Appendix B

Revised environmental management measures

Revised environmental management measures

The EIS identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Appendix A of the EIS) have been revised. Should the project be approved, the environmental management measures in Table B-1 will guide the subsequent phases of the project development. Additional and/or modified environmental management measures to those presented in the EIS have been underlined and deleted measures, or parts of measures, have been struck out.

Table B-1: Environmental management measures

Environmental issue	ID	Environmental management measures	Responsibility	Timing
General				
Construction impacts	G1	A Construction Environmental Management Plan (CEMP) will be prepared in accordance with the Environmental Management Plan Guideline (NSW DPIE, 2020) and Environmental Management Plan Guidelines (Australian Government, 2014). It will be implemented before starting work. As a minimum, the CEMP will include: a. Statutory approval requirements b. How the project will implement the identified mitigation and management measures outlined in the EIS c. Issue-specific environmental management plans d. Roles and responsibilities, including those of sub-contractors e. Communication requirements, including liaison with stakeholders and the community f. Induction and training requirements g. Environmental performance monitoring and evaluation procedures and remedial actions h. Reporting requirements and record-keeping arrangements i. Emergency and incident management procedures j. Audit and review procedures.	Contractor	Pre-construction and construction
Operational impacts	G2	Prior to starting operations, operational environmental management measures will be incorporated into the existing Transport for NSW ferry wharf operational management system.	Transport for NSW	Operation
Consultation				

Community engagement during construction	C1	A Community Liaison Implementation Plan (CLIP) will be prepared and implemented under the CEMP. As a minimum the CLIP will:
		• Identify people, community interest groups, businesses, priority groups and stakeholders to be consulted with before and during construction
		• Set out procedures and mechanisms for distributing accessible information about, or relevant to, the project's construction
		• Provide for the formation of community-based forums that focus on key environmental management construction issues
		• Set out procedures and mechanisms to:
		  • Provide updates at key milestones and before starting impacting activities
		  • Allow the community to discuss or provide feedback
		  • To respond to community enquiries or feedback
		  • To resolve issues and mediate any disputes
		• Include the means for Aboriginal community consultation with the La Perouse Local Aboriginal Land Council, Registered Aboriginal Parties and other interest groups.
		• Include contact name and number for complaints
		• Include information on the actual impacts that can be expected because of the construction of the project and ways in which these will be mitigated
		• Include opportunities for community involvement in monitoring impacts.
			Transport for NSW
			
			Contractor
				Detailed design, pre-construction and construction

Aboriginal heritage				
Heritage considerations in design	AH1	Detailed design will consider opportunities to avoid impacts to significant heritage values and known/discovered intact archaeological remains in consultation with La Perouse Local Aboriginal Land Council and other Registered Aboriginal Parties.	Transport for NSW	Detailed design

	AH2	During detailed design, elements of design such as finishes and treatments as well as heritage interpretation, such as displays and panels, will be informed by the Aboriginal cultural heritage principles in the following policies and plans: • Kamay Botany Bay National Park: Interpretation and Storytelling Plan (WolfPeak Environment and Heritage, 2020) • Kamay Botany Bay National Park Kurnell Master Plan (NSW DPIE, 2019). • Kamay Botany Bay National Park Plan of Management (NSW DPIE, 2020a) • Meeting Place Precinct: Botany Bay National Park – Kurnell. Conservation Management Plan (Context Pty Ltd, 2008). • La Perouse Headland Conservation Management Plan (Jill Sheppard Heritage Consultants, 2009).	Transport for NSW	Detailed design
Construction heritage management	AH3	A Construction Heritage Management Plan (HMP) will be prepared and implemented under the CEMP. The HMP will include: a. Construction measures and procedures to minimise and manage impacts on Aboriginal cultural heritage b. Sensitive area maps that identify Aboriginal heritage values, culturally and archaeologically sensitive areas and constraints within the study area c. Unexpected Heritage Items Procedure (NSW Roads and Maritime Services, 2015d) d. Include consultation with and contact details for the La Perouse Local Aboriginal Land Council, Registered Aboriginal Parties and National Parks and Wildlife Service.	Contractor	Pre-construction, and construction
Aboriginal cultural heritage awareness	AH4	Aboriginal Cultural Heritage Awareness Inductions will be given to all workers during site inductions. This will ensure they are aware of the site's heritage values and context. Updates will be provided based on stakeholder feedback, consultation with the La Perouse Local Aboriginal Land Council, Registered Aboriginal Parties and following any unexpected finds.	Contractor	Pre-construction and construction
Damage to potential buried engravings and midden material at La Perouse	AH5	A Salvage Excavation Program will be developed and be carried out prior to any subsurface impacts within the Low Potential PAD at La Perouse. This includes the jetty tie-in where utilities, wharf piles and landscaping works. Following completion of the archaeological excavation and the subsequent analysis and reporting, further consultation will be undertaken to determine the long-term repository for any retrieved Aboriginal objects.	Contractor	Pre-construction and construction

