

# Woolwich Wharf Interchange Upgrade

Submissions report

Transport for NSW | November 2019



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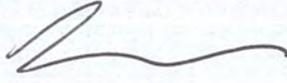
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# Document controls

## Approval and authorisation

Title	Woolwich Wharf Interchange Upgrade Submissions Report
Accepted on behalf of Transport for NSW by:	Lisa Monaghan, Project Manager
Signed:	
Dated:	12/12/19

## Document status

Document status	Date	Prepared by	Reviewed by
Draft	8 November 2019	Sam Wu	Lisa Monaghan
Final	22 November 2019	Sam Wu	Lisa Monaghan

# Executive summary

This submission report relates to the Review of Environmental Factors (REF) prepared for the Woolwich Wharf Interchange Upgrade, and should be read in conjunction with that document.

The Woolwich Wharf Upgrade is being delivered as part of the Transport Access Program. The proposal involves the replacement of the existing Woolwich Wharf and upgrade of the existing interchange. The new wharf and interchange will provide access for people with a disability, meeting the standards of the *Disability Discrimination Act (DDA) (1992)* and *Disability Standards for Accessible Public Transport (DSAPT) (2002)*.

As part of the planning process Transport for NSW (TfNSW) placed the REF on public display for 21 days between Monday 14 October and Sunday 3 November 2019. A Community Information Session was held on Saturday 19 October 2019.

The displayed REF identified Roads and Maritime Services (RMS) as the proponent for the project. Since the display of the REF, RMS has been dissolved as an organisation and its functions transferred to TfNSW.

A total of twenty-three submissions were received, with twenty-two submissions from the community and one submission from a government organisation.

The submissions from the community have been categorised into eight main areas:

- The closure of ferry services to Woolwich during construction;
- The inadequacy of the proposed alternative bus services to Woolwich during construction;
- The need for the upgrade;
- The timing of the construction;
- The duration of the construction;
- The design of the new wharf;
- The need for additional public transport to Woolwich;
- Consultation with Council.

Hunter's Hill Council and other government stakeholders have been consulted during the design development process and have provided feedback on the Proposal.

## The proposal

Transport for NSW is proposing to upgrade Woolwich Wharf Interchange (the Proposal). The Proposal includes both landside and waterside upgrades. Details of the proposal are provided in section 1.1 of this Submissions Report.

Construction of the Proposal would be continuous and is anticipated to start in the first quarter of 2020 and take about five months to complete the work.

## Summary of issues and responses

Transport for NSW received a total of twenty-three submissions, with twenty-two submissions from the community and one submission from a government organisation. The following summarises the submission categories:

### ***Closure of the ferry service during construction***

The overwhelming feedback was that the ferry service is an integral part of the transport modes for the community living in Woolwich. The project team has considered the community's feedback and proposed to continue ferry services in Woolwich by using the Clarkes Point Wharf as a temporary ferry wharf.

### ***The proposed alternative bus service during construction***

The inadequacy of the proposed alternate bus services during construction due to the infrequency of the 538 bus service and the limited operating hours of the 505 bus service. The project team has considered the community's feedback and proposes to provide a temporary bus service between Hunters Hill and Clarkes Point connecting to the temporary ferry service.

### ***The need for the wharf upgrade***

Some submissions were of the view that the wharf is currently safe, comfortable and fit for purpose and consider the upgrade to be unnecessary. The project team considered this feedback, however, the purpose of the proposed upgrade is to ensure that the ferry interchange is compliant with disability access requirements.

### ***The timing of the construction***

Some submissions asked about the timing of the construction, as the closure of the ferry services during construction, would have significant impact. The project team has considered the community's feedback and proposed to minimise disruption by continuing ferry services at Woolwich by using Clarkes Point Wharf as a temporary ferry wharf.

### ***The duration of the construction***

Some submissions deem the construction period of five months to be unnecessarily long. The project team has delivered over twenty ferry wharves as part of the Ferry Wharf Upgrade Program. The typical construction period for each ferry wharf is known to be between five and six months depending on the complexity of the project.

### ***The design of the wharf***

A number of design concerns and improvements were raised. These design issues have either been addressed by the project team or are outside of the scope of the Proposal. The matters that are outside of the Proposal scope have been passed onto Hunters Hill Council for consideration.

### ***Additional Public Transport in General***

One submission requested for an additional bus service between Woolwich Wharf and North Ryde Station to provide greater connectivity. The provision of bus services is outside the scope of the Ferry Wharf Upgrade Program however the submission will be passed onto the appropriate section of TfNSW for consideration.

### ***Consultation with Council***

One submission questioned if the project team has consulted with Council with regards to the landside works. The project team confirmed it has consulted with Council throughout the design development process.

## **Changes to the proposal**

Noting the primary feedback of retaining a similar level of public transport service during construction of the Proposal, TfNSW is pursuing the option of maintaining ferry services on the Woolwich Peninsula. This will be done by temporarily relocating the ferry services to the existing Clarkes Point Wharf at Clarkes Point. The provision of a temporary bus service from Hunters Hill to Clarkes Point Road is also being investigated to connect to the temporary ferry service.

The Clarkes Point Wharf will require some remediation works to make the temporary wharf safe for customers and Transdev Sydney Ferries to use. The remediation works are likely to include:

- Installation of new fender piles and mooring cleat;
- Removal of existing bollards;
- Installation of partial floor covering on the pontoon and ramp for safe embarking and disembarking;
- Installation of additional life buoy;
- Installation of a temporary bus stop;
- Construction of a temporary footpath from the bus stop to the wharf;
- Installation of temporary lighting on the pontoon, gangway and footpath.

The temporary works will be completed prior to the closure of Woolwich Wharf to keep the ferry services open during construction.

## **Environmental Management**

The temporary remedial works are not expected to have a significant impact on the environment, as the path lighting will be surface mounted and aquatic impact minimal. However all environmental impacts and safeguards will be considered as part of the temporary works scope development process.

## **Next steps**

Transport for NSW is progressing with the Proposal, however further work needs to be carried out with respect to the alternative transport options.

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# 1. Introduction and background

## 1.1 The proposal

Transport for NSW is proposing to upgrade Woolwich Wharf Interchange (the Proposal). The Proposal includes both landside and waterside upgrades.

