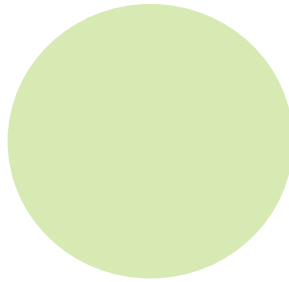


Appendix H Technical Paper: Landscape and Visual Impact Assessment

IRIS Visual Planning + Design



Barangaroo Ferry Hub Project

Landscape and Visual Impact Assessment
EIS Technical Report

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1. Introduction

This report, prepared by IRIS Visual Planning + Design, was commissioned to assess the visual and landscape character impact of the proposed Barangaroo Ferry Hub, Sydney (the proposal). This Visual Impact Assessment will inform the Environmental Impact Statement (EIS) for the proposal being prepared by RPS and Arup.

The proposed Barangaroo Ferry Hub is located at Barangaroo, within Sydney Harbour's "Foreshores and Waterways Area", and on the western edge of Sydney's central business district (CBD). Near the proposal are a number of prominent recreational and tourist areas at Darling Harbour and King Street Wharf, the future Barangaroo development, as well as the inner city residential areas of Pyrmont and Balmain East as illustrated in Figure 1-1 Location Plan.

Generally, the proposed Barangaroo Ferry Hub includes the construction and operation of a new ferry interchange comprising of:

- Three wharves located at Barangaroo South, with landside ancillary facilities included as part of the proposal likely to include way finding signage and ticket vending machines.
- Potential demolition of the existing King Street Wharf wave baffle.
- Eventual decommissioning and removal of the public transport elements of the King Street Ferry Wharf such as ticket vending machines and signage.

The study area for this assessment includes all areas from which the site is likely to be clearly seen. This area extends across the harbour to areas off Balmain East and Millers Point in the north, extending to White Bay in the west and Cockle Bay in the south. The study area is illustrated in Figure 1-1 Location plan and Figure 1-2 Views to the study area from the proposal area.



Figure 1-1 Location Plan



Figure 1-2 Views to the study area from the proposal area

2. Study Scope

The following Landscape and Visual Impact Assessment includes:

- A description of the proposal.
- A review of the relevant planning context.
- An assessment of the visual and landscape character impact of the proposal during both construction and operation, during day and night time periods, and cumulative impacts.
- Identification of potential landscape and visual mitigation measures.

An inspection of the proposal area was undertaken in August 2014. Following this, a visual and landscape character impact assessment was undertaken by Suzanne Rawlinson and Annette Allen, both Registered Landscape Architects.

3. The Proposal

The Barangaroo Ferry Hub proposal would provide a new ferry interchange to replace the existing King Street Ferry Wharf. This would serve the future transport needs of the new commercial developments at Barangaroo, relieve the capacity constraints at Circular Quay, and provide a transport interchange for the western CBD. The proposal would be linked to the CBD via the new Wynyard Walk pedestrian link (currently under construction).

The proposal responds to strategic transport planning reports including: *Barangaroo Integrated Transport Plan (BITP)* (Aug. 2012); *NSW Long Term Transport Plan*, (Dec. 2012); *Sydney's Ferry Future* (May 2013); and *Sydney City Centre Access Strategy* (Dec. 2013).

The Barangaroo Ferry Hub proposal comprises the construction and operation of a ferry terminal at Barangaroo. This would include three wharves, ferry layover, and associated landside facilities. Initially the proposal involves the construction of two wharves, with a third to be constructed when demand necessitates. The design of the proposal would be generally as shown in Figure 3-1, 3-2 and 3-3. The visual and urban character of the proposal is further described and illustrated in Chapter 8 of this report.

Figure 3-1 Barangaroo Ferry Hub Preliminary Concept, view south from Barangaroo (November 2014)



Figure 3-2 Barangaroo Ferry Hub Preliminary Concept, view north from the promenade (November 2014)



Figure 3-3 Barangaroo Ferry Hub Preliminary Concept, aerial view (November 2014)



4. Planning Context

The State and local government planning instruments, guidelines and reference documents relevant to the visual and landscape character values of the proposal area include:

- *State Environmental Planning Policy (Infrastructure) 2007*
- *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*
- *Sydney Harbour Foreshores and Waterways Area Development Control Plan 2005*
- *Visual Assessment of Marinas and Multiple Moorings*. Prepared for Department of Planning and Waterways Authority, URS Australia Pty Ltd, 2003
- *Barangaroo South Public Domain Stage 1A, Aspect and Oculus*, 2014
- *Balmain East Foreshores, Draft Plan of Management*, Leichardt Municipal Council, 2012.

The guidance offered by these documents is summarised in the following sections.

A broader review of these and all relevant planning instruments, guidelines and reference documents is contained in the planning section of the EIS.

State Environmental Planning Policy (Infrastructure) 2007

Part 3, Division 11, Clause 58A of *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) applies to the proposal area. This Division guides the development controls for State significant development sites, which includes the Barangaroo site. Clause 58B provides for exempt development:

“(1) Development for any of the following purposes is exempt development if it is carried out by or on behalf of a public authority on land to which this Division applies:

(e) lighting if the lighting minimises light spill and artificial sky glow in accordance with AS/NZS 1158 Set:2010, Lighting for roads and public spaces”

This requirement has been considered in the following night time visual assessment and corresponding mitigation measures are recommended.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

The proposal area falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (SREP SHC, now a deemed SEPP). The principal aim of SREP SHC is to:

“ensure that the catchment, foreshores, waterways and islands of Sydney Harbour are recognised, protected and maintained as an outstanding natural asset and public asset of national and heritage significance for existing and future generations.”

Part 2, Clause 14 of the SREP SHC states that for land within the Foreshores and Waterways Area, the following planning principles apply:

“(d) development along the foreshore and waterways should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands and foreshores”

Furthermore, Part 3, Division 2 of SREP SHC includes the following matters for consideration:

“25 Foreshore and waterways scenic quality

The matters to be taken into consideration in relation to the maintenance, protection and enhancement of the scenic quality of foreshores and waterways are as follows:

- (a) the scale, form, design and siting of any building should be based on an analysis of:*
 - (i) the land on which it is to be erected, and*
 - (ii) the adjoining land, and*
 - (iii) the likely future character of the locality,*
- (b) development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries,*
- (c) the cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores.”*

26 Maintenance, protection and enhancement of views

The matters to be taken into consideration in relation to the maintenance, protection and enhancement of views are as follows:

- (a) development should maintain, protect and enhance views (including night views) to and from Sydney Harbour,*
- (b) development should minimise any adverse impacts on views and vistas to and from public places, landmarks and heritage items,*
- (c) the cumulative impact of development on views should be minimised.”*

The above matters have been considered in the following landscape character and visual assessment and corresponding mitigation measures are recommended.

Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP) 2005

The *Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP) 2005* applies to land within the Foreshores and Waterways Area pursuant to SREP SHC. Section 3 of the DCP provides for the landscape assessment of such land. Specifically in Section 3.2, the general aims indicate that:

“All developments should aim to:

- Minimise any significant impact on views and vistas from and to: Public places, Landmarks identified on the maps accompanying the DCP, and Heritage items;*
- Ensure it compliments the scenic character of the area;*
- Protect the integrity of foreshores with rock outcrops, dramatic topography or distinctive visual features;*
- Provide a high quality of built and landscape design; and*
- Contribute to the diverse character of the landscape.”*

In relation to Marinas (Commercial and Private), Section 4.7 of the DCP requires that:

- *“Buildings and other facilities are to be designed and sited so that natural or other attractive features are not obscured.*
- *The extent of development over water including waterside structures, berths, fairways and access channels is to be minimized and result in minimal alienation of the waterway.*
- *The colours, appearance and form of any associated buildings shall be compatible with the surrounding environment.*
- *Shiny or reflective materials are not to be used.”*

The matters raised in the Sydney Harbour Foreshores and Waterways Area DCP have been considered in the following landscape character and visual assessment and corresponding mitigation measures are recommended.

Visual Assessment of Marinas and Multiple Moorings, URS Australia Pty Ltd (2003)

The *Visual Assessment of Marinas and Multiple Moorings Study* was commissioned by the Department of Planning to inform the SREP SHC. The key findings of this study, which offers specific guidance for this assessment, are:

- *“...vessels stored in marinas can appear as a single visual element forming a visual extension of the adjoining land-based development. ...*
- *Marinas located in narrow bays and inlets have a higher potential to block views from open space and residences located at the head of the bay or inlet. ...*
- *The potential visual impact of marinas is significantly less when viewed from adjoining waterway or opposite shoreline, if the facilities are viewed against a background of large scale commercial, industrial or residential development or slopes and ridges with high elevation.*
- *The potential visual impact on adjoining public open spaces and residential areas resulting from moored or berthed boats is strongly influenced by the relative size of the boat and distance from the viewer. For example a large power boat moored close to the shoreline will have a significantly higher visual impact than if it was moored on the waterway side of the marina.*
- *The degree of visual contrast between marina facilities, buildings and their background is the primary factor influencing the level of visual impact. The potential visual impact of such buildings is significantly reduced if the level of contrast in colour, texture, line and form between the building and background is minimised.*
- *The potential visual impact of marinas is reduced by the retention of view corridors from foreshore public open space to open water and from waterways back to sections of shoreline.*
- *The potential visual impact of marinas on adjoining residential development is strongly influenced by the degree of landform elevation with significantly less visual impact on elevated residences that have views over the top of marinas compared to residences located at elevations similar to the foreshore that have views blocked by boats and marina structures.”*

The above principles are relevant to the assessment of the proposal and have been applied to this assessment, particularly in relation to key findings regarding the impact of views over water towards an urban backdrop.

Barangaroo South Stage 1A Public Domain, Form and Oculus, 2014

This document illustrates the current plans for the public domain areas of the Stage 1A of Barangaroo South, located directly next to the proposal area.

The masterplan shows a sequence of arrival spaces, public squares and a waterfront promenade connected to the CBD by a series of pedestrian streets. These streets increase permeability of the site and promote views through the Barangaroo South site to the harbour. Wynyard Walk is in construction and, though not a part of the Barangaroo South

approvals process, has been shown in this design, with a direct connection 'Transport Place' linking pedestrian route and views from Wynyard Walk to the harbour, crossing the proposal area.

Adjoining the proposal area, the foreshore precinct runs along the length of the development area. Specifically this precinct comprises:

- 'The Terrace' a plaza with overhead arbor, lawns and cafes/ entertainment areas associated with the residential and commercial building development.
- 'The Allee' a double row of shade trees within pedestrian pavements along the length of the precinct.
- A waterfront timber boardwalk providing access to the harbour edge.

As the Barangaroo site slopes towards the harbour, these zones step down, creating an outlook to the harbour from each level, filtered through the 'Allee' of trees. The waterfront promenade culminates in a large open public square at the northern extent of precinct for larger public gatherings and harbour event viewing.

This visual and landscape character assessment has considered the intended viewing opportunities from the pedestrian streets to the harbour and from along the waterfront promenade areas within the public domain of the Barangaroo development, and the visual compatibility of the proposal with this public realm design.

