



NSW National Parks and Wildlife Service

# Review of Environmental Factors

## Bare Island Bridge Repairs



**January 2026**

Cover photograph: Character of the existing vehicle and pedestrian bridge access to Bare Island.  
Image taken by Lesryk Environmental Pty Ltd during the course of conducting the field investigation.

Report produced at the request of:  
NSW National Parks and Wildlife Service

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#### Document control

| Version  | Date              | Author/ Modified by                                                                                                                | Approved by |
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#### Disclaimer

This document has been prepared in accordance with the brief provided by NSW National Parks and Wildlife Service ('the client'). This survey has relied upon information collected during the course of a field investigation, and as available in current known literature and data sources. All findings, conclusions or recommendations contained within this document are based upon the abovementioned circumstances. The study has been prepared for use by the client, and no responsibility for its use by other parties is accepted by Lesryk Environmental Pty Ltd.

Please note that, given the dynamic nature of the relevant pieces of environmental legislation considered in this report, the authors consider that this report only has a 'shelf life' of six months. If a development application, review of environmental factors or statement of environmental effect is not submitted to a determining authority for consideration within this time frame, it is recommended that this report be reviewed and revised where required in light of any relevant legislative listings or changes.

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## Acronyms & Abbreviations

| Abbreviation | Definition                                                                        |
|--------------|-----------------------------------------------------------------------------------|
| °C           | Degrees Celsius                                                                   |
| ACH          | Aboriginal Cultural Heritage                                                      |
| AHIMS        | Aboriginal Heritage Information Management System                                 |
| AHIP         | Aboriginal Heritage Impact Permit                                                 |
| AIS          | Assets of Intergenerational Significance                                          |
| AOBV         | Areas of Outstanding Biodiversity Value                                           |
| BC Act       | NSW <i>Biodiversity Conservation Act 2016</i>                                     |
| BCA          | Building Code of Australia                                                        |
| BDAR         | Biodiversity Development Assessment Report                                        |
| BoM          | Bureau of Meteorology                                                             |
| CAP          | Conservation Action Plan                                                          |
| CCAF         | Calculated Construction Activity Footprint                                        |
| CEMP         | Construction Environmental Management Plan                                        |
| Cth DCCEEW   | Commonwealth Department of Climate Change, Energy, the Environment and Water      |
| DDA          | Commonwealth <i>Disability Discrimination Act 1992</i>                            |
| DECCW        | Department of Environment, Climate Change and Water                               |
| DPIE         | Department of Planning, Industry and Environment                                  |
| DPIRD        | NSW Department of Primary Industries and Regional Development                     |
| EEC          | Endangered Ecological Community                                                   |
| EPA          | Environment Protection Authority                                                  |
| EP&A Act     | NSW <i>Environmental Planning and Assessment Act 1979</i>                         |
| EP&A Regs    | Environmental Planning and Assessment Regulation 2021                             |
| EPBC Act     | Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
| ESCP         | Erosion and Sediment Control Plan                                                 |
| FM Act       | NSW <i>Fisheries Management Act 1994</i>                                          |
| FRP          | Fibreglass Reinforced Polymer (used for walkway decking)                          |
| GDE          | Groundwater Dependent Ecosystems                                                  |
| ha           | Hectares                                                                          |
| HHIMS        | Historic Heritage Information Management System                                   |
| ILUA         | Indigenous land use agreement                                                     |
| KFH          | Key Fish Habitat                                                                  |
| KTP          | Key Threatening Process                                                           |
| LALC         | Local Aboriginal Land Council                                                     |
| LEP          | Local Environmental Plan                                                          |
| LGA          | Local Government Area                                                             |
| MNES         | Matters of National Environmental Significance                                    |
| mm/cm/m/km   | Millimetres, centimetres, metres, kilometres                                      |
| NCC          | National Construction Code                                                        |

|                  |                                                                         |
|------------------|-------------------------------------------------------------------------|
| <b>NNTT</b>      | National Native Title Tribunal                                          |
| <b>NPW Act</b>   | NSW <i>National Parks and Wildlife Act 1974</i>                         |
| <b>NPWS</b>      | NSW National Parks and Wildlife Service                                 |
| <b>NSW DCCEW</b> | NSW Department of Climate Change, Energy, the Environment and Water     |
| <b>NSW EPA</b>   | NSW Environmental Protection Authority                                  |
| <b>NT Act</b>    | Commonwealth <i>Native Title Act 1993</i>                               |
| <b>OEH</b>       | NSW Office of Environment and Heritage                                  |
| <b>PCT</b>       | Plant Community Type                                                    |
| <b>PMST</b>      | Protected Matters Search Tool                                           |
| <b>PoM</b>       | Sydney Harbour NP Plan of Management                                    |
| <b>REF</b>       | Review of Environmental Factors                                         |
| <b>RHSEPP</b>    | State Environmental Planning Policy (Resilience and Hazards) 2021       |
| <b>SCA</b>       | State Conservation Area                                                 |
| <b>SDMP</b>      | State Disaster Mitigation Plan                                          |
| <b>SEED</b>      | The Central Resource for Sharing and Enabling Environmental Data in NSW |
| <b>SEPP</b>      | State Environmental Planning Policy                                     |
| <b>SHR</b>       | State Heritage Register                                                 |
| <b>SIS</b>       | Species Impact Statement                                                |
| <b>SVTM</b>      | State Vegetation Type Map                                               |
| <b>TEC</b>       | Threatened Ecological Community                                         |
| <b>TISEPP</b>    | State Environmental Planning Policy (Transport and Infrastructure) 2021 |

## Glossary

| Abbreviation                                      | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Areas of outstanding biodiversity</b>          | <p>An area of outstanding biodiversity value is:</p> <ul style="list-style-type: none"> <li>○ an area important at a State, national or global scale, and</li> <li>○ an area that makes a significant contribution to the persistence of at least one of the following: <ul style="list-style-type: none"> <li>i. multiple species or at least one threatened species or ecological community</li> <li>ii. irreplaceable biological distinctiveness</li> <li>iii. ecological processes or ecological integrity</li> <li>iv. outstanding ecological value for education or scientific research.</li> </ul> </li> </ul> <p>The declaration of an area may relate, but is not limited, to protecting threatened species or ecological communities, connectivity, climate refuges and migratory species (BC Act 2016).</p> |
| <b>BioNet Atlas</b>                               | The DPIE database of flora and fauna records (formerly known as the NSW Wildlife Atlas). The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails listed under the BC Act) and some fish (DPIE 2020a).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Calculated Construction Activity Footprint</b> | Refers to the area which is calculated from the activity footprint plus the applied construction buffers. The CCAF is based on the worst-case scenario and the intent is to allow for micro-siting of the final activity footprint during construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Critical habitat</b>                           | An area of land that is crucial to the survival of a particular endangered species, population and/or ecological community.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Abbreviation                                  | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cumulative impact                             | The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Direct impact                                 | Are those impacts that usually occur at the same time as the work within the Proposal area or nearby and result in immediate impacts on the environment, including the living and non-living elements of the environment, and the local community.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Habitat                                       | An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Indirect impact                               | <p>The impacts that occur as a consequence of the project or the direct impacts of a project. They may be delayed and happen further away from the site of direct impact, or result from a combination of impacts (eg. soil erosion and water runoff from a construction site).</p> <p>Impacts that occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development. When applying each factor, both long-term and short-term impacts are to be considered (State of NSW and OEH 2018).</p>                                                                                                                                                                                                                                                                                                                                                                                                           |
| Local population (of a threatened species)    | <p>The population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions:</p> <p><i>The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.</i></p> <p><i>The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.</i></p> <p><i>The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time or return year to year (OEH 2018).</i></p> |
| Matter of national environmental significance | A matter of national environmental significance (MNES) is any of the nine defined components protected by a provision of Part 3 of the EPBC Act (Commonwealth).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Mitigation                                    | Action to reduce the severity of an impact.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Native vegetation                             | <p>Has the same meaning as in section 1.6 of the BC Act and section 60B of the LLS Act. In summary:</p> <ul style="list-style-type: none"> <li>a) trees (including any sapling or shrub or any scrub)</li> <li>b) understorey plants</li> <li>c) groundcover (being any type of herbaceous vegetation)</li> <li>d) plants occurring in a wetland.</li> </ul> <p>A plant is native to New South Wales if it was established in New South Wales before European settlement (BC Act).</p> <p>Native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). Marine vegetation is covered by the provisions of the FM Act.</p>                                                                                                                                                                                                                                                                                                                                                                                   |

| Abbreviation    | Definition                                                                                                                                                                                                                                                                                  |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Population      | A group of organisms, all of the same species, occupying a particular area.                                                                                                                                                                                                                 |
| Proposal        | Is considered to include 'all activities likely to be undertaken within the area surveyed that permit the proposed work as described in Section 1.1 and 6 of this REF'.                                                                                                                     |
| Ramsar wetlands | The Convention on Wetlands of International Importance                                                                                                                                                                                                                                      |
| Study Area      | Means the subject site and any additional areas which are likely to be affected by the Proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (State of NSW and OEH 2018).                                 |
| Study region    | Is specified as a 10 km polygon around the outer edge of the defined subject site.                                                                                                                                                                                                          |
| Subject site    | Means the area directly affected by the Proposal. The subject site includes the footprint of the development and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity (State of NSW and OEH 2018). |

# 1. Introduction

## 1.1 Brief description of the Proposal

|                             |                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Proposal</b>             | Bare Island Vehicular Bridge Repair.<br>Section 6 of this REF provides details of the Proposal.                               |
| <b>Location</b>             | Bare Island Fort, Botany Bay.                                                                                                 |
| <b>NPWS park or reserve</b> | Kamay Botany Bay National Park.                                                                                               |
| <b>NPWS Area</b>            | Sydney South                                                                                                                  |
| <b>Land vested in TfNSW</b> | Sea floor of Botany Bay – Lot 3 DP1165618                                                                                     |
| <b>Council</b>              | Unincorporated Area (Bare Island and bridge),<br>Randwick City Council (northern side of the bridge including road approach). |
| <b>NSW State electorate</b> | Maroubra                                                                                                                      |

This Review of Environmental Factors (REF) has been prepared by Lesryk Environmental Pty Ltd (Lesryk) on behalf of NSW National Parks and Wildlife Service (NPWS). The REF is prepared to assess works proposed to be undertaken on the existing Bare Island Vehicle (pedestrian) bridge. The bridge provides access to Bare Island Fort.

Bare Island Fort is a historic site located in Kamay Botany Bay National Park on the northern shore of Botany Bay (Figure 1).

The fort was constructed on a “small bare island” at the entrance to Botany Bay and is separated from the mainland by a narrow channel. The island is connected to the mainland by a timber trestle bridge that was originally constructed 130 years ago between 1886 and 1887. Since its construction it has undergone many repairs and maintenance actions, with the latest work being completed in 2006/07.

Bare Island Fort, including the timber access bridge is historically significant at a State level.

Due to rotting, splitting and termite damage, many of the bridge’s timber elements require replacement. In addition, water has consistently been flowing down the hill on to the bridge at its northern abutment, this accelerating the deterioration (rotting) of the existing timbers and creating a perfect environment for termites that are known to be active.

To inform the proposed repair works, the following specialist studies have been produced:

- An inspection of the timber elements of the bridge (Timber Inspection Pty. Ltd., October 2024) (Attachment 1).
- A Structural Assessment of Piles (Consult Marine, December 2024) (Attachment 2).
- A Structural Condition Assessment of the bridge (Northrop Consulting Engineers Pty. Ltd. (Northrop), February 2024) (Attachment 3).
- An Aboriginal Heritage Due Diligence Assessment (AMBS Heritage and Ecology, August 2025) (Attachment 4).
- A Heritage Impact Statement (Urbis 2025) (Attachment 5)



**Figure 1. Location of subject site**

- Bare Island Vehicle Bridge Refurbishment Maritime Archaeology Short Memo Report (Cosmos Archaeology 2025a) (Attachment 6)
- Bare Island Vehicle Bridge Refurbishment Historical Archaeology Addendum (Cosmos Archaeology 2025b) (Attachment 7).

The proposed works are for the renewal of all of the bridge's (deteriorated/damaged) structural timber elements as identified in the specialist timber condition and structural reports, including but not limited to:

- Plumb and Raker Piles (Thirty-six (36) of the existing fifty-two)
- Cross Bracing (fourteen (14) )
- Headstocks (thirteen (13) of the existing nineteen)
- Corbels (thirty-eight (38) of the existing fifty-seven)
- Girders (fifty-six (56) of the existing sixty-three)
- Decking (all)
- Kerbs (installing larger kerbs capable of stopping a vehicle).
- Handrailing (including a safety upgrade of stainless-steel mesh infill panels to provide protection from falls for users)
- A new roadside drain on the northern approach road to direct water runoff away from the bridge abutment.

The initial quantities have been identified for replacement, however, as some are hidden under the existing decking or other sections of the bridge, the total number of all structural timber elements to be replaced would not be known until the work commences.

The handrailing and kerbing is to be upgraded, designed with advice from both the project's heritage consultants and engineers to ensure sufficient transparency to not impede the views, structural integrity to withstand the forces of a vehicle collision, provide protection falls for users and visitors and the durability to last in the marine environment.

Section 6 of this REF provides a more comprehensive description of the proposed activity.

Thirty-five (35) of the existing fifty-two piles have been identified for replacement, however, as some are hidden under the existing decking or other sections of the bridge, the total number of all structural timber elements to be replaced would not be known until the work commences.

If the handrailing and kerbing is to be upgraded, it would be designed with advice from both the project's heritage consultants and engineers.

The study area, and extent of the proposed works, are shown on Figure 1. Photographs of the existing bridge, and the defects to be repaired, are provided in Appendix 1.

All of the proposed new work would be in accordance with the designs and specifications of the NPWS *Park Facilities Manual* (April 2016), and the Building Code of Australia (BCA) construction standards.

Unless a specific aspect of the proposed work is referred to, the Proposal will hereafter be referred to as 'the proposed works', 'proposed activity' or the 'Proposal'.

This REF is required to assess any environmental impact associated with the Proposal; with the proposed work to be assessed under, and this REF prepared to ensure compliance with, Part 5 of the EP&A Act and Clause 171 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regs).

## 1.2 Estimated development cost of proposal

An estimated total of \$4,400,000 based on a staged approach. Total funding is pending.

## 1.3 Estimated duration of proposal

The duration of the proposed work is estimated to commence in January 2026, with completion expected by January 2027.

## 2. Proponent's details

|                         |                                                           |
|-------------------------|-----------------------------------------------------------|
| Contact name            | Ben Khan                                                  |
| Position                | Area Manager, Sydney South                                |
| Street address          | Greycliffe House, 6 Steel Point Rd,<br>Vaucluse, NSW 2030 |
| Contact phone number    | [REDACTED]                                                |
| Email                   | [REDACTED]                                                |
| 2 <sup>nd</sup> Contact |                                                           |
| Contact name            | Seb Tant                                                  |
| Position                | Project Officer, Major Asset Renewal Team                 |
| Contact phone number    | [REDACTED]                                                |
| Email                   | [REDACTED]                                                |

## 3. Permissibility and assessment pathway

### 3.1 Permissibility under NSW legislation

The following section outlines how the activity is permissible under applicable NSW legislation.

#### 3.1.1 National Parks and Wildlife Act 1974

##### On land reserved or acquired under the National Parks and Wildlife Act 1974

The bridge, and land to the north and south of this structure that occur above the mean high water mark (MHWM), is within land reserved under this Act. Rock shelves below the MHWM, and on the bed of the bay, are vested in Transport for NSW (being a component of Lot 3 DP1165618).

The Proposal is consistent with s.2A Objects of the Act as described below.

(1) *The objects of this Act are as follows—*

- (a) *the conservation of nature, including, but not limited to, the conservation of—*
  - (i) *habitat, ecosystems and ecosystem processes, and*

- (ii) biological diversity at the community, species and genetic levels, and*
- (iii) landforms of significance, including geological features and processes, and*
- (iv) landscapes and natural features of significance including wilderness and wild rivers,*

The Proposal meets this object of the Act by undertaking an ecological assessment of the potential impacts of the likely works, minimising the footprint of the proposed activity, and designing the work to mitigate impacts on the existing terrestrial and marine environments.

All of the terrestrial study area is highly disturbed and no threatened plant species or endangered ecological communities would be adversely affected by the proposed works.

The marine biodiversity survey did not identify any threatened species or populations in the area of potential impact. No marine threatened species or ecological communities currently listed under the FM Act were recorded during the scuba assisted investigation.

While the proposed works would require the temporary closure of the bridge and occupation of the northern approach road, the works would not have any permanent adverse effects on the landforms, landscapes or natural features and processes of the locality. The landform and features of Bare Island Fort would not be directly or indirectly impacted by the proposed activity.

- (b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to—*
  - (i) places, objects and features of significance to Aboriginal people, and*
  - (ii) places of social value to the people of New South Wales, and*
  - (iii) places of historic, architectural or scientific significance,*

The potential impacts of the proposed work on cultural heritage values of the locality have been considered through the preparation of both an Aboriginal Heritage Due Diligence Assessment (ADD) (AMBS Heritage and Ecology, August 2025) (Attachment 4), and a Heritage Impact Statement (Urbis 2025) (Attachment 5).

The repair of the bridge, and works to establish a new table drain on the northern approach road, would not have the potential to affect known or potential Aboriginal sites or non-Indigenous relics. Heritage has been considered in Section 8.3 of the REF.

The Proposal is designed to maintain and protect the heritage values of the timber bridge while providing for continued public safety, and is therefore consistent with the conservation of objects, places and features of cultural value. The bridge repairs would use timber and steel materials that are in keeping with the fabric of the existing structure, and would not diminish the heritage values of the bridge.

The La Perouse headland is a place of cultural significance to the local Aboriginal community and a place of social value to the wider people of NSW, with other historic sites and associations other than the Bare Island fortifications. These include the former Cable Station (now a museum), the monument to La Perouse, and the tomb of Pere Receveur, a Franciscan priest with the La Perouse expedition of 1788. None of these historic sites would be affected by the proposed work.

- (c) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation,*
- (d) providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.*

The proposed works would maintain the existing bridge into the future and improve public access to, and appreciation of, the natural and cultural values of Bare Island and this part of Kamay Botany Bay National Park. The works are designed to minimise any potential

adverse impacts and are in accordance with management principles of the NPW Act and the Kamay Botany Bay National Park Plan of Management.

Land reserved under the NPW Act on Bare Island is above the mean high-water mark. Land below the mean high-water mark (i.e. sections of the existing rock platforms and sea bed) is vested in Transport for NSW. NPWS has a lease agreement with Transport for NSW in regards to 'lands' proximate to Bare Island.

NPWS will consult with Transport for NSW who will be a joint determining authority on this REF (see Section 4.2.1 of this REF).

NPWS will consult with Heritage NSW who will be a joint determining authority on this REF (see Section 4.2.1 of this REF).

*(2) The objects of this Act are to be achieved by applying the principles of ecologically sustainable development.*

The principles of ecologically sustainable development are described in section 6(2) of the *Protection of the Environment Administration Act 1991*. The principles of ecologically sustainable development are:

- The precautionary principle.
- Intergenerational equity.
- Conservation of biological diversity and ecological integrity.
- Improved valuation, pricing and incentive mechanisms.

The principles of ecologically sustainable development have been applied to all aspects of the planning of the proposed work and are fully considered in Appendix 2.

*(3) In carrying out functions under this Act, the Minister, the Secretary and the Service are to give effect to the following—*

*(a) the objects of this Act,*

*(b) the public interest in the protection of the values for which land is reserved under this Act and the appropriate management of those lands.*

The proposed work would protect the values for which the land (and infrastructure) is reserved under the National Parks and Wildlife Act through applying minimally invasive or destructive repair and construction methods. The Proposal would apply the appropriate management guidelines to ensure that the public interest in the protection of those values is maintained.

### ***Reserve Management Principles***

Pursuant to Part 4, Division 2, s.30E National parks of the NPW Act —

*The purpose of reserving land as a national park is to identify, protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor or tourist use and enjoyment so as to enable those areas to be managed in accordance with subsection (2).*

The proposed work is for the sympathetic repair and upgrading of the existing historic timber bridge and would not compromise the natural or cultural values of this part of Kamay Botany Bay National Park. The work would retain and improve the opportunities for public recreation and appreciation of this part of the park while maintaining public safety, in accordance with the management principles provided in subsection (2).

### ***Kamay Botany Bay National Park Plan of Management (POM)***

The Kamay Botany Bay National Park POM (January 2020) identifies a range of general objectives for the Park, as well as two objectives for Bare Island.

These are:

- *Assess the feasibility of options to improve and enhance public access to and understanding of values for Bare Island.*
- *Subject to the outcomes of the feasibility studies, develop and implement master plans for Bare Island and Cape Banks in consultation with the community (including public exhibition). The master plans may include options for:*
  - *adaptive re-use,*
  - *works to improve public access and amenity,*
  - *provision of visitor services and facilities (food/beverages, information or retail outlets, accommodation, educational, research and cultural activities and hosting of conferences, events and functions),*
  - *partnership arrangements, including leases and licences, to support implementation of master plans.*

*Apart from small-scale structures and essential visitor facilities (such as shelters and toilets), if new permanent buildings are proposed in these areas an amendment to this plan of management may be required. Any works must be consistent with the relevant conservation management plan for the site.*

The proposed works would not compromise any of these objectives and would support the objectives relating to the maintenance of the natural and cultural values, and the provision of essential visitor facilities, site interpretation and outdoor recreation opportunities.

A draft *Interpretation, Landscape and Architectural Plan* for La Perouse Headland and Bare Island (NPWS 2011) was exhibited in May 2011. This document provides proposals for the interpretive development of the locality. The work to repair the historic timber bridge would not conflict with any of the strategies or themes developed in the plan.

No master plan for Bare Island has been completed.

### **Assets of intergenerational significance**

Under section 188H of the NPW Act and regulation, declared Assets of Intergenerational Significance (AIS) list the most important natural and cultural assets in the national park estate to increase legal protections for their conservation.

There are no listed AIS within or adjacent to the section of La Perouse headland subject to the proposed works. The closest AIS is located over 25 kilometres to the north within Garigal National Park.

### **Leasing, licensing and easement provisions**

La Perouse Headland, as shown on Figure 2 of the Plan of Management (i.e. the area within and immediately surrounding the ring road portion of Anzac Parade), is managed by Randwick City Council under a lease agreement. This arrangement provides for:

- adaptive re-use or upgrades of existing buildings and their surrounds,
- landscaping and improved public access and visitor amenity (such as new toilets and picnic and shade structures),
- visitor services and facilities (food/beverages, information or retail outlets, accommodation, educational, research and cultural activities, hosting of conferences and events and functions).

If new permanent buildings (except for small-scale structures such as shelters and toilets) are proposed in this area, an amendment to this plan of management may be required. Any works must be consistent with the relevant conservation management plan for the site.

The lease agreement does not prevent developments by NPWS.

No licencing arrangements, or easements occur within the proposed area of works, including the material laydown/compound area.

### **Internal NPWS projects**

Sections 8 and 12 of the NPW Act outline the powers and responsibilities of the NPWS in arranging for the carrying out of such works as considered necessary for, or in connection with the management and maintenance of a park.

The proposed work would occur wholly within land reserved as part of Kamay Botany Bay National Park. The repair and upgrading of the bridge, including the necessary drainage works, being a public facility and for continued sustainable visitor or tourist use and enjoyment of the park is consistent with sections 8 and 12 of the NPW Act.

