

# Barangaroo Ferry Hub

## State Significant Infrastructure Application

Supporting document — October 2014



Transport  
for NSW

## Document History

Version	Date of drafting	Author	Reviewer
1.0	17 July 2014	Peter Mangels, Greg Tallentire, Leah Howell	Carolyn McCallig
1.1	31 July 2014	Peter Mangels, Greg Tallentire	Carolyn McCallig
1.2	11 August 2014	Peter Mangels, Greg Tallentire	Carolyn McCallig
1.3	14 August 2014	Peter Mangels, Greg Tallentire	Carolyn McCallig
1.4	30 September 2014	Katie Mackenzie	Carolyn McCallig

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## Glossary and abbreviations

AHIMS	Aboriginal Heritage Information Management System
ASS	Acid Sulphate Soils
BDA	Barangaroo Delivery Authority
BITP	Barangaroo Integrated Transport Plan
BoM	Bureau of Meteorology
CCAS	Sydney City Centre Access Strategy
CHL	Commonwealth Heritage List
CIV	Capital Investment Value
DCP	Development Control Plan
DECC	Department of Environment and Climate Change (NSW)
DECCW	Department of Environment, Climate Change and Water (NSW)
DDA	<i>Disability Discrimination Act 1992</i> (Commonwealth)
DSAPT	<i>Disability Standards for Accessible Public Transport Act 2002</i> (Commonwealth)
DP&E	Department of Planning and Environment (NSW)
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning &amp; Assessment Act 1979</i> (NSW)
EPA	Environment Protection Authority (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPL	Environmental protection licence
FWPDAC	Foreshore and Waterways Planning and Development Advisory Committee
HCF	Harbour City Ferries
ISEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i> (NSW)
ISLW	Indian Spring Low Water
LEP	Local Environmental Plans
LGA	Local Government Area
MP SEPP	<i>State Environmental Planning Policy (Major Projects) 2005</i> (NSW)
MD SEPP	<i>State Environmental Planning Policy (Major Developments) 2005</i> (NSW)
NES	National Environmental Significance
NHL	National Heritage List
NSW	New South Wales
OEH	Office of Environment and Heritage (NSW)
PoEO	<i>Protection of the Environment Operations Act 1997</i> (NSW)

REF	Review of Environmental Factors
Roads and Maritime	Roads and Maritime Services
SCCAS	Sydney City Centre Access Strategy
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	<i>State Environmental Planning Policy No. 55 – Remediation of Land (NSW)</i>
SFF	Sydney's Ferry Future
SHFA	Sydney Harbour Foreshore Authority
SHR	State Heritage Register
SRD SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011 (NSW)</i>
SREP SHC	<i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (NSW)</i>
SSD	State Significant Development
SSI	State Significant Infrastructure
SSIA	State Significant Infrastructure Application
Sydney LEP	<i>Sydney Local Environmental Plan 2012</i>
TfNSW	Transport for NSW
The Master Plan	<i>Long Term Transport Master Plan</i>
WHL	World Heritage List

## Executive summary

In August 2012, the Barangaroo Transport Taskforce chaired by Transport for NSW prepared the *Barangaroo Integrated Transport Plan (2012a)*. In December 2012 and May 2013 the NSW Government released two key strategic plans that set the framework for improving the Sydney transport system - the *NSW Long Term Transport Master Plan (2012)* and *Sydney's Ferry Future (2013)* respectively. These documents identified the need for a new ferry terminal within Sydney Central Business District (CBD), and more specifically at Barangaroo, to:

- Address the unique transport needs of the Barangaroo redevelopment project
- Enable growth in ferry patronage
- Provide convenient access to the western parts of the CBD for ferry passengers
- Relieve capacity constraints at Circular Quay.

The *Sydney City Centre Access Strategy (2013)* reinforced a number of these strategies, and identified the need to connect Barangaroo ferry customers with the western and central parts of the CBD via a high quality pedestrian link, the Wynyard Walk (currently under construction). It also identifies the need for new ferry routes to provide more opportunities to access Barangaroo and the mid-town precinct by public transport.

The Barangaroo Ferry Hub proposal (Barangaroo Ferry Hub or 'the proposal') is a key element in the delivery of these strategies.

The proposal comprises the construction and operation of a ferry hub at Barangaroo (refer to Figure 1-1). The proposal would:

- Deliver the Barangaroo Ferry Hub comprising the construction of three ferry wharves to support the mixed use development of Barangaroo and the western parts of the CBD. Initially, two of the three wharves would be constructed. The third wharf would be constructed in the future when the demand for ferry services necessitates.
- Facilitate in achieving the public transport mode share (84 per cent) target to the Barangaroo / western parts of the CBD.
- Connect water based mode of public transport travel to Wynyard Station and the northern parts of the CBD via the Wynyard Walk which is currently under construction.
- Support growth of ferry services under the *Sydney's Ferry Future* ferry network.
- Contribute to improved customer satisfaction as measured by the Transport for NSW customer satisfaction drivers.

Transport for NSW, the proponent for the proposal, would deliver the planning, detailed design, and construction phases of the proposal. Harbour City Ferries would operate the proposal, whilst Roads and Maritime Services would maintain the proposal.

This report is a Supporting Document for the Transport for NSW State Significant Infrastructure Application for the proposal under Part 5.1 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act). The report and the accompanying Application have been prepared to:

- Provide relevant government agencies, other stakeholders and the community with an overview of the proposal, including a preliminary assessment of its likely impacts on the environment, and the proposed approach to the detailed environmental impact assessment required for the purposes of planning approval.
- Seek Secretary's environmental assessment requirements (SEARs) for the proposal under section 115Y of the EP&A Act.

Subsequent to release of this report, the SEARs would be prepared by the NSW Department of Planning and Environment (DP&E) in consultation with other government agencies. These would confirm the required scope of the Environmental Impact Statement (EIS) for the proposal (refer to section 2 for further details of the planning approvals process).

The report also provides a preliminary assessment of the potential environmental impacts of the proposal, including positive and negative impacts during construction and operation. This preliminary assessment has concluded that the proposal has the potential for significant impacts on the following key environmental issues:

- Noise and vibration
- Traffic, transport and access
- Ecology
- Visual amenity and urban character
- Built and non-Indigenous heritage
- Climate change adaptation
- Cumulative impacts.

A number of other environmental impacts are also likely as a consequence of the proposal, and these would also require assessment as part of the EIS.

An indicative scope for the EIS has been outlined in section 6. It is expected that this Supporting Document would assist the Secretary of Planning and Environment to formulate the SEARs for the proposal.

# 1. Introduction

## 1.1. Background

In May 2011, the Minister for Planning and Infrastructure commissioned an independent review of Barangaroo compliance with the planning approval process (the Barangaroo Review) and subsequently confirmed its commitment to Barangaroo on 8 August 2011. In response to the Barangaroo Review, the NSW Government established a Transport Taskforce for Barangaroo to develop an integrated transport plan for Barangaroo.

The need to provide a ferry hub to support development at Barangaroo was identified in the *Barangaroo Integrated Transport Plan (BITP)* (TfNSW 2012a), prepared by the Barangaroo Transport Taskforce, in August 2012.

The *NSW Long Term Transport Master Plan* (the Master Plan) (TfNSW 2012), released in December 2012 identified both short and medium to longer term actions related to ferry patronage to support Barangaroo. The medium to longer term option involved building a new ferry hub at Barangaroo to support commercial development, with new services from the Lower North Shore, Manly, Parramatta and inner harbour.

In May 2013, *Sydney's Ferry Future* (SFF) (TfNSW 2013) was released by the NSW Government; also identifying that Transport for NSW (TfNSW) will develop a ferry hub at Barangaroo, although a timeframe for delivery was not specified. SFF also identified that in the longer term, the facility at Barangaroo would relieve capacity constraints at Circular Quay with more terminating services.

In December 2013, the *Sydney City Centre Access Strategy* (SCCAS) (TfNSW 2013) reinforced these actions, and identified the need to connect Barangaroo ferry customers with the western and central parts of the CBD via a high quality pedestrian link, the Wynyard Walk (currently under construction). It also identifies the need for new ferry routes to provide more opportunities to access Barangaroo and the mid-town precinct by public transport.

The construction and operation of the ferry hub that is identified in the above strategic documents is the subject of this report and is referred to as the proposed Barangaroo Ferry Hub (Barangaroo Ferry Hub) or 'the proposal'. The proposal incorporates waterside components of the Barangaroo Ferry Hub, and would also include ancillary landside facilities such as ticket vending machines and way finding signage. Provision for some landside transport related facilities (including 300 m<sup>2</sup> of floorspace) has been made in the Barangaroo development approvals Concept design Modification 4 and therefore those landside elements do not form part of the proposal. Figure 1-1 provides an overview of the proposal.

TfNSW is aiming to deliver the Barangaroo Ferry Hub as close as possible to the initial stage of occupation of Barangaroo development, which is currently scheduled for mid to late 2015, to provide high quality public transport options for new residents and building tenants.

### 1.1.1. Barangaroo development site

Barangaroo is a 22 hectare site along the Sydney Harbour foreshore, between King Street Wharf and Walsh Bay. The site is owned by the NSW Government and falls within the City of Sydney local government area (LGA).

The Barangaroo precinct was historically used for shipping and stevedoring but the NSW Government is now planning to transform the space into a public, residential and commercial

precinct over the next decade. Based on the most recent development approval for Barangaroo, the precinct is expected to accommodate up to 23,000 office workers and attract up to 33,000 visitors per day when complete.

The precinct is divided into three sections:

- Barangaroo South – a major new business, tourism, residential and retail precinct opening onto a public waterfront promenade. This is the area in which the Barangaroo Ferry Hub would be located.
- Barangaroo Central – a cultural and civic focal point for recreation, relaxation, events, festivals, entertainment and leisure activities.
- Headland Park – a six hectare open space precinct designed to complement the neighbouring headlands of Sydney Harbour.

The Barangaroo Delivery Authority (BDA) is a State Government-owned agency established to manage and develop Barangaroo on behalf of the State Government. Lend Lease has the development rights for Barangaroo South.

## **1.2. Overview of the proposal**

The proposal comprises the construction and operation of a ferry hub at Barangaroo (refer to Figure 1-1 and 1-2).

The proposal would:

- Deliver the Barangaroo Ferry Hub to support the mixed use development of Barangaroo and the western parts of the CBD
- Facilitate in achieving the public transport mode share (84 per cent) target to the Barangaroo / western parts of the CBD
- Connect water based mode of public transport travel to Wynyard Station and the northern parts of the CBD via the Wynyard Walk which is currently under construction
- Support growth of ferry services under the Sydney's Ferry Future ferry network
- Contribute to improved customer satisfaction as measured by the Transport for NSW customer satisfaction drivers.

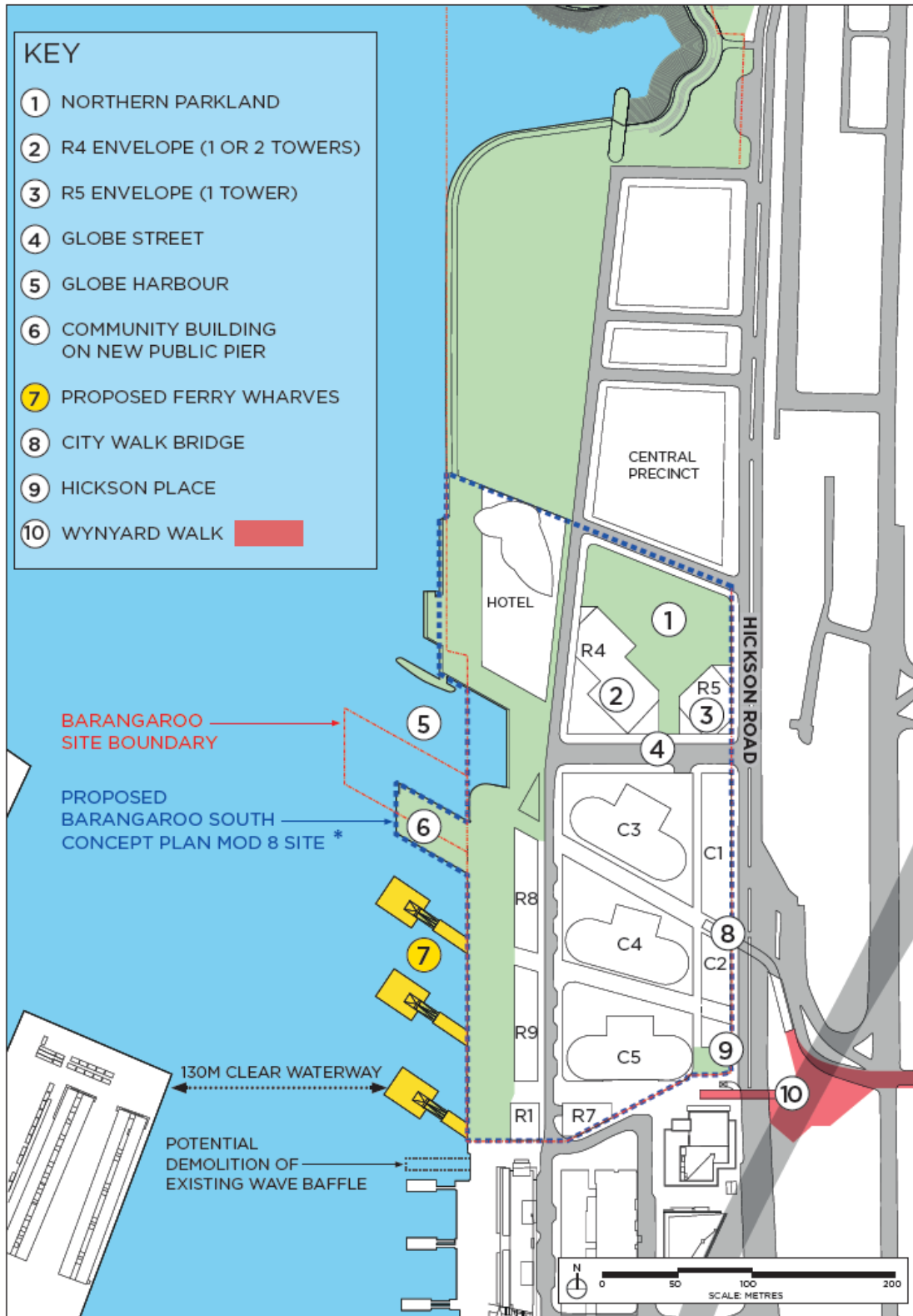
### **1.2.1. Key features**

The proposal comprises the construction and operation of a ferry hub and would include:

- Establishment of construction work area and a temporary construction compound
- Construction of three new ferry wharves and ancillary landside ferry facilities
- Potential demolition of King Street Wharf wave baffle
- Site clean-up and opening of the new wharves
- Operation of three wharves including ferry layover, pump out facilities and facilities for minor maintenance activities.