Barangaroo Revised Statement of Commitments 2010

This document outlines an agreement between the Barangaroo Delivery Authority (BDA) and the NSW Government, it includes the following commitments which relate to views and amenity:

- "56. Views from public spaces on opposite foreshores to Observatory Hill Park will be retained. Panoramas from Pymont Park around to the Harbour Bridge (from Observatory Hill Park) will also be retained."*
- 57. Future development within the Barangaroo site is to retain views to Observatory Hill Park from public spaces on opposite foreshores; and to retain a panorama from Pymont Park around to the Harbour Bridge as seen from Observatory Hill Park ...*
- 58. Future development within the Barangaroo site is to provide adequate view corridors over and between new built form to maintain the key attributes of views from Millers Point. The key attributes to be retained are:*
 - views to significant tracts of the water,*
 - the junction of Darling Harbour and the Harbour proper,*
 - the opposite foreshores,*
 - panoramic qualities of existing views and,*
 - the most distinctive views to landmark structures."*

Of particular relevance to this assessment is the importance of views to significant tracts of water, to and from opposite foreshores, preserving the panoramic quality of views, and views to landmark structures. This has been considered in the following assessment.

Balmain East Foreshores, Draft Plan of Management (DPoM), Leichhardt Municipal Council 2012

This document pertains to activities and development that affect the integrity of the values of the reserves along Balmain East Foreshores. The sensitivity of this landscape area, and the views available from it, are described in the Plan of Management at:

5.4 Landscape character and views:

“The East Balmain foreshore has strong visual relationship to several harbour edge parks. Views from the East Balmain foreshore parks are implicitly reciprocal, the parks being equally viewed from these other parklands including the future Barangaroo Parklands.” ...

The Leichhardt Heritage Conservation Map (within this DPoM) identifies Iloura Reserve as a locally significant 'Landscape' heritage item. The objectives in the LEP relating to heritage conservation are generally concerned with the protection, conservation and enhancement of the cultural heritage and identity of places of significance including “*the natural, scenic and cultural attributes of the Sydney Harbour Foreshore*” such as those identified within Balmain East; and to prevent ... “*undesirable incremental change...which reduces the heritage significance of the places.*”

There are no direct enforceable guidelines relating to the proposal within this DPoM. However there are broader heritage and conservation values to be acknowledged and considered in the landscape and visual assessment.

5. Guidance for Landscape and Visual Impact Assessment

The Sydney Harbour Foreshores and Waterways Area DCP (2005) offers guidance as to the requirements of a visual impact assessment for developments within the Sydney Harbour and its tributaries. This methodology is based upon a study (Visual Assessment of Marinas and Multiple Moorings, URS 2003) commissioned by the Department and the then Waterways Authority. As discussed in Section 4.5 above, the DCP includes guidance on the appropriate methodology for undertaking a visual assessment of marinas, which has some relevant guidance for this assessment.

In addition to the DCP, the methodology for this landscape and visual impact assessment is also guided by the RMS Guidance note *EIA-N04 Guidelines for Landscape Character and Visual Impact Assessment*, 2013. All of these methods are based on a number of international guidance documents including:

- *The Guidance for Landscape and Visual Impact Assessment (GLVIA)*, Third Edition, 2013, prepared by the Landscape Institute and Institute of Environmental Management & Assessment.
- The US Forestry Service 1996, Scenic Management System (SMS) as described in the publication '*Landscape Aesthetics: A Handbook of Scenery Management*', US Forestry Service.

The methodology used for the visual impact assessment of the proposal is described in Chapter 6, and conforms with the principles contained within these documents.

6. Methodology

This landscape and visual impact assessment has been undertaken in the following steps:

- Identification of existing visual conditions, key viewpoints and landscape character areas.
- Identification of the proposal landscape character.
- Assessment of visual impact.
- Assessment of landscape character impact.
- Identification of cumulative visual and landscape character impact.
- Identification of opportunities for mitigation.
- Conclusions.

The methodology for these tasks is explained in the following sections.

6.1 Identification of existing visual conditions and key viewpoints

A visual inspection of the study area was carried out during August 2014. This inspection was used to evaluate the existing landscape character of the area and photograph a range of viewpoints.

In order to appreciate the baseline condition, a series of representative viewpoints have been selected to illustrate the visual influence of the proposal area. These views represent publicly accessible viewpoints from a range of locations and viewing situations. Particular attention was paid to views from residential properties and places where viewers are expected to congregate such as the National Maritime Museum, parks and reserves, promenades, waterfront cafes and restaurants.

6.2 Identification of the proposal character

The proposal is described in terms of the elements which would be seen in views to the site, and which would have a potential impact on the future landscape character and views of the proposal area. This includes a description of the land and water based infrastructure, the activities of ferries and users of the proposed facility that would be seen during

construction, and operation during the day and night. These elements are described in terms of their form, shape, mass and scale, key materials and treatments of the structures, movement and lighting.

6.3 Visual impact assessment

The assessment of visual impact is based on the identification of the level of visual modification created by the proposal, and the sensitivity of the viewer. Combined, these characteristics of the view are then considered to assign a level of likely visual impact. This approach is explained more fully in the following paragraphs.

6.3.1 Visual sensitivity

Visual sensitivity refers to the nature and duration of views. Locations from which a view would potentially be seen for a longer duration, where there are higher numbers of potential viewers and where visual amenity is important to viewers can be regarded as having a higher visual sensitivity. In addition, any views recognised by local, state or federal planning regulations would, by nature of their recognition in these documents, increase the sensitivity level of the view.

In order to ensure the assessment of impact is reasonable, the sensitivity of a viewpoint is considered in the broadest context of possible views, from those of national importance through to those considered to have a neighbourhood visual importance. For this reason the following terminology is used to describe the level of visual sensitivity, see Table 6-1.

Table 6-1 Visual sensitivity levels

Visual sensitivity	Description
National	Heavily experienced view to a national icon, eg view to Sydney Opera House from Circular Quay or Lady Macquarie's Chair, view to Parliament House Canberra along Anzac Parade.
State	Heavily experienced view to a feature or landscape that is iconic to the State, eg views to the National Maritime Museum or from the State Heritage Listed Pyrmont Bridge.
Regional	Heavily experienced view to a feature or landscape that is iconic to a major portion of a city or a non-metropolitan region, or an important view from an area of regional open space, eg views to the Sydney CBD Skyline from a Sydney Harbour Ferry or waterfront promenade.
Local	High quality view experienced by concentrations of residents and/or local recreational users, and/or large numbers of road or rail users, eg Great Buckingham Street, Redfern to Redfern Park.
Neighbourhood	Views where visual amenity is not particularly important, such as lesser quality views briefly glimpsed from roads, and views from small groups of residences.

6.3.2 Visual modification

Visual modification describes the extent of change resulting from the proposal and the compatibility of these new elements with the surrounding landscape. There are some general principles which determine the level of visual modification; these include elements relating to the view itself such as distance, landform, backdrop, and contrast. There are also characteristics of the development itself which are: scale, form and alignment. Visual modification can result in an improvement or reduction in visual amenity.

A high degree of visual modification would result if the development contrasts strongly with the existing landscape. A low degree of visual modification occurs if there is minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the development and the environment in which it sits. In this situation the development may be noticeable, but does not markedly contrast with the existing modified landscape. Table 6-2 lists the terminology used to describe the level of visual modification.

Table 6-2 Visual modification levels

Visual modification	Description
Considerable reduction or improvement in visual amenity	Substantial part of the view is altered
Noticeable reduction or improvement in visual amenity	Alteration to the view is clearly visible
No perceived reduction or improvement in visual amenity	Either the view is unchanged or if it is, the change in the view is generally unlikely to be perceived by viewers

6.4 Landscape character impact assessment

Landscape Character refers to how the landscape is experienced, rather than how it is seen in specific views. In an urban environment there are a range of landscape elements that may be directly or indirectly impacted on by the proposal such as trees, promenade, plazas etc. These changes affect the character of the study area.

In order to identify the impact of the proposal on the landscape character of the study area, an assessment will be undertaken for each area. This assessment considered the sensitivity of the landscape character area and magnitude of change proposed by the proposal, and then an overall assessment of the impact on the landscape character of the area.

6.4.1 Landscape character sensitivity

Landscape sensitivity refers to the value placed on a landscape character area by the community. The value is defined primarily by the level of statutory guidance or regulation afforded a particular landscape or urban features. The sensitivity of landscape features is therefore considered in the broadest context of possible landscapes, from those of national importance through to those considered to have a neighbourhood visual importance. The following terminology is used to describe the level of landscape sensitivity, refer to Table 6-3 Landscape character sensitivity levels.

Table 6-3 Landscape character sensitivity levels

Landscape sensitivity	Description
National	Landscape character area or feature protected with national or international legislation, eg the Sydney Opera House World Heritage Listed Building and its surrounding public realm.
State	Landscape character area or feature that is heavily used and is iconic to the State, eg Darling Harbour or Hyde Park.
Regional	Landscape character or feature that is heavily used and valued by residents of a major portion of a city or a non-metropolitan region eg harbour-side parkland or promenades.
Local	Landscape character area or feature valued and experienced by concentrations of residents, and/or local recreational users eg park in Balmain not located on the harbour.
Neighbourhood	Landscape character area or feature valued and appreciated primarily by a small number of local residents eg street trees in a local street.

6.4.2 Landscape character modification

Landscape modification refers to the change to the landscape character of an area that would occur as a result of development. This includes direct impact such as the removal of trees or parkland, but also indirect impacts, such as the functional change of an area due to changing land use and access for example. Landscape modification can result

in adverse or beneficial effects. Table 6-4 Landscape character modification levels, lists the terminology used to describe the level of landscape modification.

Table 6-4 Landscape character modification levels

Landscape modification	Description
Considerable reduction or improvement to landscape quality	Substantial portion of the landscape is changed. This may include substantial changes to landuse, built form size, shape, colour or materials, and activities taking place in an area.
Noticeable reduction or improvement to landscape quality	Portion of the landscape is changed. This may include substantial changes to landuse, built form size, shape, colour or materials, and activities taking place in an area.
No reduction or improvement to landscape quality	Either the landscape quality is unchanged or if it is, it is largely mitigated by proposed public realm improvements.

6.5 Assessment of night time visual impact

The assessment of night time impact has been undertaken with a similar methodology to the daytime assessment. However, rather than assessing particular viewpoints or landscape features, this assessment draws upon the guidance of the Institution of Lighting Engineers (UK), and their *'Guidance for the reduction of obtrusive light'* (2005). This guidance note identifies environmental zones, useful for the categorising of night time landscape settings. These zones are:

- E1: Intrinsically dark landscapes – National Parks, State Forests etc.
- E2: Low district brightness areas – rural, small village, or relatively dark urban locations.
- E3: Medium district brightness areas – small town centres or urban locations.
- E4: High district brightness areas – town/city centres with high levels of night time activity.