Potential damage to the rock engravings at La Perouse	AH6	A visual inspection of the potential rock engravings (Site 3, La Perouse [AHIMS ID 45-6-0650] and Site 4, La Perouse [AHIMS ID 45-6-0651]) will be undertaken before setting-up the ancillary facilities and starting construction.	Contractor	Pre-construction
	AH7	Establish exclusion zones for all registered AHIMS rock engraving sites within the construction boundary or directly adjacent and cover with geotextile fabric (or similar) before setting-up the ancillary facilities and creating the construction compound.	Contractor	Pre-construction
Potential damage to AHIMS site at La Perouse	AH8	Archaeological work method statements will be prepared prior to setting up ancillary facilities, construction compounds or construction works to prevent impact and preserve the integrity the rock engraving at La Perouse (AHIMS ID 45-6-0653). During excavation and subsurface works or any other identified high risk activities, archaeological supervision and vibration monitoring will be undertaken at the potential location of the rock engraving at La Perouse (AHIMS ID 45-6-0653). If the engraving is identified and/or the vibration levels would result in damage to the integrity of the sandstone structure, works must cease, the site protected and the construction methodology be reviewed in consultation with a heritage consultant to mitigate further impacts.	Contractor	Pre-construction and construction
Potential damage to AHIMS site at Kurnell	AH9	Archaeological supervision will be undertaken during excavations below 400mm at Kurnell within the Foreshore Midden – Captain Cook's Landing Place (AHIMS ID 52-3-0219). If archaeological material is identified, further archaeological investigations may be required following review and assessment of the archaeological resources identified.	Contractor	Pre-construction and construction

Non-Aboriginal heritage				
Heritage considerations in design	NAH1	Detailed design will consider opportunities to avoid impacts to significant heritage values and known/discovered intact archaeological remains in consultation with Heritage NSW. Options to consider during the detailed design include: a. Excavating the utility trench at Kurnell underneath the buried portion of the course stone sea wall near the wharf tie-in instead of removing a section of the sea wall b. Excavating the utility trench at Kurnell underneath the archaeological remains of the former sea wall near the wharf tie-in instead of impacting the archaeological remains c. Limiting the impact depth of landscape works at La Perouse to reduce impacts to the archaeological remains of the former wharf approach road d. Avoiding impact to remnant Coast Banksia community at La Perouse. Where impact cannot be avoided, offset planting of native vegetation at La Perouse and Kurnell will be provided.	Transport for NSW	Detailed design
	NAH2	During detailed design, elements of design such as finishes and treatments as well as heritage interpretation, such as displays and panels, will be informed by the non-Aboriginal cultural heritage principles in the following policies and plans: • Kamay Botany Bay National Park Kurnell Master Plan (NSW DPIE, 2019). • Kamay Botany Bay National Park Plan of Management (NSW DPIE, 2020a) • Meeting Place Precinct: Botany Bay National Park – Kurnell. Conservation Management Plan (Context Pty Ltd, 2008). • La Perouse Headland Conservation Management Plan (Jill Sheppard Heritage Consultants, 2009).	Transport for NSW	Detailed design

Non-Aboriginal heritage construction management	NAH3	Non-Aboriginal heritage management measures will be included as part of the Construction Heritage Management Plan (HMP). The HMP will include: a. Construction measures and procedures to minimise and manage impacts on non-Aboriginal cultural heritage b. Sensitive area maps that identify non-Aboriginal heritage values, culturally and archaeologically sensitive areas and constraints within the study area c. Identification of heritage protection zones and protection requirements for heritage items within and in the vicinity of the construction boundary d. An outline of the required archaeological management strategies e. A heritage register to document the location, condition, significance, storage requirements of any memorials, monuments and interpretive panels which need temporarily relocating and storing during construction including The Captain Cook watering well, The Landing Place Memorial and interpretative panels on the extant wharf. f. Unexpected Heritage Items Procedure (NSW Roads and Maritime Services, 2015d) g. Consultation with National Parks and Wildlife Service, Heritage NSW, Randwick City Council and Sutherland Shire Council.	Contractor	Pre-construction and construction
Damage to former sea wall at Kurnell and former wharf approach road at La Perouse Preserving the heritage record of the coursed stone sea wall and other listed items impacted by the project	NAH4	An Archaeological Research Design (ARD) will be prepared before work starts. The ARD will confirm the areas within the construction boundaries requiring archaeological investigation, management and any salvage requirements, following detailed design. It will outline the archaeological investigation method. Archaeological Work Method Statements (AWMS) will be prepared prior to construction to support the ARD.	Transport for NSW Contractor	Pre-construction
Incorporating identified archaeological remains	NAH5	Where any archaeological investigations identify remains, opportunities should be considered for leaving archaeological remains exposed and incorporating them into the visual landscape. Consultation with Heritage NSW and National Parks and Wildlife Service will be undertaken to determine the long-term repository for any retrieved objects.	Transport for NSW	Pre-construction Construction