Landside ancillary facilities included as part of the proposal would be likely to comprise way finding signage and ticketing (including Opal card facilities).

Initially, two of the three wharves would be constructed. The third wharf would be constructed in the future when the demand for ferry services necessitates.



**Figure 1-1 Barangaroo Ferry Hub key proposal features (Indicative only, subject to design development).**

\* Base diagram sourced from Request to Modify Barangaroo Concept Plan MP06\_162 MOD 8 available from [http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6124](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6124) (TfNSW, 2014)

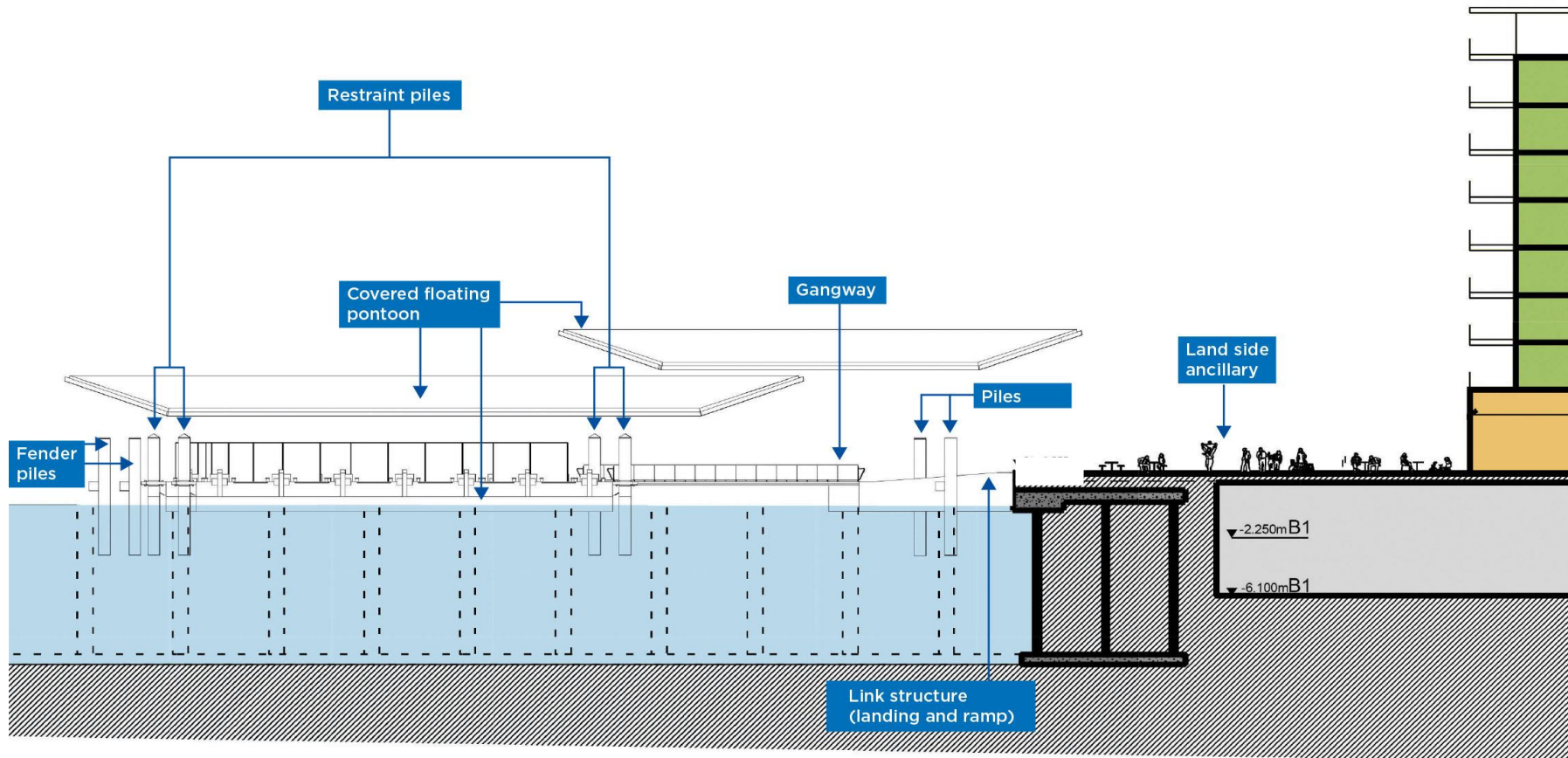


Figure 1-2 Typical wharf layout (Indicative only, subject to design development)

### **1.2.2. The proponent**

As the proponent for the proposal, TfNSW will deliver the planning, concept design and construction of the Barangaroo Ferry Hub.

It is expected that ownership and maintenance of the ferry hub asset would be the responsibility of Roads and Maritime Services (Roads and Maritime), whilst ferry operations would most likely be delivered through Harbour City Ferries (HCF).

### **1.2.3. Capital investment value**

The proposal is expected to be above the threshold capital investment value (CIV) which triggers the need for an EIS.

## **1.3. Purpose and structure of this report**

This report comprises a Supporting Document for TfNSW's State Significant Infrastructure Application (SSIA) for the proposal under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The report and the accompanying Application have been prepared to:

- Provide relevant government agencies, other stakeholders and the community with an overview of the proposed Barangaroo Ferry Hub, including a preliminary high level assessment of its likely impacts on the environment, and the proposed approach to the detailed environmental impact assessment required for the purposes of planning approval.
- Seek Secretary's environmental assessment requirement's (SEARs) for the proposal under section 115Y of the EP&A Act. Subsequent to release of this report, the SEARs will be prepared by the Department of Planning and Environment (DP&E) in consultation with other government agencies. These will confirm the required scope of the Environmental Impact Statement (EIS) for the proposal (refer to section 2 for further details of the planning approvals process for the proposal).

The structure and content of this report is as follows:

- Section 1 – Introduction: Outlines the key elements of the proposal, and the purpose of this report
- Section 2 – Planning and assessment process: Provides an outline of the statutory approvals framework for the proposal, including applicable legislation and planning policies
- Section 3 – Need and alternatives: Provides an outline of why the proposal is required, and the alternatives considered
- Section 4 – Proposal description: Provides an outline of the proposal
- Section 5 – Preliminary assessment of environmental impacts: Provides a preliminary assessment of the potential impacts of the proposal on the environment
- Section 6 – Proposed scope of the EIS: Outlines the proposed scope of the EIS for each of the identified key and other environmental issues
- Section 7 – Consultation: Outlines the consultation which has been undertaken to date and what is proposed during the preparation of the EIS
- Section 8 – Conclusion: Outlines the key conclusions of this report.

## 2. Planning and assessment process

### 2.1. Environmental Planning and Assessment Act 1979

#### 2.1.1. Part 5.1

Part 5.1 of the EP&A Act establishes an assessment and approval regime for 'State Significant Infrastructure' (SSI). Part 5.1 applies to development that is declared to be SSI by a State environmental planning policy (SEPP).

Under section 115U(3) of the EP&A Act, the following development that is declared SSI may be carried out without development consent under Part 4; however, the approval of the Minister for Planning is required prior to proceeding to construction:

- (a) infrastructure
- (b) other development that (for this Part and within the meaning of Part 5) would be an activity or which the proponent is also the determining authority and would, in the opinion of the proponent require an environmental impact statement to be obtained under Part 5.

As explained further in section 2.2.1, the proposal is declared to be SSI, under *State Environmental Planning Policy (State and Regional Development) 2011* (the SRD SEPP).

#### 2.1.2. Planning approvals process

Under Part 5.1 of the EP&A Act, the planning and approvals process includes the following key steps, as identified in Figure 2.1:

- Submission of an SSIA with the accompanying supporting document (this document) to the Secretary of DP&E under section 115X of the EP&A Act, to seek SEARs for the proposal (section 115Y)
- Preparation and submission of an EIS under section 115Y(2), addressing the matters outlined in the SEARs
- Public exhibition of the EIS for a minimum of 30 days
- Assessment of the application by the DP&E and preparation of the Secretary's environmental assessment report (section 115ZA).



**Figure 2-1 Approval process under Part 5.1 of the EP&A Act**

### 2.1.3. Relationship with the Barangaroo approvals process

A request for the redevelopment of Barangaroo (formally known as East Darling Harbour) was submitted to the Minister of Planning in February 2006. The proposal included the redevelopment of 22 hectares of city foreshore land between King Street Wharf and Walsh Bay.

On 22 March 2006, the Minister for Planning agreed to consider Barangaroo as a potential State significant site under the *State Environmental Planning Policy (Major Projects) 2005* (MP SEPP). The Minister declared Barangaroo a Major Project and subject to Part 3A of the EP&A Act and authorised the submission of a concept plan for the site.

The original Concept Plan (06\_162) for Barangaroo was first approved by the Minister for Planning in February 2007. Since the original approval there have been six amendments to the Concept Plan. The original Concept Plan stated the southern part of the site is convenient to Wynyard Rail Station and Bus Interchange as well as the ferry stop at King Street Wharf (Masson, Wilson and Twiney, 2006).

In February 2010 an amendment to the original Concept Plan was proposed (MP06\_0162 MOD 4). The modification proposed several amendments including a hotel development, additional ground floor space and height.

The modification proposed a number of changes including approximately 300 m<sup>2</sup> of transport related office space. The modification also facilitates the future provision of ferry wharves and provides an indicative location for these at the southern end of the site. The construction of the wharves and the provision of associated waterside infrastructure were proposed to be undertaken by others. These are now the subject of this application.

A State Significant Development (SSD) application (SSD 13\_6303) was submitted to the Department of Planning and Infrastructure in November 2013 seeking approval for all public domain works within Stage 1A of Barangaroo South. One of the key features of the proposed works is the waterfront promenade which would interface with the Barangaroo Ferry Hub. It also includes services for power and water supply which will extend to the harbour edge to provide for future connections to the Barangaroo Ferry Hub (JBA Planning, 2014). The Department is currently collating submissions received during the exhibition of the application.

## 2.2. State environmental planning instruments

### 2.2.1. State Environmental Planning Policy (State and Regional Development) 2011

The SRD SEPP identifies development that is SSI. The parameters for the declaration of SSI, being:

- Development is declared, pursuant to section 115U (2) of the Act, to be State significant infrastructure for the purposes of the Act if:
  - (a) the development on the land concerned is, by the operation of a State environmental planning policy, permissible without development consent under Part 4 of the Act, and
  - (b) the development is specified in Schedule 3.

*State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) is relevant to the proposal and under the ISEPP the proposal is permissible without development consent under Part 4 of the EP&A Act. This is further explained in section 2.2.2.

Clause 2 Schedule 3 of the SRD SEPP includes a definition for “*Port facilities and wharf or boating facilities*”, being “*Development for the purpose of port and wharf facilities or boating facilities (not including marinas) by or on behalf of a public authority that has a capital investment value (CIV) of more than \$30 million*”.

As at July 2014, the CIV for the proposal is expected to exceed this threshold and therefore, the proposal is SSI and falls under Part 5.1 of the EP&A Act, requiring approval from the Minister for Planning. Refer to section 2.1.1 for further details on Part 5.1 of the EP&A Act.

### **2.2.2. State Environmental Planning Policy (Infrastructure) 2007**

The ISEPP aims to facilitate the effective delivery of infrastructure across the State.

Clause 68(4) of ISEPP permits development on any land for the purpose of wharf or boating facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for a wharf and is to be carried out by TfNSW, it is permissible without development consent under Part 4 of the EP&A Act. However, as discussed in section 2.1.1, the proposal is declared to be SSI and requires the approval of the Minister of Planning.

The proposed southern wharf is located above the Interim Metro Corridor for Sydney Metro identified in the ISEPP. The design of the proposed ferry wharf considers the protection of the Metro Corridor. Further detail on the design, together with relevant provisions of the ISEPP would be provided in the EIS.

### **2.2.3. Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005**

The *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (the SREP SHC, now a deemed SEPP) covers all the waterways of Sydney Harbour, the foreshores and its wider catchment.

The plan aims to protect, enhance and maintain the catchment, foreshores, waterways and islands of Sydney Harbour. The plan also aims to establish a balance between promoting a prosperous working harbour, maintaining a healthy and sustainable waterway environment and promoting recreational access to the foreshore and waterways.

The site falls within the W1 Maritime Waters under SREP SHC. The proposal would be characterised as public water transport facilities which are permissible with development consent under SREP SHC. Nevertheless as explained above, the proposal is declared to be SSI in accordance with the provisions of the SRD SEPP and requires the approval of the Minister of Planning.

The proposal may impact the boundary of the SREP SHC buffer zone, depending on the final design; however, it is unlikely to impact on any of the Strategic Foreshore Sites identified within the SREP SHC. The EIS for the proposal will consider the potential impacts of the proposal on the Sydney Harbour Catchment.