The waterside features of the Proposal include:

- Removing the existing gangway, pontoon and associated wharf structures, including existing piles and gangway
- Installing a new three-metre wide by 18-metre long gangway
- Installing a nine-metre wide by 18-metre long floating covered and glazed pontoon, held in position by four new piles
- Installing a new shore bridge to connect landside and waterside elements supported by three piles
- Installing two new protection piles west of the gangway
- Installing two pivot piles to assist with berthing.

The landside features of the Proposal would include:

- Upgrading the existing heritage waiting shed to improve disability access which would include removal of the existing non-structural internal walls to open up the internal space and installing new seating and a new wooden framed window
- Upgrading the existing toilet amenities to provide one unisex toilet and one accessibility compliant unisex toilet
- Raising the footpath levels and re-grading the cul-de-sac from the bus stop and parking to the wharf to achieve compliance with disability access requirements. This would include temporary removal of the “Valentia Street Wharf” sign between the wharf entry and heritage waiting shed
- Raising the seawall by a height of about 500 mm and length of about 30m and placing a rock apron on the seabed in front of the seawall to improve stability
- Upgrading three accessible car parking spaces and the footpath leading to the wharf and providing two kiss and ride spaces
- Installing five bicycle parking hoops
- Installing disability compliant fencing along the seawall from the accessible parking to the wharf.

An overview of the Proposal is shown in Figure 1.

Construction of the Proposal would be continuous and is anticipated to start in the first quarter of 2020 and take about five months to complete the work.

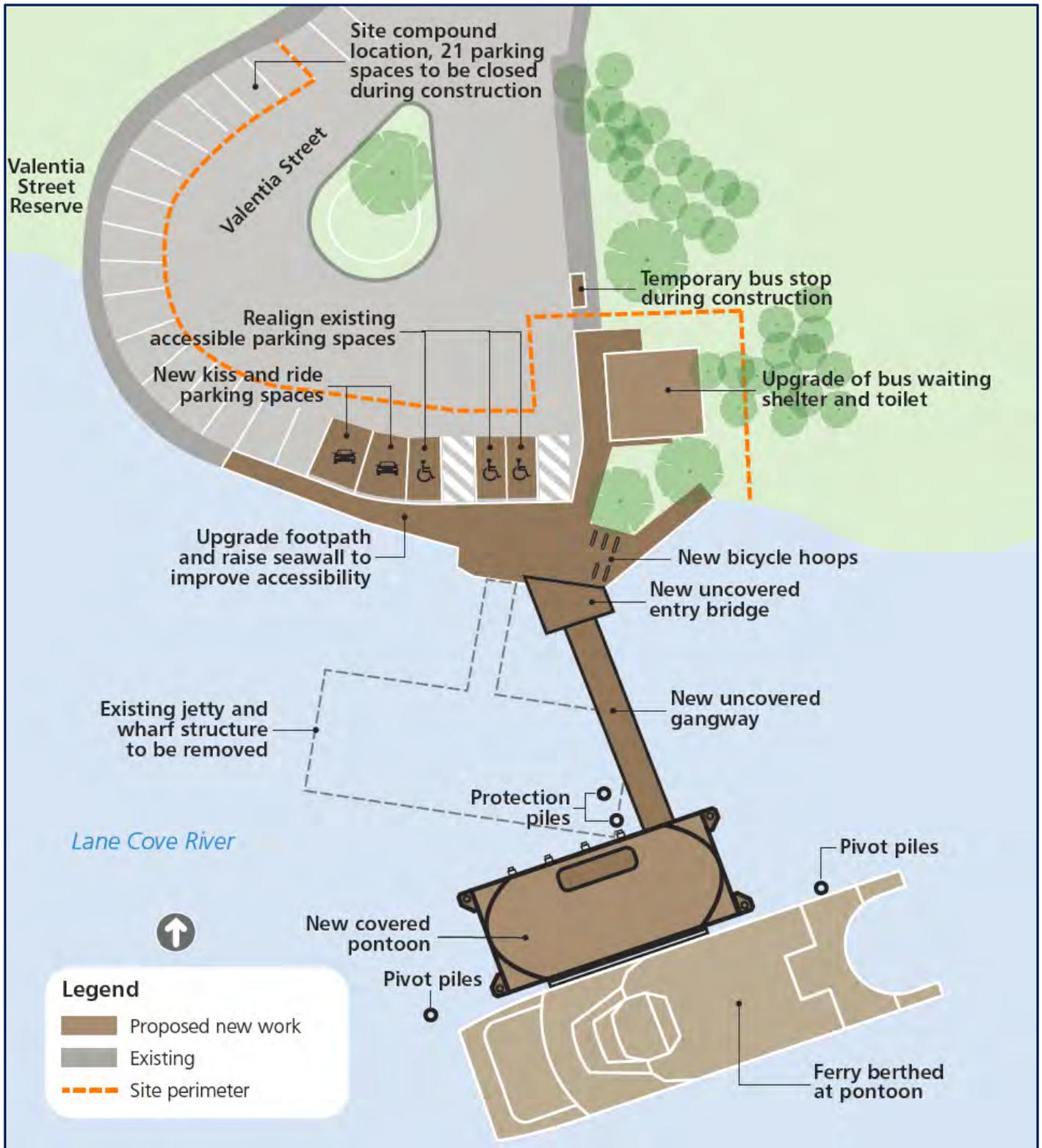


Figure 1 Overview of the Proposal

## 1.2 REF display

Transport for NSW prepared a review of environmental factors (REF) to assess the potential environmental impacts of the proposed works. The REF was publically displayed for 21 days between Monday 14<sup>th</sup> October 2019 and Sunday 3<sup>rd</sup> November 2019 at Transport for NSW's office and Hunter's Hill Council office, as detailed in Table 1-1. The REF was placed on the Transport for NSW project website and made available for download. The display locations and website link were advertised on the Roads and Maritime website.

Table 1-1: Display locations

Location	Address
Roads and Maritime (now TfNSW)	20 – 44 Ennis Road, Milsons Point NSW 2061
Hunter's Hill Council	22 Alexandra Street, Hunters Hill NSW 2110

## 1.3 Purpose of the report

This submissions report relates to the REF prepared for the Woolwich Wharf Interchange Upgrade and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Transport for NSW. This submissions report summarises the issues raised and provides responses to each issue (Chapter 2). It details proposed changes to the Proposal (Chapter 3) and identifies new or revised environmental management measures (Chapter 4).

## 2. Response to issues

Transport for NSW received twenty-three submissions which were accepted up until the Sunday 3 November 2019. Table 2-1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Chapter 3 of this report.