Heritage awareness and responsibilities	NAH~~5~~ 6	Non-Aboriginal Heritage Awareness Inductions will be given to all workers during site inductions. This will ensure they are aware of their obligations under the NSW *Heritage Act 1977* and best practice as outlined in The Burra Charter (Australia ICOMOS 2013). Updates will be provided based on stakeholder feedback and following any unexpected finds and the outcome of the ARD.	Contractor	Construction
Impacts on heritage fabric, views and landscapes at La Perouse and Kurnell	NAH~~6~~ 7	A Photographic Archival Recording Program will be undertaken in accordance with the *How to Prepare Archival Recording of Heritage Items* (NSW Heritage Office 1998) and *Photographic Recording of Heritage Items Using Film or Digital Capture* (NSW Heritage Office 2006). Photographic archival recording will be carried out for heritage items that are directly impacted within the construction boundaries and record the setting and views of the heritage items within the study area that will be subject to minor or greater visual impacts based on Table 8-4 of the EIS. The impacted elements include but are not limited to: a. The former sea wall at Kurnell b. The former wharf approach road at La Perouse c. The archaeological potential areas at La Perouse d. Nearby heritage items subject to minor visual impacts including; Kurnell Peninsula Headland, Kamay Botany Bay National Park (North and South) and Towra Point Reserve, Kurnell Historic Site (in Kamay Botany Bay National Park), Kurnell monuments (in Kamay Botany Bay National Park) and Captain Cook monument.	Contractor	Pre-construction
Reinstatement of Monument Track to maintain the historical circulation pattern	NAH~~7~~ 8	Monument Track will be reinstated in the same location following construction. This will ensure that the historical circulation pattern is maintained in accordance with the policies outlined in section 5.5: Landscape of the Meeting Place Precinct CMP. Specifically: a. The existing concrete slabs will be temporarily removed and reinstated rather than being replaced. If this is not possible, replaced sections will match the existing track b. Care will be taken to remove sections with interpretive text and ensure that they are returned to their original location.	Contactor	Construction
Underwater heritage				

Underwater heritage construction management	UH1	Underwater heritage management measures will be included as part of the Construction Heritage Management Plan (HMP). The HMP will include: a. Construction measures and procedures to minimise and manage impacts on underwater heritage b. Sensitive area maps that identify areas of underwater heritage sensitivity and constraints in the study area c. Artefact management procedures, including identification of approved submerged reburial locations d. Relevant work method requirements, including the installation and removal of the construction platform at La Perouse, temporary causeway at Kurnell and any other temporary structures e. Maritime heritage inductions tailored for underwater work activities including, but not limited to anchoring or trenching f. Restricted zones to be established for the following heritage items; First Slipway at La Perouse, Remains of the sandstone block causeway for La Perouse wharf, Paragon Restaurant / Boat Davits, Holt Jetty / Isaac Smith memorial/ Captain Cook's Landing Site which limit activities and movements ie no tracked machines. g. Archival, baseline and periodic monitoring protocols (before and during construction, including a final site inspection within three months of completion of works) for the heritage items identified in UH1(g) h. Unexpected Heritage Items Procedure (NSW Roads and Maritime Services, 2015d) i. Consultation requirements with National Parks and Wildlife Service, Heritage NSW, Randwick City Council and Sutherland Shire Council.	Contractor	Pre-construction and construction
Underwater heritage finds during wharf construction	UH2	An archaeological dive inspection will be carried out within the footprint of the wharves. Where a culturally significant heritage item is present, any movable heritage items will be relocated away from the impact area before starting work.	Contractor	Pre-construction
Unidentified seabed anomalies	UH3	Unidentified seabed anomalies will be avoided through the use of a five metre no-anchoring exclusion zone. If these areas are required for anchoring or mooring, a dive inspection will determine if the item is of low cultural heritage sensitivity to enable these activities to occur.	Contractor	Pre-construction
Marine biodiversity				

Lighting impacts to marine habitat and fauna	MB1	Design and lighting opportunities will be considered during the detailed design, including: a. Use of light permeable materials for the wharves to minimise shading impacts to marine habitats b. Measures in the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds, and Migratory Shorebirds (Australian Government Department of Environment and Energy, 2020).	Transport for NSW	Detailed design
Marine biodiversity impacts	MB2	A Construction Biodiversity Management Plan (BMP) will be prepared in accordance with the Biodiversity Assessment Method (NSW DPIE, 2020h). It will be implemented under the CEMP. The BMP will detail the measures and procedures to minimise and manage construction impacts on marine biodiversity. The BMP will include: a. Sensitive area maps that identify sensitive habitats, protection areas, no anchoring zones, and exclusion zones to protect seagrass and threatened species b. Define procedures addressing relevant matters specified in the NSW DPI Fisheries Policy and guidelines for fish habitat conservation and management (NSW Department of Primary Industries, 2013). c. Include measures to prevent and monitor: • Water pollution • Sediment disturbance during construction • Construction vessel/barge movements, anchoring, and shading • Impact on known Black Rockcod habitat where possible • Biosecurity risks • Vessel strike by maintaining safe distances and approaches as identified in section 2.3 and 2.5 of the Biodiversity Conservation Regulation 2017 and limiting speeds. d. Define and implement marine ecology induction to all workers during site inductions e. Consultation with DPI Fisheries, NSW Environment, Energy and Science Group, Randwick City Council, Sutherland Shire Council, National Parks and Wildlife Service for the preparation of the BMP.	Contractor	Pre-construction and construction
Habitat degradation on sensitive environments related to vessel anchoring and mooring: construction	MB3	Establish no anchoring zones to minimise impacts from anchor points within seagrass meadows of *Posidonia Australis* at Kurnell and La Perouse.	Contractor	Pre-construction and construction
	MB4	Avoid fixed location of barges at locations of *Posidonia australis* outside of the marine habitat impact area within the construction boundary to minimise shading impacts.	Contractor	Pre-construction and construction