Clause 31 of the SREP SHC requires that the Foreshore and Waterways Planning and Development Advisory Committee (FWPDAC) be given notice of proposals that fall within Schedule 2 and that any comments be taken into consideration. Schedule 2 includes public water transport facilities. Service providers are also required to be notified of the proposal. FWPDAC, Ausgrid and Sydney Water will be notified of the proposal and comments received will be addressed within the EIS.

Clause 59 of the SREP SHC requires the impact of a proposal on the significance of heritage items to be assessed. There are no items listed within Schedule 4 of SREP SHC that are within or in the vicinity of the site.

Part 6 of SREP SHC relates to Wetland Protection. The site is not identified as being Wetland Protection Areas. Nevertheless, the potential impact of the proposal on these areas is discussed at section 5.1.3.

The proposal will be considered in the context of the *Sydney Harbour Foreshores and Waterways Areas Development Control Plan 2005* (DCP) as the proposal falls within the Foreshores and Waterways Areas under SREP SHC. The proposal is considered to be consistent with the relevant planning principles and requirements of the DCP.

#### **2.2.4. State Environmental Planning Policy No. 55 – Remediation of Land**

*State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55) was enacted to provide a State-wide approach to the remediation of contaminated land for the purpose of minimising the risk of harm to the health of humans and the environment. In accordance with clause 7(1) of SEPP 55, a consent authority must not consent to the carrying out of any development on land unless:

- (a) *It has considered whether the land is contaminated.*
- (b) *If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or would be suitable, after remediation) for the purpose for which the development is proposed to be carried out.*
- (c) *If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land would be remediated before the land is used for that purpose.*

Waterside contamination investigations are currently being undertaken for the proposal to inform the design and could be included in the EIS where relevant.

The proposed ancillary landside ferry facilities are not expected to involve the disturbance of the land surface beyond the installation of way finding signage and ticketing (including Opal card facilities). Any potential disturbance of soils would be minor and could be managed through appropriate management measures which would be provided in the EIS.

#### **2.2.5. State Environmental Planning Policy (Major Developments) 2005**

The proposed temporary construction compound and the ancillary landside facilities are located on land which is subject to the *State Environmental Planning Policy (Major Developments) 2005* (MD SEPP). Relevant provisions of the MD SEPP would be considered during the preparation of the EIS. However, as the proposal is declared to be SSI (refer to section 2.1), the aspects of the proposal that are subject to the MD SEPP would be assessed under Part 5.1 of the EP&A Act.

#### **2.2.6. Local environmental planning instruments**

The proposal is located adjacent to land which is subject to the *Sydney Local Environmental Plan 2012* (Sydney LEP). Relevant provisions of the Sydney LEP would be considered during the preparation of the EIS. However, as the proposal is to be assessed under Part 5.1 of the EP&A Act, the permissibility and consent provisions of this plan do not apply.

## 2.3. Other applicable legislation

### 2.3.1. Environment Protection and Biodiversity Conservation Act 1999

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Commonwealth Minister for Environment for proposals that have the potential to significantly impact on matters of national environmental significance or the environment of any Commonwealth land.

Environmental approvals under the EPBC Act may be required for an 'action' that has, will have or is likely to have a significant impact on:

- Matters of national environmental significance (NES)
- The environment on Commonwealth land (whether or not the action is occurring on Commonwealth land).

Approval for such an action may be required from the Commonwealth Minister for Environment.

An 'action' is considered to include a proposal, development, undertaking, activity or series of activities.

Matters of NES include:

- World heritage areas
- National heritage places
- Ramsar wetlands of international importance
- Nationally listed threatened species and ecological communities
- Listed migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions.

The Sydney Opera House is a declared World Heritage property. The proposal is not located within the buffer zone of the Sydney Opera House and is not expected to impact on this buffer zone. It is not anticipated that that a referral to the Department of Environment would be required. Any matter of NES, including construction on Commonwealth land will be further considered during the preparation of the EIS, to determine if an EPBC Act referral would be required.

### 2.3.2. Disability Discrimination Act 1992 and Disability Standards for Accessible Public Transport 2002

The Commonwealth *Disability Discrimination Act 1992* (DDA) aims to eliminate as far as possible, discrimination against persons on the ground of disability in areas including access to premises and the provision of facilities, services and land.

The Commonwealth *Disability Standards for Accessible Public Transport Act 2002* (DSAPT) (Clause 33.1) requires all new public transport premises, infrastructure and conveyances to be compliant with the requirements of the standard and referenced Australian Standards and Design Rules therein, unless unjustifiable hardship is incurred by implementation.

The proposal will be designed to be independently accessible and DDA and DSAPT compliant for no less than 80 per cent of all tides. There would be times where the proposal would not comply due to tidal variance which would affect the gradient of the gangway.

### **2.3.3. Protection of the Environment Operations Act 1997**

One of the primary objectives of the *Protection of the Environment Operations Act 1997* (PoEO) is to 'protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development'. The PoEO Act contains a list of activities that require an environmental protection licence (EPL).

The proposed activity does not appear to be a scheduled activity under schedule 1 of the PoEO Act and hence it is not expected that a licence would be required. This would be confirmed with NSW Environment Protection Authority (EPA) and details would be provided within the EIS.

### **2.3.4. Other legislation not applicable to SSI proposals**

Section 115ZG of the EP&A Act specifies that the following approvals are not required for proposals considered under Part 5.1:

- Concurrence under Part 3 of the *Coastal Protection Act 1979* of the Minister administering that Part of the Act
- A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*
- An approval under Part 4, or excavation permit under section 139, of the *Heritage Act 1977*
- An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*
- An authorisation referred to in section 12 of the *Native Vegetation Act 2003* to clear native vegetation or State protected land
- A bushfire safety authority under section 100B of the *Rural Fires Act 1997*
- A water use approval under section 89, a water management work approval under section 90, or activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.

While these approvals would not be required, consultation would be undertaken with the relevant agencies that administer these Acts.

## 3. Need and alternatives

### 3.1. Strategic context

#### 3.1.1. Barangaroo Integrated Transport Plan

In 2012, the Barangaroo Transport Taskforce chaired by TfNSW, prepared the BITP (TfNSW 2012a), an integrated transport plan for Barangaroo, to address the unique transport needs of the Barangaroo development. The transport needs of Barangaroo are a key input to the short and long term transport solutions for the Northern CBD, most importantly Wynyard rail and bus, and supported by other modes such as ferry, light rail, walking and cycling.

The BITP recommended that short term initiatives and detailed planning for longer term initiatives for Northern CBD should commence immediately. A key recommendation of the BITP was the development of a second CBD ferry terminal at Barangaroo to enable growth in ferry patronage and convenient access to the Western parts of the CBD for ferry passengers, as well as relieving congestion pressure at Circular Quay.

#### 3.1.2. Sydney's Ferry Future

The SFF released by the NSW government in May 2013 identified that TfNSW would develop a ferry hub at Barangaroo, and that this new facility would help, in the longer term, to relieve capacity constraints at Circular Quay by providing an alternative termination point for ferry services.

The SFF 2013, supports an integrated transport network, where:

*Ferries need to connect seamlessly to other transport modes and include safe, convenient pedestrian access. Interchanges with other transport modes will be enhanced to allow customers to take advantage of the whole transport network. Coordination with bus services will be improved and there will be greater availability of bicycle parking at wharves. Services will also be aligned to link into "ferry to ferry" interchange points such as Balmain East to make it easier for customers to travel to different destinations across the harbour. Increasing ferry use will help to take pressure off key congested road corridors.*

#### 3.1.3. NSW Long Term Transport Master Plan

In December 2012, the NSW Government released the LTTMP, which is a 20 year plan to improve the NSW transport system (NSW Government 2012a). It provides the basis upon which further detailed transport planning, including the proposal, can be undertaken.

The Master Plan has considered the future population growth and employment precincts within the State, including Sydney.

The Master Plan outlines the capabilities and limitations of different transport modes, including rail (heavy and light rail), bus, private vehicles and ferry to provide clear direction for future transport investigations.

In the current morning peak one hour, between 8 am and 9 am, buses bring 41,000 people into the city, while 19,500 other vehicles bring in a further 24,000 people. Over the next 20 years, trips into the Sydney CBD are set to grow by 31 per cent – an additional 56,500 trips, the equivalent of 942 standard buses. Putting more vehicles onto the roads to manage these

trips will worsen congestion. An integrated public transport solution is needed to ease congestion in the CBD.

The Master Plan includes five steps, focusing on bus, rail and light rail strategies to reduce CBD congestion. Alongside the five steps the proposal would provide greater capacity for customers to access the western and central parts of the CBD by ferry. Opal ticketing facilities would be provided to improve integration across transport modes as identified in the Master Plan.

The Master Plan includes 220 short, medium and long term goals that are focused on commitments to the transport system in NSW. Accompanying the Master Plan are seven modal delivery plans, including a ferry modal delivery plan, which was discussed in section 1.1 and section 3.1.2.

The proposal is a key action in the Master Plan as it will serve the new commercial development at this site, connect ferry customers to the western and central parts of the CBD and provide an alternate passenger drop off point alongside the Circular Quay ferry terminal.

#### **3.1.4. Sydney City Centre Access Strategy**

The SCCAS is the State's detailed plan to deliver a fully integrated transport network in Sydney's city centre. This strategy includes a number of separate components across different modes (bus, heavy rail, light rail, ferry and cycling) that as a whole aim to unlock additional capacity within the Sydney CBD. The proposal represents a component of the SCCAS – connecting Barangaroo to the city centre and Sydney transport network. Two components of the SCCAS of particular relevance to the proposal are new bus routes serving Barangaroo and Walsh Bay and Wynyard Walk, which will provide a direct pedestrian connection between Barangaroo and Wynyard.

#### **3.1.5. Draft Metropolitan Strategy for Sydney to 2031**

The draft *Metropolitan Strategy for Sydney 2031* (the draft Strategy) (NSW Government 2013) provides a comprehensive plan to manage the growth of Sydney. Sydney's population is expected to grow by 1.3 million by 2031 with an additional 625,000 jobs created. Within the draft Strategy, nine 'city shapers' will play an important role in shaping future growth across greater Sydney. Those which are relevant to the proposal include:

- Global Sydney – The area encompassed by Sydney's CBD and North Sydney is predicted to have an increase of more than 114,000 new jobs. Transport connections with other areas of Sydney will be improved. Areas such as Darling Harbour and Barangaroo will be regenerated.
- Sydney Harbour – Sydney Harbour is the defining feature of Sydney and one of our biggest lifestyle and economic assets. More areas of the harbour foreshore will be opened up to the public, including transforming important waterfront areas such as Barangaroo and the Bays Precinct. Ferry transport use and water quality will be improved. The role of Sydney Harbour as a 'working harbour' will remain.

The draft Strategy supports the delivery of key proposals and actions identified in the *NSW Long Term Transport Master Plan*, including the proposal, through improving transport access to and within the western and central parts of the CBD.

#### **3.1.6. NSW 2021**

*NSW 2021: A plan to make NSW number one* (Department of Premier and Cabinet 2011) is a 10 year plan by the NSW Government to rebuild the economy, return quality services,

renovate infrastructure, restore accountability to government, and strengthen the local environment and communities. It replaces the State Plan as the NSW Government's strategic business plan.

This plan sets immediate priorities for action and guides NSW Government resource allocation in conjunction with the NSW Budget.

Of relevance to the proposal, Goal 7 is to 'Reduce travel times', Goal 8 is to 'Grow patronage on public transport by making it a more attractive choice' and Goal 9 of the plan is to 'Improve customer experience with public transport services'.

The proposal would assist with achieving these goals by providing a high quality public transport service to the western and central parts of the CBD by ferry that will ensure a positive whole of journey experience including comfortable and timely travel. This focus on customer experience should assist in making the proposal an attractive public transport choice.

### **3.2. Need for the Barangaroo Ferry Hub**

Growth in travel demand within the Sydney CBD has led to increased transport congestion and a reduction in the quality of service to customers. The proposal at Barangaroo would provide access to the Barangaroo precinct and relieve capacity constraints on nearby ferry terminals, including Circular Quay and King Street Wharf.

Congestion across metropolitan Sydney is estimated to cost up to \$5 billion per annum (TfNSW 2013). Train and bus services, stations and stops are, at times, operating above their intended capacity during peak periods. The cost of this is regular overcrowding and longer commuting times. The existing transport network within the Sydney CBD has limited capacity and the challenge is to increase the capacity, reliability and quality of public transport services to the Sydney CBD. The Sydney CBD is a hub of activity with more than 630,000 trips made to the area each weekday. This is expected to grow to 775,000 trips over the next 20 years, with congestion costs forecast to increase to around \$8 billion per annum (TfNSW 2013).

As discussed in section 1.1.1, once fully occupied Barangaroo will accommodate up to 23,000 office workers and 2,500 residents, in addition to attracting an estimated 33,000 visitors per day when complete. The need for the proposal is based on demand for transport services to the precinct with a focus on population, employment and attractions within the walking catchment of the wharf.

The proposal aims to address congestion and capacity constraints of King Street Ferry Wharf and congestion and operational constraints at Circular Quay in peak periods. The proposal is intended to replace public transport ferry services at King Street Wharf and along with alleviating congestion at Circular Quay would further increase transport options for customers arriving to the Sydney CBD.

### **3.3. Key benefits**

The key benefits of the proposal include:

- Increased accessibility, by:
  - increasing public transport accessibility to the Barangaroo development and the western and central parts of the CBD
  - connection to the city centre via Wynyard Walk, a high quality pedestrian link between Barangaroo and Wynyard Station

- integrated ticketing for public transport in Sydney via Opal.
- Improved customer experience, by providing:
  - new ferry facilities that consider safety, amenity and comfort for customers
  - a design that would be compatible with the look and feel of the wider Barangaroo development
  - a design that would reduce maintenance requirements and be resistant to vandalism.
- Improved network capacity, by:
  - relieving capacity constraints at Circular Quay by providing a new ferry hub at Barangaroo
  - providing direct access to the Barangaroo precinct from ferry routes from the Lower North Shore, Parramatta and inner harbour
  - improving resilience of ferry services for special events or maintenance activities.