Table 2-1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual 1	1	2.2.1, 2.3, 2.4.2
Individual 2	2	2.2.1, 2.2.2
Individual 3	3	2.2.1, 2.2.2, 2.5
Individual 4	4	2.2.1, 2.3, 2.4.2
Individual 5	5	2.2.1, 2.3, 2.5
Individual 6	6	2.2.1, 2.2.2
Individual 7	7	2.2.1
Individual 8	8	2.4.1
Individual 9	9	2.2.1
Individual 10	10	2.3, 2.4.2
Individual 11	11	2.2.1, 2.2.2
Individual 12	12	2.6
Individual 13	13	2.2.1
Individual 14	14	2.2.1
Individual 15	15	2.2.1, 2.2.2
Individual 16	16	2.2.1
Individual 17	17	2.2.1, 2.2.2
Individual 18	18	2.2.1, 2.3, 2.5, 2.7
Individual 19	19	2.2.1, 2.2.2
Individual 20	20	2.2.1, 2.2.2
Individual 21	21	2.2.1, 2.4.2,
Individual 22	22	2.2.1, 2.4.2,
Government Agency 1	23	2.2.1, 2.4.1

### 2.1 Overview of issues raised

Of the twenty-three submissions received, twenty-two submissions were from the community and one submission from a government organisation.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Transport for NSW response to these issues forms the basis of this chapter.

Of the twenty-three submissions received, four submissions objected to the proposal, one submission supported the proposal and the remaining eighteen did not offer a position on the proposal.

The one submission from a government organisation supported the objectives of the proposal but raised concerns of stopping ferry operations during construction, which would negatively affect the organisation and its stakeholders.

The issues raised in the submissions from the community can be categorised into eight main areas:

- The closure of the ferry operations to the Woolwich Peninsula during the construction of Woolwich Wharf Interchange Upgrade. The overwhelming feedback was that the ferry service is an integral part of the transport modes for the community living in the peninsula. The community have suggested a number of alternative wharves to be used as a temporary wharf during construction;
- The inadequacy of the proposed alternate bus services during construction of Woolwich Wharf Interchange Upgrade. The community expressed concerns that infrequency of the 538 bus service and the limited operating hours of the 505 bus service would cause major inconvenience for commuters in comparison to the what is currently provided by the ferry service;
- The need for the upgrade. These submissions noted the current wharf is safe, comfortable and fit for purpose and considered the proposal to be unnecessary.
- The timing of the construction;
- The duration of the construction;
- The design of the wharf. A few submissions touched upon the lack of adequate weather protection as well as the unsympathetic design of the wharf to the heritage look and feel of its surrounds;
- The necessity for a bus connection between Woolwich Wharf and North Ryde Station; and
- Consultation with Council.

## 2.2 Transportation during Construction

### 2.2.1 The Closure of the Ferry Service during Construction

#### ***Submissions numbers***

1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23

#### ***Issue description***

The overwhelming majority of submissions raised concerns that the ferry service would be closed during construction. The ferry service is considered by the community to be an integral part of the transport modes provided in the peninsula. The community commented on the inadequacy of the proposed alternative transport during construction as a major concern. The alternative transport suggested during the closure of the wharf included the use of the 505 and 538 bus services. Submissions received commented that the alternative bus service was inadequate and suggested a temporary ferry wharf should be provided to maintain ferry services during construction, similar to that provided during the construction of Cockatoo Island Wharf and Balmain Wharf. A number of alternative wharves were suggested including the Clarkes Point Wharf at the end of Clarke Road, Woolwich Marina at the end of Margaret Street, Pulpit Point Marina at Le Vesinet Drive and Hunter's Hill Wharf at the end of Alexandra Street.

## **Response**

The project team has considered the community's feedback and proposes to continue ferry services to Woolwich Peninsula during the construction of Woolwich Wharf Interchange Upgrade. Clarkes Point Wharf at the end of Clarke's Road is proposed as a temporary wharf for the continual operation of ferry services to Woolwich. A temporary bus service will also be investigated to connect between Hunter's Hill and the temporary wharf at Clarkes Point.

## 2.2.2 The Proposed Alternate Bus Services during Construction

### **Submission number(s)**

2, 3, 6, 11, 15, 17, 19, 20

### **Issue description**

A number of submissions received raised concerns about the proposed alternative bus routes during construction. During weekday peak periods, the 505 bus service would operate between Woolwich Wharf and City Town Hall in the peak direction only. At other times, customers could catch the 538 bus service from Woolwich to Gladesville and either change at Hunter's Hill or Gladesville for a connecting bus service, depending on the time of day. The 538 bus service would have extended hours during construction to match ferry timetables.

The community expressed concerns that the infrequency of the 538 bus service and the limited operating hours of the 505 bus service would cause major inconvenience for commuters. It was deemed that the alternative transport did not provide an adequate replacement for the current ferry service. This would cause inconvenience to school children who use the ferry to commute to and from school; office workers who start early or finish late; visitors who travel outside of peak hours; the elderly and people who rely on the ferry services for easy, reliable and effective transport to the CBD, without the need to use the congested Victoria Road.

## **Response**

The project team has considered the community's feedback and proposed to continue ferry services to Woolwich Peninsula during the construction of Woolwich Wharf Interchange Upgrade. Transport for NSW proposes the Clarkes Point Wharf at the end of Clarke Road as a temporary wharf for the continual operation of ferry services to Woolwich. A few submissions also requested for the existing 538 service to be rerouted to connect to the temporary wharf if ferry services remain operational during construction. The project team is investigating the option of providing a temporary bus service from Hunters Hill to the Clarkes Point to connect with the temporary ferry service. This would include the provision of a temporary bus stop in the car park at Clarke Road.

## 2.3 The Need for the Wharf Upgrade

### **Submission number(s)**

1, 4, 10, 18

### **Issue description**

A few submissions raised concerns regarding the need for the upgrade. These submissions deemed that the wharf in its current state to be safe, comfortable and fit for purpose. One submission considered the proposal not a good use of government funds with the view that it would be better used elsewhere.

## **Response**

The necessity of the Woolwich Wharf Upgrade is outlined in Section 2.1 of the REF.

The Disability Standards for Accessible Public Transport 2002 (DSAPT) and Disability (Access to Premises – Buildings) Standards (2010) (Disability Standards 2010) made under the *Disability Discrimination Act 1992* (DDA), require all public transport infrastructure, including wharves, to be fully compliant by 2022.