Marine pests	MB5	Implement biosecurity management measures applicable and relevant to the project in accordance with relevant NSW DPI Fisheries policies and procedures and National biofouling management guidelines for marinas, slipways, boat maintenance and recreational boating facilities (DAWE, 2021).	Contractor (Construction) Transport for NSW (Operation)	Pre-construction, construction and operation
Habitat degradation and turbidity on sensitive environments related to vessel wash and disturbance: operation	MB6	Establish suitable navigation channels to avoid areas of listed species habitat, including: Kurnell a. Watts reef (likely Black Rockcod habitat) b. Large TEC seagrass meadow of Posidonia Australis La Perouse c. Avoid accessing near reef habitat d. No access over patch of Posidonia Australis to the east of the wharf.	Contractor (Construction) Transport for NSW (Operation)	Pre-construction, construction and operation
Boat strike and vessel impacts on marine fauna	MB7	Vessels are to maintain safe distances and approaches as identified in section 2.3 and 2.5 of the Biodiversity Conservation Regulation 2017.	Transport for NSW	Operation
	MB8	Where possible, areas of known Black Rockcod habitat will be identified in detailed design and avoided during construction and within the ferry swept path during operation.	Transport for NSW	Detailed design, construction and operation
Habitat degradation and turbidity on sensitive environments related to vessel wash and disturbance	MB9	Establish areas of no wash zones in consultation with Port Authority NSW, NSW DPI Fisheries and Transport for NSW at: a. La Perouse to minimise wash effects on the coastal subtidal and intertidal reef areas b. Watts Reef near Kurnell to minimise wash effects on the subtidal habitat on the reef c. Near both wharves to minimise excess wash from the ferry and recreational vessel access.	Transport for NSW	Construction and operation
Seagrass habitat loss	MB10	A Marine Biodiversity Offset Strategy (MBOS) will be prepared in consultation with NSW DPI Fisheries. As a minimum the MBOS will include: a. Pre and post construction seagrass monitoring program to validate construction impacts b. A seagrass translocation and rehabilitation plan c. Investigation of other offset opportunities which may include artificial marine fauna habitat such as seahorse habitat structures, environmentally friendly moorings or research trials on environmentally friendly moorings.	Transport for NSW	Pre-construction, construction and operation

Terrestrial biodiversity				
Risks to native flora and fauna during construction	B1	Measures to further avoid and minimise the construction footprint, native vegetation or habitat removal will be considered during the detailed design stage and implemented where practicable and feasible. Measures to avoid and minimise impacts should be prioritised in the following order: a. Critical habitat b. Threatened species, endangered ecological communities or their habitat c. Native vegetation and habitat supporting flora and fauna connectivity and/or that supports other environmental objectives such as protecting water quality, hydrology or erosion and sediment controls d. Native vegetation of higher quality condition e. Other native vegetation.	Transport for NSW	Detailed design
Habitat disturbance from light	B2	As a part of detailed design, opportunities to minimise disturbance of foreshore and forested habitats as a result of light spill are to be investigated. This will include: a. Minimising the number of proposed permanent lights and optimising their locations where possible so as to provide maximum setbacks to adjacent habitats b. Where lights cannot be avoided, use of lower impact globes, directional shields, timers, sensors or motion detectors.	Transport for NSW	Detailed design

Terrestrial biodiversity impacts	B3	Terrestrial biodiversity management measures will be included as part of the Construction Biodiversity Management Plan (BMP). As a minimum the BMP will include: a. Sensitive area maps that identify native vegetation, flora and fauna habitat, threatened species and endangered ecological communities b. Maps showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features (eg hollow-bearing trees), and areas for rehabilitation or re-establishment of native vegetation c. Site inductions and training to ensure awareness of requirements of the BMP and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of areas of identified biodiversity value that are to be protected. d. Requirements set out in the Roads and Traffic Authority (RTA) Landscape Guideline e. Procedures addressing relevant matters specified in the Biodiversity Guidelines - Protecting and managing biodiversity on RTA Projects (NSW Roads and Traffic Authority, 2011a) including but not limited to: • Pre-clearing, including the outcomes of final flora and fauna species checks, establishment of exclusion zones and on-ground identification of specific habitat features to be retained (such as hollow-bearing trees) • Vegetation clearing and bushrock removal, including staged habitat removal and any specified seasonal limits on clearing activities • Fauna handling and unexpected threatened species finds • Rehabilitation, revegetation, re-use of soils, woody debris and bushrock, and other habitat management actions • Weed and pathogen management • Unexpected finds procedure. f. Monitoring during construction and post-construction g. Adaptive management measures to be applied if monitoring indicates unexpected adverse impacts.	Contractor	Pre-construction and construction
Indirect impacts to retained trees through construction activities and placement of permanent infrastructure	B4	A consulting arborist is to carry out an assessment of all trees within the construction boundary that are proposed for retention in accordance with Australian Standard 4970: Protection of Trees on Development Sites. The arborist is to provide a report with recommendations on the viable retention of all native trees within the construction boundary of the mapped PCTs, and include recommendations for amending design or using alternate construction methods to reduce any impacts on retained trees.	Contractor	Pre-construction