### **3.4. Options considered**

The following three options for the proposal have been identified.

- Option 1 – Base Case/Do nothing. Continue to provide ferry services from King Street Wharf and Aquarium Wharf
- Option 2 – Supplement existing ferry facilities at King Street Wharf with an additional wharf at Barangaroo
- Option 3 – Construction and operation of two ferry wharves at Barangaroo, with future provision for a third wharf, and cease ferry operations at King Street Wharf.

### **3.5. The preferred option**

Option 3 fulfills the proposal objectives and the objectives of the BITP and is the subject of this application.

Full details of the option development and assessment process would be included in the EIS.

## 4. Proposal description

The proposal scope outlined in this section is indicative and based on the current construction planning and level of design available at August 2014. This design is continuing to develop as more engineering and assessment work is completed and will benefit from input from stakeholders and the community. Some scope may change as the design progresses and more detail becomes available. These changes would be considered as the environmental impact assessment process continues – and would be documented in the EIS.

### 4.1. Overview

The proposal comprises the construction and operation of a ferry hub and would include:

- Establishment of construction work area and a temporary construction compound
- Construction of three new ferry wharves and ancillary landside ferry facilities
- Potential demolition of King Street Wharf wave baffle
- Site clean-up and opening of the new wharves
- Operation of three wharves including ferry layover, pump out facilities and facilities for minor maintenance activities.

Landside ancillary facilities included as part of the proposal are likely to include way finding signage and ticketing (including Opal card facilities).

Barangaroo development approval Concept Design Modification 4 has made provision for approximately 300 m<sup>2</sup> of transport related office space. This space is to be delivered by BDA and/or Lend Lease, and therefore does not form part of the proposal.

Telecommunications, electricity, water and sewerage would be available at the foreshore edge. This would also be constructed by the BDA as part of Concept Design Modification 4. The proposal includes connection into the landside service infrastructure.

#### 4.1.1. Staging

Initially, two of the three wharves would be constructed. The third wharf would be constructed in the future when the demand for ferry services necessitates.

## 4.2. Scope of works

The scope of works for the proposal would include construction and operation of the Barangaroo Ferry Hub.

### 4.2.1. Construction

#### (a) Establishment of construction work area and a temporary construction compound

It is anticipated that the construction work area would be established by installing hoarding along the foreshore at the location of the proposed wharves, construction signage identifying the work area, and installing silt curtains around the perimeter of the site within the waterway. The silt curtains would contain any potential disturbance of harbour sediments from

construction and demolition activities such as vessels manoeuvring and piling within the construction work area.

A temporary construction compound about 400m<sup>2</sup> would also be established. It is anticipated that the temporary construction compound would be located on the Barangaroo development site adjacent to the wharf. This would involve the installation of hoarding, relocatable site sheds, amenities, bunding to prevent accidental spills entering the waterway, and construction equipment (e.g. construction materials and tool boxes).

The majority of construction plant, equipment, materials and personnel would access the construction site via Sydney Harbour, travelling by boat and/or barge from the construction contractor's main office facilities (off-site facility) to the proposal area.

A 130 metre wide navigation channel would be maintained throughout the works wherever possible to minimise disturbance to vessel movements and safety of vessels travelling to and from Darling Harbour during construction.

**(b) Construction of three new ferry wharves and ancillary landside ferry facilities.**

Based on other similar ferry wharves throughout Sydney Harbour it is envisaged that each wharf would comprise:

- (a) A prefabricated steel covered pontoon approximately 30 metres long and 23 metres wide, which includes:
  - (i) Two berthing faces on each pontoon.
  - (ii) Ancillary facilities on each wharf to provide for passenger safety, comfort and security and to display ferry service information.
  - (iii) A roof structure.
- (b) A covered link structure (comprising landing and ramp) up to about 23 metres long and nine metres wide to connect the gangway to the ramp.
- (c) A covered prefabricated gangway about 15 metres long and seven metres wide between the link structure and the pontoon.
- (d) Two prefabricated gangways between the pontoon and the vessel, one for each berth.
- (e) Ticket barriers and Opal infrastructure.
- (f) Four restraint piles for each pontoon and piles to support each link structure.
- (g) Vessel arrestor systems comprising a group of piles and cross beam adjacent to the sea wall.
- (h) Connection of electrical, telecommunication and water services.
- (i) A pump-out facility comprising pumps, filters, reels, valves, electrical and control facilities.

Based on similar ferry wharf projects in the harbour it is likely that construction of the wharves would be carried out as follows:

- The majority of the wharf components such as the piles, pontoon, gangway and ancillary facilities would be transported between the location of the proposal and the off-site facility via barges. These components would arrive at the site at the time of installation. In-situ work is likely to be required for the link structure.

- The piles would be installed using a combination of screwing, vibrating and hammering techniques from a barge piling rig.
- Once the piles are installed, precast concrete elements would be installed at the link structure. Concrete trucks would pour the concrete into precast units to finish the link structure and into the piles to complete pile caps.
- Intricate lifting and placement of components of the wharves would be carried out using a barge mounted crane. This method would be used to install the gangway, pontoon and some of the ancillary facilities.
- It is anticipated that specific components of work may need to be undertaken out-of-hours (i.e. during the evening and night time periods). Piling and intricate lifts typically need to be undertaken during calm environmental conditions (e.g. still water and minimal wind) to ensure that barges used for the piling can remain still for the piles to be installed accurately. Calm conditions are also required to provide safe conditions for the construction crew. Out-of-hours activities are normally limited to the early stages of construction and a minor portion of the overall construction program (i.e. a few weeks).
- It is anticipated that the construction of the initial two wharves would take approximately 12 months to complete, including an anticipated 3 month piling period.

The construction program and methodology is still under development and would be detailed in the EIS, expected to be publicly exhibited later this year.

#### **(c) Demolition of King Street Wharf wave baffle**

The King Street Wharf wave baffle would potentially be demolished and taken to the off-site facility by barge. This would involve:

- Removal of the timber decking, supporting timber girders and underlying wash barrier steel substructure.
- Removal of the piles using a vibratory hammer to extract the piles. The hammer would be placed over the pile using a barge mounted crane. If the pile is unable to be pulled out, it would be cut level to the harbour bed to remain in situ. Divers would cut the pile at seabed level using appropriate underwater equipment.

The components of the wave baffle would be reused, where possible, or eventually removed to a licensed waste management facility for recycling or disposal.

#### **(d) Site clean-up and opening of the new wharves**

The site would be cleaned up and restored to its intended state. Controls and temporary structures would be removed. A safety assessment of the structure would be carried out to identify any risks and rectify any safety hazards resulting from the construction before opening areas to the public.

All construction fencing, hoarding and signage would be removed to open the wharves for operation.

### **4.2.2. Operation**

The Barangaroo Ferry Hub would initially include two operating ferry wharves catering for most vessel classes (with exception of the larger Manly Freshwater Ferries). The wharves would operate to service Harbour City Ferries primarily rather than commercial vessels who would continue to use King Street Wharf facilities.

At the year of opening (2016) the Barangaroo Ferry Hub is expected to have patronage throughput of up to eight vessels per hour during weekday peak periods and 14 vessels per hour all day Saturday and Sunday. Patronage throughput is expected to increase, requiring up to 14 vessels per hour for both weekday peak and weekend services by 2026.

Operating hours would be between 5 am and 12 am Monday to Friday and between 7 am and 12 am Saturday, Sunday and public holidays. It is envisaged that weekday PM peak periods would mirror that of the AM weekday periods.

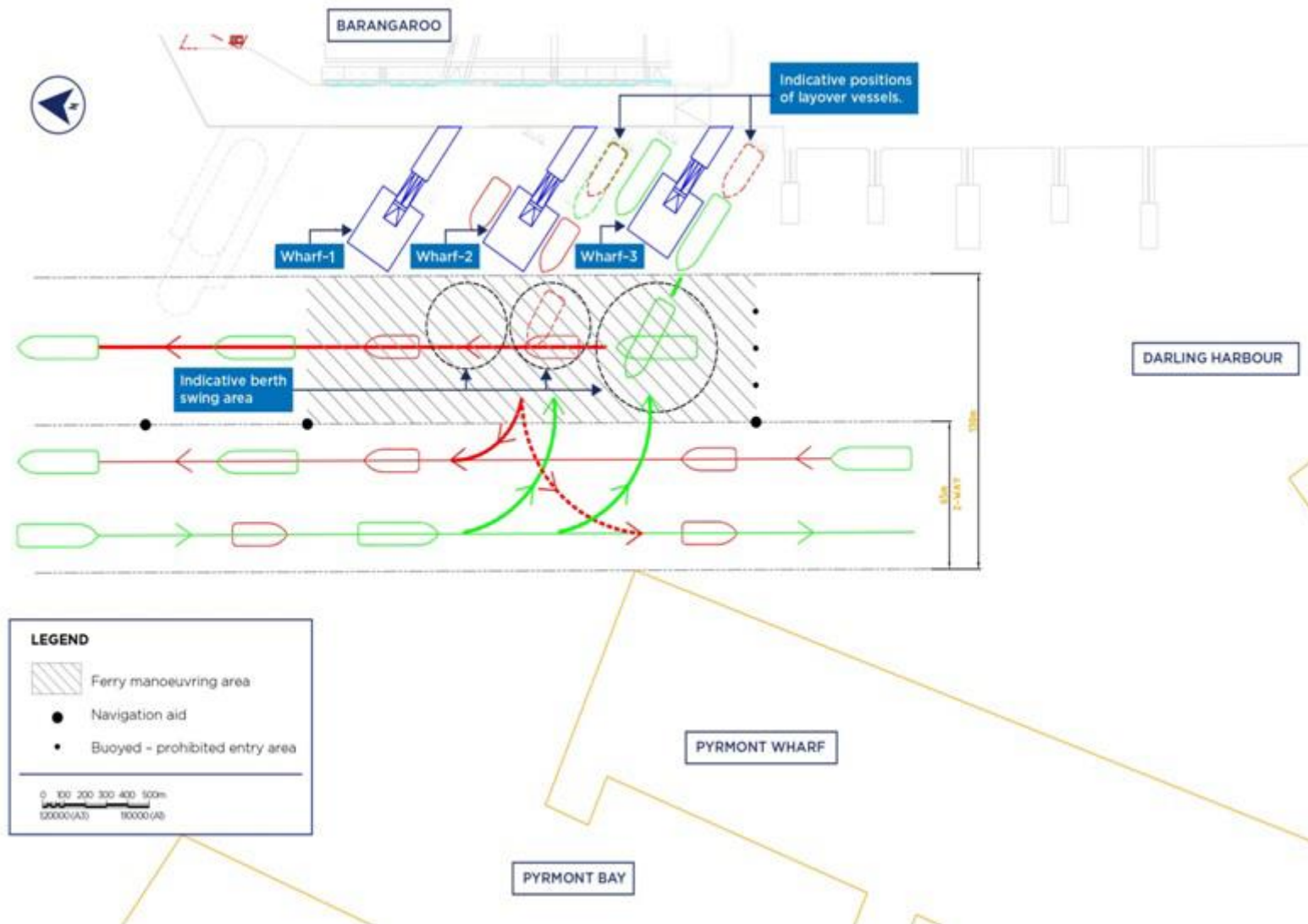
The Barangaroo Ferry Hub may be required to operate outside of the operating hours detailed above during peak events such as New Years Eve, Vivid and Australia Day. The timetabling of services at the Barangaroo Ferry Hub may also require adjustment to accommodate other events that take place in the metropolitan area.

The third wharf would be constructed and operated in the future when demand necessitates.

Further details on specific aspects of the operation of the proposal are provided below.

#### **Wharf operations**

Figure 4-1 below provides indicative vessel movements around the ferry wharves and shows the likely manoeuvring requirements for vessels arriving and departing the wharves.



**Figure 4-1 Indicative vessel movements (AECOM 2014)**

### **Layover of vessels**

Each wharf would provide a single layover berth on its southern side. Layover would also occur at the passenger berths subject to timetable requirements.

During extended layover the vessels would run on shore power. It is expected that there would be up three vessels moored at each wharf overnight.

Layover during daytime breaks would typically be between 15 and 45 minutes depending on timetable requirements.

### **Maintenance of vessels**

Minor maintenance of ferries would take place at the Barangaroo Ferry Hub by Harbour City Ferries, with Roads and Maritime maintaining the ferry wharves. This would be limited to ferries that layover and include activities such as minor repairs, pump-out of sewerage, cleaning of vessels and updating passenger information displays. This is similar to the current maintenance activities that occur at Circular Quay. Major scheduled maintenance would take place at Balmain Shipyard.

Pump-out of sewerage from layover vessels would typically occur once per day for each vessel. During periods of heavy passenger demand, pumping may need to occur more frequently.

## **4.3. Proposal timeframe**

The current timeframe for the project is to lodge the SSIA with DP&E in September 2014. Following the receipt of the SEARs, initial community engagement would take place and the EIS would be prepared and submitted to DP&E for public exhibition late in 2014.

It is anticipated that construction would commence in mid 2015, subject to planning approval, and the Barangaroo Ferry Hub would commence operation in 2016.

## **4.4. Sustainability**

Sustainability is a key priority for the Barangaroo Ferry Hub. TfNSW would work towards developing high level sustainability objectives for the Barangaroo Ferry Hub. These objectives would aim to promote sustainability by:

- Achieving best practice when measured against both government agency and Australia-wide
- Sustainability rating systems
- Complying with the applicable TfNSW sustainability targets for transport proposals
- Collaborating with other government agencies and utility providers to achieve efficiencies in infrastructure provision where feasible
- Exploring opportunities for offsetting operational energy usage.