Requirements for the storage of materials would use the existing sealed approach road and the grassed area on the northern side of the bridge. This area has previously been used as a site compound as part of past bridge repair works.

### **3.1.2 Wilderness Act 1987 (for activities in wilderness areas)**

Not applicable.

### **3.1.3 Biodiversity Conservation Act 2016**

The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community now and into the future, consistent with the principles of Ecologically Sustainable Development.

The Proposal is consistent with the objectives of the BC Act through the undertaking of an ecological survey of the likely areas of disturbance, and a full consideration of the likely impacts of the proposed work.

The BC Act provides a listing of threatened species, populations and ecological communities, areas of outstanding biodiversity value, and key threatening processes.

No plant species or ecological communities listed under this Act were located within, or adjacent to, the proposed activity area.

An assessment of the potential impact of the Proposal on biodiversity is provided in Section 8.2.5 of this REF.

No biodiversity stewardship site agreements apply to the area.

### **3.1.4 NSW Reconstruction Authority Act 2022**

The primary object of this Act is to promote community resilience to the impact of disasters in New South Wales through—

*(a) disaster prevention, preparedness and adaptation, and*

*(b) recovery and reconstruction following disasters.*

With reference to Section 38(1) of the Act:

- 1) *A relevant entity must have regard to the State disaster mitigation plan and any relevant disaster adaptation plan in exercising any of the relevant entity's functions that are prescribed by the regulations for the purposes of this section.*

The NSW Reconstruction Authority has developed Australia's first *State Disaster Mitigation Plan 2024-2026* (SDMP) (NSW RA 2025). This supports the NSW Government's commitment to making our communities safer, more resilient and better prepared to face the challenges of disasters caused by natural hazards such as floods, bush fires, storms and cyclones and coastal erosion and inundation.

Chapter 4 of the SDMP outlines 'Tools to reduce hazard exposure' and 'Tools to reduce hazard vulnerability,' represented by Actions and Desired Outcomes. These primarily relate to measures such as:

- evacuation infrastructure,
- relocation (movement of people and existing homes and infrastructure),
- mitigation infrastructure (e.g., sea walls, flood levees, water storage, slope stabilisation),
- strategic planning controls, warning systems, and
- community infrastructure.

The proposed work to repair the bridge improves upon the existing ability of it to be used as an evacuation route and is not inconsistent with the measures and outcomes of this Act.

### **3.1.5 Rural Fires Act 1997**

The objectives of the RF Act are to provide —

- (a) *for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and*
- (b) *for the co-ordination of bush fire fighting and bush fire prevention throughout the State, and*
- (c) *for the protection of persons from injury or death, and property from damage, arising from fires, and*
  - (c1) *for the protection of infrastructure and environmental, economic, cultural, agricultural and*
- (d) *for the protection of the environment by requiring certain activities referred to in paragraphs (a)–(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the Protection of the Environment Administration Act 1991.*

The NSW Bush Fire Prone Land mapping (State Government of NSW and NSW RFS 2025) does not identify the study area as bush fire prone land.

## **3.2 Environmental Planning and Assessment Act 1979**

### **3.2.1 Assessment pathway**

It is confirmed that an REF is the applicable assessment pathway because each of the following apply:

- The activity is not declared to be state significant infrastructure under s.2.13 of the Planning Systems SEPP.

- All parts of the proposal may be undertaken as development without consent as follows:
  - Those sections in Kamay Botany Bay National Park are declared to be development without consent under s.2.73(1)(a) of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) as the development is authorised under the *National Parks and Wildlife Act 1974*.
  - Those sections outside the national park may be undertaken in accordance with s.2.109(1) of TISEPP — *Development permitted without consent – general* as it is development for the purpose of a road or road infrastructure facilities by NPWS which is a public authority.
  - Under s.5.5(1) of the EP&A Act, NPWS is required to ‘examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.’

This REF complies with the requirement for public authorities to assess the impact of an activity under Part 5 of the EP&A Act.

- The activity is **not** identified as requiring development consent under another environmental planning instrument that prevails over the TISEPP. In particular:
  - The activity **is not** in a coastal wetland or littoral rainforest, or it does not otherwise meet the criteria for development requiring consent outlined in s.2.7(2) of the State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP).
  - The activity **is not** coastal protection works.
  - The activity is not a type of development requiring development consent under s.2.9 of the Resources and Energy SEPP.
- The activity **is not** declared to be exempt development under an environmental planning instrument or fails to fully meet the requirements for exempt development.

The works will require the temporary disturbance of land vested in Transport for NSW (i.e. the sea bed below the existing access bridge). Approval, within the meaning of s.5.1(1) of the EP&A Act, is required from Transport for NSW. This REF will be referred to both Transport for NSW and Heritage NSW for its consideration and provision of a decision statement as joint determining authorities.

### 3.2.2 Strategic plans

The relevant district strategic plan for the area of the Proposal is the *Our Greater Sydney 2056 – Eastern City District Plan* (Greater Sydney Commission March 2018).

The plan identifies 22 planning priorities to achieve the community’s vision, along with short, medium, long term, and ongoing actions to monitor and report on the progress of implementation. The planning priorities cover the following five broad planning topics:

1. Infrastructure and collaboration.
2. Liveability.
3. Productivity.
4. Sustainability.
5. Implementation.

The proposed maintenance works to the Bare Island bridge support all of the objectives of the district plan, and in particular enhance the planning priorities related to Liveability; respecting the district’s heritage, and Sustainability; protecting and enhancing scenic and cultural landscapes.

### 3.3 Other relevant NSW legislation

#### 3.3.1 Coal Mine Subsidence Compensation Act 2017

The NSW Planning Portal ePlanning Spatial Viewer (NSW Government 2025c) shows that the locality, and the Proposal, does not occur within a known historical coal mining area or a coal mine subsidence district.

#### 3.3.2 Fisheries Management Act 1994

The objects of this Act are to:

- (1) *...conserve, develop and share the fishery resources of the State for the benefit of present and future generations.*
- (2) *In particular, the objects of this Act include—*
  - (a) *to conserve fish stocks and key fish habitats, and*
  - (b) *to conserve threatened species, populations and ecological communities of fish and marine vegetation, and*
  - (c) *to promote ecologically sustainable development, including the conservation of biological diversity,**and, consistently with those objects—*
  - (d) *to promote viable commercial fishing and aquaculture industries, and*
  - (e) *to promote quality recreational fishing opportunities, and*
  - (f) *to appropriately share fisheries resources between the users of those resources, and*
  - (g) *to provide social and economic benefits for the wider community of New South Wales, and*
  - (h) *to recognise the spiritual, social and customary significance to Aboriginal persons of fisheries resources and to protect, and promote the continuation of, Aboriginal cultural fishing.*

All of the marine waters of Botany Bay, including the waters around Bare Island are classified and mapped as Key Fish Habitat under the FM Act.

The area around Bare Island, and the bridge and channel over which it spans, is not mapped as a Marine Protected Area. The nearest Marine Protected Area is the Cape Banks aquatic reserve, this located about 950 m to the east of the proposed activity area along the part of the La Perouse headland from Endeavour light at Henry Head (southern limit) to around the bridge at Cape Banks (northern) (NSW Marine Estates 2025). This Marine Protected Area is about 22 ha in size and extends about 100 m seawards from the mean low tide mark (NSW Marine Estates 2025). The proposed activity will not have a direct or indirect impact on this aquatic reserve.

No permanent or intermittently flowing streams or creeks that could provide fish habitat as defined under the FM Act occur on Bare Island or the northern mainland approach to the existing bridge.

Part 7 of the FM Act provides for the protection of aquatic habitats and sets out circumstances where notification to, or approval from, NSW DPIRD – Fisheries, prior to works commencing, may be required. This includes if the proposed activity affects fish including threatened species, fish habitat, fish passage or harm to marine vegetation (sections 199, 200, 205 or 219 of the FM Act).

With regard to Part 7 Division 3 of the FM Act, *Dredging and reclamation* is defined by the Act as:

Dredging work —

- (a) *any work that involves excavating water land*
- (b) *any work that involves moving material on water land or removing material from water land.*

Reclamation work —

- (a) *using any material (such as sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land, or*
- (b) *depositing any such material on water land for the purpose of constructing anything over water land (such as a bridge), or*
- (c) *draining water from water land for the purpose of its reclamation.*

Water land is land submerged by water –

- (a) *whether permanently or intermittently*
- (b) *whether forming an artificial or natural body of water.*

Aspects of the proposed activity (i.e. the exposure, and removal of, the piles) will conform to dredging and reclamation. Therefore, notification in accordance with s.199 of the FM Act is required.

NPWS contacted DPIRD – Fisheries on 19 September 2025, providing them with a copy of this REF. A response from DPIRD – Fisheries was received by NPWS on 22 September 2025 (Attachment 6), this noting DPIRD – Fisheries has reviewed the works. At an online meeting 25 September 2025, DPIRD - Fisheries confirmed that they would issue a s199 approval letter (in the coming week), this based on the information currently provided. Prior to works commencing a Seahorse Management Plan and CEMP must be submitted to DPIRD – Fisheries.

Part 7A of the FM Act deals with threatened species conservation and requires that the significance of the impact of a proposed development or activity on threatened species, populations or ecological communities listed under the FM Act are assessed using a 'seven-part test' in accordance with s.221ZV of the Act. Where a significant impact is likely to occur, a SIS must be prepared.

Based on the outcomes of the site inspection, this including scuba assisted diving, significant impacts on threatened species would not occur as a result of the proposed activity.

A consideration of the potential impact(s) of the Proposal on aquatic habitats and threatened species is provided in Sections 8.2.3 and 8.2.5 of this REF.

### **3.3.3 Heritage Act 1977**

The Heritage Act provides protection for items of State heritage significance that are listed on the State Heritage Register (SHR).

Bare Island Fort and curtilage, including the access bridge and northern approach road subject to the Proposal, was listed on the State Heritage Register (SHR) in 1999.

As the proposed activity will require the replacement of timber components of the existing bridge, establishment of a new table drain on eastern approach, new balustrading and kerbing and so forth, Urbis, on behalf of NPWS, applied for approval to conduct the works

through NSW Heritage. This was in the form of a Section 60 application, this being granted approval on 4 December 2025 (Attachment 8).

The approval granted by the Heritage Council of NSW was subject to 15 conditions, these being:

- 1) All work shall comply with the information contained within:
  - a. Engineering drawings, prepared by Consult Marine as listed in the approval
  - b. *Heritage Impact Statement – Bare Island Vehicle Bridge*, prepared by Urbis, dated 23 September 2025
  - c. *Bare Island Vehicle Bridge – Aboriginal Due Diligence Assessment*, prepared by AMBS Ecology and Heritage, dated August 2025
  - d. *Bare Island Vehicle Bridge Refurbishment Historical Archaeology Addendum*, prepared by Cosmos Archaeology, dated 10 November 2025.
  - e. *Bare Island Vehicle Bridge Refurbishment Maritime Archaeology Short Memo Report*, prepared by Cosmos Archaeology, dated 10 November 2025.
- 2) A suitably qualified and experienced heritage consultant must be nominated for this project. The nominated heritage consultant must provide input into the detailed design, provide heritage information to be imparted to all tradespeople during site inductions, and oversee the works to minimise impacts to heritage values. The nominated heritage consultant must be involved in the selection of appropriate tradespersons and must be satisfied that all work has been carried out in accordance with the conditions of this consent.
- 3) All work to, or affecting, significant fabric shall be carried out by suitably qualified tradespersons with practical experience in conservation and restoration of similar heritage structures, materials and construction methods.
- 4) Significant built and landscape elements are to be protected during site preparation and the works from potential damage. Protection systems must ensure significant fabric, including landscape elements, is not damaged or removed.
- 5) Prior to the commencement of works, a visual survey shall be conducted by a suitable qualified professional to ensure that the area does not include any culturally significant species specifically mentioned in the National Listing for Kamay Botany Bay Collection Sites. Should any of the listed species be found in the works area, these shall be protected through fencing and signage to ensure safeguarding during construction works. Should protection measures for culturally significant species not be possible, replanting in alternate locations or replacement planting of the same species in other areas of the SHR listing shall be undertaken.
- 6) The perimeter of the works compound should be altered (i.e. with temporary fencing) to exclude the area of high archaeological potential (including a buffer of at least 1 m).
- 7) No ground disturbance is to be undertaken within the works compound or any areas of high archaeological potential, including, but not limited to excavation, trenching etc.
- 8) Samples of significant copper sheathing and/or nails shall be retained on site for future interpretation purposes.
- 9) A photographic archival recording must be prepared prior to the commencement of works, during works and at the completion of works. This recording must be prepared in accordance with the Heritage NSW publication 'Guidelines for preparing archival recordings of heritage items as a condition of consent' (2025). Only the digital copy of the archival record must be submitted electronically to Heritage NSW. The required format and specifications of the record are published on the Heritage NSW website.
- 10) A Maritime Archaeological Management Plan shall be prepared and implemented on site during construction works by a suitable qualified and experienced Maritime Archaeologist.
- 11) The management plan shall follow the recommendations outlined in the *Bare Island Vehicle Bridge Refurbishment: Maritime Archaeology Short Memo Report*, prepared by Cosmos Archaeology, dated 10 November 2025, including but not limited to heritage induction, monitoring of works and an Unexpected Finds, etc.

- 12) The Applicant must ensure that if substantial intact archaeological deposits and/or State significant relics or any other buried fabric such as works not identified, are discovered, work must cease in the affected area(s) and the Heritage Council of NSW must be notified. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.
- 13) Should any Aboriginal objects be uncovered by the work which is not covered by a valid Aboriginal Heritage Impact Permit, excavation or disturbance of the area is to stop immediately and Heritage NSW is to be informed in accordance with the *National Parks and Wildlife Act 1974*. Works affecting Aboriginal objects on the site must not continue until Heritage NSW has been informed and the appropriate approvals are in place. Aboriginal objects must be managed in accordance with the *National Parks and Wildlife Act 1974*.
- 14) If requested, the applicant and any nominated heritage consultant may be required to participate in audits of Heritage Council of NSW approvals to confirm compliance with conditions of consent.
- 15) This approval will lapse five years from the date of the consent unless the building works associated with the approval have physically commenced.

The reasons associated with each of these conditions are identified in Attachment 8.

No other items of potential state significance, are located close to the proposed work site and none would be affected.

Section 8.3.2 of this REF provides further details of the bridge and any other heritage items in the locality.

### **3.3.4 Marine Estate Management Act 2014**

The nearest marine reserve (known as Cape Banks aquatic reserve) is located along the part of the La Perouse headland that extends from Henry Head and around to Cape Banks.

The proposed work would not directly affect this reserve and potential indirect effects would be minimal given the small scale of the proposed method of in-water piling activities.

### **3.3.5 Protection of the Environment Operations Act 1997**

In accordance with Part 3.2 'Licences required for scheduled development work and scheduled activities,' the proposed work is not an activity identified under Schedule 1 of the Act. Therefore, an environmental protection licence issued by the NSW EPA in accordance with s.47-49 of this Act is not required.

Part 5.3, s.120 of the Act, stipulates a person who pollutes any waters is guilty of an offence. If the mitigation measures are implemented, the proposed work is not likely to result in the pollution of nearby waters, and an approval or permit required under s.122 of this Act is not required.

## **3.4 Commonwealth legislation**

### **3.4.1 Environment Protection and Biodiversity Conservation Act 1999**

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection for threatened species, ecological communities, wetlands of international importance for migratory birds, and world or national heritage, which are listed under the Act.

The proposed work would not affect:

- nationally listed migratory species,

- nationally listed threatened species or populations,
- nationally listed ecological communities,
- world heritage or national heritage values of a place on the World Heritage List or National Heritage List,
- the ecology of a Ramsar wetland.

As the proposed work would not have a significant impact on threatened species, populations, ecological communities, world or national heritage, or wetlands of international importance for migratory birds, referral of the matter to the Commonwealth Minister for further consideration and approval is not required.

### 3.4.2 Native Title Act 1993

The NT Act provides for the recognition and protection of native title. The Act covers actions affecting native title and the processes for determining whether native title exists and also the compensation for actions affecting native title.

Under section 23B (7) of the Act, native title is extinguished by previous exclusive possession when:

- (7) An act is a previous exclusive possession act if:*
- (a) it is valid (including because of Division 2 or 2A); and*
  - (b) it consists of the construction or establishment of any public work that commenced to be constructed or established on or before 23 December 1996.*

The construction of the bridge and the Bare Island fortifications is a previous exclusive possession and has extinguished native title.

No native title claims are pending. There are no Future Act Objections, Determinations or Current Notices pending. Notification requirements under the NT Act do not apply.

## 3.5 Consistency with national parks policy

| Policy name                                       | How the Proposal is consistent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accessible parks policy<br>(DCCEEW 2023)          | <p>This policy aims to provide a framework for improving access to national parks by integrating accessibility considerations into the planning and management of national parks and the opportunities they provide for visitors, volunteers and the community.</p> <p>This policy addresses the barriers to accessing national parks and visitor experiences that are faced by people with disability.</p> <p>The proposed works would maintain and improve access for all park users to Bare Island Fort historic site.</p>                                                                                                            |
| Landslides and rockfalls policy<br>(DCCEEW 2023a) | <p>NPWS has a duty of care to minimise the risk of landslides and rockfalls to people in parks and to neighbouring landholders.</p> <p>The northern road approach to the bridge is located on a slope and includes areas of near vertical sandstone rock cuttings. These features create a potential for rockfalls onto the road, which is also the pedestrian access to the bridge and Bare Island.</p> <p>The construction of proposed works would minimise ground disturbance and be mindful of the potential to destabilise slopes and rock faces. The only work that has the potential to destabilise the rock cutting would be</p> |

| Policy name                              | How the Proposal is consistent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          | the provision of a dish drain to divert runoff away from the northern bridge abutment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Visitor safety policy (DCCEEW 2022)      | <p>This policy outlines NPWS' legal duty of care towards people in parks where the risk is foreseeable to NPWS, the risk is not insignificant, and a reasonable person (if aware of the risk) would have taken precautions to limit or remove the risk; and provides guidance about how to address safety issues and reduce risk to park visitors while maintaining park values.</p> <p>Many of the existing timber hand railings and some of the decking boards on the bridge were assessed as being rotted, termite damaged or split and require replacing. The existing timber kerbing was also noted to be insufficient to prevent a vehicle driving off the bridge.</p> <p>The Proposal would improve visitor safety by replacing the damaged hand railings and decking and subject to heritage considerations, increase the size of the kerbing.</p>                                                                                                                                                                                                             |
| Neighbour relations policy (DCCEEW 2021) | <p>NPWS neighbours include public or private landholders that share a common boundary or whose properties are accessed through a park, government agencies that manage land or public service utilities in parks, and communities living close to parks, who are affected by NPWS activities and whose activities may also affect NPWS park management.</p> <p>The Proposal would notify relevant public authorities adjoining this section of the park, and advertise the works and access changes to the wider community prior to works commencing.</p> <p>Sydney Water manages a sewer and water main on the approach road and bridge. The proposed works have been developed and designed so that the mains would not be disturbed, however Sydney Water would be notified one month prior to the commencement of the proposed activity.</p> <p>Ausgrid manages the electricity connection under the northern approach road and across the bridge to Bare Island Fort. Ausgrid would be notified one month prior to the commencement of the proposed activity.</p> |
| People & wildlife policy (DCCEEW 2022a)  | <p>This policy aims to manage interactions between people and wildlife and seeks to prioritise the safety of people and minimise risks of harm or damage, while considering the protection status and biological needs of animals to achieve positive and lasting outcomes.</p> <p>The proposed works would provide continued access for people to interact with native wildlife as safely as possible and without the need to unnecessarily enter or disturb adjacent habitat.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 3.6 Summary of licences and approvals

### 3.6.1 Approval required from National Parks and Wildlife Service

Internal NPWS approval or authorisation, including expenditure.

### 3.6.2 Other approvals

Approval for the works to be undertaken is required from NSW Heritage. To obtain this approval, Urbis, on behalf of NPWS, applied for approval to conduct the works through NSW Heritage. This was in the form of a Section 60 application, this being granted approval on 4

December 2025 (Attachment 8). NSW Heritage will also be provided a copy of this REF and will be a joint Determining Authority on this document.

Components of the land below the existing bridge (i.e. those below the MHWL) are vested in Transport for NSW. The proposed activity will affect this land. As such, Transport for NSW would need to be a joint Determining Authority of this REF.

As aspects of the works (i.e. the exposure, and removal of, the piles) conform to dredging and reclamation notification in accordance with s.199 of the FM Act is required.

### 3.6.3 Publication triggers

The REF must be published following determination if the activity requires an approval or permit identified in section 171(4) of the EP&A Regs before it may be carried out. These triggers are summarised below in relation to the proposed activity.

**Table 1. Triggers for publication of the review of environmental factors**

| Permit or approval                                                                                                                                                                                                               | Applicable? |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Fisheries Management Act, sections 144, 199, 205 or 219 Blocking fish passage?                                                                                                                                                   | No          |
| Heritage Act, section 57(1) (commonly known as a section 60 and <b>not</b> an Exemption under section 57(2)).                                                                                                                    | Yes         |
| National Parks and Wildlife Act, section 90 (AHIP).                                                                                                                                                                              | No          |
| <i>Protection of the Environment Operations Act 1997</i> , sections 47–49 or 122<br>The activity is not a <i>scheduled activity</i> listed on Schedule 1 of the Act, or <i>scheduled development work</i> as defined by the Act. | No          |

Aspects of the proposed activity conform to dredging and reclamation. As such, notification in accordance with s.199 of the FM Act is required.

NPWS has obtained a Section 60 application under the *Heritage Act 1977* in regards to the works. As approval has been granted, the REF must be published.

## 4. Consultation – general

### 4.1 Statutory consultation

#### 4.1.1 Transport and Infrastructure SEPP

If there is a likelihood of impacts on infrastructure or services, the TISEPP requires consultation with relevant authorities as identified in Table 2.

**Table 2. Consultation triggers under the Transport and Infrastructure State Environmental Planning Policy**

| Authority (TISEPP section)                                                                                     | Trigger                                                                                                                                                           | Applicable to proposal? |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Consultation with local council (s 2.10)                                                                       | Development with impacts on council infrastructure or services (such as stormwater, sewer, water, roads and footpaths).                                           | No                      |
| Consultation with local council (s 2.11)                                                                       | Development with impacts on heritage items listed under the local environmental plan (LEP).                                                                       | Yes                     |
| Consultation with local council (s 2.12)                                                                       | Development that will change flood patterns on flood-labile land.                                                                                                 | No                      |
| Consultation with State Emergency Service (s 2.13)                                                             | Development on flood-labile land.                                                                                                                                 | No                      |
| Consultation with local council (s 2.14)                                                                       | Development that is inconsistent with a certified coastal management program affecting land within the mapped coastal vulnerability area.                         | No                      |
| Consultation with NPWS (s 2.15(2)(a))                                                                          | Development adjacent to land reserved or acquired under the NPW Act.                                                                                              | No                      |
| Consultation with NPWS (s 2.15(2)(b))                                                                          | Development on land in Zone C1 that is yet to be reserved under the NPW Act.                                                                                      | No                      |
| Consultation with Transport for NSW (s 2.15(2)(c))                                                             | Development comprising a fixed or floating structure in or over navigable waters.                                                                                 | Yes                     |
| Consultation with the Director of the Siding Spring Observatory (s 2.15(2)(d))                                 | Development that may increase the amount of artificial light in the night sky and that is on land within the mapped dark sky region                               | No                      |
| Consultation with the Cth Department of Defence (s 2.15(2)(e))                                                 | Development located within the buffer around the defence communications facility near Morundah as mapped under the Lockhart, Narrandera or Urana LEPs             | No                      |
| Consultation with the Subsidence Advisory NSW (s 2.15(2)(f))                                                   | Development on land in a mine subsidence district.                                                                                                                | No                      |
| Consultation with the Willandra Lakes Region World Heritage Advisory Committee and Heritage NSW (s 2.15(2)(g)) | Development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property                                           | No                      |
| Consultation with the Western Parkland City Authority (s 2.15(2)(h))                                           | Development within a Western City operational area (Western Parkland City Authority Act 2018, Schedule 2) with a capital investment value of \$30 million or more | No                      |
| Consultation with Transport for NSW (s 2.221)                                                                  | Traffic-generating development listed in Schedule 3                                                                                                               | No                      |

While the Proposal would not have an impact on Council infrastructure the access to the bridge and the work site would be from Anzac Parade. It is proposed to use an area adjacent to Anzac Parade for the delivery and temporary laydown of delivered materials prior to transporting them to the site. This area has been used for similar purposes for previous

works, and Council would be notified prior to the works commencing that the area would be used for the Proposal.