Vegetation and habitat loss	B5	A Terrestrial Biodiversity Offset Strategy will be prepared in accordance with the NSW Biodiversity Offset Scheme (NSW Department of Planning, Industry and Environment (DPIE), 2020i). Biodiversity credits are required to be obtained for the following PCTs and fauna species: • PCT 1823 – Coastal headland cliffline scrub • PCT 661 – Coastal sand littoral forest (Kurnell Dune Forest in the Sutherland Shire and City of Rockdale) • PCT 772 - Coastal foredune wattle scrub • ~~Gang-gang Cockatoo~~ • Potential foraging habitat for Large-eared Pied Bat • Potential foraging habitat for Eastern Cave Bat • Potential foraging/breeding habitat for Pied Oystercatcher • Potential foraging/breeding habitat for Sooty Oystercatcher.	Transport for NSW	Pre-construction, construction and operation
Traffic and transport				
Landside traffic risks during construction	T1	A Traffic Management Plan (TMP) will be prepared in accordance with Traffic Control at Work Sites - Technical Manual (Transport for NSW, 2020h) and QA Specification G10 - Traffic Management (Transport for NSW, 2020i). It will be implemented under the CEMP. The TMP will focus on maintaining general traffic flow, specifying appropriate site accesses, construction parking and construction traffic routes. The TMP will be prepared in consultation with National Parks and Wildlife Service, Randwick City Council and Sutherland Shire Council.	Contractor	Pre-construction and construction
Parking within Kamay Botany Bay National Park	T2	Transport for NSW will continue to liaise with National Parks and Wildlife Service~~s~~ to support its delivery of additional car parking within the Kamay Botany Bay National Park at Kurnell prior to operations.	Transport for NSW National Parks and Wildlife Service	Pre-construction and construction
Construction parking at La Perouse	T3	Construction worker parking along Anzac Parade at La Perouse will be avoided during peak periods (weekends). Consideration of a temporary parking facility at La Perouse will be considered during development of the TMP.	Contractor	Pre-construction
Conflict between cyclists and construction vehicles	T4	Interaction between cyclists and construction related vehicles will be managed and proposed alternative routes provided within the TMP.	Contractor	Pre-construction

Conflict between pedestrians and construction vehicles	T5	Where disruption or closure of pedestrian routes is required during construction, alternate pedestrian routes, appropriate signage and safe access will be provided in consultation with Randwick City Council, Sutherland Shire Council and National Parks and Wildlife Services.	Contractor	Pre-construction
Emergency vehicle access	T6	Emergency vehicle access will be maintained during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency.	Contractor	Construction
Conflict between marine construction works and other marine users	T7	A Marine Works Management Plan (MWMP) will be prepared in consultation with the Port Authority NSW (including Harbour Master), Transport for NSW, and other relevant stakeholders. The plan will define exclusion zones, methods of marking the zones, clearance distances, mooring plans, communication protocol, emergency and incident response procedures, vessel movements, contact details of all parties and responsible persons, and transit routes. The MWMP will be consistent with the Biodiversity Management Plan.	Contractor	Pre-construction and construction
Conflict of water users and construction vessels	T8	Maritime exclusion zones will be established to prevent unauthorised vessels entering the area. These zones will be clearly defined to communicate access for other water users and will be lit to account for the measures in National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds, and Migratory Shorebirds (Australian Government Department of the Environment and Energy, 2020).	Contractor	Construction
Swing moorings conflicting with construction boundary and operational swept ferry path	T9	Moorings that conflict with construction or the operational ferry swept path will be relocated outside of the construction boundary in accordance with Transport for NSW standard mooring relocation processes. Mooring relocation will be undertaken in consultation with Port Authority NSW and notify any affected stakeholders.	Transport for NSW	Pre-construction
Increase in commercial and recreational vessels using the area	T10	Consultation and notification will be carried out before the commencement of operations to ensure the surrounding maritime operations, including recreational boating, are informed about the project.	Transport for NSW	Operation
Landscape character and visual amenity				

Placemaking	L1	The design will be developed in consultation with National Parks and Wildlife Service, the La Perouse Local Aboriginal Land Council, Registered Aboriginal Parties, Port Authority NSW and Transport for NSW's Maritime and Urban Design Divisions. These reviews will follow Beyond the Pavement (Transport for NSW, 2020a) and Connecting with Country (Government Architect, 2020).	Transport for NSW	Detailed design
Change to existing lighting environment	L2	The lighting will be designed in accordance with AS/NZS 1158:2005 Lighting for Roads and Public Spaces (Australian and New Zealand Standard, 2005), AS/NZS 4282:2019 Control of Obtrusive Effects of Outdoor Lighting (Australian and New Zealand Standard, 2019) and to be guided by the National Light Pollution Guidelines for Wildlife (Australian Government, Department of the Environment and Energy, 20~~13~~20).	Transport for NSW	Detailed design
Loss of vegetation and landscape character	L3	~~An~~ The Urban Design and Landscape Plan (UDLP) ~~or equivalent for the project will be prepared. It~~ will be implemented under the CEMP to ensure:~~.~~ ~~The UDLP will:~~ a. ~~Outline the process to ensure place~~ The design objectives and principles are ~~implemented~~ met b. A sampling process will be carried out in consultation with Transport for NSW and the design team to ensure these outcomes are achieved c. ~~Outline~~ Any further consultation requirements are carried out with ~~relevant stakeholders such as~~ National Parks and Wildlife Service, Local Aboriginal Land Council~~,~~ and Registered Aboriginal Parties ~~and Port Authority NSW~~ d. With regard to implementing the art strategy, prototyping will be carried out and signed off by Transport for NSW to ensure quality standards and the design intent is met e. The planting as outlined in the UDLP is implemented and maintained for the specified duration f. Any deviation from the design, as documented in the UDLP, will be in consultation with Transport for NSW to ensure the quality and design intent is met. ~~g. Include the species and native vegetation to respond to the existing landscape character, including specific:~~ ~~• Planting density and location~~ ~~• Landscape management requirements.~~	Transport for NSW	~~Detailed design~~ Construction