At present, a number of elements of the existing wharf interchange including the gangway, disabled parking spaces, bus stop and heritage waiting shed are currently non-compliant. The Proposal is required to satisfy accessible transport requirements.

## 2.4 The Timing and the Duration of Construction

### 2.4.1 The Timing of the Construction

#### **Submission number(s)**

8, 23

#### **Issue description**

A few submissions inquired about the timing of the construction. One government organisation's submission also noted that the timing of the construction and ferry closure, would impact the organisation and its stakeholders. The submission requested that the project team consider the timing of the construction to minimize the impact to the organisation and its stakeholders.

#### **Response**

The timing of the start of construction shall be within the first quarter of 2020 for a duration of about five months. The project team has considered the government organisation's feedback and proposes to provide temporary ferry services on the peninsula during the construction of Woolwich Wharf Interchange Upgrade to minimize the impact on the community. Transport for NSW proposes the Clarkes Point Wharf at the end of Clarke Road as a temporary wharf for the continual operation of ferry services to Woolwich.

### 2.4.2 The Duration of Construction

#### **Submission number(s)**

1, 4, 10, 20, 21

#### **Issue description**

A number of submissions considered the five month construction period to be unnecessarily long duration. A few submissions also raised doubt that the ferry wharf upgrade would take five months to construct considering that the pontoon is being built off site. Suggestions were received to carry out the required works in stages. This would allow for the wharf to be closed for a shorter period of time, minimizing the disruption to the ferry services to Woolwich Peninsula.

## ***Response***

Transport for NSW has delivered over twenty wharves across Sydney Harbour and along the Parramatta River as part of the Transport Access Program. The typical construction duration for these wharf upgrades ranges from five to six months depending on the complexity on the project. The proposal for Woolwich Wharf Interchange Upgrade not only includes waterside demolition and activities, but also requires the raising of the existing seawall landside to flatten out the grade of the cul-de-sac to achieve compliance for the accessible parking spaces. The need to raise the seawall eliminates any option of staging the works. The proposed temporary wharf will minimize the disruption of the closure period.

## **2.5 Design**

### ***Submission number(s)***

3, 4, 18

### ***Issue description***

Three submissions from the community raised issues regarding the design of the wharf. The issues raised can be summarised as follows:

1. The artist impressions does not appear to offer adequate weather projection from wind-driven rain from the South-East which is common;
2. The current wharf is in in line with the heritage of Hunter's Hill while the proposal is not;
3. The inclusion of a coffee shop in the heritage waiting shed;

A number of design issues were also raised in conversation during the Community Information Session. These can be summarised as follows:

4. The inclusion of motorbike parking spaces;
5. Increase the amount of car park spaces;
6. The inclusion of bookshelves to encourage the beginning of a public library;
7. Flooding issue prevalent in the turning circle which may be due to a leak.

## ***Response***

The project team has taken into consideration the design issues raised by the community and provides the following response:

1. One of the objectives of the Transport Access Program is to improve customer amenity such as protection from the wind, rain and sun. The design of the pontoon includes clear glass panels on the eastern and western ends of the pontoon to provide weather protection from wind-driven rain. The clear glass panels are shown on the artist impression. The heritage waiting shed also provides weather protection.
2. The wharf design of the Ferry Wharf Upgrade Program has been designed to create a distinctive theme for Sydney Harbour. The design aims to unify and identify the harbour wharves and ferry commuter transport system. A Landscape Character and Visual Impact Assessment (LCVIA) was undertaken as part of the REF. The purpose of the LCVIA is to assess the visual impact of the proposal and to seek to minimize landscape character and visual impacts. The summary of the LCVIA can be found in Section 6.5 of the REF.
3. The inclusion of a coffee shop was not considered as part of the scope of works covered under the Ferry Wharf Upgrade Program. In designing the new wharf, a number of considerations were taken into account including accessibility, the environment, customer safety and amenity, future demand and ferry operations. The heritage waiting shed should first and foremost provide amenity of a rest

area for commuters waiting for the bus. This feedback for a coffee shop will be passed onto Council for their consideration.

4. The scope of works is limited to providing accessible parking and kiss and ride drop off. The provision of motor bike parking spaces on Valentia Street is a matter for Hunters Hill Council. The suggestion will be passed onto Council for consideration.
5. The scope of works is limited to providing accessible parking and kiss and ride drop off points. The provision of parking spaces on Valentia Street is a matter for Hunters Hill Council. The suggestion will be passed onto Council for consideration.
6. The inclusion of bookshelves is not a part of the scope of works and is a matter for Council. The suggestion will be passed onto Council for consideration.
7. The feedback of flooding issues will be passed onto Council for their action.

## 2.6 Additional Transportation Required in General

### ***Submission number(s)***

12

### ***Issue description***

One submission suggested the need for additional transport connectivity between Woolwich Wharf and North Ryde Station via an additional bus service. The submission discussed the benefits for the Woolwich community including greater connectivity to areas such as Castle Hill, Cherrybrook, Norwest business hub, Bella Vista business hub, Gladesville, Boronia Park and East Ryde. The submission believes that the additional bus service would be in line with the Older Person Transport and Mobility Plan 2018 – 2022 proposed by Transport for NSW.

### ***Response***

The provision of additional bus services is an operational bus matter and outside the mandate for the Ferry Wharf Upgrade Program. The submission will be passed onto Transport for NSW (buses) for consideration as part of their Older Person Transport and Mobility Plan 2018 – 2022.

## 2.7 Consultation with Council

### ***Submission number(s)***

18

### ***Issue description***

One submission noted the heritage status of the bus waiting shed and that the toilets were made DDA compliant a few years ago. The submission questioned if Council were on board with the refurbishment of the heritage item and if Transport for NSW have consulted with Council on the proposal (as the major appear to be unaware of the upgrade).

### ***Response***

The project team is aware of the heritage status of the bus waiting shed and the previous work undertaken by Council. The accessibility toilet requires further work to achieve full compliance as does the heritage waiting shed to improve circulation space and a level ramp into the building. The project team has

confirmed that the Hunter's Hill Council has been consulted about the proposal and has provided input through the design development process.

## 3. Changes to the proposal

### 3.1 The Continuation of Ferry Service during Construction

The overwhelming response from the community and from government agencies is the requirement to retain a ferry service on Woolwich Peninsula during the five month construction period. A temporary ferry wharf will be provided. A number of locations along the peninsula have been considered including Clarkes Point Wharf (at the end of Clarke Road), Woolwich Marina, Pulpit Point Marina and Hunter's Hill Wharf.