Key measures to achieve and implement sustainability for the proposal would include:

- Preparing a detailed sustainability framework for the proposal, which would assess the feasibility of the agreed objectives.

- Collaborating with key stakeholders including City of Sydney Council, Sydney Harbour Foreshore Authority (SHFA) and Sydney Ports, as well as capitalising on existing sustainability initiatives, knowledge and systems within these agencies.
- Embedding the sustainability framework requirements across all relevant proposal disciplines including but not limited to assessment, procurement, construction and operations.

## 5. Preliminary assessment of environmental impacts

This section provides a preliminary assessment of the potential environmental impacts that are likely to be associated with the construction and operation of the Barangaroo Ferry Hub proposal. The impacts described are considered preliminary and may change throughout the design and environmental impact assessment process as more information becomes available. Any changes to environmental impacts would be adequately assessed as part of the EIS and associated technical studies. An outline of the proposed EIS scope is provided in Chapter 6.

The environmental impacts identified in this section have been classified as 'key' or 'other' environmental issues. This classification is based on the likely significance of the identified environmental impacts from the findings of the preliminary environmental assessment and previous experience with similar infrastructure proposals.

Key environmental issues can be defined as those impacts that are considered likely to be significant (without the adoption of adequate environmental management measures) and would require further detailed investigation during the preparation of the EIS. Other environmental issues are defined as those impacts that are not expected to be significant and would be manageable through the application of best practice environmental management measures.

### 5.1. Key environmental issues

#### 5.1.1. Noise and vibration

##### Existing environment

Currently, the Barangaroo development site located directly east of the proposal area is the main contributor to the existing noise environment. Other noise emissions include those associated with boating operations within Pyrmont Bay, Darling Harbour and the surrounding waterways, waterfront restaurants and bars at King Street Wharf and the nearby Wynyard Walk construction site.

Once complete, the main noise emissions from Barangaroo are expected to include those associated with the commercial and recreational precincts.

The nearest sensitive receivers include nearby waterfront commercial properties at King Street Wharf, offices located within the Brookfield Multiplex, American Express and KPMG buildings on Shelley Street, the King Street Wharf apartments and Medina Grand apartments on Lime Street, the Ibis hotel on Shelley Street, and the Sydney Wharf apartments at Pyrmont Bay.

The nearest sensitive receivers on completion of Barangaroo South would include the R8 and R9 residential towers. These towers were designed to be fitted with double glazing and air-conditioning, which would offer a level of noise attenuation.

##### Construction noise and vibration impacts

Construction of the proposal is expected to take approximately 12 months. Works would generally be undertaken during standard hours, however it is anticipated that various components of work may be required to be undertaken out-of-hours. This may be specific to certain conditions in the harbour, for example piling is usually undertaken in the early

morning period during calmer tidal conditions. Other works may be undertaken out-of-hours to minimise impacts on existing ferry traffic or to minimise noise impacts.

Construction of the proposal would result in noise and vibration impacts to surrounding land uses and sensitive receivers. Ultimately the magnitude of impact would be a function of the type of activity being undertaken, the equipment being used, the working hours and the distance to the receiver. The construction activities likely to have the highest impact include piling work and potential demolition of the existing wave baffle.

Based on a similar assessment undertaken for the King Street Wharf Jetty Refurbishment Review of Environmental Factors (REF) directly south of the proposal area, construction noise and vibration impacts may exceed the noise management levels outlined in the Interim Construction Noise Guideline (DECC, 2009) at some locations.

### **Operational noise and vibration impacts**

Sources of noise associated with operation of the proposal are anticipated to include loading and unloading of passengers at the ferry wharves, public announcements and the ferries themselves such as engine and propeller noise and any warning sounds that need to be made as the ferries arrive and depart the wharves. The level of the noise emissions may vary with the different vessel types. The incidental bumping of the ferries against the pontoon as they dock may also result in some noise and vibration impacts.

The extent of noise and vibration impacts on nearby receivers would depend on the sensitivity of the receiver, the distance between the source and the receiver, any intermediate acoustic shielding and the ground medium (noise travels better and is not easily attenuated over water).

It is assumed that ferries arriving and departing the hub would be in operation during the hours of 5am and midnight, in line with the current Sydney Ferries timetable.

There is no noise guideline developed specifically to address the noise impacts associated with ferry operations. In the absence of a specific guideline for the ferry transport mode, the Industrial Noise Policy (EPA, 2000) (INP) would provide the closest framework which could potentially be applied for the assessment of operational noise impacts. However, it is noted that the INP has been developed for more static noise sources (eg. Industrial facilities, extraction fans, air conditioning units etc) rather than transient noise associated with ferry movements. An alternative assessment framework/guideline which is more relevant to ferry operations would be discussed in consultation with the EPA as part of the development of the EIS.

Noise and vibration is likely to be managed through an operational management plan, targeting directly affected receivers.

## **5.1.2. Traffic, transport and access**

### **Existing environment**

#### *Maritime transport*

The Darling Harbour waterway is a key transport route for passenger vessels. It is used by a variety of water-based transport modes including commuter ferries and commercial and recreational vessels.

Darling Harbour comprises a number of vessel berths, with the main thoroughfare through the centre of the waterway providing access to these berths. There are currently no berths

along the Barangaroo foreshore and at this stage it is not envisaged that other vessel berths would be provided in this area besides the Barangaroo Ferry Hub.

Until recently, Barangaroo was used as a temporary cruise ship terminal. A permanent cruise ship terminal has now opened at White Bay and the use of Barangaroo for this purpose has stopped.

The nearest berth to the proposal area is Wharf 1 at King Street Wharf. Wharf 1 has two berthing faces (north and south). The northern berth is occupied by Captain Cook Cruises under a lease arrangement with Roads and Maritime. The King Street Wharf wave baffle is located on the northern side of Wharf 1 and would potentially be demolished as part of this proposal.

The proposal would operate services through Sydney Harbour and Parramatta River, which have similar traffic and transport characteristics. Both waterways are generally heavily trafficked with commuter ferries, commercial and recreational vessels. Given its depth, Sydney Harbour also accommodates large ships including cruise liners travelling to and from terminals at Circular Quay and White Bay. Vessel traffic within Pyrmont Bay and Darling Harbour increases on weekends and during scheduled events such as the Sydney International Boat Show.

Vessels heading into Pyrmont Bay and Darling Harbour are restricted as they enter at an 8 knot speed limit past the Barangaroo site.

#### *Road transport*

Lime Street is the closest vehicular traffic route to the proposal. Lime Street is a two lane local road that connects to King Street at the south and Shelley Street to the east. Lime Street services the adjacent waterfront properties and commercial and office buildings. Lime Street has regulated on-street parking on both sides. There are loading zones for about 14 vehicles along the western side of Lime Street between Erskine Street and Barangaroo South. There are a series of bus layover spaces further south along the western side of Lime Street. Other parking facilities are provided within the Macquarie Bank building on Lime Street.

#### *Pedestrian transport*

Currently the foreshore adjacent to Barangaroo is utilised by pedestrians during day time hours for active and passive recreation. Part of this area would be occupied for construction activities.

The proposal area adjoins the northern edge of the King Street Wharf promenade. The King Street Wharf promenade is a busy pedestrian thoroughfare providing access to waterfront properties and the King Street ferry wharves. Access to the foreshore and the northern end of the King Street Wharf promenade is from Lime Street.

Once constructed, Barangaroo South would comprise a mix of commercial, workplace and residential buildings and public open spaces. Access would be provided through a series of pedestrian connections and roads. A pedestrian promenade is to be developed along the length of the Barangaroo foreshore edge. The Barangaroo South section of this promenade is currently the subject of an SSD (SSD 13\_6303) which is discussed further at section 2.1.3.

#### *Public transport*

The closest public ferry wharf to the Barangaroo development is King Street Ferry Wharf. Based on the current ferry timetable, ferries operate at King Street Wharf between 6.30 am and 11.30 pm on weekdays and 8.30 am to 11.30 pm on weekends and public holidays.

Buses also service King Street Wharf, with services operating every 15 to 20 minutes during peak times.

### **Traffic, transport and access impacts**

The proposal would impact the existing maritime, road and pedestrian traffic, transport and access. These impacts are discussed in the sections below.

#### *Maritime transport*

The proposal may impact existing vessel movements in the vicinity of the proposal area during construction and operation.

The proposal would generate minor increases in water traffic during the construction period. Water-borne construction plant may also be operated and docked within the proposal area during the construction period. Some minor detours may be required during this time, however this is unlikely to have a significant impact to other users of the waterway and access to other ferry wharves would not be restricted. Construction would be managed to respect the timing of events scheduled by SHFA. This may involve avoiding construction or certain construction activities during certain large scale or high profile events such as the Sydney International Boat Show period.

During operation, the proposal would provide a new ferry service to Barangaroo from the Lower North Shore, Parramatta and inner harbour. In conjunction to the addition of wharf facilities, there may be opportunities to upgrade existing ferry services to and from the western parts of the CBD.

Timetable changes to vessel movement in and out of the Darling Harbour waterway would reflect changes to the King Street Ferry Wharf and Circular Quay wharves, relieving congestion and overall capacity constraints.

#### *Road transport*

Construction of the proposal may result in a temporary increase in vehicular traffic in Lime Street and the general vicinity of the proposal area. However this is not anticipated to result in conflict between private vehicles, construction traffic and public transport during this period.

Construction vehicles may need to utilise existing parking spaces on Lime Street, or other nearby parking facilities which may reduce the number of available public parking spaces during this time.

Operation of the proposal is not expected to create a significant demand for additional vehicles accessing the site, however some vehicles may need to access the site from time to time for routine maintenance activities.

#### *Pedestrian transport*

The proposal area would utilise part of the current public foreshore to the west of the Barangaroo site. During construction, pedestrian access may be limited on the foreshore between the proposal area and Barangaroo South.

The proposal would be designed to facilitate efficient pedestrian access to and from the western parts of the CBD, Wynyard Walk, Barangaroo South, King Street Wharf, Darling Harbour foreshore, and the wider Barangaroo development in operation.

*Public transport*

The proposal is part of a broader integrated transport plan for Barangaroo (TfNSW 2012) and would positively contribute to the provision of improved public transport for the northern part of the CBD. The proposal has been conceived as part of a multi-modal transport solution for the Northern CBD which includes walking (Wynyard Walk), rail, light rail and buses.

**5.1.3. Ecology**

**Existing environment**

An aquatic ecology survey was undertaken by Marine Pollution Research Pty Ltd in May 2013 to support the King Street Wharf Jetty Refurbishment REF. Table 5-1 lists the habitat zones and species identified by the survey.

**Table 5-1 Local aquatic habitats and species**

Aquatic habitat zone	Species identified
Upper intertidal zone on bare concrete or bare wood	Limited variety of intertidal animals; encrusting barnacles ( <i>Elminius sp.</i> ), green turfed algae and oysters.
Lower intertidal habitats	Variety of gastropod molluscs; <i>B. nanum</i> , <i>Austrocochlea obtusa</i> , the Oyster borer, <i>Morula marginalba</i> and several limpet and false limpet species ( <i>Cellana tramoserica</i> and <i>Montfortula sp.</i> ).
Shallow sub-tidal fringes	Patchy cover of encrusting red coralline algae plus a variety of short frondose brown algae species including <i>Dictyota dichotoma plus Sargassum sp.</i> Shaded shallow sub-tidal habitats support an extended oyster band with black mussels.
Below the shallow sub-tidal algae fringe	Patchy band of algae including three brown macroalgae species ( <i>Ecklonia radiata</i> , <i>Padina sp.</i> , and <i>Sargassum spp.</i> ), a number of frondose algae, some mussels and a variety of sponge, bryozoa and tunicate species. Shaded areas do not support algae. A kelp zone with very scattered cover was confined to the piles and part of one suspended wave baffle that are exposed to sunlight. The kelp zone was no more than four metres deep.
Sub-tidal algae zone	Diverse fauna of mainly encrusting species such as bryozoa, sponges, colonial ascidians and tufted bryozoans embedded in a silt matrix. At around three metres above the seabed, the hard substratum habitats are covered in silt and support very few attached fauna.
Seabed comprising soft silty-sand	Soft substratum benthic infauna (animals that live in the sediments). No plants encountered on the seabed and none were expected at these depths.

The *Fisheries Management Act 1994* and the *Environment Protection and Biodiversity Conservation Act 1999* identify a number of shark and fish species as threatened species. None of these were identified during the aquatic survey. No other threatened aquatic species or populations that are known to occur in Sydney Harbour were observed during the survey.

The Barangaroo and surrounding area is a highly developed environment and the foreshore area is located on reclaimed land. A search of the NSW Wildlife Atlas undertaken in June 2013 for the King Street Wharf Jetty Refurbishment REF identified a number of threatened species and ecological communities listed under the *Threatened Species Conservation Act 1995* within a 10 kilometre radius of King Street Ferry Wharf.

This included microbats which are known to roost in man-made structures, including stormwater drains, culverts, under bridges in expansion joints or other crevices.

A targeted survey for threatened microbats was undertaken in April and May 2013 to support the King Street Wharf Jetty Refurbishment REF which included the wave baffle to potentially be demolished as part of this proposal. The surveys did not detect any microbats within the area and no suitable roosting habitat sites were identified. It was considered that the area was also unlikely to provide suitable habitat, roosting or food resources for any other of the listed terrestrial species identified.

An EPBC Protected Matters search undertaken on 14 July 2014 for a 10 kilometre radius from the proposal area identified potential for the following species:

- Three threatened ecological communities
- 72 threatened species
- 69 migratory species
- 95 listed marine species
- 13 whales and other cetaceans.

### Ecological impacts

Based on the investigations carried out for King Street Wharf Jetty Refurbishment REF, it is considered that the proposal area is unlikely to contain seagrass vegetation and would likely only support limited algae vegetation. It is also considered unlikely that the proposal area would provide suitable habitat for threatened species listed under the *Fisheries Management Act 1994* and the *Environment Protection and Biodiversity Conservation Act 1999*.