Finalisation of the landscaping	L4	Transport for NSW will continue to consult with National Parks and Wildlife Service to inform the final landscape design at Kurnell. Any changes required to be made to the landside layout of seating at Kurnell, proposed landscaping and proposed lighting will be coordinated by Transport for NSW in collaboration with National Parks and Wildlife Service.	Transport for NSW	Construction
Maintain amenity during construction	L4~~5~~	All areas and activities in the construction boundary will be managed to ensure the appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials.	Contractor	Construction
Integration of cultural artwork	L6	Delivery of the cultural artwork on site shall be completed in close collaboration with the selected Aboriginal artists and the Gujaga Foundation to ensure the artist intent is achieved. Any deviation from the design will be considered in consultation with Transport for NSW to ensure the project design objectives are met.	Contractor Transport for NSW	Construction
Ongoing maintenance	L~~5~~7	The ongoing maintenance of urban design and landscaping for the project shall remain Transport for NSW's responsibility unless satisfactory arrangements are put in place for the transfer of ownership to another authority. The landscaping outlined in the UDLP will be maintained to the standards established in the UDLP, unless and until landscaping items have been transferred to another authority.	Transport for NSW	Operation
Socioeconomic				
Aboriginal land claims	S1	Transport for NSW will consult with Aboriginal land claimants that will be impacted by the project to resolve any outstanding claims.	Transport for NSW	Pre-construction
Access restrictions	S2	Private property access will be maintained. If any temporary access restrictions are needed, those affected will be consulted in accordance with the CLIP.	Contractor	Construction

Employment opportunities over the project's life	S3	A Skills and Employment Strategy will be prepared setting out how the project will promote opportunities for upskilling and training of the local workforce during construction and operation. The strategy will promote and include employment particularly for people with a disability, Aboriginal people, the unemployed and other vulnerable groups. The strategy will include a target for local employment and skills attainment that could be used to monitor success of implementation. The strategy will align with the NSW Government Procurement Board Direction Skills, training and diversity in construction and the NSW Government Policy on Aboriginal Participation in Construction.	Contractor	Pre-construction, construction and operation
Surface noise and vibration				
Construction noise and vibration management	SN1	A Construction Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The plan will generally follow the approach of the Interim Construction Noise Guideline (NSW DECC, 2009) and provide details of construction management measures and procedures. The plan will include: a. An Out of Hours Works Protocol and provision to cover working outside of the standard hours set by the Construction Noise and Vibration Strategy (ST-157/4.1, Transport for NSW, 2020j) b. Identify all potential significant noise and vibration generating activities c. Noise and vibration management measures such as restrictions on working hours, staging, placement and operation of work compounds, parking and storage areas, temporary noise barriers, haul road maintenance, equipment selection and controlling the location and use of vibration generating equipment d. A monitoring and reporting program to assess performance against relevant noise and vibration criteria e. Consultation arrangements with affected neighbours and sensitive receivers, including notification and complaint handling procedures f. Consultation with NSW EPA, Randwick City Council, Sutherland Shire Council and National Parks and Wildlife Service for preparation of the NVMP g. Contingency measures in the event of non-compliance with noise and vibration criteria.	Contractor	Pre-construction and construction

Vibration impacts to heritage items	SN2	A pre-construction building condition assessment of Aboriginal and non-Aboriginal heritage items within 70 metres of the construction boundary will be carried out by a suitably qualified person prior to construction. During construction, inspections of the construction activities and work areas will be undertaken to monitor and review the construction methodology and confirm the integrity of the nearby significant structural elements. For heritage items identified at risk during the pre-construction condition assessment, minimum safe working distances will be established and vibration monitoring be carried out prior to the commencement of construction and monitored throughout construction to identify any construction-related impacts. If impacts are detected, work in the area will stop and appropriate environmental management measures will be implemented such as using alternative construction techniques or installing protection structures in collaboration with a heritage consultant.	Contractor	Pre-construction and construction
Unavoidable noise and vibration impacts	SN3	Any noise or vibration affected sensitive receivers will be notified at least five days before starting work. The notification will include details of: a. Construction periods and working hours b. Contact information for project management staff c. Complaint and incident reporting d. How to obtain further information. This excludes emergency works which will be covered under the CLIP.	Contractor	Construction
Underwater noise and vibration				

Construction underwater noise management	UN1	Underwater noise management measures will be included as part of a Construction Noise and Vibration Management Plan (CNVMP). The CNVMP will include: a. Identification of potential significant underwater noise and vibration generating activities b. Management measures that will be guided by section 5 of the SA Underwater Piling Noise Guidelines (Government of South Australia, 2012). This will include: • Investigating the use bubble curtains to reduce the severity of the energy of the sounds caused by the driving of the piles. • Carrying out observations for 30 minutes before starting work in all zones. • A slow-start process for the piling works that would last for 10 minutes. • Implement a stand-by and shut down process. • Prepare and maintain a compliance and siting report while piling takes place. • Notify the recreational user groups in the area and post notices at the key beaches warning people of the ongoing piling works so that can expect potential underwater noise. • Aim to avoid piling on weekends and during public holidays.	Contractor	Pre-construction and construction
Underwater noise impacts on humans	UN2	Public communication, including website updates and notices at the project areas, will be carried out before any piling starts. This will be included as part of the CLIP.	Contractor	Pre-construction and construction
Underwater noise impacts on marine fauna	UN3	Underwater noise monitoring may be carried out before the main construction works starts. This will be used to define three zones in accordance with section 5.2 of the Underwater Piling Noise Guidelines (Government of South Australia, 2012): a. Zone 1: stop work b. Zone 2: introduce work restrictions c. Zone 3: use marine spotters. A specialist marine spotter will be responsible for observing and implementing the three zones during piling activities.	Contractor	Construction
Soil, water, and contamination				
Localised stormwater flooding	SW1	All new paved areas will be designed to drain freely.	Transport for NSW	Detailed design