Specific features of the lit landscape are the described in terms of:

- Sky glow – the brightening of the night sky above our towns, cities and countryside.
- Glare – the uncomfortable brightness of a light source when viewed against a dark background.
- Light trespass – the spilling of light beyond the boundary of the property or area being lit.

From this analysis, the level of impact on each precinct is assessed according to the impact levels that are identified in Section 6.6.

6.6 Assigning impact levels

An assessment of visual impact has been made on a range of representative viewpoints. Additionally, urban design and landscape character impact has been assessed for the study area. Significance criteria have been used to assign landscape and visual impact levels.

Significance is defined in the *Guidance for Landscape and Visual Impact Assessment*, Third Edition (2013) as “a measure of the importance or gravity of the environmental effect”. The following significance criteria have been developed specifically for the landscape and visual impact of the proposal. The purpose of the criteria is to ensure there is a clear and consistent means of evaluating impact. The following criteria have been used, refer Table 6-5.

Table 6-5 Visual and landscape character impact significance criteria

		Sensitivity				
		National sensitivity	State level Sensitivity	Regional sensitivity	Local sensitivity	Neighbourhood sensitivity
Modification	Considerable reduction	Very high adverse	Very high adverse	High adverse	Moderate adverse	Minor adverse
	Noticeable reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse	Negligible
	No perceived change	Negligible	Negligible	Negligible	Negligible	Negligible
	Noticeable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial	Negligible
	Considerable improvement	Very high beneficial	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

Similarly, for the assessment of visual impacts at night, the following criteria will be applied, refer Table 6-6.

Table 6-6 Night time visual impact significance criteria

		Sensitivity			
		E1: Intrinsically dark landscapes	E2: Low district brightness	E3: Medium district brightness	E4: High district brightness
Modification	Considerable reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse
	Noticeable reduction	High adverse	Moderate adverse	Minor adverse	Negligible
	No perceived change	Negligible	Negligible	Negligible	Negligible
	Noticeable improvement	High beneficial	Moderate beneficial	Minor beneficial	Negligible
	Considerable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

6.7 Mitigation measures

Following the identification of potential visual and landscape character impact, potential opportunities for mitigation were identified. Measures include opportunities to avoid, reduce and manage potential adverse impact during construction and operation of the proposal.

6.8 Cumulative impacts

Following the assessment of visual and landscape character impact, consideration is given to the cumulative impact of these effects. Combined, the impact may be increased or decreased. There is also the potential for a cumulative effect between the proposal and future development proposed for the study area, which will be considered.

7. Existing Visual Conditions and Landscape Character

The study area is currently in a period of intense change, the site was formerly a passenger terminal for cruise liners, and is now a major construction zone with Headland Park and Barangaroo South currently under construction, and Central Barangaroo to be developed in the future. The study area will become a landmark high-end commercial, residential and recreational precinct upon completion of this construction. This ultimate development form will be considered as a baseline for this assessment, and described in the following discussion of visual conditions and landscape character.

The visual catchment of the proposal is constrained on the landside by large scale urban development, a tight street pattern, and limited open space. The proposal area is, however, much more widely seen from the harbour and across the harbour from areas to the north, west and south.

Key landscape and visual features of this visual catchment include a number of landmarks including the former port control tower at the northern end of the Barangaroo site (potentially to be removed as a part of the Barangaroo development), Observatory Hill and the Sydney Harbour Bridge in the north; The National Maritime Museum and Heritage Fleet, the Pyrmont Bridge, and Sydney Aquarium in the south; and views to the Sydney Tower nestled in the skyline to the east of Cockle Bay.

The CBD skyline creates a strong visual edge to the east of most views within the study area. The verticality of the CBD skyline creates visual enclosure to easterly views and reduces the depth of views. At harbour level, a range of edge treatments characterise the harbour edge in the vicinity of the proposal area, with open water in the north, and becoming more densely developed in the south.

These features are illustrated in Figure 7-1 Landscape and visual features of the proposal area.

There are a range of landscape character types in the proposal area, including three different harbour character areas to the west of the proposal area, and three urban development areas surrounding the proposal area to the east, which will be described as:

- Balmain East to Millers Point
- Barangaroo to White Bay
- Darling Harbour to Cockle Bay
- King Street Wharf
- Barangaroo South
- Central Barangaroo and Headland Park

These landscape character areas are illustrated in Figure 7-2, and are illustrated and described in the following sections.



Figure 7-1 Landscape and visual features of the proposal area

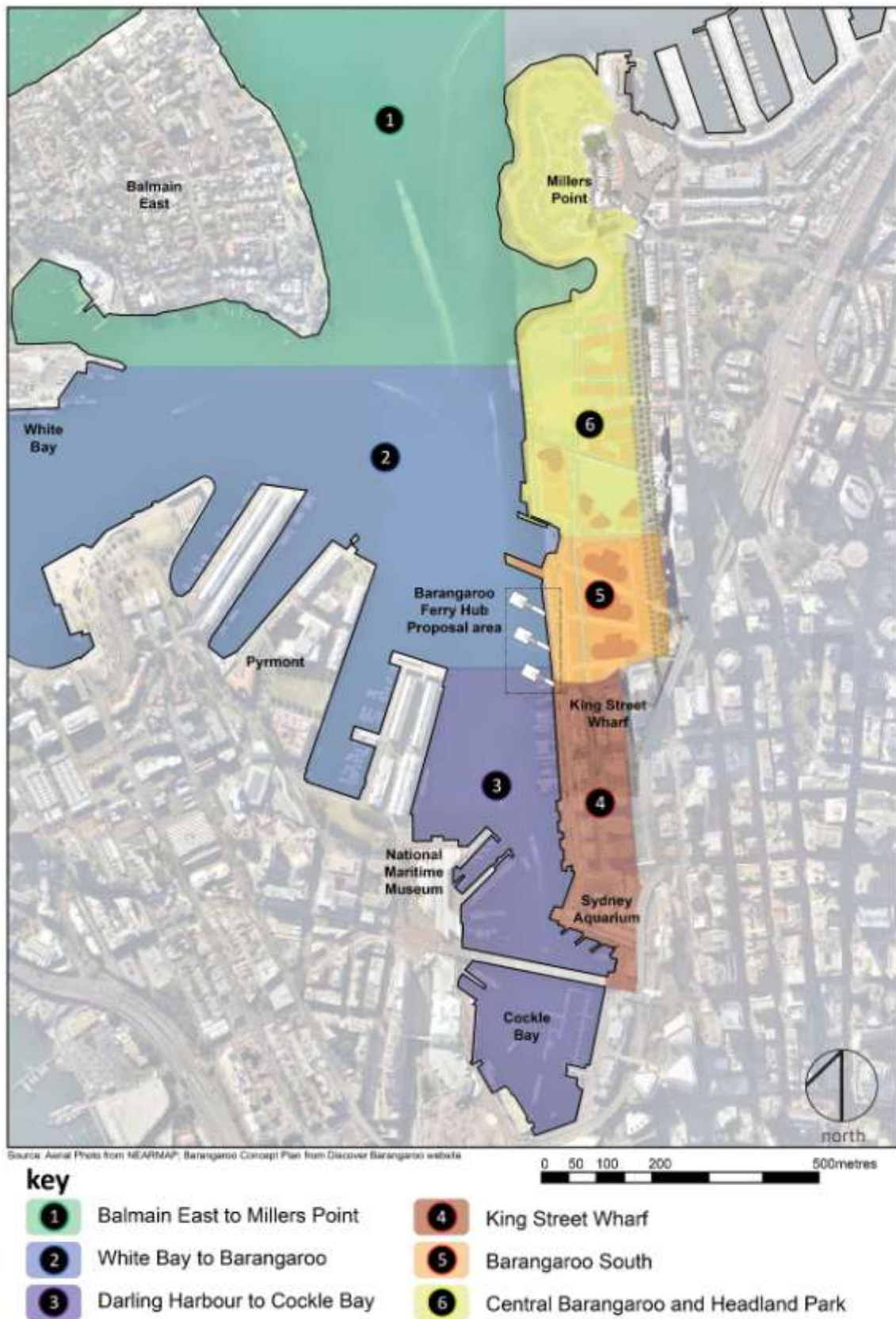


Figure 7-2 Landscape character areas

7.1 Balmain East to Millers Point



The character of the harbour stretching from Balmain East to Millers Point is both urban and open. Views typically include a large expanse of open water with a residential or open space harbour edge. This openness sits in contrast to the CBD skyline which creates a strong vertical element in views and a western boundary to most views. The Sydney Harbour Bridge is a visual feature, seen in some views. Sydney's north shore can also be seen in many north and east facing views, adding depth to the view and glimpses into distant inlets and bays. The harbour in this area is relatively wide and numerous ferries and other vessels, including large cruise ships, frequently use this stretch of water. East Balmain and Millers Point both have a rocky parkland character, and a fabric of historic architecture. Views from Balmain have a sense of tranquillity, created by the contrast of the quiet viewing location and busy city in the view.

Figure 7-3 Balmain East to Millers Point character images

7.2 Barangaroo to White Bay



Between Barangaroo in the east, and Johnstons and White Bays in the west, there is a large expanse of open water and a lower profile built form, with predominantly three to five storey finger wharves and buildings stepping back from the harbour. Visual features of this precinct include finger wharves; a cruise ship terminal; open space and waterfront promenades; and residential and commercial uses. There is a less touristy feel to this precinct, and a sense of calm, with small harbours and bays providing an undulation to the harbor edge that creates visually enclosed pockets.

The future Barangaroo development, which is located to the east of this character area is described in section 7.5 and 7.6.

Figure 7-4 Barangaroo to White Bay character images

7.3 Darling Harbour to Cockle Bay



Figure 7-5 Darling Harbour to Cockle Bay character images

The landscape character in the vicinity of Darling Harbour and Cockle Bay is of a highly urban, visually cluttered harbour. A range of historic and modern vessels are moored in this part of the harbour. Visual features include the iconic Australian National Maritime Museum building, lighthouse and moored replica 'Endeavour' tall-ship. The neck of the harbour is narrow, and can appear visually cluttered as boats pass in close proximity between moored ships and ferries. At wharf level, numerous floating restaurants, moored ships and ferries create a built edge to the harbour, restricting views to the open water of the harbour. To the south the historic Pyrmont Bridge crosses Cockle Bay, providing elevated views across the harbour, and to the vertical mass of the CBD skyline.

7.4 King Street Wharf



Figure 7-6 King Street Wharf character images

The King Street Wharf area of East Darling Harbour includes a dense urban form, stepping up from harbour-side restaurants and foreshore plazas, to the high-rise towers of the CBD skyline beyond. The CBD buildings are predominantly glass-clad multistorey commercial office towers. The Sydney Tower is a visible feature of this portion of the skyline in some views. Restaurants line the east of the bay, and broad timber promenades line the harbour edge.