## 4.1.2 Other statutory consultation

### Transport for NSW

The proposed activity will require work on the seabed to remove the exiting (broken) piles, this to be conducted on land (the seabed of Botany Bay) vested in Transport for NSW. As such, consultation with Transport for NSW is required in order to permit the proposal, in accordance with s.2.15 of the TISEPP—

- 1) *A public authority, or a person acting on behalf of a public authority, must not carry out specified development that this Chapter provides may be carried out without consent unless the authority or person has—*
  - (a) *given written notice of the intention to carry out the development (together with a scope of works) to the specified authority in relation to the development, and*
  - (b) *taken into consideration any response to the notice that is received from that authority within 21 days after the notice is given.*

## 4.2 Targeted consultation

### 4.2.1 Adjacent landowners

#### Transport for NSW

Land below the existing bridge (i.e. below the MHWM) is vested in Transport for NSW. As components of the works will affect this land, Transport for NSW is to be consulted and would be a joint determining authority (alongside NPWS) of this REF.

#### Heritage NSW

As the works will require various activities including the replacement of timber components of the existing bridge, NPWS nominated representative has applying for approval to conduct the works through NSW Heritage. This was in the form of a Section 60 application, approval for the works to proceed being granted 4 December 2025.

#### Other – service providers

Notification and consultation is required with owners of the assets that enter the island (water and electricity lines).

#### Other – Port Authority of NSW

NPWS, or their nominated contractor, is required to consult with the Port Authority of NSW, particularly in regards to the establishment of any exclusion zones below/adjacent to the works area.

### 4.2.2 Wider community consultation and/or notification of works

Temporary signage would be installed at strategic locations at least 2 weeks prior to the works to inform local residents and visitors of the proposed activity and any temporary access restrictions.

NPWS are developing a community plan and a specific project information web page.

The foreshore of Bare Island is a site that is regularly visited by scuba diving clubs. These clubs access the rock platforms by traversing the existing bridge. As this would not be

possible during the works period, alternative options will be considered to provide access to those rock platforms that are present near the northern bridge abutment.

During the works, NPWS will regularly communicate with relevant scuba diving clubs.

#### **4.2.3 Interest groups and/or notification**

It has been identified that local scuba diving groups would be impacted by the proposed works.

No other local groups or community-based clubs have been identified that could be expected to have an interest in the proposed works. Notification of the proposed activity and bridge closure would be undertaken via temporary signage at the site. The same information would also be published on the NPWS website prior to the works commencing.

## 5. Consultation – Aboriginal communities

### 5.1 Native title notification requirements

1. Is the land subject to an Indigenous land use agreement (ILUA)?

**No**

2. Has native title been extinguished?

**Yes**

Botany Bay National Park was reserved on 23 November 1984. Under this circumstance, it is considered that the land subject to the proposed activity has had native title extinguished, and the proposal is considered to be validated under 24J of the NT ACT in accordance with:

1. *This Subdivision applies to a future act (the later act) if:*
  - (a) *an act (the earlier act ) took place before the later act and on or before 23 December 1996; and*
  - (b) *the earlier act was valid (including because of Division 2 or 2A); and*
  - (c) *the earlier act:*
    - (i) *was done by the Crown in right of the Commonwealth, a State or Territory; or*
    - (ii) *consisted of the making, amendment or repeal of legislation by the Commonwealth, a State or Territory; and*
  - (d) *the earlier act contained, made or conferred a reservation, proclamation, dedication, condition, permission or authority (the reservation ) under which the whole or part of any land or waters was to be used for a particular purpose; and*
  - (e) *the later act is done in good faith:*
    - (i) *under or in accordance with the reservation; or*
    - (ii) *in the area covered by the reservation, so long as the act's impact on native title is no greater than the impact that any act that could have been done under or in accordance with the reservation would have had.*

Compliant with subparagraph (e)(i), the proposed work (the later act) is an act in accordance with the purpose of reservation under the NPW Act.

Notification requirements under the NT Act do not apply.

A search of the Register of Native Title Claims did not identify the study area within the boundary of any Native Title Claim (NNTT 2025b); therefore, consultation with native title holders/claimants is not relevant.

### 5.2 Parks under joint management arrangements other than an indigenous land use agreement

Is the park's management subject to another joint management arrangement such as a memorandum of understanding?

**No**

### 5.3 Other parks

The proposed work would be undertaken within existing disturbed and modified areas that have undergone previous ground disturbance, and in which no known Aboriginal sites have been previously found.

Due diligence advice of Aboriginal cultural heritage was prepared in May 2025. The survey found no evidence of Aboriginal items or sites in the study area and concluded that sites of Potential Aboriginal Deposits (PAD) were unlikely to be uncovered by the proposed work.

Formal consultation with the Aboriginal community following the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW, 2010c) is not a requirement for due diligence advice. No additional Aboriginal community consultation was therefore undertaken.

Given the ground survey of the study area did not find any additional sites, or expected the likelihood of PAD to be uncovered by the proposed work, consultation with the Aboriginal community in regard to the specifics of the Proposal is not necessary.

## 6. Proposed activity (or activities)

### 6.1 Location of activity

Table 3. Summary of activity location

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| Description of location | Bare Island Fort, Bare Island Road, La Perouse NSW 2036. |
| Site commonly known as  | Bare Island (including the bridge).                      |
| Park name               | Kamay Botany Bay National Park.                          |
| Lot/DP – NPWS Estate    | Lot 1 DP915424 and Lot 5111 DP752015                     |
| Land vested in TfNSW    | Sea floor of Botany Bay – Lot 3 DP1165618                |
| Site reference          | Lat: -33.99095° S. Long: 151.23190° E.<br>MGA Zone 56    |

### 6.2 Description of the proposed activity

The Proposal involves repair of the timber access bridge to Bare Island Fort by removing and replacing rotted, decayed, termite damaged or otherwise degraded timber elements.

The proposed work is described below and shown on the Site photographs in Appendix 1. The Phase 1 investigation reports informed the design and scope of the proposed works. These are:

- *Timber Inspection Bare Island Vehicular Bridge* (Timber Inspections Pty. Ltd., October 2024).

This report inspected and assessed the condition of the headstocks, corbels, girders, decking, kerb and handrailing. The report is provided in Attachment 1.

- *Bare Island Vehicle Bridge: Structural Inspection of Piles* (Consult Marine, December 2024).

This report inspected and assessed the condition of all of the piles. The report is provided in Attachment 2.

- *Structural Report NPWS GSB Elevated Structures* (Northrop Consulting Engineers Pty. Ltd., February 2024).

This report inspected and assessed the condition of all of the piles. The report is provided in Attachment 3.

The scope of the construction works would include: the renewal of all required timber elements of the bridge, including but not limited to:

- Plumb and Raker Piles.
- Cross Bracing.
- Headstocks.
- Corbels.
- Joists.
- Decking.

- Kerbs (possibly installing larger kerbs capable of stopping a vehicle).
- Handrailing, including a safety upgrade in keeping with the heritage profile and values of the bridge. The handrailing and the kerbing has been designed and upgraded under advice from heritage consultants and engineers.

In addition, a new table drain is to be constructed on the northern approach road to channel water away from the northern bridge abutment. Under the current drainage regime, the constant flow of water onto the abutment timbers has caused parts to rot and create the perfect environment that promotes termite activity.

The design of the drain would be dictated and developed in consultation with advice from both the project's heritage consultants and engineers.

No new or upgraded services (water, waste, electricity) would be provided to the island.

The quantities of timber bridge members to be replaced is not precisely known, as the engineers are still analysing the data from the Stage 1 investigations, and there is the potential for hidden timber damage to be revealed as the deck and other elements are dismantled.

The proposed construction methods are provided in Section 6.2.3 below.

**Table 4. Standards, procedures, guidelines and manuals**

| Standards, procedures, guidelines/manuals | How proposal is consistent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Australian Standards                      | All proposed work would be in compliance with Australian Standards as specified in the final design and construction plans, including BCA and DDA compliance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NPWS Guidelines                           | <p>The proposed work would meet the performance requirements contained within the <i>NPWS Park Facilities Manual</i> (internal document, OEH 2016).</p> <p>This manual provides a coordinated set of standards and principles for facilities in NSW NPWS reserves. It provides a system of consistent designs for facilities with a corporate image, and guidance on engineering considerations for construction of facilities including the obligation under the EP&amp;A Act and other statutes to meet Building Codes of Australia and other Australian Standards, as well as for precinct planning, and vehicle access and planning. It allows scope for local characteristics to be incorporated into facilities and emphasises sustainable use of materials, visually integrating facilities and using local materials where possible.</p> |
| NPWS Construction Assessment Procedures   | The requirements within the <i>Construction Assessment Procedures</i> (OEH 2011c) apply to all building and infrastructure works on lands reserved or acquired under the NPW Act, and provide standard requirements which must comply with the Building Code of Australia and other relevant Australian Standards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| NSW Standards and manuals                 | All erosion and sedimentation control devices would be in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (the Blue Book) (Landcom 2004).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## **6.2.1 The proposed activity: pre-construction, construction, operation and remediation**

### **Pre-construction:**

- Preparation of applicable management plans including (as required):
  - Construction Environmental Management Plan (CEMP)
  - Erosion and Sedimentation Control Plan (may be aspect of CEMP)
  - Traffic management plan (may be aspect of CEMP)
  - Waterway Management Plan
  - Syngnathidae (Seahorse) Management Plan.
- Transport for NSW Manager Waterway Operations (Botany Bay & Port Hacking) ([mobbph@transport.nsw.gov.au](mailto:mobbph@transport.nsw.gov.au)) will be provided a copy of the Waterway Management Plan to review and approve, particularly in regards to any marine traffic enclosures and buoyage / signage.
- NSW DPIRD – Fisheries will be consulted on the Syngnathidae (Seahorse) Management Plan.
  - A copy of the Syngnathidae (Seahorse) Management Plan is to be provided to Transport for NSW Manager Waterway Operations (Botany Bay & Port Hacking) ([mobbph@transport.nsw.gov.au](mailto:mobbph@transport.nsw.gov.au)) to ensure the activity does not interfere with the existing seahorse hotels that are present in Botany Bay.
- Consultation with the Port Authority of NSW and other applicable public authorities and local council.
- Notification of the proposed works via signage at strategic locations in the locality informing the public of the work and the closure of the bridge and access to Bare Island Fort during the work.
- Notification of the proposed works to the general community and park users through appropriate sections of the NPWS website.
- Notification of the proposed works to the general community and park users through use of variable message signs and other means as needed.
- Establishment of a works compound area in the area adjacent to Anzac Parade and an appropriate section of the sealed approach road.
- Delineation and fencing of any exclusion/protection zones.
- Installation of all environment management and protection measures (refer to Section 9 for details).

### **Construction:**

- Closure of the bridge to public access, installation of security and safety fencing.
- Positioning of cranes and other machinery/plants to be used for the works.
- Staged removal of existing timber handrail, kerbing, decking, girders, corbels, headstocks to reveal piles and to facilitate the removal or piles to be replaced.
- Removal of cross bracing.
- Exposure of 'hidden' elements of the existing bridge and inspection of these to determine their status
  - NPWS notified if additional timber elements require replacement
  - NPWS to liaise with their heritage consultant and, if appropriate, NSW Heritage
- Removal of plumb and raker piles to be replaced using direct pulling method, or a vibrating head if required.

- To achieve this, a diver would blow the sand away from inside a steel tube (approx. 2m diameter) this placed atop of the feature, to reveal the top of the timber pile so it can be extracted. As the sand is blown out, the steel tube will sink deeper due to its weight, ensuring that sand doesn't re-enter the cavity. Once the pile remnant is revealed, straps are attached to this and it is extracted by a crane that is located on the bridge. A new timber pile is then inserted into the exposed cavity.
- Installation of new timber piles by impact driving.
- Installation of cross braces.
- Installation of new superstructure timbers where required.
- Installation of new decking, kerbing and hand railing where required.
- Replacement of existing mesh:
  - The proposed mesh size will be based on AS5100 (Bridge Design) and AS1926 (Safety Barriers for Young Children), which require a Non-Climbable Zone of at least 900 mm to prevent climbing by children under 5 years of age. To achieve this, the aperture must be no smaller than 12.5 x 12.5 mm and no larger than 40 x 15 mm. This range ensures that the mesh cannot be used as a foothold by toddlers while maintaining structural integrity.
  - The mesh will be mill-finished stainless steel, which naturally oxidises and develops tea staining over time, reducing reflectivity and helping it blend into the environment.
- Construction of new table drain to divert approach road runoff away from the northern abutment timbers. This may be undertaken prior to the bridge works, or after its completion.

#### **Post Construction:**

- Transport all waste off-site for disposal at a licenced waste management facility. Waste would be transported and recycled or disposed of in accordance with the *NSW Waste Classification Guidelines* (NSW EPA 2014).
- Make good the disturbed materials laydown/compound area adjacent to Anzac Parade (including topsoiling and turfing if required).
- Carry out a final inspection of the bridge, construction site and surrounding area upon completion of the works, certifying conformity to the specification, removal of all waste, and ensure all disturbed areas are stabilised or have appropriate temporary erosion and sediment controls in place.
- Provide a seabed clearance survey upon completion of the proposed activity to certify that all construction material not part of the proposal has been removed and no underwater obstacles remain.
- The above two items are to be completed by a suitably qualified surveyor and are to comply with the standards of Transport for NSW *Guidelines for Hydrographic and Geotechnical Data* (Transport for NSW 2024).
- Demobilisation. Proposal site to be cleared of temporary signage and exclusion/buffer zones.
- Reopen bridge to full public access and use.

### **6.2.2 The activity footprint (size of the area of impact)**

The total calculated activity footprint is predicted to be in the order of about 5,420 m<sup>2</sup>, this including:

- The aquatic and terrestrial areas under the bridge and 10 m either side (north and south) of the existing length (i.e. approaches) of the bridge.
  - Works on the sea bed would be restricted to each of the existing piles that require removal and a radius of 2 m round each of these.
- An additional area that is 10 m x 10 m in size on the grassed southern (Bare Island) side of the bridge.
- All of the approach road on the northern (La Perouse) side of the bridge to Anzac Parade.
- The area of the materials laydown/compound area adjacent to Anzac Parade (this in the order of 2,380 m<sup>2</sup> in size).
- An area of 20 m either side of the bridge on the northern and southern foreshore rock platforms.

It should be noted that all of the construction activity footprint would be within the existing road approach, bridge and the grassed area above the approach road cutting and adjacent to Anzac Parade. Construction activity footprint areas considered relatively undisturbed include the bed of the sea channel under the bridge and the rock platforms at each end of the bridge. Both the deck of the bridge, and the sea bed immediately under the bridge (and for 10 m either side of the bridge) have been included in the footprint calculation.

A construction footprint on the rock platforms includes the areas immediately under the bridge deck and for 20 m either side of the bridge to account for potential use and any plant and equipment movement requirements.

### **6.2.3 Proposed construction methods, materials and equipment**

Specifics of the proposed scope of work for the project would be in accordance with instructions provided in the finalised design and construction plans.

The proposed work would be consistent with NPWS policy and best practice procedures per the standards, procedures, guidelines/methods as described under Section 6.2.

All upgrade/construction work would be undertaken in accordance with work health and safety requirements.

Materials would be fit-for-purpose and selected to remain in character with the heritage status of the bridge.

The proposed work would be carried out by contractors engaged by NPWS. The Principal Contractor would be responsible for the investigation, location and protection of any underground services within the work site. It is known that electricity cabling and other services are located under the northern approach road and across the bridge.

The Principal Contractor would also be responsible for obtaining all of the necessary approvals from other agencies prior to work commencing.

The Principal Contractor would also be responsible for the preparation of a Construction Environmental Management Plan (CEMP) that includes a traffic management plan and crane lifting plan in addition to the more common CEMP components. The CEMP and sub-plans would be updated as necessary and required.

Prior to works commencing NPWS will review the CEMP.

In addition, an efficient Project Management Plan would be prepared and implemented by the Principal Contractor, ensuring only essential plant and materials are stored onsite, and the works can be performed safely and efficiently for the workers and the public.

The construction Contract and works would be carefully monitored by NPWS staff to ensure the risk of harm to the environment and heritage sites is mitigated.

## **Bare Island Access**

During the bridge renewal works access to the bridge and Bare Island would be closed to the public. The bridge would also be closed to all NPWS staff and contractors not engaged by the Principal Contractor for the bridge renewal works.

Access to Bare Island for NPWS staff and contractors would only be possible via barge or helicopter, which would be arranged by NPWS if required. This inconvenience would be mitigated by ensuring that the Project Plan is implemented efficiently, that all stakeholders receive prior notification, and the project is well managed by NPWS project delivery team to minimise the closure period.

## **Construction Materials**

The main construction materials are considered to be compatible with those previously used as part of the bridge refurbishment and ones that are sympathetic to the character of the site and its heritage. Those expected to be used would include:

- Select old growth turpentine timber piles.
- Select, dimensioned hardwood timber for bridge superstructure.
- Galvanised steel plates and fasteners for timberwork.
- Timber formwork.
- Concrete.
- Stainless steel mesh for the balustrading safety improvements.

For the new table drain:

- Asphalt.
- Road base fill.

## **Construction Methods**

Details of the proposed construction methods would need to be determined by the Principal Contractor and approved by NPWS, and specified in the Contractor CEMP prior to the works commencing. The expected generalised construction methods are provided below.

During the works heavy plant and machinery would be used, including cranes, forklifts and excavators. A crane is likely to be stationed on both of the bridge approaches for the removal and replacement of piles and other bridge components. Both approaches to the bridge are part of the state listed heritage site and the methods for protection of the areas from damage would need to be specified in the CEMP.

Crane operations will commence on the northern bridge approach, with the deconstruction and replacement of relevant members (eg. piles, corbels, girder, decking etc) occurring at headstock (Bent) 1. Works at headstock (Bent) 1 will include this being propped. Once completed, the works crane would be 'walked' to Headstock 2 and the process repeated. This process would be repeated for the remaining 17 assets.

A catchment deck or net for the worker safety, containment of sediment and construction waste may be required.

A floating boom may be located either side of the existing bridge to collect any floating debris that falls from the works site and enters the receiving waters.

Materials that fall from the deck of the bridge and sink will be collected.

On site hot work (welding) may also be required for the work.

#### **6.2.4 Receival, storage and on-site management for materials used in construction**

Materials and equipment would be brought to the site via the existing road network and unloaded at the laydown area adjacent to Anzac Parade before being moved to the work site, the closed approach road or stored in the compound. Truck movements for the delivery of plant, equipment and materials, and the removal of waste materials is expected to be low and staggered over non-consecutive days. Deliveries and removal of material would only occur during normal construction hours as provided in Section 6.2.8. Minor disruption to traffic movements on the Anzac Parade loop road is expected as trucks need to reverse into the work site.

If required, temporary sediment controls would be installed around construction materials in accordance with Blue Book guidelines. All equipment being used during construction and going beyond formed roads would be subject to best practice hygiene methods to prevent the introduction of additional weeds and pathogens.

Stockpiled materials would be kept out of overland flow paths. Any material excavated waste material (i.e. rocks and soil) would be reused on site or stockpiled separately with appropriate temporary sediment and erosion control measures to prevent off-site movement.

#### **6.2.5 Earthworks or site clearing including extent of vegetation to be removed**

Minor ground excavation would be required for the installation of the new table drain on the northern approach to the bridge. This would require the removal of exotic grasses and other weeds including Kikuyu Grass (*Cenchrus clandestinus*), Coastal Plain Pennywort (*Hydrocotyle bonariensis*), Holly Fern (*Cyrtomium falcatum*) and Mirror Plant (*Coprosma repens*). Some individuals of the common native species Kobby Club-rush (*Ficinia nodosa*) may also be removed.

The establishment of the materials laydown/compound area adjacent to Anzac Parade is also likely to result in the die-off of some of the exotic maintained lawn that covers the area. This would be made good at the completion of the work by topsoiling and re-turfing if required.

#### **6.2.6 Environmental safeguards and mitigation measures**

The environmental safeguards and mitigation measures to be implemented during the proposed work are detailed in Section 9. These measures are in accordance with all relevant construction, environmental and safety legislation and guidelines, including NPWS *Park Facilities Manual* (internal document, OEH 2016), as well as any additional conditions of the determination of this REF.

#### **6.2.7 Sustainability measures – including choice of materials and water/energy efficiency**

The proposed scope of works aims to establish longer-term solutions to the current situation, eliminating the potential for any structural failure and reducing the need to carry out future unplanned repairs.

All materials selected would be durable, fit-for-purpose, and to provide an extended design life. The materials used in the repair of the bridge would be in keeping with the existing heritage values and in accordance with the recommendations of the heritage advice report.

Efforts would be made to ensure the sustainability credentials of materials to be used.

The materials and construction methods used for the proposed works would be in accordance with current best practice industry standards.

The proposed works would be carried out only during daylight hours, negating the need for artificial lighting and increased use of energy. Transport movements would be coordinated where possible to reduce the number of movements and minimise fuel consumption. All transport, machinery and equipment used would be serviced and maintained to ensure efficient operation and energy usage.

Waste materials, including old bridge timbers would be recycled where possible. The recycling methods (where applicable) would be enacted in accordance with NSW EPA statutory requirements.

### **6.2.8 Construction timetable and staging and hours of operation**

Generally, the work would take place within standard working hours in accordance with the *Draft Construction Noise Guideline* (NSW EPA 2020):

- 7:00 am – 6:00 pm Monday to Friday
- 8:00 am – 1:00 pm Saturday.

No work on Sundays or public holidays unless authorised by NPWS.

The duration of the proposed work is estimated to commence in January 2026, with completion expected by January 2027.

## **7. Reasons for the activity and consideration of alternatives**

### **7.1 Objectives and reasons for the Proposal**

The Bridge is currently closed to vehicle access following a preliminary structural review undertaken by Consult Marine in December 2024. That review noted the potential for the failure of piles under vehicle use or crowd loading until pile repairs are completed. A section of the bridge was subsequently also closed to pedestrian movements due to damaged decking timbers. The report advised that of the 52 bridge piles, 4 piles require urgent replacement, and 14 piles would require replacement within 5 years. Further inspections of the bridge recommended that 35 of the 52 bridge piles be replaced.