Therefore, any potential ecological impacts during construction are expected to be limited and manageable with best practice measures.

Given the current ferry and maritime operations in the area, ecological impacts during operation are expected to be low. The creation of additional wetted surface areas may be beneficial in providing suitable habitat for algae-based assemblages that would provide feeding and shelter habitat for a range of juvenile and small reef fish.

As part of its development, Barangaroo would provide landscaped areas in the South and Central precincts and Headland Park at the northern end of the site. Headland Park is said to feature bushland areas and tidal rock pools, potentially providing habitat for native flora and fauna species.

#### 5.1.4. Visual amenity and urban character

##### Existing environment

The proposal is located on the eastern edge of the Darling Harbour waterway, with the Barangaroo South development site to the east and King Street Wharf to the south. On the other side of the waterway to the west is Pyrmont Bay (see Figure 1-1).

Once complete, Barangaroo South will comprise a mix of commercial, workplace and residential buildings and public open spaces. Other nearby land uses on King Street Wharf and Lime Street include waterfront commercial properties, office buildings, hotels and residential apartments.

Topography in the vicinity of the proposal area is relatively flat. Further to the east, the land rises moderately to ridge lines located at the eastern edge of the CBD.

The Darling Harbour waterway experiences a high level of water traffic and comprises a number of vessels berths (both large and small) along the eastern and western shorelines, with the main vessel thoroughfare through the centre of the waterway.

The foreshore adjacent to Barangaroo is retained by a concrete sea wall which extends from the top of the pedestrian promenade to the seafloor.

### **Visual amenity and urban character impacts**

The proposal is expected to be visible from King Street Wharf to the south, Pyrmont Bay to the west and Barangaroo from the east and north. Other views would be from moving vessels on the water or distant views from Darling Harbour.

Temporary visual elements associated with construction of the proposal would include:

- A temporary construction compound about 400 m<sup>2</sup> in area would be located on the Barangaroo development site adjacent to the wharves
- Construction hoarding, site sheds and amenities
- Construction vessels, vehicles and personnel
- Construction lighting required for night works.

Permanent visual elements associated with operation of the proposal would include three wharves, each comprising:

- A prefabricated steel covered pontoon of approximately 30 metres long and 23 metres wide, which includes:
  - Two berthing faces on each pontoon
  - Ancillary facilities on each wharf to provide for passenger safety, comfort and security and to display ferry service information
  - A roof structure.
- A covered link structure (comprising landing and ramp) about 23 metres long and nine metres wide to connect the gangway to the ramp.
- A covered prefabricated gangway about 15 metres long and seven metres wide between the link structure and the pontoon.
- Two prefabricated gangways between the pontoon and the vessel, one for each berth.
- Ticket barriers including Opal infrastructure.
- Four restraint piles for each pontoon and piles to support each link structure.
- Vessel arrestor systems comprising a group of piles and cross beam adjacent to the sea wall.
- Connection of electrical, telecommunication and water services.
- A pump-out facility comprising pumps, filters, reels, valves, electrical and control facilities. Some or all of the pump-out facility may be located within a cabinet.
- Potential removal of the existing King Street Wharf wave baffle.

Temporary visual impacts experienced during construction are expected to be manageable given the highly developed nature of the surrounding area.

The proposal would result in permanent changes to the existing landscape. Given the development of Barangaroo and other developments currently being undertaken in the area, operation of the proposal is not expected to result in major visual impacts alone. However, it would form part of the broader landscape changes occurring as part of the Barangaroo development (see section 5.1.8).

The design of the proposal would be sympathetic to the future Barangaroo South development and the adjacent pedestrian promenade. The proposal would have the same form as the other harbour wharves currently being upgraded across Sydney Harbour.

### 5.1.5. Built and non-Indigenous heritage

#### Existing environment

##### *National and Commonwealth & World heritage*

The Australian Heritage Database maintained by the Department of the Environment includes Federal heritage designations identified on the National Heritage List (NHL) and the Commonwealth Heritage List (CHL), and International heritage designations identified on the World Heritage List (WHL).

A search of the Australian Heritage Database undertaken on 25 June 2014 identified one item included on the NHL located in the vicinity of the proposal area. The same item (Sydney Opera House – see Table 5-2) is also listed on the WHL as a World Heritage Site. No other items listed on the CHL are close to the proposal area.

**Table 5-2 Items on the National Heritage List, Commonwealth Heritage List and World Heritage List proximate to the proposal area**

Site name	Address	Approximate distance from the proposal area
Sydney Opera House	Bennelong Point, Sydney	1.34 kilometres (North-east)

The Sydney Opera House is a sufficient distance from the proposal area so as to not be impacted directly or indirectly by the proposal.

##### *State heritage*

Heritage places of State significance are included on the State Heritage Register (SHR) maintained by the Heritage Branch of the Office of Environment and Heritage. Places included on the SHR are available on the online NSW Heritage Inventory database. A search of the Heritage Inventory undertaken on 25 June 2014 found four items in the vicinity of the proposal area (see Table 5-3). Other items are located within the surrounding area but are not expected to be impacted by the proposal.

**Table 5-3 Items on the State Heritage Register proximate to the proposal area**

Item	Address	Approximate distance from the proposal area
Sussex Hotel/Big House Hotel	20 Sussex Street, Sydney	200 metres (East)
Grafton Bond Store and Sandstone Wall	Hickson Road, Millers Point	200 metres (East)
MSB Stores Complex	2-4 Jenkins Street, Millers Point	230 metres (East)
MSB Stores Complex – Building 1	2-4 Jenkins Street, Millers Point	230 metres (East)

### *Maritime heritage*

Historic shipwrecks more than 75 years of age in enclosed waters within NSW are protected by Part 3C of the *Heritage Act 1977*. A search of the online NSW Heritage Inventory indicated that 80 shipwrecks are known to exist in the main Sydney Harbour area, however none are known to be located within the vicinity of the Project Area. The same resource lists two heritage items at Pyrmont however, being the Australian National Maritime Museum and the Sydney Heritage Fleet. Neither of these items are expected to be impacted by the proposal.

It should be noted that several other historic shipwrecks are known to be located in Sydney Harbour, however their exact locations are currently unknown. These include the *Native* (1850), *Robert Sayers* (1854), *Gem* (1880), *Cadet* (1912), *Esther* (1920) *Rodney* (1938), *Siesta* (1942), *Nereus* (1942), *Silver Cloud* (1942) and *Marlean* (1944). However, given the amount of dredging that has occurred throughout Sydney Harbour, movement of sediment caused by intensive shipping in addition to natural tidal movement, it is considered highly unlikely that any of the historic shipwrecks remain submerged or buried within the vicinity of the area. Consequently, it is considered that there would be an extremely low risk of impact to historic shipwreck material, as previous dredging would have ensured that the location is clear of historic material.

### *Section 170 heritage items*

Section 170 of the *Heritage Act 1977* requires each State Government Agency to keep records of its own heritage items. These registers can be found on the NSW Heritage Inventory. A search of the Heritage Inventory identified three section 170 items as being located in the vicinity of the proposal area (see Table 5-4). Other items are located within the surrounding area but are not expected to be impacted by the proposal.

**Table 5-4 Items on the section 170 heritage register proximate to the proposal area**

Item	Address	State Government Agency	Approximate distance from the proposal area
Grafton Bond Store and Sandstone Wall	Hickson Road, Millers Point	Road and Maritime Services	200 metres (East)
MSB Stores Complex	2-4 Jenkins Street, Millers Point	Road and Maritime Services	230 metres (East)
Warehouses (former Dalgety's Bond Stores)	Munn Street, Millers Point	Road and Maritime Services	490 metres (North)

### Local heritage

Places of local significance are included in heritage schedules in Local Environmental Plans (LEPs). A search of Schedule 5 of the Sydney LEP undertaken on 25 June 2014 identified seven items of local heritage within the vicinity of the proposal area (see Table 5-5). Other items are located within the surrounding area but are not expected to be impacted by the proposal.

**Table 5-5 Items of local heritage significance proximate to the proposal area**

Item	Address	LEP item number	Approximate distance from the proposal area
Former MSB Stores, including interior	36 Hickson Road, Sydney	I880	200 metres (East)
Retaining wall, palisade fence and steps	High Lane, Sydney	I881	230 metres (East)
Lane off Gas Lane including sandstone walls and wrought iron street light	Jenkins Street, Sydney	I890	230 metres (East)
Former Grafton Bond Store, including interiors	201-217 Kent Street, Sydney	I1813	200 metres (East)
Trees and sandstone retaining walls (adjacent Napoleon Street)	Sussex Street, Sydney	I1952	200 metres (East)
Former "New Hunter River Hotel", including interiors	20-26 Sussex Street, Sydney	I1953	200 metres (East)
Former MWS&B Pumping Station	21-25 Sussex Street, Sydney	I1954	170 metres (East)

### Built and non-Indigenous heritage impacts

As can be seen from the above tables, there are no heritage items located within the proposal area. The nearest non-Indigenous heritage item is located approximately 170 metres to the east on Sussex Street. At this stage, it is not expected that works associated with the proposal would impact on the significance any of the nearby heritage items.

#### 5.1.6. Climate change adaptation

Key components of the proposal would have a design life of up to 50 years. Therefore, there is the potential for long-term climate changes to impact on the operation of the proposal.

A number of climatic variables have the potential to impact on the proposal, including:

- Sea level rise.
- More frequent and severe wind and rainstorms.
- Increased rainfall intensities.
- More frequent and extreme heat waves.

The design of the Barangaroo Ferry Hub has factored in the height of the Barangaroo sea wall which would have been designed having regard to sea level rise.

Climate change risks during construction of the proposal are not anticipated to be significant, given the short duration and expected timing.

### **5.1.7. Cumulative impacts**

During construction, the proposal could interact with current or planned major proposals being undertaken in the area, including Barangaroo and Wynyard Walk developments.

Should the proposal's construction program overlap with other construction proposals there is potential for cumulative impacts such as increased traffic and transport disruption and noise and vibration, air quality, visual amenity and socio-economic impacts.

During operation, the proposal would largely interact with the Barangaroo and Wynyard Walk developments.

Consultation would be undertaken throughout the design development and EIS process to determine the likely magnitude and extent of potential cumulative impacts and to identify suitable design and/or mitigation measures to reduce such impacts.

## **5.2. Other environmental issues**

### **5.2.1. Property and land use**

#### **Existing environment**

Barangaroo is owned and managed by BDA. It is currently being redeveloped as a mixed use precinct including commercial, retail, residential, and recreational uses.

Development to the south of the proposal includes a mix of tourism, commercial, residential and maritime land uses. The King Street Wharf promenade to the south of the proposal is managed by SHFA and the buildings are managed by Brookfield Multiplex. The existing King Street Wharf wave baffle and jetties are owned by Roads and Maritime.

The proposal would be developed within the Darling Harbour waterway and land forming part of the Barangaroo site.

Concept Plan approval for the redevelopment of the East Darling Harbour (now known as Barangaroo) was granted by the Department of Planning in February 2007. This is discussed further at section 2.1.3.

The Barangaroo South Public Domain Stage 1A Development Application submitted to DP&E in May 2014 is seeking approval for the provision of services for power and water supply which will extend to the harbour edge to provide for future connections to the Barangaroo Ferry Hub (JBA Planning, 2014).

#### **Property and land use impacts**

No significant impacts to property are anticipated as a result of construction of the proposal.

Operation of the proposal would result in a change to the existing use of the waterway. Consultation would be undertaken throughout the EIS process to determine the likely magnitude and extent of potential impacts to identify suitable design and/or mitigation measures to reduce such impacts.

### 5.2.2. Utilities and services

The proposal would connect with the utility services that would be provided as part of the Barangaroo South development.

### 5.2.3. Aboriginal heritage

#### Existing environment

The *National Parks & Wildlife Act 1974* protects Aboriginal heritage (places, sites and objects) within NSW. The Office of Environment and Heritage maintains records of all previously identified Aboriginal places, sites and objects in the Aboriginal Heritage Information Management System (AHIMS) database. A search of the AHIMS undertaken on 3 July 2014 identified 26 Aboriginal objects within one kilometre of the proposal area (see Table 5-6), with the closest being approximately 300 metres to the south east. None of these objects were located within the proposal area.

**Table 5-6 Summary of AHIMS sites within one kilometre of the proposal area**

Site type	Frequency	Per cent
Potential archaeological deposit (PAD)	7	27%
Midden	4	15%
Rock engraving	4	15%
Shelter with midden	3	11%
Artefact scatter	2	8%
Shelter with art	2	8%
Burial/ historic place	1	4%
Artefact scatter with PAD	1	4%
Shelter with art; shelter with midden	1	4%
Burial; shelter with art and midden	1	4%
<b>Total</b>	<b>26</b>	<b>100%</b>

#### Aboriginal heritage impacts

The nearest Aboriginal object is located approximately 300 metres to the south east of the proposal area. The existing shoreline is on reclaimed land and as such the risk of encountering items of Aboriginal heritage value as part of the proposed works is low. Overall it is not expected that works would impact on any recorded Aboriginal heritage items within the vicinity of the proposal.

### 5.2.4. Hydrology

#### Existing environment

The proposal is located within the Darling Harbour waterway, on the southern side of Sydney Harbour. Darling Harbour is subject to ocean tides, currents and waves.

The tides within the proposal area are anticipated to be semi-diurnal i.e. two high and two low tides each day. The currents are expected to be low, with a maximum current speed of

0.5 knots (0.25 metres per second) and wind shear on the water's surface generating the strongest flux. Waves are expected to be experienced in the proposal area due to wind chop and wash from passing vessels.

Hydrographic surveys indicate that the seabed within the vicinity of the proposal is approximately 11 metres below Indian Spring Low Water (ISLW) at the base of the seawall. The seafloor along the Barangaroo foreshore slopes towards the centre of the waterway to a depth of approximately 12.5 - 12.8 metres below ISLW. The water levels within the vicinity of the proposal area are expected to range from 9.5 metres to 11.5 metres, depending on the tide.