Localised water quality impacts	SW2	All new footpaths will be designed to drain to grassed areas to promote infiltration and cleansing of pollutants.	Transport for NSW	Detailed design
Pollution through discharge of sediment and other pollutants from construction compound and works areas	SW3	A Soil and Water Management Plan (SWMP) will be prepared in accordance with QA Specification G38, Soil and Water Management (Transport for NSW, 2020). It will be implemented under the CEMP. The SWMP will: a. Identify all reasonably foreseeable risks relating to soil erosion, soil contamination, asbestos, acid sulfate soils and water pollution associated with undertaking the activity b. Describe how these risks will be managed and minimised including the management of potential acid sulfate soils and potential contamination c. Include the required processes/procedures for excavation, handling, storage, and transport of sediment and arrangements for managing pollution risks associated with spillage or contamination. d. Consultation with NSW Environment Protection Authority (EPA), NSW Environment, Energy and Science Group, Sydney Water, Randwick City Council, Sutherland Shire Council and National Parks and Wildlife Service.	Contractor	Pre-construction and construction
Reduced soil and water quality due to erosion and sediment runoff	SW4	An Erosion and Sediment Control Plan (ESCP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2 (Blue Book, Landcom, 2004). It will be implemented under the SWMP. The ESCP will include: a. Detailed measures and controls to minimise erosion and manage sediment control risks to prevent pollution of waterways b. Arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Contractor	Pre-construction and construction
Pollution through fuel leaks	SW5	Equipment, plant and machinery refuelling and maintenance will be carried out in impervious bunded areas. Vessels and associated plant and equipment will be maintained and refuelled at appropriate facilities offsite or adhere to industry standards, Port Authority NSW and pollution prevention regulations during refuelling, transfer, storage and handling of hazardous materials. Refuelling will always be attended. Machinery will be checked daily to ensure that there are no oil, fuel, or other liquid leaks.	Contractor	Construction
	SW6	Vehicle wash-downs will be carried out offsite or within a designated bunded area with an impervious surface.	Contractor	Construction

Encountering groundwater	SW7	Shallow groundwater will be managed in accordance with the Technical Guideline for Environmental Management of Construction Site Dewatering (NSW Roads and Traffic Authority, 2011b).	Contractor	Construction
Coastal processes				
Wave climate and the increased risk of erosion and reduced longshore drift west of the temporary causeway at Kurnell.	CP1	If a temporary causeway is constructed at Kurnell, temporary causeway armour (ie sandbags, rock) will be selected to account for and withstand the local wave climate.	Contractor	Construction
Turbidity impacts for the temporary causeway	CP2	If construction of the temporary causeway at Kurnell is to occur, a turbidity monitoring specification will be developed and implemented to achieve the limits in the Turbidity Water Quality Standards Criteria Summaries; A Compilation of State/Federal Criteria (USEPA, 1988) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1 (ANZECC& ARMCANZ, 2000). Should the monitoring record an exceedance, measures such as stopping work and rectifying the exceedances will be carried out.	Contractor	Pre-construction and construction
Scour of the seabed	CP3	Operational restrictions to control approaching, berthing and departing from the wharves will be enforced for all vessels using the wharves to limit scour. These measures will be agreed in consultation with Port Authority NSW (including Harbour Master).	Transport for NSW	Operation
Climate change				
Impacts on wharf and future users from climate change induced events	CC1	The wharves will be designed to account for impacts of climate change, such as sea level rise and severe weather events.	Transport for NSW	Detailed design
Passenger comfort and safety in storms and strong winds or increased extreme temperatures.	CC2	The wharves will be maintained in accordance with the Transport for NSW operational management system to ensure the weather protection measures remain effective over time.	Transport for NSW	Operation
Air quality				