This was due to the weathered nature of the piles particularly at the connection to the rock bed on rock platforms where the pooling of water leads to deterioration of the pile bases. Maintenance repairs of these piles would not be sufficient, and replacement was recommended. The assessment recommended that vehicle use of the bridge cease and that the crowd loading be restricted.

The report also identified existing safety implications for vehicle use of the bridge in that it does not have a vehicle impact barrier or kerbs that can prevent a vehicle from leaving the bridge.

Further assessments of the bridge were then undertaken to determine the condition of all timber elements. This work highlighted the extensive nature of the damage to the bridge timber through decay, termite damage and structural failure (timber splitting), and the work required to repair the bridge.

The proposed works aim to undertake those repairs. This would maintain the structural integrity and heritage values of the bridge, and improve staff and visitor access to Bare Island Fort.

Repair and refurbishment of the bridge would provide a better visitor experience, improve visitor safety, and encourage use of Kamay Botany Bay National Park in line with the NPWS charter for national parks.

The objectives and reasons for the Proposal are therefore to:

1. Maintain the historic Bare Island bridge infrastructure and restore vehicular access to Bare Island Fort.
2. Improve public safety.
3. Better support management of the precinct, including compliance with identified actions to desired outcomes of the PoM, and the objects and reserve management principles of the NPW Act.

## **7.2 Consideration of alternatives**

### **Do-nothing**

The Do-nothing option would mean retaining existing timber walkway and railings, and corroding steel stair railing. This option is not viable due to the deteriorating timber piles and other elements of the bridge, resulting in increasing public and staff safety issues in the use of the bridge. It does not accord with the heritage conservation responsibilities of the NPWS.

Currently, the functionality and standard of the infrastructure is aging, and poses safety risks and hazards, and a reduced level of visitor experience in a high use destination.

Fundamentally, the do-nothing option would not meet the objectives of the need to undertake repairs, nor comply with the desired outcomes of the PoM or identified NPWS' policies.

### **Closure of the bridge**

Closure of the bridge to vehicle and pedestrian traffic would prevent access to the Bare Island Fort. This option is not viable given its heritage value and attraction as a tourist destination. It also does not accord with the heritage conservation responsibilities of the NPWS.

Currently, the functionality and standard of the infrastructure is aging, and poses safety risks and hazards, and a reduced level of visitor experience in a high use destination.

This option would not comply with the desired outcomes of the PoM or identified NPWS' policies.

### **Construction of a new bridge on a new alignment**

Whilst an option, the financial and heritage implications associated with this option do not make it a viable consideration.

### **Alternative options**

An alternative design option for components of the proposed work was considered. This option, pending a response from NSW Heritage on the proposal to establish a stainless steel mesh infill barrier design, being the replacement of the existing hand railing and kerbing with like for like materials. This option is non-compliant with Bridge Code AS5100 and is contrary to the engineers' recommendation.

The final materials and design will be determined by heritage considerations, current costs, future maintenance needs and costs, fitness for purpose, and visual aesthetics.

## 7.3 Justification for preferred option

The proposed work as assessed within this REF is considered to be a prudent, balanced and financially justifiable method that would:

- Address the need to maintain and preserve the bridge, safety issues and non-compliance with vehicular use.
- Enable improved management of the bridge and access to Bare Island Fort.
- Conserve the heritage values of the bridge and the locality.
- Conserve the natural values of the study area.
- Meet NSW and Commonwealth legislation.
- Meet the objectives, and management principles in accordance with s.30G, of the NPW Act.
- Meet the identified desired outcomes of the Kamay Botany Bay National Park PoM.
- Comply with identified NPWS policies.
- Meet relevant Australian design and construction standards, including Bridge Code AS5100.

## 7.4 Site suitability

Not applicable. Per NPWS standard REF template (dated March 2024), matter refers to s.151 of the NPW Act and the granting of leases and licences to third parties. NPWS is the proponent and land manager for the project and is therefore not seeking, or required to seek, a lease or license with regards to s.151 of the NPW Act. As such, completion of a site suitability assessment is not required.

# 8. Description of the existing environment

## 8.1 Overview of the project area

The Bare Island Fort bridge is situated at the entrance to the northern side of Kamay Botany Bay. It spans a narrow channel between the historic Bare Island Fort and the mainland at La Perouse providing pedestrian and vehicular access to the island.

The area comprises typical Sydney coastal sandstone foreshore with broad flat rock platforms on the shoreline and almost vertical cliffs with large boulders fractured from the cliff faces at the high tide line.

Bare Island and the La Perouse mainland on the northern side of the bridge has had a very long history of disturbance and vegetation clearing and landform modification for military and public recreational uses. Vegetation is sparse and comprises mostly exotic lawns and other weed species with some common native plants surviving.

Many historic buildings and landmarks are situated at La Perouse and the locality is a popular daytime local and international tourist destination.

Anzac Parade forms a loop on the headland and provides road access to the Bare Island site. A group of shops and eateries with residential apartments above them are located on the northern side of the loop road. These apartments would be the nearest sensitive noise receptors to the proposed work site.

The roadway in front of the proposed materials laydown/compound area comprises parallel parking with a wide concrete footpath and square sandstone block delineation between the

road and footpath. The access road to the bridge from Anzac Parade has a formalised gate and no parking zone and would provide space for trucks reversing into the access road or materials laydown/compound area.

The Department of Defence Unexploded Ordnance map indicates that the area to the east of the proposed activity is mapped as, and has a Site Categorisation of, 'other' (Department of Defence 2025) (Plate A).



**Plate A:** Unexploded ordnance site categorisation.

With reference to the Department of Defence website it is noted 'The Department of Defence identifies and maintains a record of areas affected, or suspected of being affected, by Unexploded Ordnance (UXO) that may influence the nature of land use'.

Six site categorisations are provided with 'other' defined as:

*'Defence records confirm that the area was used for military training but do not confirm that the site was used for live firing. UXO or explosive ordnance fragments / components have not been recovered from the site. Defence opinion is that it would be inappropriate to assess as either slight, substantial or remote.'*

**Advice:** *These sites have been included for general information purposes only. Defence makes no recommendations in regards to this category.*

### Meteorological data:

The meteorological information potentially relevant to carrying out the proposed work is that annual rainfall is approximately 1000 mm, with most falling from December to March during the summer period. However intense rainfall events are possible at any time of the year with the onset of climate change impacts. The proposed erosion and sediment controls, and other materials storage protections to be implemented, would be designed to cope with an intense rainfall event.

## 8.2 Natural values

### 8.2.1 Geology, geomorphology and topography

The Proposal site occurs along the coastline of La Perouse Headland which is comprised of deeply eroded Hawkesbury Sandstone and displays landforms typical of this, including weathered sandstone sea cliffs up to 30 m in height and broad rock platforms on the foreshore. Elevation ranges from approximately -5 m (below water level) to 15 m above sea level (asl) at the Anzac Parade access point. The sealed approach road to the northern bridge abutment is cut into the sandstone bedrock with a low near vertical cutting on the upslope side and a rocky slope to the foreshore rock platform on the downslope side of the road.

### 8.2.2 Soil types and properties (including contamination)

The Soil Landscapes of the Sydney 1:100,000 Sheet Report (Chapman and Murphy 1989; Figure 2) indicates that two soil landscapes occur in the area of the proposed work, these being:

- Lambert Soil Landscape (9130la), on the mainland side of the bridge, and
- Disturbed Terrain (9130xx), all of Bare Island.

Both of these are on a geology of Hawkesbury Sandstone. The Lambert Soil Landscape has a largely natural soil profile, while the Disturbed Terrain includes areas of artificial fill material including dredged estuarine sand and mud, demolition rubble, industrial and household waste, and rocks and local soil materials. Bare Island would have been extensively cleared and subject to cutting and filling with on-site material rather than imported material and some of the original shallow soils are likely to have been retained for cover over the fortifications.

While the bed of the channel under the bridge is not included in soil mapping, it is expected to be a combination of bedrock and loose rocks with areas of sandy sediment.

The Lambert Soil Landscape on the mainland La Perouse headland comprises undulating to rolling low hills. Local relief 20–120 m and slopes <20%. Broad convex crests and plateau surfaces.

Gently to moderately inclined sideslopes, often associated with small hanging valleys. Characteristic sandstone bedrock that outcrops as wide benches (10–100 m), with broken scarps 1–4 m high. Small, poorly drained seepage areas are common (Chapman and Murphy, 1989).

The soils developed are shallow (<50 cm) discontinuous Earthy Sands and Yellow Earths on crests and insides of benches; shallow (<20 cm) Siliceous Sands/Lithosols on leading edges; shallow to moderately deep (<150 cm) Leached Sands, Grey Earths and Gleyed Podzolic Soils in poorly drained areas; localised Yellow Podzolic Soils associated with shale lenses.

Limitations of these soils to development are; a very high soil erosion hazard, rock outcrop, localised seasonally perched watertables, shallow highly permeable soil, with very low soil fertility.

The topsoils in particular have a severe erosion hazard. The proposed work would not involve excavation of any in-situ natural soil profile. The excavation for the new table drain is expected to be in either accumulated sediments or road base material used for the construction of the sealed access road.

### Contaminated Land and Acid Sulfate Soils

The Contaminated Land Record (NSW EPA 2025) does not identify the study area as containing any land that is known to be contaminated.

Reference to the SEED map (NSW Government 2025b), utilising the Acid Sulfate Soils layer, does not identify any part of the study area as having potential acid sulfate soils present.



Figure 2. Soil Landscape mapping

### 8.2.3 Watercourses, waterbodies and their catchments

Bare Island bridge is located over a narrow channel separating Bare Island from the mainland and linking Astrolabe Cove and Congwong Bay which are part of the marine waters of Botany Bay (Figure 3). The channel is marked on some maps as Frenchman's Channel.

No watercourses occur within or near the Proposal site and rainfall is channelled into the local road drainage system and discharged into the bay. Significant rainfall events are therefore unlikely to have the potential for disruption or damage to the proposed work, such as soil erosion or materials storage problems.

No wetlands occur in vicinity of the Proposal, and it is not within the Sydney drinking water catchment.

Beyond existing influences, the works to repair the existing bridge will not have a direct impact on the receiving waters of Botany Bay.

### 8.2.4 Coasts and estuaries

The coastline and waters of Botany Bay occur immediately below the proposed activity area and could be adversely impacted by materials entering this waterway during the repair period, or through inputs due to the flow of uncontrolled sediment laden runoff during a rainfall event.

The waters of Botany Bay are mapped as Key Fish Habitat (KFH) under the *Fisheries Management Act 1994*.

The nearest Marine Protected Area is the Cape Banks aquatic reserve located about 950 metres to the east along the part of the La Perouse headland from Henry Head and around Cape Banks (Figure 3).

Referencing Chapter 2 of the RHSEPP 2021, the area in which the works are to be undertaken are not identified as being mapped as Littoral Rainforest or Littoral Rainforest Proximity Area. The Site occurs in a Coastal Environment Area and Coastal Use Area under the Resilience and Hazards SEPP.

Section 2.10 (Development on land within the coastal environment area) of RHSEPP 2021 requires that *'development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:*

- (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,*
- (b) coastal environmental values and natural coastal processes,*
- (c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,*
- (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,*
- (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,*
- (f) Aboriginal cultural heritage, practices and places,*
- (g) the use of the surf zone.*



Figure 3. Waterways and Key Fish Habitat/environments

Section 2.11 (Development on land within the coastal use area) of RHSEPP 2021 requires that *'development consent must not be granted to development on land that is within the coastal use area unless the consent authority:*

- (a) has considered whether the proposed development is likely to cause an adverse impact on the following—*
  - (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,*
  - (ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,*
  - (iii) the visual amenity and scenic qualities of the coast, including coastal headlands,*
  - (iv) Aboriginal cultural heritage, practices and places,*
  - (v) cultural and built environment heritage, and*
- (b) is satisfied that—*
  - (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or*
  - (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or*
  - (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and*
- (c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.*

Beyond the existing nature of the foreshore environments that occur within, and close to, the existing bridge alignment, the proposed activity would not have an effect on the Coastal Environment and Coastal Use Areas. The proposed activity would not contribute to any direct or indirect adverse effects on the biophysical, hydrological or ecological integrity, will not affect any Aboriginal cultural heritage items, practices or places, would not restrict existing access to the foreshore, will not have a visual impact on the coastal environment, will not affect the quantity and quality of surface and ground water flows to and from, Botany Bay and so forth.

The potential impacts and mitigation measures proposed to be implemented are discussed in Section 9.

## 8.2.5 Biodiversity

### Survey Methods

Site inspections were conducted by Deryk Engel<sup>1</sup> B.Env.sc [Hons] on 30 April, and Harry Engel<sup>1</sup> B.Mar.Sc and Tori Engel<sup>2</sup> B.Edu on 3 May, 2025.

The inspection conducted on 3 May involved a consideration of both the terrestrial, and aquatic environments, present within, and adjacent to, the proposed activity footprint.

The aquatic investigation was conducted by Lesryk during a mid-going high tide period, involved random foot traverses along the rocky foreshore either side of both bridge abutments. Observations were made of those marine species present and targeted inspections carried out of the structure and composition of the habitat features (e.g., any sea grass and kelp beds).

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<sup>1</sup> Diving qualification: Padi Advanced Open Water Certificate # 22020B5900

<sup>2</sup> Diving qualification: Padi Advanced Open Water Certificate # 1812AH2284

In addition, scuba assisted underwater diving was conducted by two Lesryk personnel during the aquatic investigation. This inspection identified those species present on, and in proximity to, the piers that are to be replaced, as well as the character of the marine environments, including the bed of the existing channel.

Table 5 provides the water and weather conditions experienced during the surveys. It should be recognised that the data gathered is only indicative of the environmental conditions of the site at the time field work was conducted.

The purpose of the investigations, along with a review of databases and reports, was to identify the diversity of ecological communities, terrestrial and aquatic species known for, or potentially occurring in close proximity to, the proposed activity footprint; particularly any that are of State and/or national conservation significance as listed under the Schedules to the EPBC, BC and FM Acts.

**Table 5. Lesryk investigations – conditions experienced**

| Date                                              | Start time | End time | Weather conditions                                                                                                                                                     |
|---------------------------------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30/04/2025<br>Terrestrial<br>and other<br>surveys | 10:30      | 11:30    | Overcast skies, drizzling to constant rain, 18 degrees air temperature. Strong onshore winds. Rain eased towards end of inspection. Tide high with strong swells.      |
| 03/05/2025<br>Aquatic<br>studies                  | 1:00 pm    | 3.00 pm  | 100% cloud cover, no wind (still, 5 kph), scattered light showers.<br>24 degrees water temperature, 22 degrees air temperature, low tide (0.7 m at 8am) going to high. |

### Overview of terrestrial and aquatic biodiversity

As part of the biodiversity assessment, known databases and previous studies conducted in proximity to the proposed activity area were reviewed to identify the diversity of ecological communities, flora and fauna species known for, or potentially occurring in, the study region that are of State and/or national conservation significance as listed under the Schedules to the EPBC, BC and FM Acts.

The databases and reports referred to include, but were not limited to, the:

- Protected Matters Search Tool (Cth DCCEEW 2025a).
- BioNet Atlas database [Atlas of NSW Wildlife] (NSW DCCEEW 2025a).
- NSW WeedWise: Priority weeds for Greater Sydney (DPIRD 2025b).
- NSW State Vegetation Type Map (release C2.0.M2.1 [March 2025]) (State Government of NSW and NSW DCCEEW 2024).
- BioNet Vegetation Classification (NSW Government 2025e).

### Limitations to the site survey

The weather conditions experienced during the April 30 terrestrial investigation were considered to limit the diversity of land-based animals recorded. Whilst a limitation, considering the highly modified use of the existing maintained exotic lawns, car park and rock platforms, this limitation is not considered to negatively influence the overall survey or

assessment of the works. The identification of the dominant plants present was possible during this survey.

No limitations were encountered during the course of the scuba assisted surveys.

Not all animals can be fully accounted for within any given study area. The presence of threatened species is not static; it changes over time, often in response to longer term natural forces that can, at any time, be dramatically influenced by weather factors or human-made disturbances; therefore, a precautionary approach has been adopted where necessary (i.e. suitable habitat for those threatened species known to occur, or that have been previously recorded within the surrounding locality, was identified).

Some plant species such as native orchids are difficult or impossible to detect at certain times of the year when they have no above ground parts. This was not considered a major limitation of the survey since the proposed work would occur within highly disturbed areas including maintained exotic lawns, roads and rock platforms. In these habitats, it is not expected that any orchids or threatened plants are present in the soil seed bank.

### Plant Community Types

Vegetation in the locality has been mapped at a broad scale in NSW State Vegetation Type Map (State Government of NSW and NSW DCCEEW 2024). The vegetation communities are described in terms of dominant species and understorey characteristics.

These communities are also related to the NSW vegetation formation and classes taken from Keith (2004) and the NSW Plant Community Types (PCTs) assigned to the vegetation type in the Vegetation Information System database maintained by the NSW Government.

With reference to the State Vegetation Type Map, the following PCTs are mapped as occurring within or near the study area (Figure 4):

- PCT 0 – Not Classified
- PCT 3811 – Sydney Coastal Headland Cliff Scrub.

For reference a description of PCT 3811 is provided below (Table 6).

**Table 6. Mapped Plant Community Type Descriptions**

| Mapped PCTs                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PCT 3811 – Sydney Coastal Headland Cliff Scrub | <p>A mid-high to tall, rarely very tall heathland that forms a narrow band above the dramatic sandstone coastline cliffs and headlands of Sydney. These are very exposed locations and the vegetation is pruned by sea-breezes. The shrub canopy very frequently includes a high cover of <i>Melaleuca armillaris</i> and <i>Banksia ericifolia</i> commonly with <i>Allocasuarina distyla</i>. The low shrub <i>Baeckea imbricata</i> is also very frequent, particularly near the cliff edge or where the water table is close to the surface. Other woody shrubs that are encountered very frequently include <i>Westringia fruticosa</i>, commonly <i>Leptospermum laevigatum</i> and occasionally <i>Acacia longifolia</i>, amongst others. The sparse ground cover is variable in composition, with drier sites including small forbs such as <i>Xanthosia pilosa</i>, and where water may pool in depressions or near rock seepage, including sedges such as <i>Ficinia nodosa</i>.</p> <p>This PCT has a disjunct distribution within the Sydney district, closely associated with Hawkesbury Sandstone cliff lines at Kurnell, La Perouse, North Head, and Royal National Park. It may also occur in suitable habitats on the Central Coast and lower Hawkesbury. In the Jervis Bay area this PCT is found on the Permian sandstone headlands at Beecroft Peninsula and Booderee National Park.</p> |

It is noted that PCT 3811 is not associated with any Threatened Ecological Community (TEC) listed, or currently being considered for listing, under the Schedules of the EPBC or BC Acts.

The site inspection conducted 30 April 2025, confirmed the mapping was accurate, with PCT 0 being the only plant community observed within both the proposed activity footprint and study area.



Figure 4. PCT vegetation mapping.

## Vegetation Description

The area within the proposed activity footprint is mostly a maintained exotic lawn dominated by the introduced plant, Kikuyu Grass (*Cenchrus clandestinus*). Other common plants present within the proposed activity footprint were the exotics Coastal Plain Pennywort (*Hydrocotyle bonariensis*), Lantana (*Lantana camara*), Bitou Bush (*Chrysanthemoides monilifera* subsp. *rotundata*), Mirror Plant (*Coprosma repens*) and Holly Fern (*Cyrtomium falcatum*). The native species New Zealand Spinach (*Tetragonia tetragonioides*), Knobby Club-rush (*Ficinia nodosa*) and Pig Face (*Carpobrotus glaucescens*) also occur but are infrequent in the proposed activity footprint except for along the top edge of the sea cliff.

None of the native plants recorded are listed, or currently being considered for listing, under the EPBC or BC Acts.

Apart from the lawn, the other plants recorded generally occur as isolated individuals or small groups. Given their current location(s), none of the native species are expected to be directly affected by the proposed works.

## Aquatic plants

During the underwater dives, the only marine vegetation recorded in proximity to the existing bridge piers was Spiny Kelp (*Ecklonia radiata*). This is a common kelp and is the dominant species along the NSW Coastline (DPI-Fisheries 2023).

Under the FM Act, Strapweed (*Posidonia australis*) is listed as an Endangered population in Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie. An area of this plant is mapped as being present about 700 m north-west of the proposed activity footprint, in the vicinity of Frenchmans Beach (NSW Marine Estates 2025). Whilst considered during the course of the scuba assisted investigation, no occurrences of Strapweed or other seagrasses were observed within the likely direct or indirect disturbance footprint of the bridge works.

As no occurrences of Strapweed are present within or close to the disturbance footprint, an assessment that considers the criteria provided under the s.221ZV (Part 7A) of the FM Act is not required.

## Weed Species

All of the terrestrial vegetation in the Proposal area exhibited some level of weed disturbance. The following Weed of National Significance (WoNS) and/or Priority Weeds for the Greater Sydney (DPI 2025) were identified (Table 7).

**Table 7. Weeds of concern occurring in the study area**

| Common Name | Scientific Name                                          | Status   | Comment                                                                       |
|-------------|----------------------------------------------------------|----------|-------------------------------------------------------------------------------|
| Bitou Bush  | <i>Chrysanthemoides monilifera</i> ssp. <i>rotundata</i> | PW, WoNS | Scattered throughout the sea cliff area where maintained lawn does not occur. |
| Lantana     | <i>Lantana camara</i>                                    | PW, WoNS | Scattered throughout the sea cliff area where maintained lawn does not occur. |

Key

PW – Priority Weed for the Greater Sydney, WoNS – Weed of National Significance

## **Areas of outstanding biodiversity value or critical habitat**

The Commonwealth's Register of Critical Habitat (Cth DCCEEW 2025b), DPIRD's Register of critical habitat (DPIRD 2025d) and the AOBV register (NSW DCCEEW 2025b) (in conjunction with Part 3 of the Biodiversity Conservation Regulation 2017) per listings provided under the EPBC, BC and FM Acts does not identify any gazetted areas of critical habitat or AOBV for any flora or fauna species, populations or communities occurring within or near to the proposed activity footprint.

## **Environmental assets of intergenerational significance (AIS)**

No AIS sites have been identified within or in close proximity to the area of investigation.

## **Threatened ecological communities**

Vegetation within PCT 0 is not considered to conform to a native plant community; therefore, no TECs listed under the EPBC or BC Acts are considered to be present within the proposed activity footprint.

PCT 3811 – Sydney Coastal Headland Cliff Scrub, was not identified as being present within the activity footprint. Nonetheless, this PCT is not associated with any TECs listed under the EPBC Act or BC Act.

As no terrestrial or aquatic TECs are present, further consideration of the impact of the works with regards to the applicable assessment criteria provided under the EPBC Act, BC Act or FM Act are not required.

## **Threatened species and populations**

### **Flora**

None of the native plants recorded during the site inspection are listed, or currently being considered for listing, under the EPBC or BC Acts.

The DPE BioNet Atlas (DPE, 2025) identified 8 threatened plants previously recorded within a 2 km radius of the proposed activity footprint (Figure 5).

Within the proposed activity footprint, considering the site's land use history, no threatened plants are expected to be in the soil seedbank and therefore visible at other times of the year.