Stormwater flows from surrounding suburbs are discharged into Darling Harbour via an underground pipe system after being collected from roadside kerb and guttering, the roofs of buildings, and other hardstand areas. Stormwater also reaches Darling Harbour directly from the surrounding hardstand areas and structures over the water, such as pontoons and jetties.

No flooding issues have been identified in the proposal area.

### **Hydrological impacts**

It is not anticipated that there would be any impacts to tide levels, tidal flows, currents or water levels during construction or operation of the proposal. However, the use of floating barges during construction may produce a minor localised reduction in wave energy.

During operation of the proposal, there may be a minor change in water movements and an increase of waves due to potential removal of the existing wave baffle. However, this is not expected to significantly impact the hydrological processes of the waterway or impact on the shoreline or other operational parameters of the harbour.

## **5.2.5. Soils, geology and contamination**

### **Existing environment**

The Barangaroo foreshore is reclaimed land retained by a concrete sea wall which extends from the top of the pedestrian promenade to the seafloor.

The foreshore promenade is currently about 10 metres wide and is relatively flat with a gentle slope away from the water. It is a combination of concrete and asphalt. The land surface within the adjacent Barangaroo construction site is highly disturbed and surrounded by construction hoarding.

The foreshore promenade forming part of the proposal area (see Figure 1-1) drains over the surface onto Barangaroo South. As part of its redevelopment, Barangaroo South would contain erosion and sediment management measures designed to minimise run-off and stormwater quality issues.

Previous studies undertaken in Sydney Harbour indicate that parts of the harbour have the potential for sediments to contain contaminants (Birch and Taylor 2006). Closed areas of the harbour where there is less movement of sediments by tide and waves and areas where there is a history of industries on or near the water such as Barangaroo and Darling Harbour have an increased chance of containing contaminants within sediments. Therefore, there is potential for the proposal area to contain contaminants within sediments.

The Acid Sulphate Soils (ASS) Map (Sheet 14) within Sydney LEP identifies that any works to the existing ground surface of King Street Wharf or works that are likely to lower the

ground water table may encounter ASS. Although unmapped, it is also presumed that ASS may be present within the waterway.

The source of fill used to reclaim the foreshore is unknown and therefore the fill also has the potential to be contaminated.

### **Soils, geology and contamination impacts**

Land based activities during construction would include:

- Establishment of a construction compound area on the existing pedestrian promenade (approximately 400 m<sup>2</sup> in area)
- Installation of construction hoarding, site sheds and amenities
- Installation of prefabricated steel covered pontoons and associated facilities
- Installation of gangways, link structures, landings and ramps.

These activities would be undertaken on the existing concrete promenade. Therefore no disturbance to the land surface is expected.

There would be no disturbance to the land surface during operation of the proposal.

During construction, it is not anticipated that the placement of piles would result in the significant mobilisation of contaminants from the sediments (with the relative risks dependent on the pile type and placement methods).

Water depths are considered sufficient to avoid propeller or jet wash mobilisation of seabed sediments during operation.

### **5.2.6. Air quality**

#### **Existing environment**

The existing air quality in the proposal area is primarily influenced by emissions from motor vehicles, commercial operations and residential activities. There is also potential for air quality to be affected by construction works at Barangaroo e.g. dust generation. It is assumed that these impacts are currently minimised by a Construction Environmental Management Plan for the development.

The two air pollution issues of primary concern in Sydney are photochemical smog and particle pollution. Particle pollution is seen as a brown haze usually present in the cooler months of the year. Particle pollution comprises airborne particles from human-made emissions and other natural particle sources such as sea salt, dust, pollen and bush fires. Photochemical smog is seen as a whitish haze, which in Sydney largely comprises nitrogen oxides from motor vehicles (City of Sydney, 2012).

The nearest OEH air quality monitoring stations to the site are located in Rozelle and Lindfield. These monitoring stations, along with stations at Chullora and Lindfield make up the Sydney East region. A review of air quality monitoring data for Sydney East region for the month of June 2014 showed averages between very good and good. There were a few days within the month where regional air quality was better than the average. However, there were also days where air quality was only considered to be fair (OEH, 2014).

The closest Bureau of Meteorology (BoM) monitoring station to the proposal area is at Observatory Hill. Data from the BoM (BoM, 2014) reports that the average annual rainfall recorded at Observatory Hill is 1212.4 millimetres.

According to the BoM (BoM, 2014) the average annual wind speed ranges between about 10.6 km/h (at 9am) to 16.6 km/h (at 3pm). Wind direction and speed varies throughout the day, usually being calmer in the morning. Wind speed and direction also varies throughout the year.

### **Air quality impacts**

During construction of the proposal temporary impacts on air quality may arise from:

- Minor generation of particles from demolition and construction works
- Minor emissions (primarily diesel exhaust) from plant and machinery
- Minor emissions from construction traffic and water vessels.

During operation of the proposal temporary impacts on air quality may arise from:

- Emissions from operation of ferries.

The proposal is not likely to have a significant impact on local air quality. Construction and operational air quality impacts associated with the proposal are anticipated to be manageable through the application of standard environmental management measures. Overall, air quality is not considered to be a key issue for the proposal.

## **5.2.7. Greenhouse gas and energy**

### **Greenhouse gas and energy impacts**

The proposal would involve energy-consuming activities throughout construction and operation.

During construction, greenhouse gas emissions would predominantly be generated by the following activities:

- Combustion of fuel in construction plant, equipment and vehicles (direct emissions)
- Electricity use at the construction compound and during general construction works (indirect emissions)
- Disposal of waste from construction staff and compounds (indirect emissions from the decomposition of waste material)
- Indirect emissions embodied in construction materials, including cement and steel (i.e. the energy and resources that were consumed to produce a particular construction material).

Opportunities to reduce construction-related greenhouse gas emissions would be investigated during detailed design. This may include opportunities to use construction materials with lower embodied emissions (where a suitable substitute is available for construction materials with high embodied emissions) and the adoption of energy efficient work practices. Other opportunities may include purchasing electricity derived from a renewable energy source (where available) and the use of photovoltaic lighting at the wharves.

### **5.2.8. Hazards and risks**

Hazards and risks associated with construction of the proposal would generally be associated with:

- Construction materials, wastes or objects falling from the foreshore into Darling Harbour, causing water pollution and risk to human health
- Construction materials, wastes or objects falling from construction barges or other construction vessels into Darling Harbour causing water pollution and risk to human health
- A spill of hydraulic fluid or fuel used in construction plant or equipment entering the waters of Darling Harbour
- Construction workers falling from the promenade or vessels in Darling Harbour potentially resulting in physical injury or drowning
- Undertaking works close to sensitive receivers, such as nearby residences
- Undertaking works within highly pedestrianised areas
- The use and storage of hazardous materials
- The use of heavy machinery
- The use of electricity close to bodies of water.

Construction hazards and risks are considered to be manageable through the application of standard mitigation measures.

Hazards and risks associated with the operation of the proposal would primarily be associated with:

- Objects falling from the ferries or the jetties into Pyrmont Bay and Darling Harbour, causing water pollution
- A spill (e.g. hydraulic fluid and/or fuel) from a ferry or pump out waste entering the waters of Darling Harbour
- Passengers or staff falling from the promenade or vessels in Darling Harbour potentially resulting in physical injury or drowning.

The proposal would be designed to ensure public safety. Operational hazards and risks are considered to be manageable through design and the application of education programs and standard mitigation measures and plans (such as emergency response plans).

Overall, hazards and risks are not considered to be key issues for the proposal.

### **5.2.9. Wastes and resource use**

Waste produced during the construction and operation of the proposal is likely to include:

- Spoil from excavation and trenching works (construction phase)
- Demolition waste from the existing wave baffle, if removed, and any impacted pavement (construction phase)
- Surplus construction materials (construction phase)
- General domestic waste from construction and maintenance personnel (construction and operational phases)

- Waste from portable on-site toilets at construction compounds (construction phase).

The disposal of waste generated during the construction and operation of the proposal is not anticipated to result in significant adverse environmental impacts. All waste generated by the proposal would be assessed, classified, managed and disposed of in accordance with the *Waste Classification Guidelines* (DECCW 2009). Standard environmental management measures would be prepared (based on the *Waste Classification Guidelines*) by the construction contractor prior to construction.

Resources used during the construction and operation of the proposal would include:

- Electricity (construction and operational phases)
- Fuel (construction phase)
- Concrete (primarily construction phase)
- Steel (primarily construction phase)
- Water (construction and operational phase).

Whilst the proposal would increase demand on local and regional resources, it is unlikely that the proposal alone would result in any resource becoming scarce or in short supply. Environmental management measures would be developed to reduce the proposal's demand on resources. The production of waste and the consumption of resources are therefore not considered to be key issues for the proposal.

### **5.2.10. Socio-economic**

#### **Existing environment**

The proposal is located within the City of Sydney LGA. Key surrounding land uses include commercial and public transport operations, commercial waterfront properties, office buildings, hotels, residential apartments and tourism. Barangaroo is currently being redeveloped as a mixed use precinct including commercial, retail, residential, and recreational uses.

#### **Socio-economic impacts**

The proposal would result in a range of positive and negative socio-economic impacts, which would vary in magnitude and extent. Social impacts and benefits are expected for those who live, work or access Barangaroo and the surrounding area.

Socio-economic impacts expected during construction include:

- Reduction in local amenity due to increased noise and vibration, air quality impacts and reduced visual amenity
- Temporary loss of space along the Barangaroo foreshore promenade
- Temporary loss of parking on Lime Street or nearby parking facilities
- Temporary impacts to water vehicle traffic, including minor detours.

The preparation and implementation of a Community and Stakeholder Liaison Plan for the proposal would actively communicate impacts/disruptions with affected stakeholders.

Socio-economic impacts expected during operation include:

- The introduction of ancillary facilities within space along the Barangaroo foreshore promenade which have the potential to change pedestrian movements and queuing (i.e. ferry users), particularly during special events and a permanent visual change with the installation of permanent structures
- Change in the noise profile within the harbour associated with operation of the ferries
- Improved accessibility to the CBD and other ferry wharf locations
- Timetable improvements.

## 6. Proposed scope of the EIS

Chapter 5 of this report provides an overview of the potential environmental impacts that are likely to be associated with construction and operation of the proposal.

As discussed in Chapter 2, the proposal qualifies as SSI and would be assessed under Part 5.1 of the EP&A Act through an EIS. Table 6-1 outlines the proposed scope of the EIS. The proposed scope has been developed with a focus on undertaking further detailed investigations for the ‘key’ environmental issues.

Further investigation of the ‘other’ environmental issues would also be undertaken, as outlined in Table 6.1. These investigations would be used to confirm the preliminary assessment that these issues would not result in a significant impact on the environment and could be appropriately managed through the application of design and/or best practice environmental management measures.

During this process, should any of the ‘other’ environmental issues be identified as potentially having significant environmental impacts, the likely impacts would be adequately assessed and documented in the EIS.

The scope outlined in Table 6-1 would be refined (if necessary) following receipt of the SEARs.

**Table 6-1 Proposed scope of EIS**

Issue	Scope
General	<ul style="list-style-type: none"> <li>• The EIS would be prepared in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000.</li> <li>• The EIS would provide the following information:               <ul style="list-style-type: none"> <li>○ objectives of the proposal and the strategic need and justification</li> <li>○ the statutory planning context and compliance with relevant Commonwealth, State and Regional strategic planning and transport policies</li> <li>○ a detailed description of the proposal and its interaction with the existing ferry service</li> <li>○ an analysis of any feasible alternatives or options considered</li> <li>○ an assessment of the likely environmental impacts of the proposal, with a focus on the key issues identified in this report</li> <li>○ a description of measures proposed to mitigate any adverse environmental impacts</li> <li>○ a list of any other approvals that must be obtained before the proposal can be carried out</li> <li>○ how the principles of ecologically sustainable development will be incorporated into all stages of the proposal, including design, construction and operation.</li> </ul> </li> </ul>
Consultation	<ul style="list-style-type: none"> <li>• The EIS would provide information on the consultation activities that have been undertaken prior to, and during, the preparation of the EIS, as well as details on the key issues raised during this consultation, and how these issues have been addressed through the EIS and design development.</li> </ul>
<b>Key issues</b>	
Noise and vibration	<ul style="list-style-type: none"> <li>• A noise and vibration assessment would be undertaken in accordance with:               <ul style="list-style-type: none"> <li>○ the <i>Interim Construction Noise Guideline</i> (DECC, 2009)</li> <li>○ the <i>Industrial Noise Policy</i> (EPA, 2000) and/or an alternative</li> </ul> </li> </ul>