The project team have consulted with a number of key stakeholders and deem Clarkes Point Wharf to be most suitable location for a temporary ferry wharf. This is based on:

- The close proximity of Clarkes Point Wharf to the existing Woolwich Wharf, minimising impact to ferry operation and timetable;
- The pontoon has been deemed to be of a suitable size for temporary ferry berthing and operations;
- The pontoon can be reasonably upgraded for temporary ferry berthing;
- The feasibility of bus services to operate a service at the car park.



Figure 2 Overview of temporary wharf at Clarkes Point

The Clarkes Point Wharf will require some remediation works to make the temporary wharf safe for customers and Transdev Sydney Ferries to use. The remediation works are likely to include:

- Installation of new fender piles and mooring cleats;
- Removal of bollards;
- Partial installation of floor covering on the pontoon and ramp for safe embarking and disembarking;
- Installation of additional life buoy;

- Construction of a temporary footpath from the car park to the wharf;
- Installation of temporary lighting on the pontoon, gangway and footpath

The temporary works will be completed prior to the closure of Woolwich Wharf to keep the ferry services open during construction.

Environmental impacts and safeguards will be considered as part of the temporary works at Clarkes Point scope development process.

## 4. Environmental management

The REF for the Woolwich Wharf Interchange Upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7 of the review of environmental factors).

After consideration of the issues raised in the public submissions and changes to the proposal, the safeguard and management measures have been revised.

Additional mitigation measures have been included as follows:

- The provision of ferry operations during construction to the temporary ferry wharf;
- ***Undertake environmental investigations as necessary (including arborist report) for the temporary works. Implement all mitigation measures or safeguards as identified by the investigations.***; and
- Investigation of the option to provide an alternative bus service from Hunters Hill to Clarkes Point carpark to connect to the temporary ferry wharf.

Should the proposal proceed, environmental management will be guided by the framework and measures outlined below.

### 4.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, Greater Sydney Project Officer, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the QA Specification G36 – Environmental Protection (Management System), QA Specification G38 – Soil and Water Management (Soil and Water Plan), and QA Specification G10 – Traffic Management.

### 4.2 Summary of safeguards and management measures

The REF for the Woolwich Wharf Interchange Upgrade identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Chapter 7 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been made bold and italicised.

Table 4-1: Summary of environmental safeguards and management measures

No	Impact	Environmental safeguards	Responsibility	Timing
1	Soil and water	<p>A Soil and Water Management Plan (SWMP) would be prepared and implemented as part of the CEMP. The SWMP would identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks would be addressed during construction.</p> <p>Erosion and sediment control measures are to be implemented and maintained (in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)) to:</p> <ul style="list-style-type: none"> <li>• Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets</li> <li>• Reduce water velocity and capture sediment on site</li> <li>• Minimise the amount of material transported from site to surrounding pavement surfaces</li> <li>• Divert clean water around the site.</li> </ul>	Contractor	Detailed design/ pre-construction
2	Flooding	<p>In case of flood events, the SWMP would include measures to address potential flood threats and evacuation requirements. The measures would include:</p> <ul style="list-style-type: none"> <li>• Regular consultation of the Bureau of Meteorology website for weather forecasts and flood warnings</li> <li>• Scheduling of activities on land (including compound site) and water subject to flooding to avoid high flow periods</li> <li>• A process for removing equipment and materials off site and out of flood risk areas quickly</li> <li>• Storing and use of fuels and chemicals away from the flood zone, in bunded areas.</li> </ul>	Contractor	Construction
3	Acid sulphate soils	<ul style="list-style-type: none"> <li>• An Acid Sulphate Soil Management Plan (ASSMP) would be prepared as part of the Contaminated Land Management Plan to address the potential for acidity to be generated from ASS and PASS disturbed during the construction phase. Potential or actual acid sulphate soils are to be managed in accordance with the Roads and Maritime Services Guidelines for the Management of Acid Sulphate Materials 2005.</li> </ul>	Contractor	Detailed design/ pre-construction

No	Impact	Environmental safeguards	Responsibility	Timing
4	Acid sulphate soils	<ul style="list-style-type: none"> <li>The disturbance of sediment and/or the underlying soils should be kept to a minimum to lower the risk of exposing these sediments to oxygen. If ASS are to be exposed to oxidation or spoil is to be generated during construction activities requiring disposal, further assessment for ASS and waste classification should be undertaken.</li> </ul>	Contractor	Detailed design / Pre-construction
5	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.	Contractor	Detailed design / Pre-construction
6	Erosion and sedimentation	<p>Prior to commencement of construction activities, sediment control device (such as sediment boom and curtain) should be installed around the work area to contain disturbed sediment from water surface by allowing suspended sediments to settle back on the bottom of the seabed overtime. The silt boom and curtain would extend from a minimum of 100 millimetres above the water line to a minimum of 2.5 metres below the water line before starting work. Installation should be undertaken during high tide periods from a boat. The device should be designed to rise and fall with the tide to prevent disturbance. Inspection of the device should be undertaken on a daily basis after ebbing tides, with additional inspection be carried following storm events. Monitoring of turbidity inside and outside of the device should also be performed, using a portable turbidity meter/logger. As with installation, decommissioning should be carried out by boat during high tide periods.</p> <p>Sediment control device will not be required once construction activities are above seabed level. Prior to removing the device, conditions within the curtain will be assessed visually and field instrument to verify that sediment has settled resulting in similar water turbidity to that outside the curtain.</p>	Contractor	Detailed design / Pre-construction
7	Waste	Should spoil be generated during construction activities, further sampling and analysis should be undertaken to confirm the waste classification prior to disposal.	Contractor	Detailed design/ pre-construction