Given that the proposed activity would be undertaken within existing cleared and modified areas, it is highly unlikely that any threatened flora not identified during the field investigation would be affected.

### **Fauna**

A number of native and exotic terrestrial and aquatic species were recorded during the course of the field inspections undertaken to assess the proposed activity (Appendix 3). This included 18 native birds, 19 fish, one octopus and a variety of invertebrates.

Of the native species detected, the White-bellied Sea-Eagle is listed as Vulnerable under the BC Act. It is not listed under the EPBC Act.

During the inspection, two White-bellied Sea-Eagles were observed flying over Congwong Beach (location of beach shown on Figure 4), heading in a southerly direction.

Within and close to the proposed activity footprint, no large stick nests were observed and no 'developed' vegetation that could provide nesting opportunities for Sea-Eagles at a later date were noted. The White-bellied Sea-Eagle is not expected to be breeding close to the proposed activity footprint and the proposed works would not affect any resources utilised by this species.



**Figure 5: Threatened flora previously recorded in vicinity of the subject site**

As the works would not affect the local viability of this animal, nor erect any barriers to its movement patterns or fragment/isolate its habitat, a consideration of the matter with regards to the assessment criteria provided under Section 7.3 of the BC Act is not required.

The DPE BioNet Atlas (DPE, 2025) identified 38 fauna species previously recorded within a 2 km radius of the proposed activity footprint (Figure 6).

Of the threatened species previously recorded, habitat for the Sooty Oystercatcher (*Haematopus fuliginosus*) is present within the proposed activity footprint.

The Sooty Oystercatcher is listed as Vulnerable under the BC Act. It is not listed under the EPBC Act. The Sooty Oystercatcher occupies rocky headlands, rocky shelves, exposed reefs with rock pool, beaches and muddy estuaries (OEH 2025). At low tide, this bird could occupy those exposed rocky platforms adjacent to and under the bridge. This bird would only be using this site as a foraging or roosting resource as it is documented as breeding exclusively on offshore islands (OEH 2025).

The rock platforms near the bridge are not a limited resource, with similar rock platforms at other locations on Bare Island and they are common within this part of Botany Bay.

The 'temporary' nature of the proposed activity would not result in the removal of the habitat provided by the rock platforms that are present near the bridge works site, and would be available to the foraging and roosting needs of this bird at the completion of the Proposal.

Given the presence of similar resources beyond the works area, the likelihood that the works would occur during all tide periods, and the overall temporary nature of the activity, impacts on the Sooty Oystercatcher would be very limited.

As the works would not have a significant effect on the Sooty Oystercatcher or its habitat, a consideration of the matter with regards to the criteria provided under Section 7.3 of the BC Act is not required.

Reference to the PMST (DCCEEW 2025a; Appendix 4) notes that the following threatened marine species have been recorded, or may be present, within Botany Bay:

- Black Rockcod (*Epinephelus daemeli*)
  - A territorial species that inhabits caves, gutters and crevices. They are usually found in depths up to 50 m, although individuals have been collected from below 100 m. Juveniles are found inshore, often in coastal rockpools and estuaries (NSW Department of Primary Industries 2025a).
  - If present, this species may occur in association with the rocky bed and shelves present in the locality.
- White's Seahorse (*Hippocampus whitei*).
  - Recorded within coastal embayment's and estuaries. Occurs at depths of 1 m to 18 m. Habitats that are considered important habitat for the White's Seahorse include natural habitats such as sponge gardens, seagrass (e.g. *Posidonia australis*) meadows and soft corals. It is also known to use artificial habitats such as protective swimming net enclosures and jetty pylons (NSW Department of Primary Industries 2025b).
  - If present, this species may occur on the bridge piers that are to be replaced.
- Australian Grayling (*Prototroctes maraena*).
  - A migratory species that spawns in the lower freshwaters of coastal rivers and spends approximately 6 months in coastal seas as larvae/juveniles before migrating back into freshwater rivers and streams where they remain for the rest of their lives (NSW Department of Primary Industries 2025c).
  - Unlikely to be adversely affected by the works proposed if present during the migratory phase of its life cycle.



**Figure 6: Threatened fauna previously recorded in vicinity of the subject site**

- Cauliflower Soft Coral (*Dendronephthya australis*).
  - Found in estuarine environments at depths of 1 m to 15 m. Generally found in areas of sandy seabeds where there is high current flow (NSW Department of Primary Industries 2025d).
  - May be present on the seabed near the bridge works.

Sharks, Turtles and other listed marine species are considered likely to be present in proximity to Bare Island on occasion, though the nature of the works would not have a direct bearing on the habitats used by these species. With regards to the presence of these marine species, the proposed works would not present any barriers to their movement patterns, nor isolate or remove habitat.

The scuba assisted dive survey focused on the area below, and in proximity to, the bridge. During this inspection no Black Rockcod, White's Seahorse or Cauliflower Soft Coral were identified, however a variety of other marine species were observed. None of these identified marine species are listed, or currently being considered for listing, under the EPBC or FM Acts.

As no species listed under the FM or EPBC Acts were recorded during the course of the site inspections, and none are considered likely to occur in proximity to, or be affected by, the proposed work, reference to the assessment criteria listed under s.221ZV (Part 7A) of the FM Act or the EPBC Act's Significant Impact Guidelines is not required.

Whilst not detected, as there is the potential for threatened aquatic species to be present, including the White's Seahorse, and as a number of 'common to abundant' marine invertebrates were observed, a pre-works inspection (and relocation locally of any collected species) of the piers will be conducted immediately prior to the activity commencing. These works will be a component of the Syngnathidae (Seahorse) Management Plan that will be prepared.

No aquaculture is present within the study area and, as the Proposal does not involve obstruction of fish passage, no permits in accordance with s.144 or 219 of the FM Act are necessary.

Whilst no threatened aquatic species are to be disturbed, aquatic animals (e.g. molluscs and echinoderms) that are occupying the piles to be replaced may be adversely affected. To minimise impacts on these species, mitigation measures have been presented in Section 9.2 of this REF.

## Key Threatening Processes

None of the 36 Key Threatening Processes (KTPs) listed for mainland NSW under Schedule 4 of the BC Act, or those listed on the EPBC and FM Acts, are applicable to the proposed works.

The repair of the existing bridge access to Bare Island, including use of maintained lawns as compound and stockpile sites etc, would not contribute to the operation of any KTP listed under the EPBC, BC or FM Acts.

## 8.3 Cultural values

### 8.3.1 Aboriginal cultural heritage

An Aboriginal Cultural Heritage Assessment (ACHA) Due Diligence report was prepared for the Proposal by AMBS Ecology and Heritage in May 2025 (Attachment 4).

As part of the Due Diligence report, an Aboriginal Heritage Information Management System (AHIMS) extensive search was carried out on 14 April 2025, this indicating the presence of 68 registered Aboriginal sites in the search parameter employed (Figure 7). One of these; AHIMS Site # 45-6-3865 (La Perouse Midden 19-01) is located close to the study area (Figure 8).

The site was recorded in 2021 by Artefact Heritage. It is a shell scatter located directly above a southeast facing cliff overlooking the Bay. The shell midden was found to be eroding out of the bottom of a humic layer of sediment, less than 150mm thick, and was determined that it was unlikely that the shell was deposited through natural processes (AMBS 2025).

The midden site is within an area of shrubs above the access road and about 40 m from the northern bridge abutment (AMBS 2025). The site would not be directly disturbed by the proposed work but there is the potential for accidental indirect impact unless workers are informed of its location and the site is fenced during the construction period (AMBS 2025).

No other recorded sites are within the area of potential indirect impact (AMBS 2025).

The land use history of the proposed activity area and the locality was investigated as part of the ACHA study (AMBS 2025). AMBS notes that the original land surface of the study area and headland have been impacted by historic vegetation clearance, construction of a small structure within part of the proposed material laydown area (visible in the 1943 aerial photo), construction of the bridge and access road and later the construction of the Anzac Parade loop road. Available aerial photographs show that the northern section of the study area, where the material laydown area is proposed, has been significantly disturbed in the past.

A visual inspection conducted by AMBS personnel on 21 April 2025 involved a pedestrian survey of the study area and surroundings, focusing on identifying levels of disturbance and assessing the landforms. The inspection aimed to assess the study area's current condition and to identify whether landscape features likely to indicate the presence of Aboriginal objects are present (AMBS 2025).

The survey area consisted of the Bare Island Bridge, the rock ledges on the north and south end of the bridge, the bridge access road from the Anzac Parade loop road, and the grassed area to the east of the bridge access road (the proposed material laydown area). Aside from the rock ledge on either end of the bridge, ground surface visibility was low due to the asphalt access road and grassed areas.

No Aboriginal sites, objects or places, or undisturbed areas of potential Aboriginal archaeological sensitivity were identified within the study area during the visual inspection. The inspection confirmed that majority of the study area has experienced significant disturbance (AMBS 2025).

As per the Heritage NSW Code of Practice, lands can be considered disturbed "if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable" (AMBS 2025). Examples of disturbances within the study area, provided by the Code include, clearing of vegetation, construction of roads, trails and tracks (including fire trails and tracks and walking tracks), construction of buildings and the erection of other structures, and construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) (AMBS 2025).

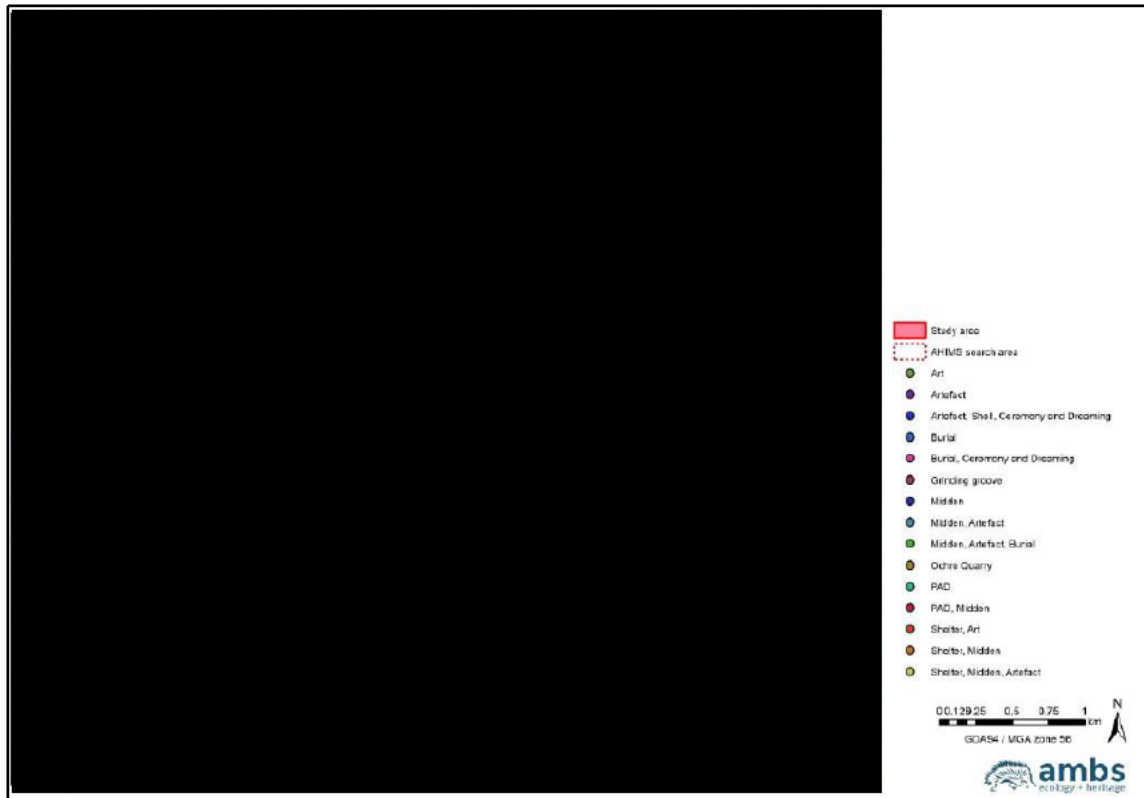


Figure 7. Registered AHIMS sites within the vicinity of the study area (AMBS 2025).



Figure 8. AHIMS sites closest to the study area (AMBS 2025).

Based on the results of the visual inspection, the predictive model for Aboriginal sites, proximity to water and landforms present, and the historic and observed level of disturbance, it was considered unlikely for subsurface Aboriginal heritage objects and archaeological deposits to be present within the study area, as the natural soils have likely been significantly disturbed (AMBS 2025).

Further archaeological assessment of the study area was considered unlikely to increase the current scientific understanding of the local region (AMBS 2025).

Recommendations from the Aboriginal Cultural Heritage Due Diligence assessment mitigation measures to be implemented to avoid impact on any unexpected Aboriginal heritage are provided in Section 9.5 of this REF.

No formal consultation with the Aboriginal community was undertaken to inform the ACHA. Formal consultation with the Aboriginal community following the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW, 2010c) is not a requirement for due diligence advice. Fieldwork for the re-issued due diligence advice report was undertaken during the Metropolitan LALC end of year shut down and a sites officer was not available. No additional Aboriginal community consultation was therefore undertaken at that time.

There are no nearby assets of intergenerational significance for Aboriginal cultural value under s.153G of the NPW Act. The study area has not been declared an Aboriginal Place under s.84 of the NPW Act.

In preparing the ACHA, AMBS considered the Heritage NSW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*, this being reproduced in Table 8.

**Table 8. Generic Due Diligence process**

| Due Diligence Assessment Process                                                                                                                                                                                                    | Response                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1.</b> Will the activity disturb the ground surface or any culturally modified trees?                                                                                                                                       | The proposed development will disturb the ground surface. No native trees are currently present in the study area or immediate surrounds.<br><br>Proceed to Step 2a.                                                                                                             |
| <b>Step 2a.</b> Are there any relevant confirmed site records or other associated landscape feature information on the AHIMS database?                                                                                              | No previously registered sites have been recorded within the study area, AHIMS. Proceed to Step 2b.<br><br>The study area is in close proximity to the shoreline, however areas that are not currently hardstand have it has been significantly disturbed.                       |
| <b>Step 2b.</b> Are there any other sources of information of which a person is already aware? Other sources of information can include previous studies, reports or surveys which you have commissioned or are otherwise aware of. | A number of archaeological assessments have been undertaken in the local area, with two studies, located in close proximity to the study area. Proceed to Step 2c.                                                                                                               |
| <b>Step 2c.</b> Are there landscape features present likely to indicate presence of Aboriginal objects?                                                                                                                             | The study area has been impacted by levels of disturbance from land clearing, and landscape modifications, and infrastructure construction. It is therefore unlikely for Aboriginal objects to be present within the study area in an archaeological context. Proceed to Step 3. |
| <b>Step 3.</b> Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information be avoided, and/or can the carrying out of the activity at the relevant landscape features be avoided?                  | No Aboriginal heritage sites have previously been recorded within the study area. Landscape features that are likely to indicate presence of Aboriginal objects are significantly disturbed in the study area. Proceed to Step 4.                                                |

| Due Diligence Assessment Process                                                                                                  | Response                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 4:</b> Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely? | The desktop assessment has confirmed that it is unlikely for further Aboriginal objects to exist within the study area, due to the observed levels of disturbance to the landform present. |

### 8.3.2 Historic heritage values

To determine the presence of previously recorded non-Aboriginal [European] cultural heritage within the vicinity of the proposed activity, a Heritage Impact Statement (HIS) was prepared by Urbis in September 2025 (Attachment 5).

The HIS was been prepared to fulfill the self-assessment requirements under the EPBC Act for the proposed remediation works to the Bare Island Vehicle Bridge.

Section 4.2 of the HIS identifies that the following statutory listings and registers have been reviewed to identify the location and significance of historic heritage items and places in the vicinity of the study area:

- Randwick Local Environmental Plan (LEP) 2012
- NPWS s170 Heritage and Conservation Register
- State Heritage Register
- Maritime Heritage Database
- Australian Heritage Database.

With reference to Section 4.2 of the HIS, Table 9 below lists those items identified on applicable statutory heritage listings with relevant item numbers where available (these also presented on Figures 9 and 10).

The HIS acknowledged the National Heritage Values Statement that was included in the National Heritage List of the Kamay Botany Bay: Botanical Collection Sites (8 September 2017), being:

**Criterion (a)** The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history (refer to HIS for accompanying values statement)

The HIS provided the following conclusion:

The proposed works for the Bare Island Vehicle Bridge within the boundaries of the Kamay Botany Bay: Botanical Collections Sites have been assessed to have no impact on the National significant values of the item. The proposed works will remediate the existing bridge and approach, and does not propose to remove or impact on any of the noted Botanical collections of Kamay Botany Bay.

The proposed action has been assessed, and it concluded that it would not have a significant impact on any MNES. As such, referral to the Commonwealth Department of Climate Change, Energy and the Environment and Water is not recommended.

**Table 9.** Heritage items on statutory lists within the subject site

| Register                                                            | Item Name                                                                                                                                | Listing Number | Potential Impacts |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|
| Randwick Local Environmental Plan (LEP) 2012 (NSW Government 2025a) | Kamay Botany Bay National Park (Botany Bay National Park, La Perouse Headland, Yarra Bay and Frenchman's Bay) Heritage Conservation Area | C5             | No                |
| Randwick LEP                                                        | Bare Island Fort                                                                                                                         | 1171           | No                |
| NPWS s170 Heritage and Conservation Register (NSW Government 2025f) | Bare Island Fort                                                                                                                         | 1374           | No                |
| State Heritage Register (NSW Government 2025g)                      | Bare Island Fort                                                                                                                         | 00978          | No                |
| State Heritage Register                                             | Kamay Botany Bay National Park                                                                                                           | 1918           | No                |
| Maritime heritage database (NSW Government 2025i)                   | Bare Island Fort                                                                                                                         | 2083           | No                |
| Australian Heritage Database (DCCEEW 2025d)                         | Kamay Botany Bay: Botanical Collection Sites                                                                                             | 106162         | No                |

With regards to the State Heritage Register the HIS notes that the Vehicle Bridge is specifically mentioned in the statement of significance, however it is mentioned under Criteria c) Aesthetic Significance, being:

*The earliest views of Bare Island emphasised it as a small rugged island, and the current form of the island still permits an understanding of the island's original size and shape. Once it became fortified and connected by a **bridge** to the mainland it remained a popular object for photography, with most photographs of the island either emphasising the western face with large expanses of concrete and loop-holed walls, or the view down the **bridge** towards the jumble of concrete, rocks and grass...*

Section 6.3 of the HIS details that no known or potential archaeological relics are expected to be affected by the proposed activity, as the area has been subject to prior disturbance.

Section 7 of the HIS concludes that the proposed works are considered to result in a positive heritage outcome, ensuring that the Bare Island Vehicle Bridge is appropriately maintained and stabilised. The additional works to the balustrades and kerbing will provide much needed safety measures for users and visitors to the bridge and fort, without compromising the significance of either of these sites. The proposed new drain located along the access road will aid in drainage issues present at the site and will aid in discharging water runoff that would otherwise potentially pool and lead to the quickened deterioration of the reinstated timber members of the Bare Island Bridge.

With regards to the existing bridge piers, during the interval between 1984 and 2007, it is noted that a number of these have been previously replaced (Plate B).

The mitigation measures presented in Section 7 of the HIS, these aimed at preventing adverse heritage affects that may result from the proposal, are identified in Section 9.6 of this REF.



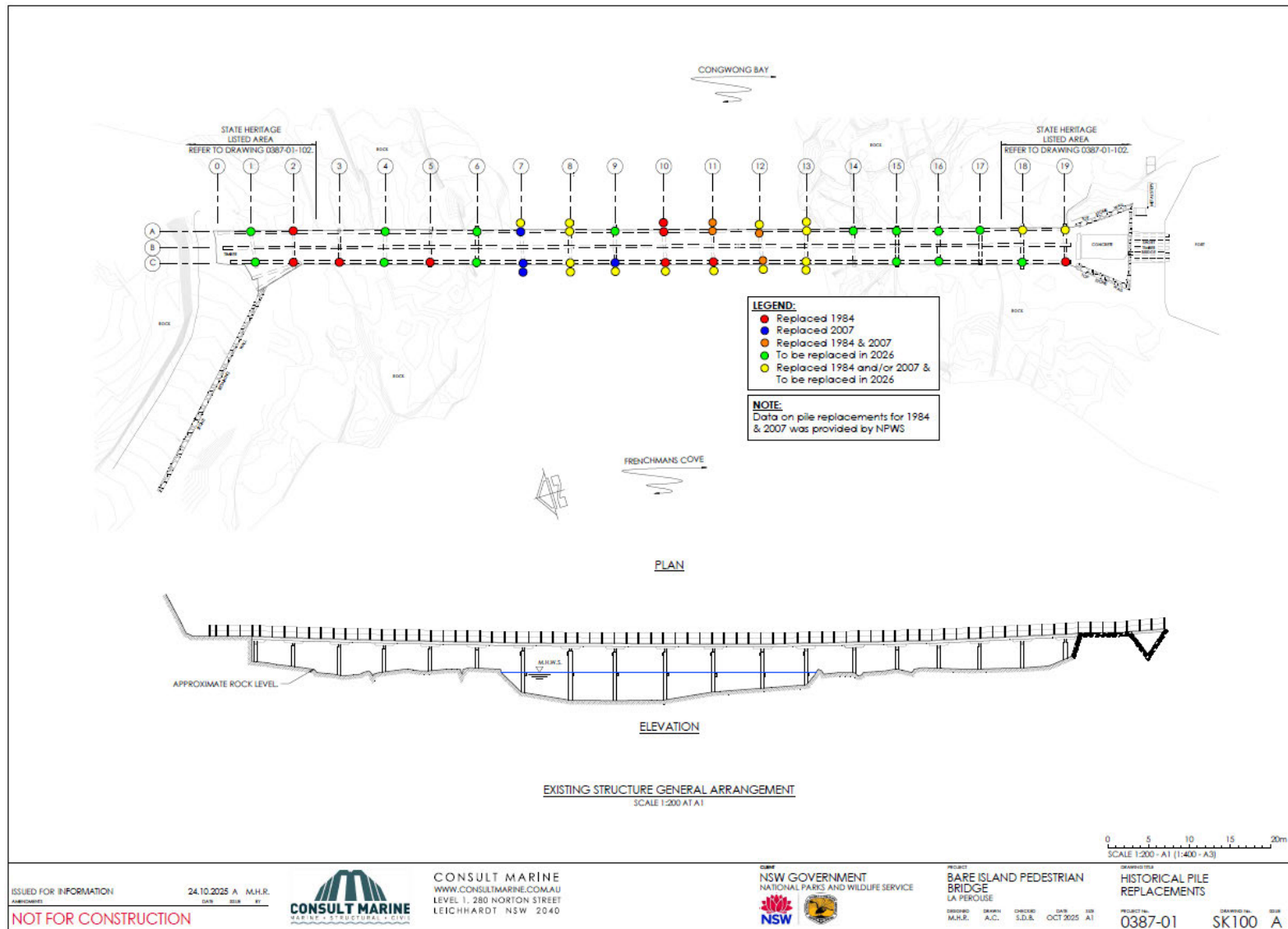
Figure 9. Extract of heritage map showing the subject site outlined in yellow (Urbis 2025)

## Review of Environmental Factors: Bare Island Bridge Repair



Figure 10. Extract of heritage map showing the subject site outlined in yellow

## Review of Environmental Factors: Bare Island Bridge Repair



**Plate B:** Historical Pile Replacement (Consult Marine 2025).

## **8.4 Social values**

### **8.4.1 Recreation values**

The Proposal is located within an area of Kamay Botany Bay National Park popular with both locals and tourists. The site provides spectacular views over Kamay Botany Bay from the ocean to the airport and Port Botany, and across the water to the southern portion of the national park at Kurnell.