Issue	Scope
	<p>assessment framework/guideline more relevant to ferry operations (in consultation with the EPA as part of the development of the EIS). Refer to Section 5.1.1 for further detail.</p> <ul style="list-style-type: none"> <li>○ the <i>Transport for NSW Construction Noise Strategy</i> (TfNSW, 2012b).</li> </ul> <ul style="list-style-type: none"> <li>● The noise and vibration assessment would: <ul style="list-style-type: none"> <li>○ identify the existing acoustic environment, in accordance with current and future land uses</li> <li>○ identify potential sensitive receivers, in accordance with current and future land uses</li> <li>○ assess the predicted noise and vibration levels and the potential impacts as a result of construction and operation of the Barangaroo Ferry Hub</li> <li>○ identify options for reasonable and feasible mitigation measures to minimise expected impacts during construction and operation.</li> </ul> </li> </ul>
Traffic, transport and access	<ul style="list-style-type: none"> <li>● A traffic, transport and access assessment would be prepared to assess the construction and operational impacts of the proposal.</li> <li>● The traffic, transport and access assessment would consider the following issues: <ul style="list-style-type: none"> <li>○ the proposal's interaction with maritime, road, pedestrian and public transport networks</li> <li>○ the key pedestrian routes and vehicle access requirements</li> <li>○ linkages to adjacent land uses such as Barangaroo, King Street Wharf, Darling Harbour and Wynyard Walk.</li> </ul> </li> <li>● The traffic, transport and access assessment would reference the following documents: <ul style="list-style-type: none"> <li>○ <i>Sydney's Ferry Future: Modernising Sydney's Ferries</i> (NSW Government, 2013)</li> <li>○ <i>Sydney City Centre Access Strategy</i> (TfNSW, 2013)</li> <li>○ <i>Barangaroo Integrated Transport Plan</i> (TfNSW, 2012a)</li> <li>○ <i>Barangaroo Pedestrian Precinct Demand</i>, (Arup, 2013).</li> </ul> </li> </ul>
Ecology	<ul style="list-style-type: none"> <li>● An aquatic ecology assessment would be prepared in accordance with requirements of the <i>Fisheries Management Act 1994</i> and the SREP SHC.</li> <li>● The aquatic ecology assessment would include: <ul style="list-style-type: none"> <li>○ a dive survey of the seabed and adjacent shoreline and a check for threatened species</li> <li>○ an assessment against the expected aquatic biota from a literature review of threatened species under the <i>Fisheries Management Act 1994</i>, <i>Threatened Species Conservation Act 1995</i> and <i>Environment Protection and Biodiversity Conservation Act 1999</i>, and any local studies.</li> <li>○ an impact assessment to determine whether construction and operation of the proposal would adversely affect the known aquatic habitats</li> <li>○ suitable measures to avoid, minimise or mitigate potential impacts.</li> </ul> </li> </ul>
Visual amenity and urban character	<ul style="list-style-type: none"> <li>● A landscape character and visual impact assessment would be undertaken to understand the temporary and permanent visual effects of the proposal and the overall impact to the landscape character of the area.</li> <li>● The landscape character and visual impact assessment would include: <ul style="list-style-type: none"> <li>○ an analysis of the combined value of the built, natural and cultural</li> </ul> </li> </ul>

Issue	Scope
	<p>landscape characteristics of the locality and the impact of the proposal on views, vistas and public and private spaces in the region.</p> <ul style="list-style-type: none"> <li>○ a consideration of the potential impact of lighting</li> <li>○ appropriate safeguards and management measures to minimise any potential impacts.</li> </ul> <ul style="list-style-type: none"> <li>● Selected photomontages would be prepared to support the assessment incorporating the proposed design, scale and finishes of the proposal set within its future landscape context.</li> </ul>
Built and non-Indigenous heritage	<ul style="list-style-type: none"> <li>● A Statement of Heritage Impact would be prepared in accordance with the relevant Office of Environment and Heritage guidelines.</li> <li>● The Statement of Heritage Impact would build on the preliminary investigations undertaken for this report and would include: <ul style="list-style-type: none"> <li>○ an inventory of heritage items, including a description and statement of significance based on existing information</li> <li>○ an assessment of the archaeological potential within the proposal area</li> <li>○ an assessment of the proposal's impacts on the heritage significance on listed heritage items and areas of archaeological potential</li> <li>○ mitigation measures to minimise any perceived impacts.</li> </ul> </li> </ul>
Sustainability and climate change	<ul style="list-style-type: none"> <li>● A sustainability strategy report and climate change risk assessment would be prepared for the proposal.</li> <li>● The sustainability strategy report would: <ul style="list-style-type: none"> <li>○ confirm the applicable and related sustainability initiatives in accordance with the TfNSW Sustainability Design Guidelines and Sydney Ports Corporation Guidelines.</li> <li>○ provide recommendations for the effective implementation of sustainability initiatives during design and subsequent planning phases.</li> </ul> </li> <li>● The climate change risk assessment would include: <ul style="list-style-type: none"> <li>○ a review and interpretation of up-to-date scientific climate change data</li> <li>○ a targeted literature review, focusing on NSW and maritime specific policies and guidelines</li> <li>○ a qualitative description of the likely impacts of climate change on the proposal</li> <li>○ a quantitative assessment of greenhouse gases</li> <li>○ risk mitigation or adaptation measures that may be required during the life of the proposal.</li> </ul> </li> </ul>
Cumulative impacts	<ul style="list-style-type: none"> <li>● The EIS would include details of the proposal's interaction with other known developments in the area, particularly Barangaroo and Wynyard Walk. Potential cumulative impacts arising from the interaction of these projects would be identified and assessed in a qualitative manner. Management and mitigation measures would be proposed, where appropriate.</li> </ul>
<b>Other environmental issues</b>	
Property and land use	<ul style="list-style-type: none"> <li>● The EIS would include an assessment of potential impacts on adjacent land with consideration of the following issues: <ul style="list-style-type: none"> <li>○ existing and future land uses based on the Barangaroo Masterplan and consultation with other major landholders.</li> <li>○ direct impacts on property and land use within the proposal area</li> <li>○ indirect positive and negative impacts on property and land uses</li> </ul> </li> </ul>

Issue	Scope
	adjacent to the proposal area, including potential land use integration issues and impacts on land use amenity.
Utilities and services	<ul style="list-style-type: none"> <li>• The EIS would include preliminary information on the location of existing or future services and utilities and how the proposal would interact with these services.</li> <li>• Where required, appropriate management measures for these works would be developed to minimise impacts to existing service providers.</li> </ul>
Aboriginal heritage	<ul style="list-style-type: none"> <li>• It is not anticipated that a detailed Aboriginal heritage assessment investigation would be required.</li> <li>• An Aboriginal cultural heritage due diligence assessment would be undertaken, in accordance with the Office of Environment and Heritage's <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i> (2010).</li> <li>• The assessment would include: <ul style="list-style-type: none"> <li>○ a review of relevant database searches (AHIMS and the NSW Atlas of Aboriginal Places) and any relevant Aboriginal heritage reports to determine the presence of known Aboriginal sites and places within, or proximate to, the proposal area</li> <li>○ a site inspection to examine registered Aboriginal sites and/or any Aboriginal places, if required</li> <li>○ an assessment of the Aboriginal archaeological potential in the proposal area</li> <li>○ an assessment of the potential impacts of the proposal on known or potential Aboriginal archaeological sites</li> <li>○ recommendations to mitigate any impacts on Aboriginal sites and areas of Aboriginal archaeological potential, where appropriate.</li> </ul> </li> </ul>
Hydrology	<ul style="list-style-type: none"> <li>• It is not anticipated that a detailed hydrological assessment would be required.</li> <li>• The EIS would provide a desktop assessment of the current hydrological processes and conditions in the proposal area to determine the potential construction and operational impacts.</li> <li>• The hydrological assessment would include details about: <ul style="list-style-type: none"> <li>○ tides, currents, waves and water levels</li> <li>○ the current and future stormwater infrastructure</li> <li>○ water quality management.</li> </ul> </li> </ul>
Soils, geology and contamination	<ul style="list-style-type: none"> <li>• The EIS would provide a desktop soils and geology assessment based on existing information and previous studies. Management and mitigation measures would be proposed, where appropriate.</li> <li>• A desk top review of any previous relevant contamination investigations would be undertaken and management and mitigation measures would be proposed to address potential impacts, where appropriate.</li> </ul>
Air quality	<ul style="list-style-type: none"> <li>• It is not anticipated that a detailed air quality assessment would be required.</li> <li>• This EIS would include a qualitative air quality assessment focusing on the construction impacts and the development of management and mitigation measures, where appropriate. The assessment would include: <ul style="list-style-type: none"> <li>○ a description of the existing air quality environment and meteorology using existing background data</li> <li>○ identification of sensitive receptors and neighbouring land uses</li> </ul> </li> </ul>

Issue	Scope
	<ul style="list-style-type: none"> <li>○ key pollutant criteria for the proposal, referenced from relevant NSW guidelines and legislation</li> <li>○ identification of the key emission sources during the construction and operational phases</li> <li>○ a qualitative assessment of construction air quality impacts</li> <li>○ a qualitative assessment of potential air quality impacts and/or improvements associated with the operational phase of the proposal</li> <li>○ where relevant, appropriate mitigation/management measures for the construction and operational phases to minimise impacts on the receiving environment.</li> </ul>
Greenhouse gas and energy	<ul style="list-style-type: none"> <li>● The EIS would include a quantitative greenhouse gas emissions assessment comprising the following: <ul style="list-style-type: none"> <li>○ an inventory of likely greenhouse gas emissions for the proposal including construction phase emissions and annual operational emissions for major greenhouse gases attributable to specific components of the proposal, with total emissions expressed in tonnes of carbon dioxide equivalent (t CO<sub>2</sub>-e)</li> <li>○ an outline of the greenhouse gas generating activities associated with the proposal</li> <li>○ an outline of the proposal's annual and overall contribution to the NSW and national greenhouse gas emissions profile</li> <li>○ a high-level commentary on the significance of predicted greenhouse gas emissions on the environment and the legislative implications of these emissions</li> <li>○ a high-level investigation of greenhouse gas abatement opportunities, including a description of the intended measures to avoid and/or minimise greenhouse gas emissions.</li> </ul> </li> </ul>
Hazards and risks	<ul style="list-style-type: none"> <li>● It is not anticipated that a detailed hazards and risk assessment would be required.</li> <li>● The EIS would include a desktop hazard and risks assessment evaluating the potential safety issues and impacts during construction and operation of the proposal. The assessment would consider the general operational safety requirements at other ferry wharves in the harbour. Management and mitigation measures would be proposed, where appropriate.</li> </ul>
Wastes and resource use	<ul style="list-style-type: none"> <li>● It is not anticipated that a detailed waste and resources assessment would be required.</li> <li>● The EIS would include a desktop waste and resources assessment considering the following aspects: <ul style="list-style-type: none"> <li>○ likely waste streams and volumes from construction and operation of the proposal, including spoil, waste water and demolition materials</li> <li>○ likely resources required for construction and operation of the proposal, including energy, fuel, steel etc.</li> </ul> </li> </ul>
Socio-economic	<ul style="list-style-type: none"> <li>● The EIS would include a socio-economic impact assessment to identify and evaluate the social impacts and benefits of the proposal.</li> <li>● The assessment would draw upon the other investigations undertaken as part of the EIS to understand the potential social impacts, including noise and vibration, traffic, transport and access, visual amenity, property and land use and air quality.</li> <li>● The assessment would include: <ul style="list-style-type: none"> <li>○ an overview of the current and expected future social profile at</li> </ul> </li> </ul>

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Issue	Scope
	<p>Barangaroo</p> <ul style="list-style-type: none"><li>○ identification of key socio-economic benefits and impacts</li><li>○ identification of impacts on existing services and facilities</li><li>○ recommended mitigation measures.</li></ul>

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## **7. Consultation**

### **7.1. Consultation strategy**

Following the project announcement in May 2014 a consultation strategy has been prepared to provide a framework for the proactive management of communications with the community and key stakeholders regarding the proposal. An initial meeting has also been held regarding the proposal with City of Sydney Council and also the BDA and Lend Lease communication team.

No formal consultation has been undertaken to date in relation to the Barangaroo Ferry Hub. The main activities relating to the project have involved feasibility and options development and assessment to respond to the need for the project as outlined in section 3.2.

### **7.2. Consultation activities**

Formal engagement with the community and key stakeholders will commence during the development of the EIS and continue throughout the EIS display phase. Key stakeholders to be consulted include the BDA, SHFA, City of Sydney Council, Leichhardt Municipal Council, Australian Maritime Safety Authority and Roads and Maritime.

Extensive consultation will also be undertaken with both the surrounding commercial and residential receivers of the both the new Barangaroo South Development, Shelley Street and King Street Wharf areas.

#### **7.2.1. EIS consultation activities**

TfNSW is committed to a high level of consultation and engagement with the community and stakeholders throughout the development of the proposal. Community and stakeholder consultation activities would be undertaken throughout the development and exhibition of the EIS.

TfNSW is committed to a structured program of broad based community and stakeholder engagement during the preparation for, and exhibition of, the EIS.

Key consultation activities for the proposal are outlined below.

#### **Stakeholder briefings**

Stakeholder briefings with key stakeholders would be held to provide information and facilitate the opportunity to provide feedback to be incorporated into the EIS.

#### **Letterbox drop**

Pre-lodgement community engagement activities would include a letterbox drop to all commercial and residential receivers within close proximity of the proposal. Feedback on the proposal would be encouraged via the Transport for NSW community information line, email and website.

### **Door Knocking**

Door knocking of businesses along King Street Wharf would be conducted to provide information regarding the change in ferry routes and facilitate the opportunity to provide feedback.

### **Community briefings**

Briefings and presentations would be offered to community groups prior to public exhibition of the EIS including chambers of commerce and precinct committees. Feedback received during these sessions would be incorporated into the EIS.

### **Community information stands**

Public exhibition of the EIS would be conducted for a minimum of 30 calendar days. Advertisements would be placed in newspapers to advise of the public exhibition and where the EIS can be viewed, as well as details on proposed community information sessions.

## 8. Conclusion

This Supporting Document provides an overview of the proposal to construct and operate a ferry hub at Barangaroo and sets the strategic context and justification for the proposal.

The report also provides a preliminary assessment of the potential environmental impacts associated with the construction and operation of the proposal. Based on the results of this assessment, the following environmental issues are considered key issues for the EIS:

- Noise and vibration
- Traffic, transport and access
- Ecology
- Visual amenity and urban character
- Built and non Indigenous heritage
- Climate change adaptation
- Cumulative impacts.

A number of other potential environmental impacts were identified in the preliminary assessment that would also require assessment in the EIS.

An indicative scope for the EIS has been provided in section 6 of this report. It is expected that this Supporting Document will assist the Secretary of DP&E to formulate environmental assessment requirements for the proposal.

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- Transport for NSW (TfNSW) 2013, *Sydney City Centre Access Strategy*