No	Impact	Environmental safeguards	Responsibility	Timing
8	Soil and water	<p>A detailed environmental work method statement (EWMS) will be prepared and implemented for the following high-risk activities:</p> <ul style="list-style-type: none"> <li>• Modification of the seawall</li> </ul> <p>The content of the EWMS would include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Description of the works/activities including machinery to be used</li> <li>• Outline of the sequence of the work/activities, including interfaces with other construction activities</li> <li>• Identification of potential environmental risks/impacts due to the works/activities and associated with wet weather events</li> <li>• Evaluation of methods to eliminate/reduce the environmental risk</li> <li>• Mitigation measures to reduce environmental risk</li> <li>• Any safeguards resulting from consultation with public authorities and other stakeholders, when appropriate</li> <li>• A map indicating the locations of sensitive locations (such as threatened species or heritage items), likely potential environmental impacts, and work area</li> <li>• Identification of work area and exclusion areas</li> </ul> <p>A process for progressive review, eg monitoring processes and methods to eliminate/reduce environmental risks/impacts.</p>	Contractor	Detailed design/ pre-construction
9	Erosion and sedimentation	<p>Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient silt curtains or erosion and sediment controls.</p> <p>Results of the observations of the integrity of the silt curtain are required to be recorded and maintained specifically for the purpose. Records are required to be kept on the site and to be made available for inspection by persons authorised by Roads and Maritime.</p>	Contractor	Detailed design/ pre-construction
10	Erosion and scour	<p>The number of jack-ups/anchor points would be minimised where possible. The locations would be selected to avoid areas of sensitive habitat, as discussed further in section 6.1.4.</p>	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
11	Erosion and scour	Work positioning barges, drilling and pile driving should occur during calm conditions to prevent excessive scouring and other impacts.	Contractor	Construction
12	Soil and water	In consultation with DPI Fisheries, appropriate erosion and sediment control measures are to be used during construction to minimise turbidity impacts in the waterway	Contractor	Construction
13	Water quality	A spill management plan would be developed and communicated to all staff working on site. Any aquatic spill (whether spill occurs on water on land and subsequently enters the water) is to be immediately reported to Roads and Maritime and Sydney Ports VTS and VHF Channel 13.	Contractor	Construction
14	Water quality	All machinery and equipment would be maintained in good working order and regularly visually inspected for leaks.	Contractor	Construction
15	Water quality	Any chemicals or fuels stored at the site or equipment barges would be stored in a bunded area to prevent chemical leaks or spills entering the water.	Contractor	Construction
16	Accidental spill	A land based and aquatic emergency spill kit is to be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.	Contractor	Construction
17	Accidental spill	If an incident (e.g. spill) occurs, the Roads and Maritime Services Environmental Incident Classification and Reporting Procedure is to be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.	Contractor	Construction
18	Accidental spill	Emergency contacts will be kept in an easily accessible location on vehicles, vessels, plant and site office. All workers will be advised of these contact details and procedures.	Contractor	Construction
19	Accidental spill	Spill kits for construction barges must be specific for working within the marine environment and be stored and maintained on the barge	Contractor	Construction
20	Accidental spill	All workers will be advised of the location of the spill kit and trained in its use.	Contractor	Construction
21	Accidental spill	Vehicles, vessels and plant must be properly maintained and regularly inspected for fluid leaks.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
22	Accidental spill	No vehicle or vessel wash-down or re-fuelling would occur on-site.	Contractor	Construction
23	Accidental spill	In the event of a maritime spill, the incident emergency plan would be implemented in accordance with Sydney Ports Corporation's response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2012).	Contractor	Construction
24	Accidental spill	Refuelling of plant and equipment and storage of hazardous materials on land and on barges is to occur within a double-bunded area.	Contractor	Construction
25	Aquatic biodiversity	<p>A Marine Ecology Management Plan would be prepared as part of the CEMP. This would include, but not be limited to, measures relating to the following activities to minimise the risk for pollution:</p> <ul style="list-style-type: none"> <li>• Sediment and rock debris control</li> <li>• Oil/fuel/chemical storage and spill management</li> <li>• Machinery and engine maintenance schedule to reduce oil/fuel leakage</li> <li>• Low impact barge positioning to prevent propeller scouring and thrust wash onto sensitive habitats, such as the mangroves</li> <li>• Minimise footprint and establish no-go zones in sensitive habitats (eg key fish habitat)</li> <li>• Accidental waste/material overboard response (eg construction materials dropped into the harbour)</li> <li>• Biological hygiene (eg prevent spread of noxious species on and off the site)</li> </ul> <p>Aquatic fauna management.</p>	Contractor	Pre-construction
26		No-go zones would be established to avoid damage to all terrestrial and nearby aquatic habitats. No-go zones should be marked on a map and displayed inside the construction barge and office. All staff responsible for manoeuvring the barge should check the map before selecting a new position.	Contractor	Pre-construction
27		No anchors or mooring blocks/lines should be placed on the Type 2 KFH. All lines should be suspended off the seafloor to minimise drag across areas of habitat.	Contractor	Pre-construction

No	Impact	Environmental safeguards	Responsibility	Timing
28		A floating boom with silt curtain would be installed to contain sediment plumes during drilling and pile hammering and placement of the rock apron. The silt curtain should encompass the aquatic construction zone fully, rather than being anchored to the shore and regularly inspected for entrainment and impingement of aquatic/marine wildlife.	Contractor	Construction
29		Work positioning barges, drilling and pile driving should occur during calm conditions.	Contractor	Construction
30		Gentle start-up hammering is to be implemented to allow undetected aquatic fauna to leave the area and avoid hearing damage. Work should be stopped if large fauna is observed nearby.	Contractor	Construction
31	<b>Biodiversity and Non Aboriginal Heritage</b>	<b><i>Undertake environmental investigations as necessary (including arborist report) for the temporary works. Implement all mitigation measures or safeguards as identified by the investigations.</i></b>	<b>TfNSW</b>	<b><i>Pre-construction/Construction</i></b>
32	Unexpected bats find	If in the case bats are discovered on site during pre-construction survey, the CEMP will detail unexpected bat find mitigation measures. Protocol procedures are from from the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) must be followed.  This includes a stop work procedure if a threatened microbat species is found, and may include the requirement for a Microbat Management Plan.	Contractor	Pre-construction
33	Pest species	Measures should be identified as part of the Marine Ecology Management Plan to minimise the potential to introduce <i>Caulerpa taxifolia</i> to the area.  This should include measures to minimise contamination. . For example, a drill head or anchor used at another site with <i>Caulerpa</i> should be thoroughly cleaned of plant propagules and sediment before being used at another location. Fragments of <i>Caulerpa</i> can remain viable for up to three days out of the water. Best hygiene practices are outlined in the NSW Control Plan for the Noxious Marine Alga <i>Caulerpa taxifolia</i> (NSW I&I 2009).	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
34	Airborne noise Ground-borne noise & vibration	Limiting number of plant, use of alternative equipment and /or using a different, quieter method to carry out the work. For this Proposal: Where feasible, limit the amount of plant equipment operating at any one time. For particularly noisy plant items (e.g. jackhammer), the use of such plant should be minimised where feasible.	Contractor	Construction
35	Airborne noise	Where feasible and reasonable, any site hording or fences erected should be constructed with thick plywood or fitted with temporary acoustic barriers to provide additional noise reduction at the immediate receivers.	Contractor	Construction
36	Airborne noise	Considered implementation of temporary barriers around the stationary sources or use of alternative quieter equipment. Where temporary noise barriers are used to block line of sight between stationary works and equipment (paving, jackhammering, compressor and generator) and the receivers, a reduction of around 5 dB to 10 dB could be expected.	Contractor	Construction
37	Airborne noise Ground-borne vibration	Potential noise impacts have been minimised through the design of the proposal which involves undertaking as much construction work as possible at a contractor's off-site facility rather than at site, including assemblage of pre-fabricated components.	Contractor	Construction
38	Vibration on Heritage building	To minimise vibration impacts related to the heritage building, the following management measures are relevant: Dilapidation survey undertaken at heritage structure and Valentia Street waiting shed Vibration assessment criterion based on peak component particle velocity (PPV) (German Standard DIN 4150-3: 1999 Structural Vibration – Part 3 Assessed at a conservative superficial cosmetic damage criterion of 3mm/s peak component particle velocity (based on DIN 4150) may be applicable.	Contractor	Pre-construction
39	Airborne noise Ground-borne noise and vibration	Notifications will be distributed detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 5 days prior to the start of works.	TfNSW/Contractor	Pre-construction/Construction