Risks to air quality during construction	A1	Air quality management measures will be incorporated into the CEMP. This will include: a. Dust mitigation and suppression measures such as spraying or covering exposed surfaces, providing vehicle clean down areas, covering of loads, street cleaning, use of dust screens, maintenance of plant in accordance with manufacturer's instructions b. Methods to manage works during strong winds or other adverse weather conditions c. A progressive rehabilitation strategy for exposed surfaces.	Contractor	Pre-construction and construction
Greenhouse gas				
Greenhouse gas emissions	GG1	The wharf design will include materials that have low embodied carbon, are durable (to reduce maintenance), and/ or are highly efficient such as LED lighting.	Transport for NSW	Detailed design
Embodied carbon in construction materials	GG2	Where practicable and feasible, construction materials will be managed to: a. Maximise onsite materials reuse b. Reuse recycled aggregates c. Manage waste to maximise recycling and minimise the percentage sent to landfill d. Incorporate fly ash in concrete e. Procure prefabricated materials to eliminate offcuts onsite f. Reduce use of reinforcement bar/steel.	Transport for NSW Contractor	Detailed design and construction
Greenhouse gas emissions	GG3	The ferry vessels will be operated and maintained in accordance with the Transport for NSW operational management system to ensure optimal operational conditions to minimise fuel use.	Transport for NSW	Operation
Sustainability				
Sustainable development	SU1	The project will implement sustainability objectives driven by the Environmental Sustainability Strategy 2019-2023 (NSW Roads and Maritime Services, 2019) throughout all stages.	Transport for NSW Contractor	Detailed design, construction and operation
Waste				
Avoid, minimise, and sustainably manage waste	W1	A Waste and Energy Management Plan (WEMP) will be prepared in accordance with the Environmental Procedure - Management of Wastes on	Contractor	Pre-construction and construction

		Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014). It will be implemented under the CEMP. The WEMP will include: a. Measures and controls to minimise the amount of waste b. Measures to store, test, handle, transport, recovery, reuse, dispose of waste. It will also address any recovered material imported to site c. Waste management classification measures d. Measures to ensure organic waste is covered and stored onsite to prevent birds being attracted to the area e. Measure to ensure no construction generated waste is placed in public or residential bins. f. Monitoring, record keeping and reporting, including any documentation management obligations arising from resource recovery exemptions g. Sampling and waste management measures in accordance with the Roads and Maritime Services Environmental Fact Sheet EFS-706 (NSW Roads and Maritime Services, 2015b) h. Measures to reuse and mulch cleared vegetation in accordance with QA Specification R178 (Vegetation).		
Existing condition of construction sites	W2	A Pre-Construction Land Condition Assessment will be carried out in accordance with the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014) before starting work. This will also identify any pre-existing wastes.	Contractor	Pre-construction
Condition of site post-construction	W3	A Post-Construction Land Condition Assessment will be carried out in accordance with the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014). This will ensure the site condition is reinstated and suitable for handback in accordance with wider contractor specifications.	Contractor	Construction
Manage effluent waste	W4	Onsite effluent will either be discharged to the local sewage system or temporarily stored in septic or portable facilities. These facilities will be of sufficient capacity and located away from environmentally sensitive areas such as waterways. The effluent will be regularly collected and disposed of to an appropriately licenced facility. Pit toilets will not be permitted.	Contractor	Construction
Management of waste during operation	W5	Recycling and general waste bins will be installed at the wharves. Note: operational waste will be incorporated into existing management systems operated by Transport for NSW, National Parks and Wildlife Service, Randwick City Council and Sutherland Shire Council.	Transport for NSW	Operation

Hazard and risk				
Construction equipment potential to intrude airspace	HZ1	All equipment used onsite will not exceed the maximum obstacle limit survey height of 50 metres Above Height Datum (mAHD) at La Perouse and 50 to 70 mAHD at Kurnell. Equipment used on site will also not exceed the PAN-OPS limit of 126.4mAHD.	Contractor	Construction
Nearby bird populations startled during construction	HZ2	A gradual start-up of noise generating construction activities will be introduced each day onsite.	Contractor	Construction
Construction vessels impacting submerged cable	HZ3	An exemption certificate will be obtained from the Port Authority NSW to allow construction vessels to anchor within the 200-metre exclusion zone of the submerged Ausgrid power cable. Vessels will not be allowed to anchor on the cable or environmentally sensitive areas.	Contractor	Construction
Accidental spills	HZ4	An Emergency Spill Management Plan (ESMP) will be prepared in accordance with the Code of Practice for Water Management (NSW Roads and Traffic Authority, 1999) and relevant NSW EPA guidelines. It will be implemented under the WEMP. The ESMP will measures to be implemented in the event of a spill, including initial response, containment/cleaning up, and emergency services and relevant authority notifications including Transport for NSW, Port Authority NSW and NSW EPA.	Contractor	Pre-construction and operation
	HZ5	Spill kits will be kept onsite, on vessels and held within all vehicles. Training will be provided in the use and correct disposal of kits.	Contractor	Construction
Accidental spills over water	HZ6	Any significant spill not contained onsite, whether it occurred in water or on land and subsequently entered the water, will be immediately reported to the Harbour Master and Sydney Vessel Traffic Service (VTS).	Contractor	Construction
Operational spill over water	HZ7	Operational spill management environmental mitigation measures will be included in the standard operating procedure for ferries in Sydney managed by Transport for NSW and required by the Harbour Master.	Transport for NSW	Operation
Cumulative impact				
New approved projects that have not been identified at the time of this EIS	CU1	Collaboration and engagement will take place with the proponents of any new approved projects that will be built or start to operate at the same time as the Kamay Ferry Wharves. This will be used to minimise the cumulative impacts.	Transport for NSW	Construction

Consultation to manage construction fatigue and cumulative impacts	CU2	Consultation will continue with National Parks and Wildlife Service on the development of Stage 1 of the Kamay Botany Bay National Park Kurnell Master Plan that will occur through the development of the project to manage any cumulative impacts.	Transport for NSW	Pre-construction and construction
	CU3	Consultation will continue with Sutherland Shire Council, Randwick City Council and Port Authority NSW through the development of the project to manage any unforeseen cumulative impacts.	Transport for NSW	Pre-construction and construction