7.5 Barangaroo South



Figure 7-7 Barangaroo South (Source: Barangaroo Delivery Authority, Artists impressions current as of November 2014 and may be subject to further modifications)

Upon completion, the Barangaroo South precinct will appear as a stepped massing of urban built form from harbour foreshore plazas, to a medium scale, to high rise towers and to a backdrop of the existing CBD skyline. Lower residential, retail and commercial buildings will be seen adjacent to the proposal area. In the centre of the Barangaroo South site, three glass-clad multistorey commercial office towers will rise above the surrounding built form. These large scale high rise structures include curved glass walls, which softens the overall massing of these buildings. There is a consistency between the materials and character of these high rise towers with the existing CBD buildings in both scale and mass. These buildings will appear larger, and be more visually prominent, due to the development's proximity to the harbour foreshore and grander scale.

7.6 Central Barangaroo and Headland Park



Figure 7-8 Barangaroo Central and Headland character images (Source: Barangaroo Delivery Authority, Artists impressions current as of August 2014 and may be subject to further modifications)

The northern portion of the Barangaroo development will comprise two precincts. Headland Park, in the north, has been designed as a parkland mimicking the original character of the bushland and rocky headlands of the harbour. An irregular, stepped sandstone wall will create an edge to the site, which will rise steeply and be densely planted with native vegetation. Harbour areas next to this park will be undeveloped and feature an open water edge. Central Barangaroo will include public and cultural buildings, with commercial facilities, recreational areas and, urban plazas. This precinct will include some high-rise and medium scale development of similar character to the Barangaroo South development and CBD skyline adjacent. There will be a mix of open water and developed harbour edge in this area.

8. Visual character of the proposal

8.1 Components and layout

Three wharves are proposed, and would extend at a 35° degree angle from the harbour edge. The wharves would sit approximately 30 metres apart, accommodating the width of two ferries. The proposal would be located to the north of the pontoons at the King Street Wharf as shown on **Figure 8-1 Key proposal features**.

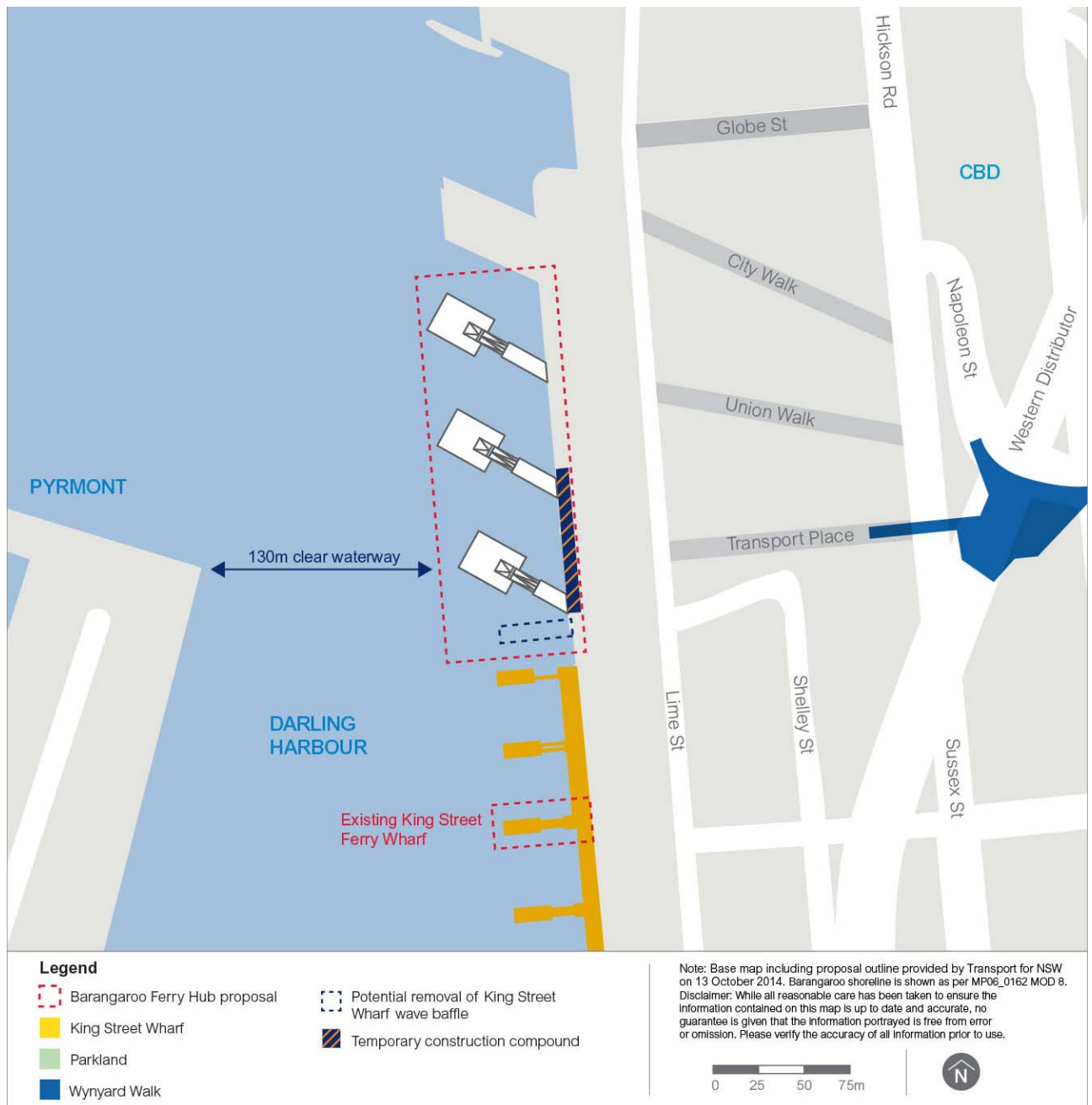


Figure 8.1 Key proposal features

Based on the preliminary concept design, it is envisaged that each wharf would comprise of a prefabricated steel pontoon (approximately 38 metres long and 22 metres wide), a gangway (approximately 15 metres long and 10 metres wide), and a fixed link structure comprising two ramps and a landing (up to 30 metres long and between 13 and 37 metres wide at the landside). These elements are connected, and overlap in places, to create an overall structure of around 66 metres in length. Each pontoon would include two berthing faces and ancillary facilities.

There would be two roof structures on each wharf as shown in **Figure 8-2**, one which sits over the pontoon and part of the gangway, and a second which sits over the gangway and link structure. The pontoon roof, which would be approximately 50 metres long, would incorporate a glazed roof light. Each pontoon and its roof would rise and fall with the tides, and the curved roof would rise approximately six metres above the waterline. The roof over the link structure would be fixed and also rise approximately six metres above the structure.

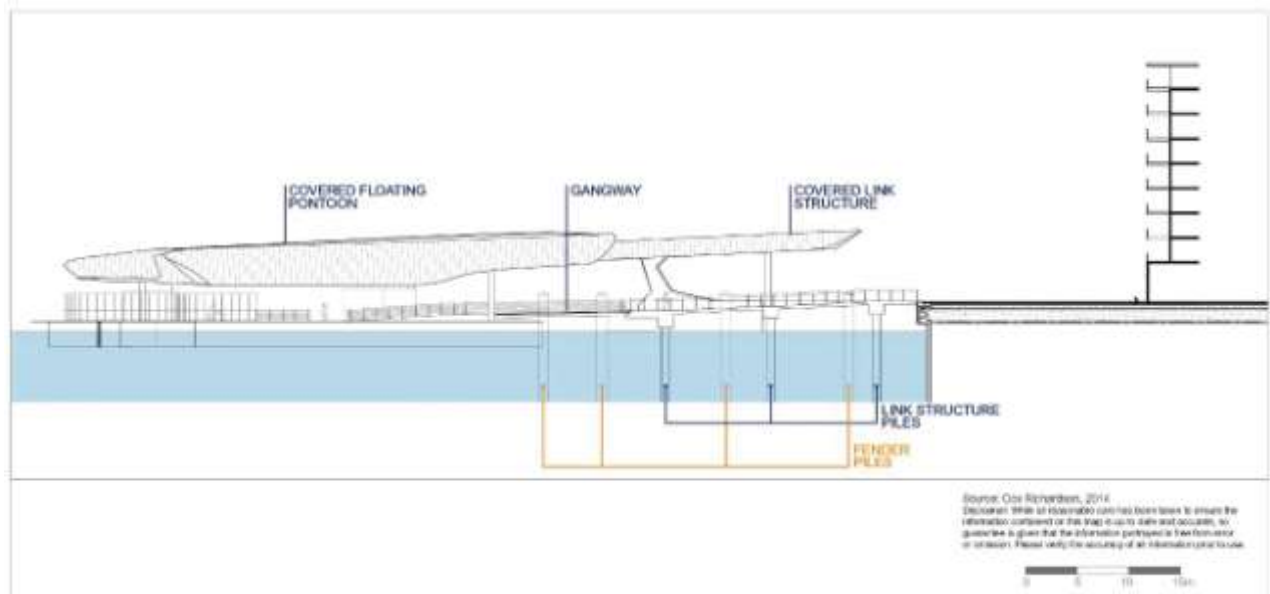


Figure 8-2 Detailed cross section of proposal

A sewage pump-out facility comprising pump, filters, reels, valves, electrical and control facilities would be located in an enclosed space on the link structure and be approximately 3 metres long, 2 metres wide and 1.5 metres high. A small gateline 'kiosk' (office) would also be located on the link structure for staff activities (no ticket sales), together with a bin store.

There is likely to be a safety barrier provided at the harbour edge located around and between the wharves. This barrier, and other infrastructure including: Ticket barriers, wayfinding signage, a public announcement system (PA system) and Opal ticketing infrastructure may also be located on the promenade. These elements would be designed to be visually appropriate with other urban furnishings along the Barangaroo South promenade and minimise visual clutter and obstruction of views to the harbour.

The Ferry Hub will require about 30 piles per wharf including restraint piles to secure the position of the pontoon, piles to support the link structure, and crash barrier piles. During detailed design and navigational safety planning, the need for fender piles would also be considered, and may potentially require up to eight additional piles per wharf.

Vessels would be seen vessel approaching and departing from the Barangaroo Ferry Hub. A 130 metre wide navigation channel would be maintained during operation and all ferry manoeuvring would occur outside of this channel. No permanent navigation markers are currently proposed.

8.2 Character during construction

Construction of the proposal would include the construction of three new ferry wharves and ancillary landside ferry facilities, potential demolition of the King Street Wharf wave baffle and decommissioning of public wharf facilities at King Street Wharf. It is anticipated that it would take up to about 12 months to construct the first two wharves including an initial three month piling period. When demand necessitates the third wharf would be constructed, taking approximately six months.

During construction there would be barge mounted cranes and equipment visible on the water within the construction site boundary. All on-water construction works would be undertaken within a floating sediment containment barrier.

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 an off-site facility via barges. In-situ work is likely to be required for the link structure. 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. Any encroachment into the navigation area would be for short periods of time and would be managed in accordance with the Harbour Master and/or Sydney Ports requirements.

On-land there would be a temporary construction compound located parallel to the harbour edge that would be approximately 420 square metres in size. This compound would include hoarding, relocatable site sheds, amenities, bunding and construction equipment (eg construction materials and tool boxes).