No	Impact	Environmental safeguards	Responsibility	Timing
40	Airborne noise Ground-borne noise & vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: <ul style="list-style-type: none"> <li>• all project specific and relevant standard noise and vibration mitigation measures</li> <li>• relevant licence and approval conditions</li> <li>• permissible hours of work</li> <li>• any limitations on high noise generating activities</li> <li>• location of nearest sensitive receivers</li> <li>• construction employee parking areas</li> <li>• designated loading/unloading areas and procedures</li> <li>• site opening/closing times (including deliveries)</li> <li>• environmental incident procedures.</li> </ul>	TfNSW	Pre-construction
41	Airborne noise	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.		
42	Airborne noise Ground-borne noise & vibration	Where specified a noise verification program is to be carried out for the duration of the works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions.	Contractor	Construction
43	Ground-borne vibration	Where required attended vibration measurements should be undertaken at the commencement of vibration generating activities to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.	Contractor	Construction
44	Airborne noise Ground-borne noise & vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
45	Airborne noise Ground-borne noise & vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles will minimise noise and vibration impacts. Similarly, diaphragm wall construction techniques, in lieu of sheet piling, will have significant noise and vibration benefits. Ensure plant including the silencer is well maintained.	Contractor	Construction
46	Airborne-noise	Where possible, the noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels compliant with the criteria in Table 4.2 of Appendix E. Implement a noise monitoring audit program to ensure equipment remains within the more stringent of the manufacturers specifications or Table 4.2 of Appendix E.	Contractor	Construction
47	Airborne-noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in Table 4.2 of Appendix E.	Contractor	Construction
48	Airborne-noise	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers. Only have necessary equipment on site.	Contractor	Construction
49	Airborne noise Ground-borne vibration	Where possible, locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work cannot be undertaken during the day, it should be completed before 11:00pm. .If programmed night work is postponed the work should be re-programmed and the approaches in this guideline apply again.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
50	Airborne noise Ground-borne vibration	Use only the necessary size and power	Contractor	Construction
51	Airborne noise	Where possible, non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.	Contractor	Construction
52	Airborne noise	Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers. Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible. Avoid or minimise these out of hours movements where possible.	Contractor	Construction
53	Construction vehicles	Limit the use of engine compression brakes at night and in residential areas. Where possible, ensure vehicles are fitted with a maintained Original Equipment Manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's 'In-service test procedure' and standard.	Contractor	Construction
54	Airborne noise	Stationary noise sources should be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of AS 2436:2010 lists materials suitable for shielding.	Contractor	Construction
55	Airborne noise	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when situating plant.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
56	Landscape and visual impact	<p>Urban design principles would be integrated throughout the detailed design and construction of the proposal. The urban design principles would:</p> <ul style="list-style-type: none"> <li>• Provide a unified and consistent design both with the proposed structure and existing built elements along the foreshore.</li> <li>• Maintain views through the proposed structure.</li> </ul> <p>Ensure that the iconic elements of Mort's Dock, Cockatoo Island and Greenwich Point maintain their character zones and are not adversely affected by the replacement wharf.</p>	TfNSW	Detailed design and pre-construction
57		The size of the proposed wharf in catering to the future commuter demand and user amenity maintains the scale of the wharf along the waterfront. Proposed elements have been designed to retain simple clear lines that do not diminish its visual strength on views towards the foreshore.	TfNSW	Detailed design and pre-construction
58		Material selection, location of services, and a standardised family of elements form the key design strategies for mitigating the impact of the proposed wharf. Attention has been made to upgrade access ramps and path connections on land and ramps and walkways within the proposed wharf to meet access standards. The proposed wharf has been designed for amenity through covered walkways and protection screens to minimise impacts of weather on ferry users.	TfNSW	Detailed design and pre-construction
59		Colour plays an important role in mitigating the impact on views and landscape character. Selection of materials and paint colour respond to the surrounding palette, are low in reflectivity, and complement the surrounding urban fabric through neutral tones. Overall the proposed wharf would promote a unified palette of materials which, while responding to the maritime heritage and surrounding character, also separates the structure as a piece of architectural design.	TfNSW	Detailed design and pre-construction
60		<p>Mitigation strategies employed through detailed design:</p> <p>Minimise impact on the foreshore through a single point of entry.</p> <p>Reduction of fixed solid elements on the pontoon to maintain views through the structure.</p> <p>Proposed gangway to remain unroofed to allow clear views to the harbour.</p> <p>Pontoon will sit at water level.</p>	TfNSW	Detailed design and pre-construction