It is an important tourist destination for national and international visitors to Sydney, who are attracted by its scenery, bushland and history. The Park is an important recreational area for locals from neighbouring suburbs, as well as a valuable regional recreational resource for all Sydneysiders.

The Park allows visitors to access the beaches and rocky foreshores of the bay, and the historic sites that are present within the Anzac Parade loop.

Good parking and numerous eateries also provide opportunities for picnic lunches or restaurant dining.

### **8.4.2 Scenic and visually significant areas**

The locality provides views of Kamay Botany Bay and surrounds as well as many historic sites and structures within a small area. Bare Island and the bridge itself are a scenically striking and important element of this part of the park, and provide a view of a nineteenth century fortification without any substantial intrusive modern backdrop.

The Proposal aims to maintain the scenic and heritage values of the bridge and the locality through the use of similar dimensioned timber to replace decayed elements, and without changing the profile of the bridge.

Overall, upon completion of the works, the site will reflect its existing views and visual character.

### **8.4.3 Education and scientific values**

Kamay Botany Bay National Park is significant for its biological, Aboriginal and historical heritage, recreational and educational values within a compact area. The National Parks and Wildlife Service provides educational signage highlighting the local biodiversity and cultural heritage values in the locality.

The existing educational and scientific values would not be adversely affected by the conducting of the proposed works.

### **8.4.4 Interests of external stakeholders**

The proposed activity will occur entirely within land managed by the National Parks and Wildlife Service. Access to the work site would be via Anzac Parade which is managed by Randwick City Council.

The proposed work site is not located in close proximity to residential or commercial properties but they would be advised of the proposed works by public notices installed at strategic locations in the Park locality prior to the proposed works commencing. The notices would include details on the closure of the bridge, expected minor disruption to traffic movements on the loop road and the expected duration of the works.

NPWS would also provide this information, and any project updates, via its website and means such as variable message signs as needed.

Where applicable, the following external stakeholders would be advised and consulted regarding the proposed works:

- Randwick City Council.
- Transport for NSW (Waterways).
- Sydney Water.
- Ausgrid.

NPWS or the Principal Contractor would consult and communicate with these organisations on an as-needed basis.

## 8.5 Matters of national environmental significance

Matters of National Environmental Significance (MNES) include the following:

- Threatened species and ecological communities listed under the EPBC Act (with the exception of extinct and conservation-dependent species and vulnerable ecological communities).
- Migratory species listed in international agreements.
- The ecological character of a wetland of international significance (Ramsar wetlands).
- National heritage values of listed national heritage places.
- World Heritage values of listed World Heritage sites and properties.

A search using the EPBC Protected Matter Search Tool (DCCEEW, 2025a; Appendix 4) and a review of the BioNet website identified that the following MNES occur within 1 km of the site:

- 1 National Heritage Place.
- 5 Threatened Ecological Communities (TECs).
- 89 Threatened Species.
- 58 Migratory Species.
- 1 Ramsar wetland sites.

The listed National Heritage Place on the national Heritage List is:

- Kamay Botany Bay: botanical collection sites.

This National Heritage Place includes Bare Island and all of the Kamay Botany Bay National Park and Towra Point Nature Reserve, as well as areas outside the national park estate around the bay. The collection sites cover the areas botanist Sir Joseph Banks and naturalist Dr Daniel Solander collected plant specimens in 1770 as part of the first landing of the Endeavour in Australia. They collected a large amount of material including seeds, plants, shells, and insects from the areas we now know as Kurnell Peninsula, Towra Point, La Perouse Headland and Bare Island.

The proposed works would not adversely affect those parts of the collection sites within the study area as these have all been cleared and excavated for construction activities over many time periods.

The threatened ecological communities, and threatened and migratory species have been considered in Section 8.2 of this REF. No TEC's or threatened or migratory species would be impacted by the conducting of the proposed activity.

The Ramsar wetland is Towra Point Nature Reserve, located about 6 km away on the southern shore of the bay. The wetland would not be impacted by the proposed works.

As the National Heritage Place, and none of the TEC's, threatened species, populations or migratory species listed under the EPBC Act, or the Ramsar wetlands, would be impacted by the proposed activity, referral of the matter to the Australian Government as a controlled action is not necessary.

## 9. Impact assessment during all stages of the activity

### 9.1 Physical and chemical impacts

| Is the proposed activity likely to...        | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. impact on soil quality or land stability? | No       | Negligible   | <p>The proposed work would have a very localised and short-term direct effect on soil quality as a result of minor excavation for the new table drain on the northern approach road and potentially at the northern bridge abutment. No effect on land stability is likely to occur as a result of the works.</p> <p>Measures detailed in the next column would be implemented to prevent the potential for excavated soil or rock waste to move downslope towards the foreshore area.</p> | <ul style="list-style-type: none"> <li>• The contractor is expected to prepare a CEMP for the proposal. The CEMP is to document the systems to manage and control environmental impacts during pre-demolition, demolition, and decommissioning phases. The CEMP also provides the overall framework for systems and procedures to ensure environmental impact is minimised and legislative requirements are fulfilled.</li> <li>• All construction personnel will complete a compulsory site induction that outlines the requirements of the CEMP and legislative requirements, tool box talks on specific environmental issues (e.g., conservation, threats, risk), and daily pre-start meetings. <ul style="list-style-type: none"> <li>○ As part of the 'site induction' all personnel are to be briefed of site sensitivities prior to entering the works area.</li> </ul> </li> <li>• The operation of the barge and crane will be a component of the CEMP.</li> <li>• All works would comply with directions as detailed in the plans and designs.</li> <li>• An ESCP would be prepared as part of the CEMP for the Proposal.</li> <li>• Temporary erosion and sediment controls would be installed in accordance with the publication Managing Urban Stormwater: Soils and Construction – Volume 1, 4th Edition (Landcom 2004).</li> <li>• Excavated waste soil and rock would be placed directly into tipper trucks or similar for removal from the site, or temporary storage in the materials laydown/compound area.</li> <li>• Coir erosion rolls and/or geotech fabric catch fences would be installed downslope of the table drain work site and cleaned or</li> </ul> |

| Is the proposed activity likely to...                           | Applies? | Impact level | Reasons                                                                   | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                                                                 |          |              |                                                                           | <p>replaced if they are still in place after several rainfall events during the construction phase.</p> <ul style="list-style-type: none"> <li>• Temporary erosion controls would be removed after disturbed soil areas have stabilised at the completion of the work.</li> <li>• All excavations on site would comply with the Safework Australia 'Excavation Work Code of Practice' (2020 or latest edition).</li> <li>• A temporary excavated material stockpile site may be located within the laydown/compound site.</li> <li>• Foundations for any concrete beams would be designed in consideration of water flows on or across the track and minimise the potential for the damming of water or soil erosion.</li> <li>• The limits of work site disturbance/construction footprint, exclusion/buffer zones, biodiversity values and site sensitivities are to be identified on site maps/plans and on the ground at the sites where appropriate.</li> <li>• Building and infrastructure works would comply with the requirements within the Construction Assessment Procedures (OEH 2011).</li> <li>• During construction, the inspection of temporary erosion and sediment control measures would be undertaken regularly, including prior to and following rain events, with any necessary maintenance to controls being undertaken promptly.</li> <li>• Stockpiles would be surrounded by coir rolls or other sediment movement measures and would be covered in the event of rain.</li> <li>• Disturbed surfaces would be compacted prior to the end of the work day or before rainfall to minimise potential for erosion and sedimentation during construction.</li> <li>• Uncontaminated excavated material would be retained and re-used on-site where applicable.</li> <li>• All fill or road base material would be clean, weed free material from a local supplier.</li> <li>• Unnecessary soil disturbance would be avoided.</li> </ul> |
| 2. affect a waterbody, watercourse, wetland or natural drainage | No       | Negligible   | Although no watercourse or natural drainage line occurs in the study area | <ul style="list-style-type: none"> <li>• REF to be provided to Transport for NSW for joint determination.</li> <li>• The northern drainage structure that will be established to divert water away from the bridge should ensure that any run-off is</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Is the proposed activity likely to...                                       | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------|----------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| system – either physically or chemically (e.g. due to runoff or pollution)? |          |              | <p>the work site occurs within or in close proximity to the waters of Botany Bay. Works will affect land vested in Transport for NSW.</p> <p>Within the northern portions of the proposed activity area, works will be undertaken to divert site drainage away from the bridge structure, this run-off will enter the receiving waters of Botany Bay.</p> <p>The work in the water or rocky foreshore to remove and replace piles would be undertaken by pulling and driving the piles. This would occur without the use of chemicals or other compounds that could cause pollution. However, there would remain a minor risk of hydraulic line failure during the work that may spill into the bay. The total volume of any hydraulic spills in the event of a failure would be small and measures would be unlikely to cause an impact on marine life given the large volume of sea water and strong currents in the channel under the bridge.</p> <p>Mitigation would be implemented to ensure spills are immediately contained and cleaned up to minimise any potential adverse impacts.</p> <p>Other parts of the proposed work are expected to use only small quantities of concrete, chemical grout compounds and cleaning fluids.</p> | <p>naturally filtered by the existing native vegetation prior to its discharge into the receiving waters (similar to the existing situation).</p> <ul style="list-style-type: none"> <li>NPWS has provided notification of the proposal to NSW Fisheries as per s.199 of the FM Act. Pending submission of this REF (once finalised) to Fisheries for their review, Fisheries' response will be included as an addendum at end/part of REF determination.</li> <li>A Waterway Management Plan (also known as a Marine Traffic Management Plan or Marine Activity Plan) is to be provided by the contractor engaged to undertake the proposal.</li> <li>The contractor appointed for the proposed activity is to make contact with the Waterways Operations Sydney Harbour division of Transport for NSW to discuss the on-water works and the Waterway Management Plan required prior to commencement of the proposed activity.</li> <li>Harbour Master's approval from NSW Port Authority will be sought for the proposal prior to commencement of the proposed activity.</li> <li>Establish a maritime navigation exclusion around the subject site.</li> <li>Floating booms will be used as needed to capture any buoyant debris that leaves the works area and enters the receiving waters of Botany Bay.</li> <li>Materials that inadvertently leave the work site and sink into the receiving waters will be retrieved.</li> <li>Catch sheets or similarly may be strung under work areas on the bridge to minimise the potential for spills or dropped items to enter the water.</li> <li>Spot checks on machinery utilised would be conducted daily before activities commence to reduce the risk of water contamination (i.e., associated with fuel or oil spills).</li> <li>A Spill Prevention and Response Plan would be prepared by the contractor as required under the construction contract conditions. The plan will provide a systematic framework to</li> </ul> |

# Review of Environmental Factors: Bare Island Bridge Repair

| Is the proposed activity likely to... | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                  | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |          |              | <p>The grout and cleaning fluids would be applied by hand from small cartridges and containers.</p> <p>The refuelling of plant and machinery would only be undertaken in specially prepared bunded areas or other approved method.</p> <p>With the implementation of mitigation measures, the risk of impacting the waters of the nearby bay is low.</p> | <p>prevent environmental impacts from potential spills or inappropriate disposal of contaminants.</p> <ul style="list-style-type: none"> <li>• Spill kits appropriate to the type and quantity of any hazardous material used for the works would be available on-site and close to the work areas at all times.</li> <li>• Spill kits would be kept stocked and located for easy access.</li> <li>• All personnel would be made aware of the storage location of spill kits.</li> <li>• All personnel would be trained in the use of the spill kits kept on site.</li> <li>• If a spill occurs, the NPWS Project Manager and NPWS Principal Authorised Person will be notified as soon as practicable.</li> <li>• Spills that cause material harm to the environment are to be reported in accordance with legislative and licensing requirements (NSW EPA).</li> <li>• Works would cease during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off-site.</li> <li>• Soil erosion and sedimentation control measures would be installed and maintained in accordance with the 'Blue Book' (Landcom, 2004). All stockpiles of excavated or construction soils would have a silt fence erected immediately downhill for the full extent of the stockpile. Erosion and sedimentation control measures would be checked and maintained daily.</li> <li>• All areas of disturbed soil would be remediated and stabilised to the same or better condition.</li> <li>• All potential contaminants would be stored on a robust waterproof membrane in the laydown/compound area, well away from the bay foreshore.</li> <li>• The refuelling of plant and machinery would only be undertaken in specially prepared bunded areas in the laydown/compound area or by another approved method.</li> <li>• Suitably qualified personnel are to:</li> </ul> |

Review of Environmental Factors: Bare Island Bridge Repair

| Is the proposed activity likely to...                                                                                                      | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                            |          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>○ Carry out a final survey of the subject site and surrounding area upon completion of the proposal, certifying conformity to the specification.</li> <li>○ Provide a seabed clearance survey upon completion of the proposed activity to certify that all construction material not part of the proposal has been removed and no underwater obstacles remain.</li> <li>• These surveys are to comply with the standards of Transport for NSW Guidelines for Hydrographic and Geotechnical Data (Transport for NSW 2024).</li> </ul> |
| 3. change flood or tidal regimes, or be affected by flooding?                                                                              | No       | NA           | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 4. affect or be affected by coastal processes and coastal hazards, including those under climate change projections (e.g. sea level rise)? | Yes      | Positive     | All of the terrestrial foreshore area of the harbour including the proposed work sites is subject to coastal processes and hazards, including erosion and rockfall. The proposed works would not increase the actions of these processes, and are a maintenance activity in response to the processes so that the Bare Island bridge remains open and safe for use. The work would also improve road drainage that is currently contributing to the deterioration of the bridge timbers. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5. involve the use, storage or transport of hazardous substances, or use or generate chemicals which may                                   | Yes      | Low adverse  | <p>Petroleum fuels would be used on site for plant and machinery, and refuelling on-site would occur. Petroleum fuel would not be stored on site.</p> <p>Small amounts of concrete and chemical grouts and cleaners are also</p>                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Materials transported to and from the work sites via the local road network would be covered to reduce dust and the potential for the loss of load.</li> <li>• Petroleum fuel would not be stored on site but would be brought to site when refuelling is required.</li> <li>• All WH&amp;S procedures and regulations for the storage and transport and use of hazardous substances would be followed.</li> </ul>                                                                                                                 |

| Is the proposed activity likely to...                                                  | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------|----------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| build up residues in the environment?                                                  |          |              | likely to be used and would be stored on-site.<br>There remains the potential for accidental spills of fuels, hydraulic fluids or other materials to occur.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Materials Safety Data Sheets would be made available for reference by all site personnel for any hazardous chemicals used on site.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6. involve the generation or disposal of gaseous, liquid or solid wastes or emissions? | Yes      | Low adverse  | <p>Waste associated with the proposed work is expected to be limited to old timber and steel from the bridge, and excavated soil/rock or road base material. Waste excavated material would be disposed of off-site at a licenced landfill or NPWS stockpile site. Waste timber and steel would be recycled or disposed of off-site at a licensed waste management facility.</p> <p>Exhaust fumes from plant and machinery would be generated on-site however given the very open site conditions to prevailing winds exhaust fumes are not expected to cause adverse impact or nuisance to local residents, commercial premises or the general public. Delivery of materials by trucks using the local road network would also contribute a minor amount to local exhaust emissions but would not be a significant increase above the normal level generated by local traffic.</p> | <ul style="list-style-type: none"> <li>All vehicles used for the works would be serviced and operated within Transport for NSW emissions standard guidelines.</li> <li>Machinery and equipment would be serviced, regularly maintained and operated within relevant guidelines.</li> <li>Where possible, uncontaminated natural resources (such as sandstone and soil) would be reused within the site.</li> <li>Waste would be classified before being disposed of at an appropriately licenced facility in accordance with <i>Waste Classification Guidelines: Part 1 Classifying Waste</i> (NSW EPA 2014).</li> <li>All waste products would be taken off-site and transported to authorised waste facilities.</li> <li>Personal rubbish would be collected and deposited into on-site receptacles, and regularly removed from the work site.</li> <li>Visual inspections of the work site would be made at the completion of each work period to ensure no refuse/debris is in a position to be blown or washed out of the construction zone or into the bay.</li> <li>A visual inspection of the work site would be made at the completion of works to ensure no construction or personal refuse/debris remains on site.</li> </ul> |
| 7. involve the emission of dust, odours, noise, vibration or radiation?                | Yes      | Low adverse  | The proposed work may result in localised, minor, short term and temporary dust and noise impact during the course of the proposed work, associated with transport movements and the operation of plant and machinery.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>The generation of dust, odour and/or noise would be restricted to the permissible construction hours.</li> <li>Work would generally be limited to standard work hours: <ul style="list-style-type: none"> <li>7.00 am to 6.00 pm Monday to Friday, and 8.00 am to 1.00 pm on Saturday.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Is the proposed activity likely to... | Applies? | Impact level | Reasons                                                                                                                                                                                  | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                                       |          |              | Given the highly urbanised setting, these impacts are expected to be a minor addition to the background noise and odours levels, and would be restricted to standard construction hours. | <ul style="list-style-type: none"> <li>○ No work to be carried out on Sundays or during public holidays (unless authorised by NPWS).</li> <li>• Properly functioning exhaust silencers would be fitted to all motorised vehicles, plant and machinery and would be required to comply with the relevant industry noise guidelines.</li> <li>• Where feasible, the number of noisy motorised plant and equipment operating at any one time would be minimised.</li> <li>• The Contractor would be required to act on any noise, vibration odour or other complaints as soon as possible.</li> </ul> |

## 9.2 Biodiversity impacts

| Is the proposed activity likely to...                                                                                                             | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                        | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. affect a declared area of outstanding biodiversity value, critical habitat or environmental asset of intergenerational significance?           | No       | NA           |                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2. result in the clearing or modification of vegetation, including ecological communities and plant community types of conservation significance? | Yes      | Negligible   | <p>The proposed work would require the removal of some exotic vegetation beside to the northern approach road for the new table drain, and may require the cutting back or removal of an exotic Mirror Plant (<i>Coprosma repens</i>) at the northern bridge abutment.</p> <p>The Proposal would not affect a native vegetation community or any native plant species that are uncommon in similar coastal</p> | <ul style="list-style-type: none"> <li>• Modification/removal of vegetation would be limited to the minimum required to successfully complete the proposed works.</li> <li>• The hygiene protocols provided in: Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from <i>Phytophthora cinnamomi</i>, myrtle rust, amphibian chytrid fungus and invasive plants (DPIE 2020) would be implemented at all stages of the proposed work.</li> </ul> |

| Is the proposed activity likely to...                                                                                                               | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                                                                                                                                     |          |              | <p>environments throughout the Sydney area.</p> <p>No marine vegetation such as seagrass meadows or substantial areas of seaweed occur in the area of the bridge.</p> <p>The proposed work also has the potential to introduce additional invasive plants through the movement of workers/equipment from other work sites.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3. endanger, displace or disturb terrestrial or aquatic fauna, including fauna of conservation significance, or create a barrier to their movement? | Yes      | Negligible   | <p>The terrestrial part of the proposed work occurs within highly modified and disturbed environment and would not impact on terrestrial foraging or breeding habitat for fauna.</p> <p>The work on the bridge would temporarily disturb marine fauna species through, particularly those living on the in-water piles which would be displaced. However, the underwater ecology survey found only common marine species occupy the piles and surrounding substrates (rocks and seabed of the channel). The same marine species currently growing on the piles are expected to reoccupy the new piles over time.</p> <p>Though common marine species were present on the piles to be removed, the proposed activity may result in the injury or death of these animals.</p> | <ul style="list-style-type: none"> <li>• Consultation with DPIRD- Fisheries required in accordance with s.199 of the FM Act. Any recommendations resulting from this consultation are to be added to this REF.</li> <li>• A Syngnathidae (Seahorse) Management Plan will be prepared. Aspects of this document will include the conducting of a pre-construction inspection by a qualified ecologist to identify and relocate any seahorses found in the algae on the existing pylons. Where safe to do so, this is to be conducted immediately prior to the poles being removed, through the use of scuba assist means. The ecologist will advise on suitable relocation sites or temporary housing options, such as artificial habitats known as "Seahorse Hotels."</li> <li>• The Seahorse Management Plan is to be submitted to DPIRD – Fisheries prior to the commencement of the works.</li> <li>• The contact details of a suitably qualified person and/or licensed wildlife handler/carer and veterinarian services would be available to the site manager(s) for all periods of work.</li> <li>• If any sheltering native species are disturbed by the proposed works, they would be safely ushered on/left to naturally disperse, or collected and relocated locally (nocturnal species to be released on dusk).</li> <li>• Any animals injured during the proposed work would be collected and taken to a local veterinarian or wildlife carer for treatment. In this regard:</li> </ul> |

| Is the proposed activity likely to...                                                        | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                         | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                              |          |              | <p>As they were recorded, and there is the potential for other seahorse and marine fauna to be present, including the State and Federally listed White's Seahorse, a pre-clearing inspection will be conducted.</p> <p>The proposed work on the bridge would not create any temporary or permanent barriers to the movement patterns of any marine species.</p> | <ul style="list-style-type: none"> <li>• Fauna must only be handled by personnel who are appropriately licensed.</li> <li>• Under no circumstances are unlicensed personnel to handle bats.</li> <li>• Once rehabilitated, native animals must be released at their point of capture.</li> <li>• If unexpected threatened terrestrial or aquatic fauna species [not assessed within this REF] are identified:</li> <li>• Potentially harmful work must cease in the vicinity of the species.</li> <li>• In line with previously detailed procedures, fauna should be allowed to disperse from an area without intervention, and handling of the species is to be avoided where possible.</li> <li>• The project's Manager would be notified (who would arrange for a suitably qualified person to investigate and conduct an assessment of significance of likely impact).</li> <li>• If an impact is likely, determine if this is consistent with approval conditions, or implement new advised protocols (as provided by the suitably qualified person). If no impact is expected, recommence work.</li> <li>• In the event of newly identified records of threatened species, the location must be uploaded to BioNet or the DPIRD.</li> <li>• In the event of an injured marine fauna species, the NPWS Project Officer would be immediately notified.</li> <li>• DPIRD Fisheries (1800 043 536) and the EPA (131 555) are to be notified immediately if any fish kill occurs in the vicinity of the works. In this situation, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by the DPIRD Fisheries and/or the EPA for the works to proceed.</li> </ul> |
| 4. result in the removal of protected flora or plants or fungi of conservation significance? | No       | N/A          |                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• If unexpected threatened terrestrial flora species [not assessed within this REF] are identified: <ul style="list-style-type: none"> <li>○ Potentially harmful work must cease in the vicinity of the species.</li> <li>○ The project's Manager would be notified (who would arrange for a suitably qualified person to investigate and conduct an assessment of significance of likely impact).</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Is the proposed activity likely to...                                                       | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                             |          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>○ If an impact is likely, determine if this is consistent with approval conditions, or implement new advised protocols (as provided by the suitably qualified person). If no impact is expected, recommence work.</li> <li>○ In the event of newly identified records of a threatened species, the location must be uploaded to BioNet or the DPIRD.</li> </ul>                                                                                                                                                                                                                                                                                                                  |
| 5. contribute to a key threatening process to biodiversity or ecological integrity?         | No       | NA           | No KTP's have been identified as likely to be operating that the proposed works would contribute to.                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6. introduce weeds, pathogens, pest animals or genetically modified organisms into an area? | Yes      | Negligible   | <p>The area is already degraded by weeds. While there is potential for the introduction of additional weeds and pathogens into the area during construction, hygiene protocols would minimise this risk.</p> <p>With the implementation of the hygiene protocols provided, it is unlikely that the proposed work would introduce weeds, pathogens, pest animals or genetically modified organisms into the study area, or benefit the presence of these if they already occur.</p> | <ul style="list-style-type: none"> <li>• If any of the priority listed weeds occur within the subject site, industry best practice weed removal methods (e.g., NSW WeedWise) would be used if clearing is required to enable the works.</li> <li>• Construction plant and machinery to be used for the works would be cleaned (e.g., washed down) prior to entry into NPWS estate to ensure weed propagules are not transported into the work site from other areas.</li> <li>• Excavated material containing weeds would be moved off site and disposed of at a registered waste facility.</li> <li>• Vehicles transporting weed contaminated material would have their load covered when leaving the site.</li> </ul> |