Out-of-hours activities would normally be limited to the early stages of construction and a minor portion of the overall construction program.

8.3 Character during operations



Figure 8-3: Character images of the proposed Barangaroo Ferry Hub

In addition to the ferry hub structures, there would be active ferries arriving and departing, laying over, and manoeuvring in the waters in and around the hub. Layover during daytime breaks would typically be between 15 and 45 minutes.

The proposal would accommodate all Sydney Ferries vessel classes (with the exception of the larger Manly Freshwater Ferries). It is expected there would be at least eight vessels per hour during weekday peak hours and 14 vessels per hour on weekends at opening. This is expected to increase to 14 vessels per hour for both weekday peak and weekend services by 2026.

At night the Barangaroo Ferry Hub would be brightly lit to accommodate safe public use of the facility, and illuminated wayfinding signage on the promenade would be provided. Ferries approaching the facility and manoeuvring within the harbour would also include lighting. It is expected that there would be up to three vessels moored at each wharf overnight.



Figure 8-4: Character images of the Sydney Harbour Ferries

9. Assessment of Impact

9.1 Assessment of Visual Impact

The following viewpoints were selected as representative of the range of views to the proposal area and the proposed development:

Viewpoint 1 - View from Illoura Reserve, Balmain East

Viewpoint 2 - View from a ferry travelling between Balmain East and King Street Ferry Wharf

Viewpoint 3 - View from a ferry approaching the proposal

Viewpoint 4 - View from Ballarat Park, Pyrmont

Viewpoint 5 - View from Pier 10, next to the heritage fleet, Pyrmont

Viewpoint 6 - View from Pyrmont Bay Ferry Wharf, Pyrmont

Viewpoint 7 - View from Pyrmont Bridge, Cockle Bay

Viewpoint 8 - View from restaurants at the King Street Wharf, Darling Harbour

Viewpoint 9 - View from footpath adjacent to the Sussex Hotel to Sussex Street

Viewpoint 10 - View south along the harbour edge, Barangaroo South

These viewpoints are identified in Figure 9-1 Viewpoint Location Plan. Section 9.2 Detailed viewpoint assessment contains a detailed assessment of these viewpoints which is then summarised in Figure 9-2 Summary of viewpoint assessment.

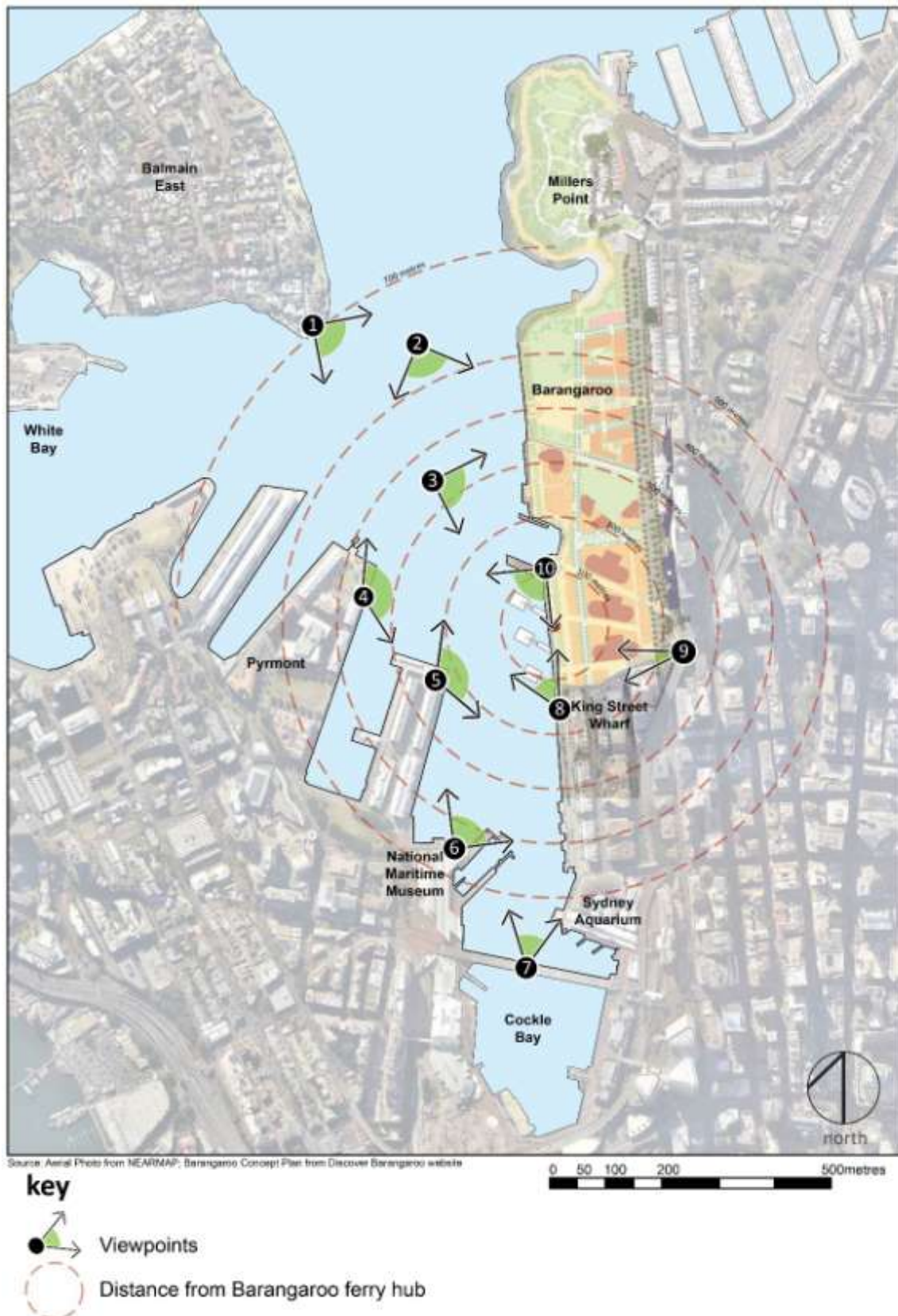


Figure 9-1 Viewpoint location plan



Viewpoint 1: View from Illoura Reserve, Balmain East

	Construction	Operation, Day	Operation, Night
Baseline Conditions: Unobstructed view across Sydney Harbour to the proposal area, seen against the future Barangaroo development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of buildings stepping up to three office towers. The proposal area is seen at a distance of approximately 600m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is a popular recreational reserve with landscape heritage value and heritage buildings. This reserve is located on Sydney Harbour, includes the Balmain East ferry stop and offers views to the CBD Skyline. This park is a popular city-wide attraction for watching fireworks and enjoying CBD views.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD and Pyrmont visually prominent in the view.
	Modification: During construction, barges including cranes and associated construction equipment would be visible in the construction site, with all construction works contained within a floating sediment containment barrier. The development envelope would extend towards the viewer in this location. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. Due to the distance and urban context, there would be no reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible	Modification: Three covered wharves would extend towards the viewer. The short end of each wharf would be seen from this angle, reducing the visual scale of the structures, and creating a more varied edge to the harbour in this view. In the future there would potentially be an additional pier and community building to the north of the proposal area (proposed as part of the Barangaroo development). This pier would extend the irregular built edge character of the harbour edge northwards. The proposal would generate additional ferry trips, and additional ferries in the waters between the proposal area and the viewer. Due to the highly urban visual context and the amount of open water visible in the foreground of this view, the proposal would be absorbed into the character of this view, resulting in no perceived reduction or improvement in visual amenity. Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. As the proposal would be viewed against the existing brightly lit urban environment, and there are already a considerable number of ferries and other vessels using this stretch of the Harbour, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 2: View from a ferry travelling between Balmain East and King Street Wharf

	Construction	Operation, <i>Day</i>	Operation, <i>Night</i>
Baseline Conditions: Unobstructed view from a ferry, across Sydney Harbour to the proposal area. The proposal area is seen against the future Barangaroo South development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of residential, retail and commercial buildings. The proposal area would be seen at a distance of approximately 400m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is a view from a popular ferry route between the tourist areas of Circular Quay and Darling Harbour. This route offers views to the CBD Skyline.		Visual Sensitivity: At night this is an area of High District Brightness , with the brightly lit CBD in view.
	Modification: During construction, barges including cranes and associated construction equipment would be visible in the construction site, with all construction works contained within a floating sediment containment barrier. The development envelope would extend towards the viewer in this location. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. However, due to the overall character of the construction activity, including barges and associated cranes, this would result in a noticeable reduction in visual amenity. Impact: Moderate adverse	Modification: Three covered wharves would extend across the harbour towards the viewer. The short end of each wharf would be seen from this angle, reducing the visual scale of the structures. This proposal would extend the varied edge to the harbour seen at the King Street Wharf, northward. In the future there may be an additional pier developed as a part of Central Barangaroo further extending the irregular built harbour edge north. The proposal would generate additional ferry trips, arriving and departing from the proposal. Due to the highly urban visual context, and the amount of open water visible in the foreground of this view, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. As the proposal would be viewed against a brightly lit urban environment and there are already a considerable number of ferries using this stretch of the harbour, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 3: View from a ferry approaching the proposal (and Barangaroo South)

	Construction	Operation, <i>Day</i>	Operation, <i>Night</i>
Baseline Conditions: Unobstructed view from a ferry, across Sydney Harbour to the proposal area. The proposal area is seen against the future Barangaroo South development, which would include a waterfront promenade with avenue trees in front of residential, commercial and retail buildings. The proposal area is seen at a distance of approximately 50m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is a view from a popular ferry route between the tourist areas of Circular Quay and Darling Harbour. This route offers views to the CBD Skyline.		Visual Sensitivity: At night this is an area of High District Brightness , due to the brightly lit CBD.
	Modification: During construction, a landside construction site would be seen, with barges including cranes and associated construction equipment in the water. All of the water based construction works would be contained within a floating sediment containment barrier. The development envelope would extend towards the viewer in this location, comprising a large portion of the middle ground of this view. There is a precedent for construction activity seen in the vicinity of the site, however, due to the proximity of the view and the character of construction activity including barge mounted cranes, this would result in a noticeable reduction in visual amenity. Impact: Moderate adverse	Modification: Three covered wharves would protrude towards the viewer. The short end of each wharf and ferries would be seen from this angle, reducing the visual scale of the structures, and extending the varied edge to the harbour in this view. In the future there may be an additional pier developed as a part of Central Barangaroo, further extending the irregular built harbour edge north. The proposal would generate additional ferry trips, arriving and departing from the proposal. Due to the highly urban visual context, and the nearby built harbour edge with the wharves to the south of the proposal area, and visual compatibility of the proposal with this area, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. As the proposal would be viewed against a brightly lit urban environment and there are already a considerable number of ferries using this stretch of the harbour, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 4: View from Ballarat Park, Pyrmont