No	Impact	Environmental safeguards	Responsibility	Timing
61	General socio-economic impacts	<p>A Communication Plan (CP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to stakeholders during construction. The CP would include (as a minimum):</p> <ul style="list-style-type: none"> <li>• Mechanisms to provide details and timing of proposed activities to affected residents and local businesses, including changed traffic and access conditions.</li> <li>• Contact name and number for complaints.</li> </ul> <p>The CP would be prepared in accordance with the <i>Community Involvement and Communications Resource Manual</i> (RTA, 2008).</p>	Contractor	Pre-construction
62	General socio-economic impacts	<p>An internet site and free-call number would be established for enquiries regarding the proposal for the entirety of construction. Contact details would be clearly displayed at the entrance to the site. All enquiries and complaints would be tracked through a tracking system, and acknowledged within 24 hours of being received.</p>	TfNSW	Pre-construction
63	Social impacts	The construction area would be secured at all times.	Contractor	Construction
64	Crime risk	It is recommended that materials and fixtures do not create opportunities for vandalism (by colour and long wearing paint).	TfNSW	Detailed design and pre-construction
65		Closed Circuit Television (CCTV) should be used to deter anti-social behaviour.	TfNSW	Detailed design and pre-construction
66		Installation of Light Emitting Diode (LED) lighting is recommended at the bus shelter and toilets. The proposed footpath canopy should also be appropriately lit.	TfNSW	Detailed design and pre-construction
67	Land and water transport	Where possible, transport of equipment and materials to site via boat and barge would be utilised over land transport to limit impacts to the local road network.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
68	Water transport	<p>A Maritime Traffic Management Plan would be prepared and implemented during the water based construction work. The Maritime Traffic Management Plan would be prepared consultation with NSW Maritime and approved by the Harbourmaster.</p> <p>In addition, the proposal would:</p> <ul style="list-style-type: none"> <li>• Fit all buoys with lights</li> <li>• Prepare Response Plans for emergencies and spills for all construction vessels</li> <li>• Fit at least one vessel with an Automatic Identification System (AIS)</li> <li>• Retrieve any material associated with the construction of the development that enters the water to prevent the obstruction of vessel movements</li> <li>• Prepare a Communications Plan for implementation during the work which must include 24/7 contact details, protocols for enquiries, complaints and emergencies.</li> </ul> <p>Any variation to the above would be agreed in advance with the Harbourmaster.</p>	Contractor	Pre-construction / construction
69	<b>Water transport</b>	<b><i>Alternate forms of transportation will be provided for passengers for the duration of the construction. Passengers would be notified of the alternative transport ahead of construction.</i></b>	<b><i>TfNSW</i></b>	<b><i>Pre-construction / construction</i></b>
70	<b>Land Transport</b>	<b><i>Alternate forms of bus transportation will be investigated to connect with alternate water transport for passengers for the duration of the construction. Passengers would be notified of the alternative bus transport if feasible.</i></b>	<b><i>TfNSW</i></b>	<b><i>Pre-construction / construction</i></b>
71	Construction access and parking	Final access and parking arrangements would be included a Traffic Management Plan. The Traffic Management Plan would also include measures to ensure light vehicle parking is strictly in accordance with Hunters Hill Council requirements and prevents parking on footpaths and grassed areas adjacent the site.	Construction	Pre-construction / construction
72	Non-Aboriginal heritage	The “Valentia Street Wharf” sign would be temporarily removed during proposed regrading works to the cul-de-sac and footpath. It is understood that it would be reinstated in the same location once the works are complete.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
73	Non-Aboriginal heritage	In the event that Aboriginal or historical archaeological resources are encountered, the Roads and Maritime's Standard Management Procedure: Unexpected Heritage Items (2015) <sup>20</sup> is to be strictly adhered to.	Contractor	Construction
74	Non-Aboriginal heritage	Interpretation in the form of signage to indicate the location and historical context of the existing Woolwich Wharf and historical Valentia Street Wharf would improve the heritage outcome of the proposed new works.	TfNSW	Construction
75	Aboriginal heritage	Should the scope of the proposed work change, further consultation with Roads and Maritime's Aboriginal Cultural Heritage Officer and regional environmental staff should be undertaken to reassess any potential impacts on Aboriginal cultural heritage.	Contractor	Pre-Construction
76	Unexpected heritage finds	The Standard Management Procedure – Unexpected Heritage Items (Roads and Maritime, 2015) would be followed in the event that (an) unknown or potential Aboriginal object(s), including skeletal remains, is/are found during construction. This applies where Roads and Maritime does not have approval to disturb the object(s) or where a specific safeguard for managing the disturbance (apart from the procedure) is not in place. Work would only restart once the requirements of that procedure have been satisfied.	Contractor	Construction
77	Waste	Waste management, littering and general tidiness would be monitored during routine site inspections.	Contractor	Construction
78	Waste	Appropriate measures to avoid and minimise waste associated with the Proposal should be investigated and implemented where possible	Contractor	Construction
79	Waste	Waste would be classified before being disposed to an appropriately licenced facility in accordance with Waste Classification Guidelines: Part 1 Classifying Waste (EPA 2014). Where necessary, this would include sampling and analysis.	Contractor	Construction
80	Resource minimisation	Recycled, durable, and low embodied energy products would be considered to reduce primary resource demand in instances where the materials are cost and performance competitive and comparable in environmental performance (eg where quality control specifications allow).	Contractor	Detailed design
81	Hazards and risks	Appropriate emergency equipment such as flotation devices and first aid kits would be kept within the construction area.	Contractor	Construction

No	Impact	Environmental safeguards	Responsibility	Timing
82	Hazards and risks	All utilities within and adjacent to the proposal footprint would be located prior to the start of the works.	Contractor	Construction
83	Hazards and risks	Safe work method statements or similar would be implemented to manage health and safety risks for the works.	Contractor	Construction
84	Hazard and risks	Weather forecasts and flood warnings would be monitored during construction. In the event of a major flood event, equipment and materials would be temporarily removed from the site, where possible.	Contractor	Construction
85	Air quality	Air quality during construction would be considered and addressed within the CEMP and would include methods to manage work during strong winds or other adverse weather conditions as required	Contractor	Construction
86	Cumulative construction impacts	Consultation would include notification prior to the start of the works Updates on any delays or changes to the construction period would also be communicated.	Roads and Maritime	Pre-construction / construction

## 4.3 Licensing and approvals

Table 4-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Approval from the Deputy Harbour Master	Approval from the Deputy Harbour Master for any work that disturb the seafloor.	Prior to the commencement of any works that disturb the seafloor.

## 5. References

Review of Environmental Factors, Woolwich Wharf Interchange Upgrade, October 2019.



[rms.nsw.gov.au/](https://rms.nsw.gov.au/)



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