### 9.3 Community impacts

| Is the proposed activity likely to...           | Applies? | Impact level | Reasons                                                                                                                                                              | Safeguards/mitigation measures                                                                                                                                                                                    |
|-------------------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. affect community services or infrastructure? | Yes      | Low adverse  | The proposed work would temporarily close the bridge, northern access road and part of the grassed area to be use as the laydown/compound site. The works would also | <ul style="list-style-type: none"> <li>• Temporary signage would be installed at strategic locations in the local area at least four (4) weeks prior to the works commencing, providing information on</li> </ul> |

| Is the proposed activity likely to...                                                                                        | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                              |          |              | <p>intermittently disrupt traffic movements on the Anzac Parade loop road as equipment and materials are delivered or removed.</p> <p>Some parking may also be restricted at the access road gate during site setup and during delivery of large plant and materials but this would be short term and intermittent.</p> <p>Scenic views of Bare Island and the bridge would also be altered during the construction period.</p> <p>All other areas of the La Perouse section of Kamay Botany Bay National Park would remain open to park users.</p> <p>The intermittent traffic disruptions would not have an adverse impact on local businesses or residences as the section of Anzac Parade in front of the shops is two-way and can be accessed from the roundabout at the entrance to the park.</p> <p>Access to parking for residential apartments above the shops is from Goorawahl Avenue which is also connected to the two-way section of Anzac Parade.</p> | <p>temporary access restrictions, and the expected works schedule.</p> <ul style="list-style-type: none"> <li>NPWS would provide public notification on their website in advance of the commencement of work, clearly advising of the temporary access restriction, detour or other changes, as well as the aim and progress of the Proposal.</li> <li>A NPWS contact telephone number for complaints about the work would also be provided.</li> <li>Equipment, vehicles and materials used for the works would not block nearby roads.</li> </ul> |
| 2. affect sites important to the local or broader community for their recreational or other values or access to these sites? | Yes      | Low adverse  | <p>The Proposal work would restrict access to the fenced work zone section of Kamay Botany Bay National Park for park users and the general public.</p> <p>Scuba divers would not be allowed within 10 m of the bridge during the construction period.</p> <p>Similar areas within the park such as foreshore rock platforms, grassed areas and scenic vantage points, and historic monuments would still be available adjacent to the work zone.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Work would be scheduled to avoid peak park use periods where possible.</li> <li>Relevant community groups such as local schools and scuba diving clubs will be notified of the closure of the bridge site and the duration of the works.</li> <li>Options will be considered for the provision of an access to the rock platform that is present near the northern abutment for use by scuba clubs.</li> </ul>                                                                                               |

## Review of Environmental Factors: Bare Island Bridge Repair

| Is the proposed activity likely to...                                          | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                |          |              | <p>The proposed upgrade works would improve the safety and compliance of the bridge and provide continued appreciation and enjoyment of the locality's natural, cultural heritage and recreational values.</p> <p>Minor disruptions to the recreational or other values of the locality would be temporary and relatively short-term.</p>                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                          |
| 3. affect economic factors, including employment, industry and property value? | No       | NA           | The very small scale of the proposed work would not affect any economic factors, including local property values.                                                                                                                                                                                                                                                                                                                                                | No additional safeguards or mitigation measures than those provided.                                                                                                                                                                                                                                                                                     |
| 4. have an impact on the safety of the community?                              | Yes      | Positive     | <p>The works at the base of the piles may result in UXO or explosive ordnance fragments / components being exposed.</p> <p>During construction, public access to the work zone would be closed and is unlikely to impact on the safety of the community.</p> <p>At the completion of the work the bridge would provide improved community safety and better access to Bare Island Fort.</p>                                                                      | <ul style="list-style-type: none"> <li>Contract staff to be made aware of situation and to cease work if unidentifiable objects exposed.</li> <li>Advice from the Defence Department to be obtained if items that could be UXO or explosive ordnance fragments / components are exposed.</li> </ul>                                                      |
| 5. cause a bushfire risk?                                                      | Yes      | Low          | <p>Hot works in the form of welding may be required as part of the proposed work, which would create a potential risk for fire ignition.</p> <p>The carrying out of the proposed work is not expected to adversely impact the protection of people, the environment, or infrastructure and assets, or impede firefighter access or public evacuation operations in the local area if a fire occurred, whether as a result of the proposed work or otherwise.</p> | <ul style="list-style-type: none"> <li>No hot works would be carried out when the bushfire danger is greater than High (e.g., during declared Total Fire Bans or Park Fire Bans).</li> <li>Fire suppression equipment appropriate to the fire risk, and personnel trained in their use would be available on-site during all working periods.</li> </ul> |
| 6. affect the visual or scenic landscape?                                      | Yes      | Low adverse  | The temporary visual impact during construction is an unavoidable consequence of construction activity.                                                                                                                                                                                                                                                                                                                                                          | No further safeguards or mitigation measures than those provided.                                                                                                                                                                                                                                                                                        |

| Is the proposed activity likely to... | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Safeguards/mitigation measures |
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|                                       |          |              | <p>The renewal of the bridge would include the addition of a stainless-steel mesh to the existing timber balustrading to improve pedestrian safety. While the mesh would add a modern element to the historic bridge, it has been chosen over other potential safety upgrade methods because of its visually minimal impact.</p> <p>The height of the balustrade will be increased by 100mm due to safety compliance. The timber kerbing on the bridge would also be increased in height from 200mm to 300mm to ensure vehicles are unable to leave the bridge under normal operating conditions. This size increase would not be easily discernible and would not detract from the visual or scenic values of the bridge.</p> |                                |

## 9.4 Natural resource impacts

| Is the proposed activity likely to...                                                          | Applies? | Impact level | Reasons                                                                                                                                                      | Safeguards/mitigation measures                                                                                               |
|------------------------------------------------------------------------------------------------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 1. result in the degradation of the park or any other area reserved for conservation purposes? | No       | NA           | The Proposal is for the upgrading of existing infrastructure and limited to previously cleared and disturbed areas. Degradation of the park would not occur. | No additional safeguards or mitigation measures than those already provided.                                                 |
| 2. affect the use of, or the community's ability to use, natural resources?                    | No       | NA           |                                                                                                                                                              | No additional safeguards or mitigation measures than those already provided.                                                 |
| 3. involve the use, wastage, destruction                                                       | Yes      | Negligible   | Although the proposed work would use natural resources in the materials, this would be on a                                                                  | <ul style="list-style-type: none"> <li>Resource management hierarchy principles would be followed where possible:</li> </ul> |

| Is the proposed activity likely to...                                                     | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Safeguards/mitigation measures                                                                                                                                                                                                                                                   |
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| or depletion of natural resources including water, fuels, timber or extractive materials? |          |              | <p>comparatively small scale within a niche market for bridge timber. The proposed work is not expected to affect the wider supply of timber of this type.</p> <p>While the use of old growth turpentine trees would be used for the piles, no realistic alternative is available for the renewal of historic timber bridges that provides long service life and heritage criteria.</p> <p>Where possible, the removed materials including old bridge timber would be recycled.</p> | <ul style="list-style-type: none"> <li>○ Avoid unnecessary resource consumption as a priority.</li> <li>○ Avoidance is followed by resource recovery, i.e., construction and demolition wastes should be recycled (at a licensed recycling centre) or sold for reuse.</li> </ul> |
| 4. provide for the sustainable and efficient use of water and energy?                     | Yes      | Negligible   | <p>Activities involved with the proposed work would not involve use of large quantities of water or energy.</p> <p>Where possible, high energy efficiency battery operated tools would be used.</p>                                                                                                                                                                                                                                                                                 | No additional safeguards or mitigation measures than those already provided.                                                                                                                                                                                                     |

## 9.5 Aboriginal cultural heritage impacts

| Is the proposed activity likely to...                                                        | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| 1. disturb the ground surface or any vegetation likely to contain culturally modified trees? | Yes      | Low adverse  | <p>The Proposal would involve very minor ground excavation beside northern bridge access road for the new table drain and disturbance within the laydown/compound area. The area of the proposed table drain is not part of the natural ground level as the access road was cut into the sandstone bedrock at the time of the original bridge construction.</p> <p>The work would not impact any culturally modified trees, and no trees occur within or adjacent to the study area.</p> | <ul style="list-style-type: none"> <li>• An unexpected finds protocol would be implemented and if any items suspected of being Aboriginal in origin are discovered during the work, the following procedure would occur: <ul style="list-style-type: none"> <li>○ All work must cease in the area.</li> <li>○ The find would be protected from impact (i.e., temporary fencing, exclusion zone).</li> <li>○ The supervising NPWS Officer would be immediately notified, and a suitably qualified person will be contacted to make an assessment of the find.</li> </ul> </li> </ul> |

| Is the proposed activity likely to...                                                                                                                                         | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                                                                                                                               |          |              | <p>An ACHA due diligence assessment prepared by AMBS Ecology and Heritage to assess the Proposal's impacts on Aboriginal Cultural Heritage concluded that the Proposal is unlikely to pose a risk of harm to recorded Aboriginal cultural heritage sites or unknown potential archaeological deposit.</p> <p>However, any inadvertent impacts to the nearby recorded AHIMS Site # 45-6-3865 (La Perouse Midden 19-01) must be avoided.</p> <p>It was considered that the Proposal may proceed with caution and an AHIP under s.90 of the NPW Act is not required for the proposed work.</p> | <ul style="list-style-type: none"> <li>Aboriginal community consultation may be required prior to the recommencement of works.</li> <li>Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.</li> <li>Work within the vicinity of the find would not continue until directed by the relevant authorities.</li> <li>If found to be an Aboriginal object, an AHIP may be required.</li> <li>If any skeletal material is uncovered during excavation work, works must cease immediately and the NSW Police must be notified.</li> <li>Any inadvertent impacts to the nearby recorded AHIMS Site # 45-6-3865 (La Perouse Midden 19-01) would be avoided. <ul style="list-style-type: none"> <li>The extent of the material laydown area would be demarcated by fencing.</li> <li>Construction personnel would be made aware of the nearby AHIMS Site # 45-6-3865, and instructed not to disturb the site in any way.</li> </ul> </li> <li>The ACHA due diligence assessment (provided in Appendix 4) would be retained on file for five years following the completion of the Proposal.</li> </ul> |
| 2. affect or occur near known Aboriginal objects, Aboriginal places or an Aboriginal cultural asset of intergenerational significance?<br>If so, can impacts be avoided? How? | Yes      | Negligible   | <p>The proposed material laydown area occurs close to AHIMS Site # 45-6-3865.</p> <p>No other known Aboriginal objects, places or cultural assets of intergenerational significance are close to the proposed work areas (refer to Appendix 4).</p>                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>See mitigation measures listed above.</li> <li>The proposed works would be contained to the work area defined and assessed within this REF.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3. affect areas:<br>a. within 200 m of waters,                                                                                                                                | Yes      | Negligible   | <p>The terrestrial parts of the study area occurs within 200 m of the foreshores of Kamay Botany Bay, and the bridge work is situated over the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>No additional safeguards or mitigation measures than those already provided.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Is the proposed activity likely to...                                                                                                                                                                                               | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Safeguards/mitigation measures |
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| b. within a sand dune system,<br>c. on a ridge top, ridge line or headland,<br>d. within 200 m below or above a cliff face,<br>e. in or within 20 m of a cave, rock shelter or a cave mouth?<br>If so, can impacts be avoided? How? |          |              | <p>waters of the bay. The terrestrial work would also occur on a ridge top and above a foreshore cliff face.</p> <p>However, all of the proposed work would be undertaken within historically highly disturbed and modified areas. The locality has been subject to numerous Aboriginal archaeological surveys and the proposed work would not directly impact any recorded sites or landscape features with the potential to contain previously unrecorded Aboriginal objects or places.</p> |                                |
| 4. affect wild resources which are used or valued by the Aboriginal community or affect access to these resources?                                                                                                                  | No       | NA           | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NA                             |
| 5. affect access to culturally important locations?                                                                                                                                                                                 | No       | NA           | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NA                             |

## 9.6 Other cultural heritage impacts

| Is the proposed activity likely to...                                             | Applies? | Impact level | Reasons                                                                                                                                                                                   | Safeguards/mitigation measures                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|----------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. affect or occur near places, buildings or landscapes of heritage significance? | Yes      | Negligible   | Section 8.3.2 of this REF details the heritage items identified within the study area, the proposed works are considered to result in a positive heritage outcome, ensuring that the Bare | Recommendations provided within the HIS: <ul style="list-style-type: none"> <li>The proposed works are limited to previously disturbed areas, specifically the removal and replacement of already replaced piles into</li> </ul> |

| Is the proposed activity likely to... | Applies? | Impact level | Reasons                                                                                                                                                                                                                                                                                                                                                                                                                          | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |          |              | <p>Island Vehicle Bridge is appropriately maintained and stabilised.</p> <p>The potential for unexpected historic heritage items to be discovered during the proposed works is extremely low given the high level of previous disturbances. However, and unexpected finds protocol for historic items would be implemented during the works.</p> <p>No historic cultural AIS are identified on the NPWS AIS Interactive Map.</p> | <p>existing seabed footings. On this basis, no further historical or maritime archaeological investigation is required at this time. If the scope of works changes, or impacts extend beyond the current disturbance footprint, further historical and maritime archaeological assessment may be necessary.</p> <ul style="list-style-type: none"> <li>As no formal archaeological assessment or monitoring has been previously undertaken, an Unexpected Finds Procedure should be implemented during all ground-disturbing works. If potential archaeological material is encountered, works should cease in the immediate area, and Heritage NSW and a qualified archaeologist should be consulted.</li> </ul> <p>Heritage Council of NSW conditions of approval:</p> <ul style="list-style-type: none"> <li>All work are to comply with the information contained within the following documents: <ul style="list-style-type: none"> <li>Engineering drawings, prepared by Consult Marine as listed in the approval</li> <li><i>Heritage Impact Statement – Bare Island Vehicle Bridge</i>, prepared by Urbis, dated 23 September 2025</li> <li><i>Bare Island Vehicle Bridge – Aboriginal Due Diligence Assessment</i>, prepared by AMBS Ecology and Heritage, dated August 2025</li> <li><i>Bare Island Vehicle Bridge Refurbishment Historical Archaeology Addendum</i>, prepared by Cosmos Archaeology, dated 10 November 2025.</li> <li><i>Bare Island Vehicle Bridge Refurbishment Maritime Archaeology Short Memo Report</i>, prepared by Cosmos Archaeology, dated 10 November 2025.</li> </ul> </li> </ul> |

| Is the proposed activity likely to... | Applies? | Impact level | Reasons | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------|----------|--------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |          |              |         | <ul style="list-style-type: none"> <li>• A suitably qualified and experienced heritage consultant will be nominated for this project. The nominated heritage consultant will provide input into the detailed design, provide heritage information to be imparted to all tradespeople during site inductions, and oversee the works to minimise impacts to heritage values. The nominated heritage consultant will be involved in the selection of appropriate tradespersons and will be satisfied that all work has been carried out in accordance with the conditions of the Heritage Council of NSW consent.</li> <li>• All work to, or affecting, significant fabric will be carried out by suitably qualified tradespersons with practical experience in conservation and restoration of similar heritage structures, materials and construction methods.</li> <li>• Significant built and landscape elements will be protected during site preparation and the works from potential damage. Protection systems will ensure significant fabric, including landscape elements, is not damaged or removed.</li> <li>• Prior to the commencement of works, a visual survey will be conducted by a suitable qualified professional to ensure that the area does not include any culturally significant species specifically mentioned in the National Listing for Kamay Botany Bay Collection Sites. Should any of the listed species be found in the works area, these will be protected through the erection of temporary fencing and signage to ensure safeguarding during construction works. Should protection measures for culturally significant species not be possible, replanting in alternate locations or replacement planting of the same species in other areas of the SHR listing will be undertaken.</li> </ul> |

| Is the proposed activity likely to... | Applies? | Impact level | Reasons | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------|----------|--------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |          |              |         | <ul style="list-style-type: none"> <li>• The perimeter of the works compound should be altered (i.e. with temporary fencing) to exclude the area of high archaeological potential (including a buffer of at least 1 m).</li> <li>• No ground disturbance is to be undertaken within the works compound or any areas of high archaeological potential, including, but not limited to excavation, trenching etc.</li> <li>• Samples of significant copper sheathing and/or nails are to be retained on site for future interpretation purposes.</li> <li>• A photographic archival recording will be prepared prior to the commencement of works, during works and at the completion of works. <ul style="list-style-type: none"> <li>○ This recording will be prepared in accordance with the Heritage NSW publication 'Guidelines for preparing archival recordings of heritage items as a condition of consent' (2025).</li> <li>○ The required format and specifications of the record are to be in accordance with those published on the Heritage NSW website.</li> <li>○ A digital copy of the archival record is to be submitted electronically to Heritage NSW.</li> </ul> </li> <li>• A Maritime Archaeological Management Plan is to be prepared and implemented on site during construction works by a suitable qualified and experienced Maritime Archaeologist. <ul style="list-style-type: none"> <li>○ The management plan shall follow the recommendations outlined in the <i>Bare Island Vehicle Bridge Refurbishment: Maritime Archaeology Short Memo Report</i>, prepared by Cosmos Archaeology, dated 10 November 2025, including but not limited to</li> </ul> </li> </ul> |

| Is the proposed activity likely to...                                                                   | Applies? | Impact level | Reasons                                                                                                                                    | Safeguards/mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                         |          |              |                                                                                                                                            | <p>heritage induction, monitoring of works and an Unexpected Finds, etc.</p> <ul style="list-style-type: none"> <li>The Applicant will ensure that if substantial intact archaeological deposits and/or State significant relics or any other buried fabric such as works not identified, are discovered, works will cease in the affected area(s) and the Heritage Council of NSW notified. Works will not commence at this site until approval to proceed is granted by the Heritage Council of NSW.</li> <li>Should any Aboriginal objects be uncovered by the work which is not covered by a valid Aboriginal Heritage Impact Permit, excavation or disturbance of the area will cease immediately and Heritage NSW informed in accordance with the <i>National Parks and Wildlife Act 1974</i>. Works affecting Aboriginal objects on the site must not continue until Heritage NSW has been informed and the appropriate approvals are in place. Aboriginal objects must be managed in accordance with the <i>National Parks and Wildlife Act 1974</i>.</li> <li>If requested, the applicant and any nominated heritage consultant are to participate in audits of Heritage Council of NSW approvals to confirm compliance with conditions of consent.</li> </ul> |
| 2. impact on relics or moveable heritage items, or an area with a high likelihood of containing relics? | No       | N/A          | <p>The area of the proposed works has a very low likelihood of containing relics.</p> <p>No moveable heritage items would be affected.</p> | No additional safeguards or mitigation measures than those already provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3. impact on vegetation of cultural landscape value (e.g. gardens)?                                     | No       | N/A          | N/A                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 9.7 Impacts on matters of national environmental significance

| Is the Proposal likely to affect MNES, including:            | Applies? | Likely impact | Reasons                                                                                                                                                                                                                                                                                                                    | Safeguards/mitigation measures                                                                                                                                      |
|--------------------------------------------------------------|----------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. listed threatened species or ecological communities?      | No       | Negligible    | No nationally listed threatened species or ecological communities occur within, or adjacent to, the study area.<br>The waters of the bay around the bridge have the potential to have marine threatened species move through the area on occasion but they would not rely on the area for their essential lifecycle needs. | <ul style="list-style-type: none"> <li>All construction personnel would be advised of the need to avoid or minimise impacts on any vegetation generally.</li> </ul> |
| 2. listed migratory species?                                 | No       | Negligible    | No previously recorded migratory species have been identified as reliant of the habitats to be disturbed for the proposed works.                                                                                                                                                                                           | No further safeguards or mitigation measures than those provided.                                                                                                   |
| 3. the ecology of Ramsar wetlands?                           | No       | NA            | NA                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                     |
| 4. world heritage values of World Heritage properties?       | No       | NA            | NA                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                     |
| 5. the national heritage values of national heritage places? | No       | NA            | NA                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                     |

## 9.8 Cumulative impacts

The proposed activity is not considered to have any cumulative impact when considered with other projects (in construction or proposed) in the vicinity of the proposal at the time of writing this REF; including with reference to the NSW Planning Portal application tracker (NSW Government 2025h).

The Proposal has only very minor impacts on the natural and built environment, and the cumulative effects on the heritage values of the bridge have been minimised through the selection of appropriate materials and construction methods.

## 10. Summary of impacts and conclusions

In preparing an REF there are 18 factors set out in the Environmental Planning and Assessment Regulation 2021 that need to be considered. Relevant factors have been addressed individually in detail in this report. To ensure that all relevant matters have been taken into account, a summary has been provided below that addresses each factor under the Regulation (Table 10).