	Construction	Operation, Day	Operation, Night
Baseline Conditions: Unobstructed view across Sydney Harbour to the proposal area, seen against the future Barangaroo South development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of retail, residential and commercial buildings. This view is generally aligned with Transport Place, and the Wynyard Walk Bridge. The proposal area is seen at a distance of approximately 300m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is located at a waterfront public realm location. Views from this location include a large extent of Sydney Harbour open water, and a harbour framed view of the CBD Skyline including the Harbour Bridge in the north, and Sydney Tower to the south. This view is representative of high quality residential properties in nearby converted wharves.	Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD visually prominent in the view.	
	Modification: During construction there would be barges, including cranes and associated construction equipment, visible on the water, with all construction works contained within a floating sediment containment barrier. The development envelope would extend towards the viewer, replacing the view of open water. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. Due to the distance, this change would not result in a noticeable reduction or improvement in visual amenity. Impact: Negligible	Modification: Three covered wharves would protrude towards the viewer. The proposal would attract numerous ferry trips per day, with vessels arriving and departing from the proposal at high frequency. The wharves and ferries would obstruct any potential view along Transport Place and to the Wynyard Walk Bridge. The proposal would extend the irregular edge to the harbour, seen at King Street Wharf. Due to the highly urban visual context, and the amount of open water visible in the foreground of this view, there would be no perceived reduction or improvement in visual amenity as a result of the proposal Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. As the proposal would be viewed against a brightly lit urban environment and there are already a considerable number of ferries using this stretch of the harbour, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 5: View from Pier 10, next to the Heritage Fleet, Pyrmont

	Construction	Operation, Day	Operation, Night
Existing Conditions: Unobstructed view across Sydney Harbour to the proposal area, seen against the future Barangaroo development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of buildings stepping up to three office towers. This view is aligned generally with Transport Place, and the Wynyard Walk Bridge. The proposal area is seen at a distance of approximately 200m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is located at a waterfront public realm location. Views from this area include a large extent of Sydney Harbour open water, and a harbour framed view of the CBD Skyline including the Sydney Tower. This view is representative of high quality residential properties in nearby converted wharves.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD visually prominent in the view.
	Modification: During construction there would be floating barges, including cranes and associated construction equipment, visible on the construction site, with all construction works contained within a floating sediment containment barrier. The development envelope would extend towards the viewer, replacing the view of open water and a uniform, uncluttered harbour edge. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. Due to the proximity of the view, this change would result in a noticeable reduction in visual amenity. Impact: Moderate adverse	Modification: Three covered wharves would protrude towards the viewer. The proposal would attract numerous ferry trips per day, with vessels arriving and departing from the proposal at high frequency. The wharves and ferries would obstruct the future view along Transport Place and to the Wynyard Walk Bridge. The proposal would extend the irregular edge to the harbour, seen next to the proposal area at the King Street Wharf. Due to the highly urban visual context, and the amount of open water visible in the foreground of this view, there would be no perceived reduction or improvement in visual amenity as a result of the proposal Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. The proposal would be viewed against a brightly lit urban environment and there are already a considerable number of ferries using this stretch of the harbour. Overall it is considered that the proposal would be in character with the existing harbour edge, as seen from this location, and that there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 6: View from Pyrmont Bay Ferry Wharf, Pyrmont

	Construction	Operation, <i>Day</i>	Operation, <i>Night</i>
Existing Conditions: Unobstructed view across Sydney Harbour to the proposal area, seen against the future Barangaroo development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of buildings stepping up to three office towers. The proposal area is seen at a distance of approximately 130m.	Visual Sensitivity: This view is of State Visual Sensitivity . It is located at the ferry wharf, a public entry point for the National Maritime Museum, a national tourist attraction. Views from this location include the replica 'Endeavour' tall ship, the Heritage Fleet, and the city-wide attraction of Darling Harbour. A large extent of Sydney Harbour is visible, with the Sydney CBD Skyline to the east and North Sydney to the north and in the background. This stretch of water is heavily trafficked and the harbour edge is largely obscured by moored vessels.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD and Darling Harbour visually prominent in the view.
	Modification: During construction barges, including cranes and associated construction equipment, and surrounded by a floating sediment containment barrier, would be visible on the water. A hoarding enclosed worksite would be seen on the landside beyond. The development envelope would extend towards the viewer, and would be aligned with existing wharf facilities at King Wharf. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. However, due to the increased visual clutter, obstruction of views to open water and close proximity of the view, this would result in a noticeable reduction in visual amenity. Impact: High adverse	Modification: Three covered wharves would protrude towards the viewer. The full length of the three wharves, and ferries, would be seen in this view, extending into the harbour, further than existing wharves at King Street. The proposal would generate additional ferry trips that would be seen arriving and departing from the proposal, increasing the boating activity visible on the open water. Due to the highly urban visual context, and visual compatibility of the character of the ferry hub with the existing wharves at King Street, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. The proposal would be viewed against a brightly lit urban environment and there are already a considerable number of ferries using this stretch of the harbour. Overall it is considered that the proposal would be in character with the existing harbour edge, as seen from this location, and that there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 7: View from Pyrmont Bridge, Cockle Bay

	Construction	Operation, Day	Operation, Night
Existing Conditions: Partially obstructed view to the proposal area, across Sydney Harbour, and King Street Wharf area. The proposal would be seen in the context of the future Barangaroo development. Once construction is complete, Barangaroo South would comprise a waterfront promenade with avenue trees in front of buildings stepping up to three office towers. The proposal area is seen at a distance of approximately 500m.	Visual Sensitivity: This view is of State Visual Sensitivity . It is a popular recreational route, and a state heritage listed bridge. Views from this location include the Darling Harbour precinct with the Maritime Museum, the Heritage Fleet, Sydney Aquarium and a large extent of Sydney Harbour in the middle ground of the view. This view includes views to the CBD Skyline, enclosing the view to the east.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD and Darling Harbour visually prominent in the view.
	Modification: During construction, the on-water worksite would be seen protruding beyond the existing King Street wharves, with vertical elements including barge mounted cranes and associated construction equipment, visible above these wharves. These elements would be seen in the middle to background of the view. The development envelope would extend across the view, seen within a context of a visually cluttered harbour. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. Due to the distance and intervening elements, there would be no noticeable reduction or improvement in the amenity of this view. Impact: Negligible	Modification: Three covered wharves would protrude from the harbour edge. The long side of the wharves, and ferries, would be seen in this view, extending into the harbour, seen protruding beyond the existing wharves at King Street. The proposal would generate additional ferry trips that would be seen arriving and departing from the proposal, increasing the boating activity visible on the open water. Due to the highly urban visual context, and visual compatibility of the character of the Barangaroo Ferry Hub with the existing wharves at King Street, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible	Modification: The ferry hub would be brightly lit and operational at night. As the proposal would be viewed against a brightly lit urban environment, and there are already a considerable number of ferries using this stretch of the harbour, there would be no perceived reduction or improvement in visual amenity as a result of the proposal. Impact: Negligible



Viewpoint 8: View from restaurants at the King Street Wharf area, Darling Harbour

	Construction	Operation, Day	Operation, Night
Existing Conditions: Partially obstructed view to Sydney Harbour, with Islands of the Sydney Harbour National Park, Balmain peninsula and the north shore beyond. The proposal area is seen at a distance of approximately 100m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is located at a popular tourist area, next to Sydney Harbour, in an iconic area of the CBD. These restaurants are a popular city-wide attraction for city workers, residents and tourists.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD and King Street Wharf visually prominent in the view.
	Modification: During construction, there would be a construction worksite established along the harbour edge, in the centre of this view. Barge mounted cranes and associated construction equipment would be visible on the water, in the centre of the view. The development envelope would extend across much of the middle ground of this view. This work would obscure views to open water of the harbour, and to the Sydney Harbour National Park beyond. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. This change would result in a noticeable reduction in visual amenity. Impact: Moderate adverse	Modification: Three covered wharves would protrude away from the viewer, extending the character of existing wharves at the King Street Wharf area, north along the harbour edge. As a result, views to the open water of the harbour, islands, Balmain peninsula and north shore beyond, would be obscured by the wharves and ferries using the hub and during layover, when seen from this location. The structures would visually rise above the horizon, and seen against the sky. Despite, the highly urban visual context, and visual compatibility of the character of the Barangaroo Ferry Hub with the existing wharves at King Street, there would be a noticeable reduction in visual amenity as a result of the proposal due to the loss of water views and visual connection to the wider harbour background. Impact: Moderate adverse	Modification: The ferry hub would be brightly lit and operational at night. There are a large number of ferries using this stretch of the Harbour. The context is a brightly lit urban environment and the Barangaroo Ferry Hub would be in character with these surrounding uses. There would be an obstruction of visible open water from this location, however, this would be less noticeable at night when the brightly lit foreground limits the depth of view. For this reason, there would not be a noticeable reduction in visual amenity as a result of the proposal at night. Impact: Negligible

Viewpoint 9: View from footpath adjacent to The Sussex Hotel to Sussex Street



	Construction	Operation, Day	Operation, Night
<p>Existing Conditions:</p> <p>Obstructed view to Sydney Harbour and the proposal area, seen at a distance of approximately 250m. This view currently includes the Wynyard Walk construction site to the left of the view and the Barangaroo South construction site in the centre of the view.</p> <p>Upon completion of construction works, views to the water will be further obstructed by the Barangaroo South development. This view will be directed along the newly constructed Transport Place, which is an east west aligned pedestrian plaza connecting Wynyard Walk to the harbour.</p>	<p>Visual Sensitivity:</p> <p>This view is of Regional Visual Sensitivity. It is located at a main pedestrian connection between the CBD and Sydney Harbour at King Street Wharf. Upon completion of the construction work this view would connect Wynyard Walk via Barangaroo South to the Barangaroo Ferry Hub.</p>	<p>Visual Sensitivity:</p> <p>At night this is an area of High District Brightness, with lighting from the King Street Wharf and the future Barangaroo South development visually prominent in the view.</p>	
	<p>Modification:</p> <p>During construction, in the centre of the view there would be a construction worksite established along the harbour edge, with barge mounted cranes and associated construction equipment located in the water beyond. This work would obscure views to the open water of the harbour.</p> <p>There is a precedent for construction activity seen in this view with construction projects occurring at Barangaroo South and Wynyard Walk.</p> <p>However, due to the location of the site at the terminus of this view, and obstruction of the harbour, this change would result in a noticeable reduction in visual amenity.</p> <p>Impact: Moderate adverse</p>	<p>Modification:</p> <p>A covered wharf would be seen extending across the background of this view, as a result, views to the open water of the harbour would be partly obscured.</p> <p>The Barangaroo Ferry Hub would be a visual feature at the terminus of this view. Due to the obstruction of the harbour, and the importance of a water view along this axis, there would be a noticeable reduction in visual amenity as a result of the proposal.</p> <p>Impact: Moderate adverse</p>	<p>Modification:</p> <p>The ferry hub would be brightly lit and operational at night. Although the proposal would be viewed against the water in this view, the context is a brightly lit urban environment and the ferry hub would be in character with these surrounding uses. Views to open water would be obstructed from this location, however, this would be less noticeable at night when the brightly lit foreground limits the depth of view. For this reason, there would be no noticeable reduction in visual amenity as a result of the proposal at night.</p> <p>Impact: Negligible</p>



Viewpoint 10: View south along the harbour edge, Barangaroo South

	Construction	Operation, <i>Day</i>	Operation, <i>Night</i>
Existing Conditions: Open view to Sydney Harbour and to the National Maritime Museum and heritage fleet. The proposal area is seen at a distance of approximately 50m.	Visual Sensitivity: This view is of Regional Visual Sensitivity . It is located at a waterfront public realm location. Views from this area include a large extent of open water, and a harbour framed view to the National Maritime Museum and historic fleet. This view is representative of future views from the Barangaroo South promenade, adjacent retail and residential areas. Historically this area has not been publicly accessible, however, recent access and the improved facilities to be provided by the Barangaroo South development will increase the value of this location to the community.		Visual Sensitivity: At night this is an area of High District Brightness , with lighting from the CBD and Darling Harbour seen across the harbour.
	Modification: During construction, in the centre foreground of the view, there would be a worksite established along the harbour edge, barges including cranes and associated construction equipment, would be located in the water. The development envelope would extend across much of this view and obstruct views to King Street Wharf, the Maritime Museum and the open waters of the harbour. There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site. However, this change would result in a considerable reduction in visual amenity. Impact: High adverse	Modification: Three covered wharves would extend across the view, with ferries using the hub and during layover, obstructing views to the open water of the harbour and iconic harbour buildings beyond. The structures would visually rise above the horizon, and seen against the sky. Despite, the highly urban visual context, and visual compatibility of the character of the Barangaroo Ferry Hub with the existing wharves at King Street, there would be a noticeable reduction in visual amenity as a result of the proposal. Impact: Moderate adverse	Modification: The ferry hub would be brightly lit and operational at night. The context is a brightly lit urban environment and the Barangaroo Ferry Hub would be in character with these surrounding uses. However, a large area of open water would be obstructed in views from this location. This would result in a noticeable reduction in visual amenity as a result of the proposal at night. Impact: Moderate adverse

The following table, 9-2 summarises the impact identified in the viewpoint assessment.

Viewpoint Number and Location	Visual Sensitivity	Construction		Operation			
		Day		Day		Night	
		Visual Modification	Visual Impact	Visual Modification	Visual Impact	Visual Modification	Visual Impact
Viewpoint 1: View from Illoura Reserve, Balmain East	Regional	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 2: View from a Ferry, Balmain East and King Street Ferry Wharf	Regional	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 3: View from a ferry approaching the proposal (and Barangaroo South)	Regional	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 4: View from Ballarratt Park, Pyrmont	Regional	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 5: View from Pier 10, next to to the Heritage Fleet, Pyrmont	Regional	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 6: View from Pyrmont Bay Ferry Wharf, Pyrmont	State	Noticeable reduction	High adverse	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 7: View from Pyrmont Bridge, Cockle Bay	State	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible
Viewpoint 8: View from Restaurants at the King Street Wharf, Darling Harbour	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible
Viewpoint 9: View from footpath adjacent to The Sussex Hotel to Sussex Street	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible
Viewpoint 10: View south along the harbour edge, Barangaroo South	Regional	Considerable reduction	High adverse	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse

Table 9-2 Summary of Viewpoint Assessment

The following sections summarise the viewpoint assessment.

9.1.1 Construction Impact

In views at a distance, such as from ferries within the harbour, the Illoura Reserve at East Balmain and Ballarat Park in Pyrmont, there would be no noticeable reduction or improvement in visual amenity as a result of the proposal. As a result, there would be a **negligible** visual impact from much of the study area during construction.

In views at a closer proximity, such as from ferries within the harbour and Pier 10, there would be a noticeable reduction in amenity during construction, resulting in a **moderate adverse** visual impact.

In views from the Pyrmont Bay Ferry Wharf, a higher sensitivity viewpoint with the proposal area located in the middle ground of the view, the proposal would create a noticeable reduction in visual amenity during construction, and an overall **high adverse** visual impact.

Views from Pyrmont Bridge, also a location of higher visual sensitivity, would experience a **negligible** visual impact. This is due to the distance and intervening elements which block views to the proposal area, resulting in no noticeable reduction or improvement in visual amenity.

Directly to the south of the proposal, views from the promenade and restaurants at King Street Wharf are of regional visual sensitivity. Due to the proximity of the proposal to this viewing location and the obstruction of views to the open water of the harbour, islands and north shore, there would be a noticeable reduction in the visual amenity of the proposal during construction, resulting in a **moderate adverse** visual impact.

Views from Barangaroo South, including the future waterfront promenade, retail and residential areas, would be of regional visual sensitivity. Due to the obstruction of views to the open water of the harbour, and iconic harbour buildings beyond, a change that would comprise a large extent of the views, there would be a considerable reduction in the visual amenity of the proposal during construction, resulting in a **high adverse** visual impact.

In views from the future Wynyard Walk and adjacent footpaths to the east of the proposal site, views of regional visual sensitivity, there would be a noticeable reduction in the amenity of the view. This is mainly due to the location of the site at the terminus of views along Transport Place, which will link Wynyard Walk and the Barangaroo Ferry Hub. There would be a **moderate adverse** visual impact on these views during construction.

Although there is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula, the overall construction impact ranges from **negligible** to **high adverse**. These impacts are temporary in nature and would be seen in the context of a continuum of construction on the Barangaroo peninsula.

9.1.2 Daytime impact during operation

When the Barangaroo Ferry Hub is operational, during daylight hours there would be a **negligible** visual impact on views from the north-west, such as at Balmain East and from ferries on the harbour. This is due to the visual compatibility of the proposal with the surrounding highly urban backdrop. In these views there is open water visible in the foreground of the view that would largely remain intact.

In views from the west, at locations such as Ballarat Park, Pier 10 and the Pyrmont Wharf, viewed at a range of distances, there would be a **negligible** visual impact as a result of the proposal. This is due to the highly urban visual backdrop and the compatibility of the character of the ferry hub with the existing King Street Wharf.

From the south, in views from the Pyrmont Bridge, there would be a **negligible** visual impact. Although this is a view of state sensitivity, the King Street Wharf would be visible in front of the proposal, partly blocking the view to the proposal. Furthermore, the proposed Barangaroo Ferry Hub is of an appropriate visual character in line with other harbour development.

In views from the promenade and restaurants at King Street Wharf, however, there would be a noticeable reduction in visual amenity as a result of the proposal. This impact is largely due to the reduced visibility of the open water of the harbour, close proximity of the view and obstruction of views to the open water of the harbour, islands, Balmain peninsula and north shore. This would result in a **moderate adverse** visual impact.

In views from the future promenade, retail and residential areas of Barangaroo South, an area that would be of regional visual sensitivity, there would be a noticeable reduction in visual amenity due to the obstruction of views to the open water of the harbour and iconic harbour buildings beyond. This would result in a **moderate adverse** visual impact.

In views from the future Wynyard Walk and adjacent footpaths, to the east of the proposal site, there would be a noticeable reduction in the amenity of views during operation. This is mainly due to the obstruction of the harbour waters in the view, and resulting in a **moderate adverse** visual impact.

9.1.3 Night time impact during operation

At night, from locations to the northwest, west and south west, the proposal would be viewed against a brightly lit urban environment. In these views there would be no perceived reduction or improvement in the amenity of these views, resulting in a **negligible** visual impact.

In west facing views, with the harbour beyond, such as from the King Street Wharf area, views would include the proposal in the foreground seen against an active and moderately lit harbour environment. The obstruction of views to the open water, harbour islands, Balmain peninsula and north shore, would be less noticeable at night when the brightly lit foreground limits the depth of view. Therefore, from these locations there would be **negligible** visual impact at night.

In views from the future promenade, retail and residential areas of Barangaroo South, however, the obstruction of open water views is more prominent due to the close proximity of these views and extent of the view that would be altered. This would result in a noticeable reduction in the amenity of these views at night, and a **moderate adverse** visual impact.

9.2 Assessment of Landscape Character Impact

An assessment of the Landscape Character Impact has been undertaken for each landscape character area, and is summarised in the following section.

9.2.1 Balmain East to Millers Point

The Balmain East to Millers Point area of the harbour is considered to have a landscape character of **regional sensitivity** particularly due to the State Heritage listing and cultural importance of the parkland on Balmain East, and the open water of the Sydney Harbour with views to the Sydney Harbour Bridge and the north shore.

The landscape character of this precinct would be directly impacted by additional ferry movements within the harbour, and views towards the CBD skyline would include the proposal in the background of views. However, these elements are consistent in character to the existing character of this area.

It is expected that there would not be a perceived reduction in the quality of the landscape character of this area as a result of the proposal during construction or operations, day and night. This results in a **negligible** impact on landscape character.

9.2.2 Barangaroo to White Bay

The Barangaroo to White Bay area of the harbour includes the water based parts of the proposal area, and extends west with a largely developed harbour edge. This area is considered to have a landscape character of **regional sensitivity** as it comprises a large expanse of the Sydney Harbour with open waters and views to the Sydney CBD skyline.

The landscape character of this precinct would be directly impacted directly by the creation of the Barangaroo Ferry Hub, with a change to the Barangaroo harbour edge to a more densely developed treatment, and reduction in the area of open water. There would be an increase in ferry movements, and ferry manoeuvring within the narrow stretch of the harbour.

However, as a result it is expected that there would be a noticeable reduction in the quality of the landscape character of this area as a result of the proposal during construction and operations. This results in a **moderate adverse** landscape impact.

At night there would be no noticeable reduction in the quality of the landscape character of the Barangaroo to White Bay area as there is less inter-visibility within the character area at night due to the brightly lit publicly accessible areas limiting the depth of view. Therefore, there would be **negligible** landscape character impact at night.

9.2.3 Darling Harbour to Cockle Bay

The Darling Harbour and Cockle Bay area of the harbour is located to the south of the proposal area, and comprises a highly developed harbour edge and harbour waters cluttered with boats and ships. This area is considered to have a landscape character of **state sensitivity** due to its location within view of the CBD skyline, and important landmark buildings and vessels including the National Maritime Museum and replica 'Endeavour', and the state heritage listed Pyrmont Bridge.

The landscape character of this precinct would not be directly impacted by the proposal. The proposal is compatible with the urban character of this precinct, with the proposal becoming somewhat of an extension to the densely developed waters and urban harbour edge treatment seen in this precinct.

These changes are generally compatible with the landscape character of the Darling Harbour to Cockle Bay area. For this reason it is considered that the proposal does not create a noticeable change to the landscape character of this area. This results in a **negligible** landscape impact during construction and operation, day and night.

9.2.4 King Street Wharf

The King Street Wharf area is located directly adjacent to the proposal area to the south. It comprises waterfront buildings with a row of restaurants facing the harbour and promenade. The harbour edge is highly developed with a number of wharves, active with ferries and boats. This area is considered to have a landscape character of **regional sensitivity** due to its location on the harbour and proximity to the tourist precinct of Darling Harbour and Pyrmont.