With regard to the Part 8, Division 1 Clause 171 of the Environmental Planning and Assessment Regulation 2021, *a determining authority must take into account the following environmental factors:-*

**Table 10. Consideration of significance of impacts for each environmental factor**

| Environmental factor                                                                                                                                                                                                                                 | Consideration                                                                                                                                                                                                                                                                                        | Significance of impact* |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1. the environmental impact on the community                                                                                                                                                                                                         | Social, economic and cultural impacts as described in sections 9.3, 9.5 and 9.6                                                                                                                                                                                                                      | Not significant         |
| 2. the transformation of the locality                                                                                                                                                                                                                | Human and non-human environmental effects as described in sections 9.1, 9.2 and 9.4                                                                                                                                                                                                                  | Not significant         |
| 3. the environmental impact on the ecosystems of the locality                                                                                                                                                                                        | Amount of clearing, loss of terrestrial and marine ecological integrity, habitat connectivity/fragmentation and changes to hydrology (both surface and groundwater) as described in sections 9.1, 9.2 and 9.4 and, for nationally listed threatened ecological communities, in section 9.7.          | Not significant         |
| 4. reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality                                                                                                                                      | Visual, recreational, scientific and other impacts as described in section 9.3.                                                                                                                                                                                                                      | Not significant         |
| 5. the effects on any locality, place or building that has—<br>a. aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or<br>b. other special value for present or future generations | Impacts to Aboriginal and historic heritage associated with the locality (including intangible cultural significance), architectural heritage, social/community values and identity, scenic values and others, as described in sections 9.3, 9.5 and 9.6 and (for MNES heritage places) section 9.7. | Not significant         |
| 6. the impact on the habitat of protected animals, within the meaning of the Biodiversity Conservation Act                                                                                                                                           | Impacts to all native terrestrial and marine species, including but not limited to threatened species, and their habitat requirements, as described in section 9.2.                                                                                                                                  | Not significant         |
| 7. the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air                                                                                                                               | Impacts to all listed terrestrial and marine species, and whether the Proposal increases the impact of key threatening processes, as described in section 9.2                                                                                                                                        | Not significant         |

| Environmental factor                                                                                                                      | Consideration                                                                                                                                                                                                                                                                                   | Significance of impact* |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 8. long-term effects on the environment                                                                                                   | Long-term residual impacts to ecological, social and economic values as described in all parts of section 9.                                                                                                                                                                                    | Not significant         |
| 9. degradation of the quality of the environment                                                                                          | Ongoing residual impacts to ecological, social and economic factors as described in section 9.4.                                                                                                                                                                                                | Not significant         |
| 10. risk to the safety of the environment                                                                                                 | Impacts to public and worker health and safety, from the proposed work, contamination, fires, sea level rise, flood, storm surge, wind speeds, extreme heat, rockfall and landslip, and other risks likely to increase due to climate change as described in sections 9.1, 9.3 and 9.4.         | Not significant         |
| 11. reduction in the range of beneficial uses of the environment                                                                          | Impacts to natural resources, community resources and existing land uses as described in sections 9.3 and 9.4.                                                                                                                                                                                  | Not significant         |
| 12. pollution of the environment                                                                                                          | Impacts due to the proposed works on air pollution (including odours, fumes and greenhouse gases); water pollution (water quality, health); soil contamination; noise and vibration (including consideration of sensitive receptors); or light pollution, as described in sections 9.1 and 9.3. | Not significant         |
| 13. environmental problems associated with the disposal of waste                                                                          | Transportation, disposal and contamination impacts as described in section 9.3.                                                                                                                                                                                                                 | Not significant         |
| 14. increased demands on natural or other resources that are, or are likely to become, in short supply                                    | Impacts to land, soil, water, gravel, minerals and energy supply as described in section 9.4.                                                                                                                                                                                                   | Not significant         |
| 15. the cumulative environmental effect with other existing or likely future activities                                                   | The negative interactions with existing development or known or likely future activities as considered in section 9.8.                                                                                                                                                                          | Not significant         |
| 16. the impact on coastal processes and coastal hazards, including those under projected climate change conditions                        | Impacts arising from the proposed activity on coastal processes, and impacts on the proposed activity from those coastal processes and hazards, both current and future, as considered in section 9.1.                                                                                          | Not significant         |
| 17. applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1 | Inconsistency with the objectives, policies and actions identified in local, district and regional plans, as considered in section 3.2.2.                                                                                                                                                       | Not significant         |
| 18. other relevant environmental factors.                                                                                                 | Any other factors relevant in assessing impacts on the environment to the fullest extent, such as native title, considered in section 5.1.                                                                                                                                                      | Not significant         |

**In conclusion:**

- There **is not** likely to be a significant effect on the environment and an environmental impact statement **is not** required.

Reason(s): The total disturbed area would be located within existing disturbed/modified areas. Ultimately, the proposed activity would have a positive impact on the study area as it would address non-compliant (BCA and DDA), deteriorating and unsafe infrastructure. The proposed activity would provide an approved standard and functionality, continued efficiency and safe access, while conserving the natural, heritage and recreational values of the area for future enjoyment and appreciation.

- There **is not** likely to be a significant effect on threatened species, populations, ecological communities or their habitats and a species impact statement **is not** required.

Reason(s): No threatened species, populations, ecological communities or their habitats listed under the EPBC Act, BC Act or the FM Act have been identified as occurring within or adjacent to the area considered and assessed. The Proposal has been designed and would be managed to avoid, minimise or mitigate any potential adverse impacts generally.

- The activity **is not** likely to have a significant impact on matters of national environmental significance listed under the Commonwealth Environment Protection and Biodiversity Conservation Act and so **will not** require referral to the Australian Government.

Reason(s): No threatened species, populations, ecological communities or their habitats listed under the EPBC Act, or other listed MNES have been identified as occurring within or adjacent to the area considered and assessed. The Proposal has been designed and would be managed to avoid, minimise or mitigate any potential adverse impacts generally. Referral of the matter as a controlled action to the Australian Government is therefore not required.

- The activity **will** require certification to the Building Code of Australia or Australian Standards in accordance with the NPWS Construction Assessment Procedures.

## 11. Supporting documentation

**Table 11. Specialist documents that accompany the review of environmental factors**

| Document title                                             | Author                                | Date           |
|------------------------------------------------------------|---------------------------------------|----------------|
| Timber Inspection: Bare Island Vehicle Bridge              | Timber Inspection Pty Ltd             | October 2024   |
| Bare Island Vehicle Bridge: Structural assessment of piles | Consult Marine Pty Ltd                | December 2024  |
| NPWS GSB Elevated Structures: Asset 1161171                | Northrop Consulting Engineers Pty Ltd | February 2024  |
| Aboriginal Due Diligence Assessment                        | AMBS Ecology and Heritage Pty Ltd     | August 2025    |
| Heritage Impact Statement                                  | Urbis Pty Ltd                         | September 2025 |

## 12. Declarations

As the person responsible for the **preparation** of this REF, I certify that, to the best of my knowledge, this REF is in accordance with the EP&A Act, the EP&A Regs and the Guidelines approved under section 170 of the EP&A Regs, and the information it contains is neither false nor misleading.

|                |                                                                                   |
|----------------|-----------------------------------------------------------------------------------|
| Signature      |  |
| Name (printed) | Deryk Engel                                                                       |
| Position       | Director and Senior Ecologist, Lesryk Environmental Pty Ltd                       |
| Date           | 21 January 2026                                                                   |

**By endorsing this REF, the proponent confirms that the information in this REF is accurate and adequate to ensure that all potential impacts of the activity can be identified.**

|                |                                                                                   |
|----------------|-----------------------------------------------------------------------------------|
| Signature      |  |
| Name (printed) | Ben Khan                                                                          |
| Position       | NPWS                                                                              |
| Date           | 21 January 2026                                                                   |

## 13. Bibliography

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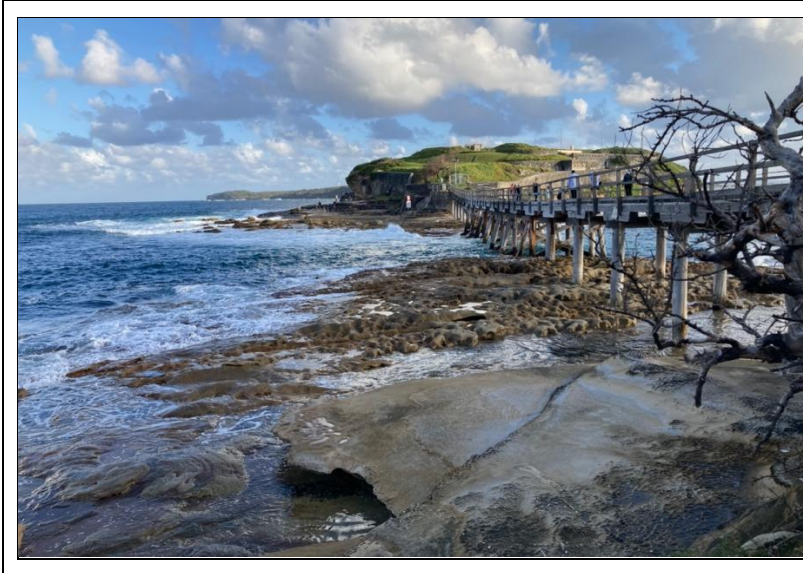
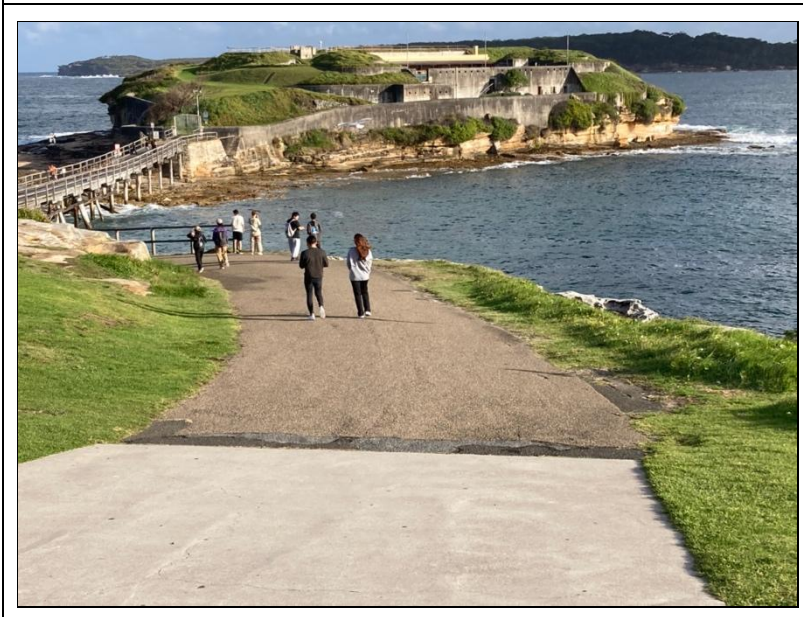
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## Appendix 1: Site photographs

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|  A photograph showing the western side of the Bare Island Bridge. The bridge is a long, narrow structure made of concrete and steel, extending from a rocky shore into the ocean. The water is blue with white foam from waves breaking against the shore. The sky is blue with scattered white clouds. In the foreground, there are large, light-colored rocks and some green grass.                     | <p>Western side view of the Bare Island Bridge from the northern approach road.</p>                                                                 |
|  A photograph showing the eastern side of the Bare Island Bridge. The bridge is a long, narrow structure made of concrete and steel, extending from a rocky shore into the ocean. The water is blue with white foam from waves breaking against the shore. The sky is blue with scattered white clouds. In the foreground, there are large, light-colored rocks and some green grass.                    | <p>View of the eastern side of the bridge, showing the tidal conditions of the rock platform, from which work may be required to be undertaken.</p> |
|  A photograph showing the approach road to the Bare Island Bridge. The road is a wide, paved path that leads from a grassy area towards the bridge. Several people are walking along the path. In the background, the bridge is visible, extending from the shore into the ocean. The water is blue with white foam from waves breaking against the shore. The sky is blue with scattered white clouds. | <p>View of the approach road to the bridge from Anzac Parade.</p>                                                                                   |

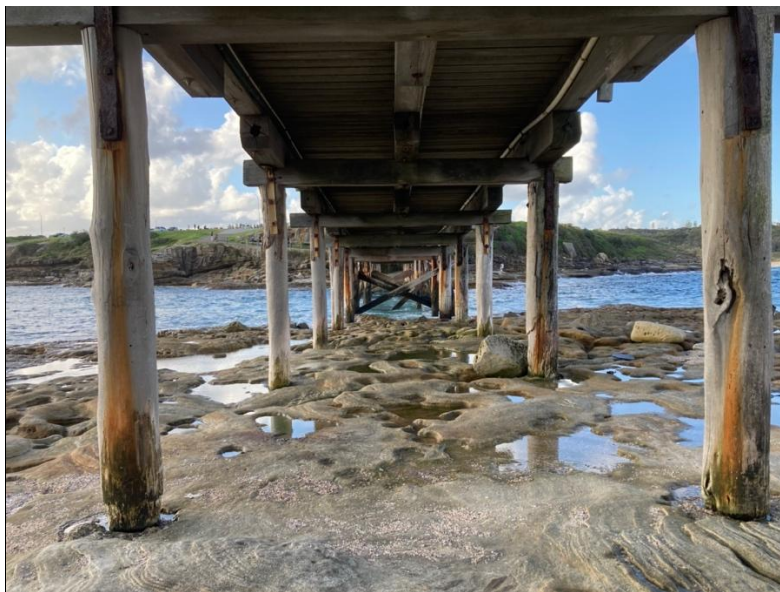
Review of Environmental Factors: Bare Island Bridge Repair



View of the northern approach road. The new roadside drain would be constructed in the grassy area below the cutting face.



The bridge deck looking toward Bare Island, showing the closed section of the deck due to deterioration, unsafe gaps in the balustrading and general condition.



Underside of the bridge looking north from Bare Island rock platform, showing typical pile deterioration.

Review of Environmental Factors: Bare Island Bridge Repair



Artists impression of works area and layout/location of compound site.



Artists impression of updated and repaired bridge post-work.

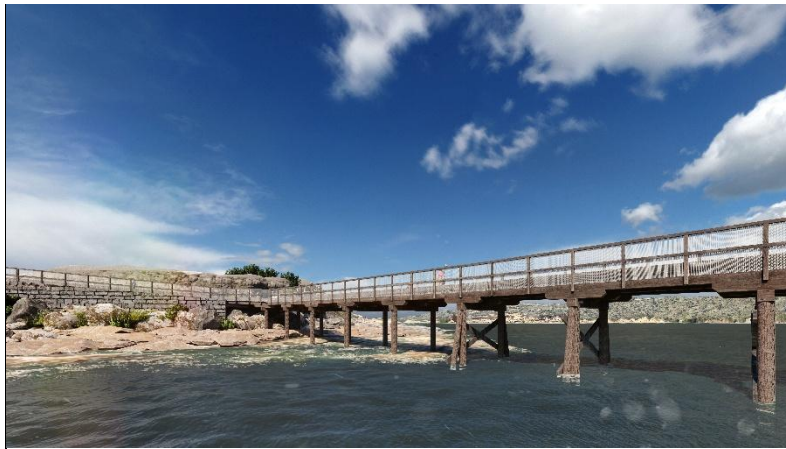


Artists impression of updated and repaired bridge post-work.

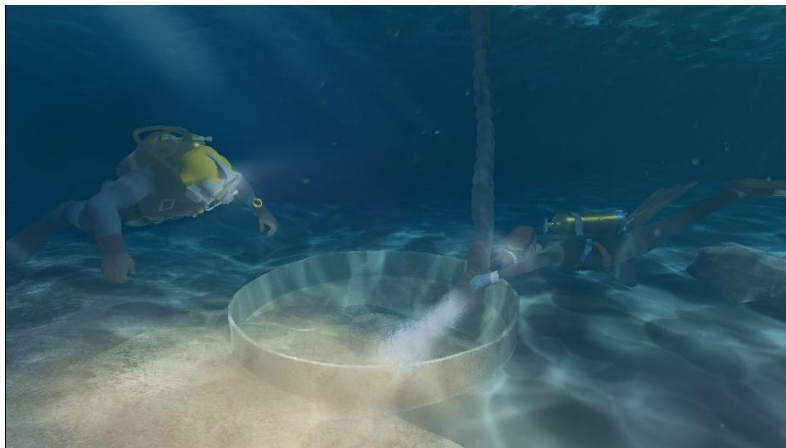
Review of Environmental Factors: Bare Island Bridge Repair



Artists impression of updated and repaired bridge post-work.



Artists impression of updated and repaired bridge post-work.



Artists impression of method to remove sand and expose piles to permit their removal and replacement.

Review of Environmental Factors: Bare Island Bridge Repair



Artists impression of method to remove sand and expose piles to permit their removal and replacement.



Photo from renewal works in 2006/7 (NPWS), showing construction methods that are likely to be employed for the current Proposal.



Photo from renewal works in 2006/7 (NPWS), showing construction methods that are likely to be employed for the current Proposal.

## Appendix 2: Principles of Ecologically Sustainable Development

1. **The precautionary principle** – that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
2. **Inter-generational equity** – that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
3. **Conservation of biological diversity and ecological integrity** – should be a fundamental consideration [of the decision to undertake the activity].
4. **Improved valuation, pricing and incentive mechanisms** – that environmental factors should be included in the valuation of assets and services, such as:
  - (i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
  - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
  - (iii) environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

| Ecologically Sustainable Development Principle                | Application to the Proposal                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautionary principle                                       | The Proposal does not pose a risk of serious or irreversible environmental damage. Any adverse impacts associated with the Proposal would be minor, temporary and short-term. Measures to reduce adverse impacts as far as practicable have been identified within this REF.                                                                                                                                |
| Intergenerational equity                                      | The Proposal, in upgrading non-compliant (BCA and DDA), deteriorating and unsafe facilities, amenities and infrastructure, would provide for an improved standard and functionality, and continued conservation of the natural, heritage and recreational values of the area to benefit future generations.                                                                                                 |
| Conservation of biological diversity and ecological integrity | <p>The conservation of biological diversity and ecological integrity have been assessed within this REF, within the impact assessment of Section 9.</p> <p>Clause 171(2) of the EP&amp;A Regulations 2021 sets out 18 factors that need to be considered when assessing environmental impact under Part 5 of the EP&amp;A Act. These factors are addressed in this report and summarised in Section 10.</p> |
| Improved valuation and pricing of environmental resources     | NPWS recognises the value of environmental resources and aims to minimise the impact of its activities by ensuring that appropriate mitigation measures are implemented for all aspects of the Proposal.                                                                                                                                                                                                    |

## Appendix 3: Terrestrial and aquatic species recorded

### Key

A – species listed under the EPBC Act

B – species listed under the BC Act

V – species is listed as Vulnerable

Ma – species listed as marine under the EPBC Act

\* – indicates introduced species

| A  | B | Common Name              | Family and Scientific Name             |
|----|---|--------------------------|----------------------------------------|
|    |   | <b>BIRDS</b>             |                                        |
|    |   | Willy wagtail            | <i>Rhipidura leucophrys</i>            |
|    |   | Noisy miner              | <i>Manorina melanocephala</i>          |
|    |   | * Common myna            | <i>Sturnus tristis</i>                 |
|    |   | Welcome swallow          | <i>Hirundo neoxena</i>                 |
|    |   | Magpie-lark              | <i>Grallina cyanoleuca</i>             |
|    |   | Australian White Ibis    | <i>Threskiornis molucca</i>            |
|    |   | Red Wattlebird           | <i>Anthochaera carunculata</i>         |
|    |   | * Common Starling        | <i>Sturnus vulgaris</i>                |
|    |   | Sliver Gull              | <i>Chroicocephalus novaehollandiae</i> |
|    |   | Nankeen Kestrel          | <i>Falco cenchroides</i>               |
|    |   | Australian Raven         | <i>Corvus coronoides</i>               |
|    |   | * Rock Dove              | <i>Columba livia</i>                   |
|    |   | Pied Butcherbird         | <i>Cracticus nigrogularis</i>          |
|    |   | Sulphur-crested Cockatoo | <i>Cacatua galerita</i>                |
|    |   | Little Black Cormorant   | <i>Phalacrocorax sulcirostris</i>      |
|    |   | Pied Cormorant           | <i>Phalacrocorax carbo</i>             |
|    |   | Little Corella           | <i>Cacatua sanguinea</i>               |
|    |   | Australian Magpie        | <i>Cracticus tibicen</i>               |
| Ma | V | White-bellied Sea Eagle  | <i>Haliaeetus leucogaster</i>          |
|    |   | Masked Lapwing           | <i>Vanellus miles</i>                  |
|    |   | Rainbow Lorikeet         | <i>Trichoglossus haematodus</i>        |
|    |   |                          |                                        |
|    |   | <b>FISH</b>              |                                        |
|    |   | Eastern Blue Groper      | <i>Achoerodus viridis</i>              |
|    |   | Eastern Haulfish         | <i>Trachinops taeniatus</i>            |
|    |   | Smooth Toadfish          | <i>Tetractenos glaber</i>              |
|    |   | Red Morwong              | <i>Cheilodactylus fuscus</i>           |
|    |   | Crested Morwong          | <i>Cheilodactylus vestitus</i>         |
|    |   | Blue-lined Goatfish      | <i>Upeneichthys lineatus</i>           |
|    |   | Yellowtail Scad          | <i>Trachurus novaezelandiae</i>        |
|    |   | Long-finned Pike         | <i>Dinolestes lewinii</i>              |
|    |   | Eastern Garfish          | <i>Hyporhamphus australis</i>          |
|    |   | Yellowfin Bream          | <i>Acanthopagrus australis</i>         |
|    |   | Snapper                  | <i>Pagrus auratus</i>                  |
|    |   | Blackfish or Luderick    | <i>Girella tricuspidata</i>            |
|    |   | Mado                     | <i>Atypichthys strigatus</i>           |

Review of Environmental Factors: Bare Island Bridge Repair

| A | B | Common Name                    | Family and Scientific Name           |
|---|---|--------------------------------|--------------------------------------|
|   |   | Southern Maori Wrasse          | <i>Ophthalmolepis lineolatus</i>     |
|   |   | Crimson banded Wrasse          | <i>Notolabrus gymnogenis</i>         |
|   |   | Black Rockcod                  | <i>Epinephelus daemeli</i>           |
|   |   | Yellow-finned Leatherjacket    | <i>Meuschenia trachylepis</i>        |
|   |   | Dusky Flathead                 | <i>Platycephalus fuscus</i>          |
|   |   | Yellowfin Goby                 | <i>Acanthogobius flavimanus</i>      |
|   |   |                                |                                      |
|   |   | <b>CEPHALOPODS</b>             |                                      |
|   |   | Common Sydney Octopus          | <i>Octopus tetricus</i>              |
|   |   |                                |                                      |
|   |   | <b>INVERTEBRATES</b>           |                                      |
|   |   | Molluscs                       |                                      |
|   |   | Sydney Rock Oyster             | <i>Saccostrea glomerata</i>          |
|   |   | Feline Cowrie                  | <i>Cypraea felina</i>                |
|   |   | Sydney Cockle                  | <i>Anadara trapezia</i>              |
|   |   | Southern Scallop               | <i>Pecten fumatus</i>                |
|   |   | Green Turban Shell             | <i>Turbo (Subnirrella) undulatus</i> |
|   |   | Common Turbo Shell             | <i>Turbo torquatus</i>               |
|   |   | Blue Mussel                    | <i>Mytilus galloprovincialis</i>     |
|   |   | Beaked Mussel                  | <i>Brachidontes rostratus</i>        |
|   |   |                                |                                      |
|   |   | <b>ECHINODERMS</b>             |                                      |
|   |   | Spiny Sea Urchin               | <i>Centrostephanus rodgersii</i>     |
|   |   | Purple Sea Urchin              | <i>Heliocidaris erythrogramma</i>    |
|   |   | Pink Sea Urchin                | <i>Holopneustes pycnotilus</i>       |
|   |   |                                |                                      |
|   |   | <b>TUNICATES &amp; SPONGES</b> |                                      |
|   |   | Sea Tulip                      | <i>Pyura stolonifera</i>             |
|   |   | Finger Sponge                  | <i>Holopsamma laminaefavosa</i>      |
|   |   |                                |                                      |
|   |   | <b>MARINE FLORA</b>            |                                      |
|   |   | Spiny Kelp                     | <i>Ecklonia radiata</i>              |

## **Appendix 4: Protected Matters Search Tool results**

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## **Attachment 1: Timber Inspection report**

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## **Attachment 2: Structural assessment of piles report**

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## **Attachment 3: GSB Elevated Structures report**

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## **Attachment 4: Aboriginal Due Diligence Assessment**

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## **Attachment 5: Heritage Impact Statement**

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## **Attachment 6: Bare Island Vehicle Bridge Refurbishment Maritime Archaeology Short Memo Report**

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## **Attachment 7: Bare Island Vehicle Bridge Refurbishment Historical Archaeology Addendum**

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## **Attachment 8: Approval - Section 60 of the *Heritage Act* 1977 application**

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