The landscape character of this precinct would not be directly impacted by the proposal. However, where the character is influenced, in a small part, by views to the harbour in the vicinity of Barangaroo South there would be some impacts experienced.

There would be a temporary reduction in landscape amenity during construction, resulting in a **moderate adverse** visual impact. During operations, throughout the day, the proposed changes are generally compatible with the landscape character of the King Street Wharf. For this reason it is considered that the proposal does not create a noticeable change to the landscape character, resulting in a **negligible** landscape impact during operations in the daytime. However, at night the brightly lit environment would limit visibility to the harbour through the Barangaroo Ferry Hub, and is likely to result in a noticeable reduction in landscape character, resulting in a **moderate adverse** landscape impact.

9.2.5 Barangaroo South

The Barangaroo South urban character area incorporates the landside parts of the proposal area. This area is considered to have a landscape character of **regional sensitivity** due to its location within view of the CBD and next to the open waters of the Sydney Harbour. The future Barangaroo South area would include harbour front promenades and development stepping back from the harbour edge to high-rise towers.

The landscape character of this precinct would be directly impacted by the creation of the Barangaroo Ferry Hub, with a change to the Barangaroo harbour edge to a more densely developed treatment, and reduction in the area of visible open water from adjacent promenade and plazas, ground and lower level retail and residential areas. The character of these water views would be a considerable feature of the character of this precinct. This proposal has a character that is compatible with the future development form of this precinct. There would be views over and through the proposal area, however, some views would be interrupted by the angled alignment of the proposed wharves. This would locate the proposal on the terminus of views along Transport Place and Union Walk, increasing the legibility and visual connectivity of the public transport network, and is therefore considered to be an appropriate character for this densely developed area of the City.

The proposal would form a transition in landscape character from the southern harbour areas of Darling Harbour and Cockle Bay to the open water edge that would be located in Central Barangaroo and the Headland Park in the north.

It is expected that there would be a noticeable reduction in the quality of the landscape character of this area as a result of the proposal during construction, and a noticeable change during operations. This results in a **moderate adverse** landscape impact during construction and operations throughout the day. Similarly, at night the brightly lit environment would limit visibility to the harbour through the Barangaroo Ferry Hub, which is likely to result in a noticeable reduction in landscape character, and a **moderate adverse** visual impact.

9.2.6 Central Barangaroo and Headland Park

The Central Barangaroo and Headland Park area is considered to have a landscape character of **regional sensitivity** due to its location near to the CBD and next to the open waters of the Sydney Harbour. The future Central Barangaroo area and Headland Park would include harbourside promenades and parkland in the south and a naturalistic rocky harbour edge in the north. Views to the open waters of the harbour and a largely undeveloped harbour edge would be characteristic landscape features of this area.

The landscape character of this precinct would not be directly impacted by the proposal. However, the proposal would result in a change to the Barangaroo South harbour edge to a more densely developed treatment, forming a transition in landscape character from the southern harbour areas of Darling Harbour and Cockle Bay to the open water edge that would be located in Central Barangaroo and the Headland Park in the north.

As a result it is expected that there would be no change to the landscape character of this area as a result of the proposal during construction and during operations, day and night. This results in a **negligible** landscape impact.

			Construction		Operation			
			Day		Day		Night	
Landscape Character Area		Landscape Sensitivity	Landscape Modification	Landscape Impact	Landscape Modification	Landscape Impact	Landscape Modification	Landscape Impact
1	Balmain East to Millers Point	Regional	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible
2	Barangaroo to White Bay	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible
3	Darling Harbour to Cockle Bay	State	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible
4	King Street Wharf	Regional	Noticeable reduction	Moderate adverse	No reduction or improvement	Negligible	Noticeable reduction	Moderate adverse
5	Barangaroo South	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse
6	Central Barangaroo and Headland Park	Regional	No reduction or improvement	Negligible	No reduction or improvement	Negligible	No reduction or improvement	Negligible

Table 9-3 Summary of Landscape Assessment

10. Cumulative Impact

There are a number of potential cumulative impacts caused by the proposal, as discussed in the following paragraphs.

There is a cumulative impact created by the construction of the proposal. There has been a series of construction projects in the vicinity of the proposal area including the Barangaroo South and Headland Park which are ongoing. There will be further construction occurring at the Central Barangaroo site, following the completion of the current Barangaroo development stages. All three of these redevelopment areas are likely to have some construction components occur concurrently with the construction of the Barangaroo Ferry Hub proposal. In addition the Ferry Wharf Upgrade Program includes a 12 wharves to be upgraded around the harbour, with more than half completed. Upcoming projects that may occur concurrently with the proposal include upgrades at Balmain East Wharf and the Pyrmont Wharf. The whole study area has been and will continue to undergo a major transformation. There would be a cumulative impact on the landscape character of the study area and views in the vicinity of the proposal area as a result of this concurrent construction activity.

The proposal would potentially have a cumulative impact on the balance of edge treatments seen within the Darling Harbour reach of the harbour. However, despite the localised impacts on the proposal area, there is a compatibility of the character of the proposed Barangaroo Ferry Hub with the wharves to the south at King Street Wharf and the highly built character of the Darling Harbour and Cockle Bay area. With the proposed areas of harbour edge, along Central Barangaroo and the Headland Park, dedicated to open water views and progressively less developed harbour edge leading to the naturalistic edge surrounding the parkland in the north, there is a balance of edge treatments achieved within the study area.

Overall it is considered that there would be no cumulative impacts in views seen across the harbour waters, as the Barangaroo Ferry Hub would be largely visually absorbed into the highly urban background of Barangaroo South and the CBD.

There would be a direct character impact upon the waters between Barangaroo South and Pyrmont, in particular, as the character of the ferry manoeuvring and existing vessel routes and manoeuvring patterns combine to create an impact. This cumulative impact would be minor as the additional vessel movements are consistent with the existing use of this portion of the harbour.

Key interactions between the visual and landscape character impact, such as with heritage values, have been considered within the assessment. Similarly, the planned future development of the study area has been considered such as future proposals at Barangaroo and Wynyard Walk, for example.

11. Mitigation of Impact

This chapter addresses the mitigation measures that should be considered to avoid, reduce and manage the identified potential adverse operational and construction landscape and visual impacts. Mitigation measures would ultimately form part of the Construction Environmental Management Plan and Operational Environmental Management Plan for the proposal.

Mitigation measures during construction would include:

- Where feasible and reasonable, the elements within the construction site would be located to minimise visual impacts (e.g. materials would be stored behind fencing).
- Lighting to be designed and installed in accordance with *AS/NZ 1158 Set:2010: Lighting for roads and public spaces* to ensure glare and light spill are minimised.
- Signage and branding would be further developed during detailed design to be consistent with the TfNSW wayfinding standard, and to ensure the Barangaroo Ferry Hub is visible and it reads as part of the coordinated suite of public transport facilities
- Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.

- During special events such as New Years Eve and Vivid Festival construction hours should be limited and the construction site set up should minimise visual impact.

The construction contractor should monitor the effectiveness of mitigation measures and consider reasonable and feasible measures to respond to complaints if they arise.

Mitigation measures during operations (some of which are incorporated into the concept design) would include:

- The use of glass or similar material to create transparency and reduce the obstruction of views to the water.
- Integrate and minimise the scale of elements such as the pump-out facility, gateline 'kiosk', and any pontoon facilities as much as possible to reduce visual obstruction to water views.
- Minimise the use of railings and structures that obstruct views to the water and create visual clutter.
- Integrate elements of the structure to create a unified and coherent character to the architecture of the Barangaroo Ferry Hub.
- The design of Barangaroo Ferry Hub should create a simple, low scaled ferry hub that maximises views to the water and which relates to the architectural language of the existing Ferry Wharf Upgrade Program.

12. Conclusions

In conclusion, the main sources of impact created by the proposal are the reduction in the area of visible open water and the introduction of a more densely developed harbour edge treatment. Overall the proposal has a character that is compatible with the future development form of the Barangaroo peninsula as a high quality urban expansion to the CBD, and with the surrounding East Darling Harbour precinct.

Although some views would be altered and interrupted by the angled alignment of the proposed wharves the Barangaroo Ferry Hub would become a visual landmark in many views. This would increase the legibility and interconnectivity of the public transport network, and is therefore considered to be of appropriate visual character in many views within the study area.

There is a precedent for construction activity seen in the vicinity of the site with a range of construction projects occurring next to the site and continuing along the Barangaroo peninsula. During construction of the Barangaroo Ferry Hub it is expected that **moderate adverse** impacts would be experienced from views across the water, at close proximity, where the coverage and scale of the on-water construction activity would be prominent in views. **High adverse** visual impacts would be experienced where the sensitivity of the view is heightened, specifically from the Pyrmont Ferry Wharf in the vicinity of the National Maritime Museum, where the proposed construction would be in close proximity and reduce the area of open harbour waters visible. These impacts are temporary in nature and would be seen in the context of a continuum of construction on the Barangaroo peninsula.

During operations in views from the west, and at a distance, the impacts would be **negligible** as the Barangaroo Ferry Hub would be largely visually absorbed into the highly urban background of Barangaroo South and the CBD. In views from the west, from vessels within the harbour and at a closer proximity, there would be negligible visual impacts. This is because the development would be consistent in character with the surrounding Barangaroo South development and wider views to the CBD and largely visually absorbed into this backdrop. In views from the promenade and restaurants at King Street Wharf directly to the south, from the promenade, some residential and retail areas at Barangaroo South directly to the north, and from Wynyard Walk to the east, however, there may be a **moderate adverse** visual impact due to the close proximity of the proposal and potential obstruction of water views.

At night there would be a **negligible** impact on most views to the site due to the compatibility of the proposal with the context of lights across the harbour and brightly lit development. However in views from Barangaroo South there may be a **moderate adverse** visual impact at night due to the close proximity of these views and extent of the view that would be altered.

There are unlikely to be impacts on the landscape character of areas surrounding the site to the north, west and south. However, in areas directly impacted by the project at the Barangaroo to White Bay and Barangaroo South character areas, and located directly to the south, at King Street Wharf there would potentially be some **moderate adverse** landscape character impacts experienced. This is due to the reduction of open water and character of the construction works, and operations during the day. At night, the impacts are negligible as there is a reduced intervisibility at night and an existing and future brightly lit setting.

Cumulative impacts would be experienced due to the ongoing construction activity caused by the transformation of much of the Barangaroo peninsula, the balance of harbour edge treatments seen within the context of the unfolding Barangaroo development, and the incremental increase in vessel movements on the harbour waters adjacent to the proposal and across the harbour.

There are limited opportunities to mitigate the impacts experienced during construction, however, management of the image of the site would be important in order to limit visual and character impacts. There are some opportunities for mitigation through the design of the Barangaroo Ferry Hub, particularly in relation to the selection of materials and design of elements to minimise the visual clutter and maximise the openness and transparency of the Hub structures so that views to the water are maximised in views.

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