Transport for NSW

Kamay Ferry Wharves

Community education forum: Deep dive on wharf design process

Welcome. The session will start soon.

La Perouse Wharf (artist impression)

Kurnell Wharf (artist impression)

Contact us
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nswroads.work/kamayferrywharves

NSW GOVERNMENT

We acknowledge the Bidjigal and Gweagal clans who traditionally occupied Kamay (Botany Bay) and pay respect to Elders past and present.

We recognise and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

New to Microsoft Teams?

Q&A and Closed Captions

Q&A is enabled on the right panel of your desktop, or by tapping the icon on your mobile device. Select ‘ask a question’ and type your question.

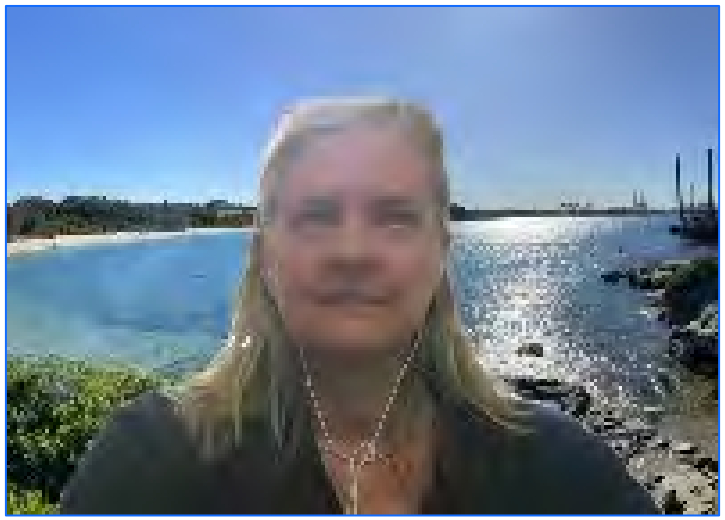
Closed Captions can be turned on my pressing the three dots ‘More’ > ‘language and speech’ > ‘turn on live captions’. On your mobile, click the **CC box** and ‘turn on live captions’. We apologise if these captions are inaccurate at times. We will provide corrected captions for the recorded session that will be saved to our website.

Microsoft Teams advise that there may be a **15- to 60-second delay** from the time the media stream is broadcast to when attendees see it.

For the best experience, we suggest joining from a PC.

This information session is being recorded and will be made available on our website. Read Transport’s privacy statement here: www.transport.nsw.gov.au/about-us/transport-privacy

Introductions



Kate Lewis

Manager Communications and Stakeholder Engagement
Transport for NSW

David Dack

Associate Principal | Maritime
Arup

Summary of topics from registration

Check website
Frequently Asked Questions or contact our team

Wharf design-related

- Fishing access and best practice design principles for access to people with disabilities fishing
- Who are the wharves designed for? Can commercial and private vessels use the wharf? Can cruise ship tenders use the wharf?
- Safety for people using the facility
- Request for consultation on wharf design and details of final wharf design
- Emergency services access
- Will there be new parking spaces and where?
- Toilet facilities
- What maritime conditions, swell and refraction has been taken into account?
- What size swell might deem the wharves not useable for a ferry service?
- Design challenges

Ferry connection

- What are the special requirements for ferries?
- Will the ferry be wheelchair accessible?
- Are there planned ferry connections with Sydney Harbour terminals (incl CBD); Cronulla to Kurnell?
- Ferry hours of operation and schedules
- Ferry impact on water quality at Frenchmans Beach
- Will there be an increase in bus services?
- Will there be a tender process and what are the timeframes?

Wharf operation

- Vessel berthing time limits
- Wharf operation times
- Are there any additional navigation restrictions?

Environment

- Information on environmental impacts and impacts to seagrass
- Update on seagrass restoration work
- Will there be signs about what to do if public sees seals or other marine mammals in distress?

Construction

- Progress update; has wet weather impacted progress?
- Expected completion date
- When will full-beach access be opened at Kurnell
- Will there be an opening ceremony?

Project cost

Acknowledgement of previous ferry boat skippers

Quick update:

Wharf operation, ferry and accessible fishing

- Progressing the development of operational plans for the wharves
- Working towards an Expression of Interest (EOI) for a potential future ferry connection in coming months (at this time, the NSW Government is not proposing to subsidise a commuter Opal service)
- We will be opening the wharves later this year, prior to confirming a ferry connection, so that the local community and visitors can enjoy the many benefits of these new wharves.
- Investigating sections of lowered balustrade to further support people with disabilities fishing at the wharves
- Construction completion planned for late 2024

Image of wharf berthing area construction progress at La Perouse

Designing the multi-user wharves

Arup has been involved with the project from the feasibility stage, and tonight we will hear about some of the processes and key considerations when designing the multi-user wharves at La Perouse and Kurnell.

There will be time for questions at the end.

Key project phases

DESIGNING THE WHARVES

Design Overview

Background

▲ Locality plan

▲ Photos of historical wharves

Design Overview

Purpose and benefits

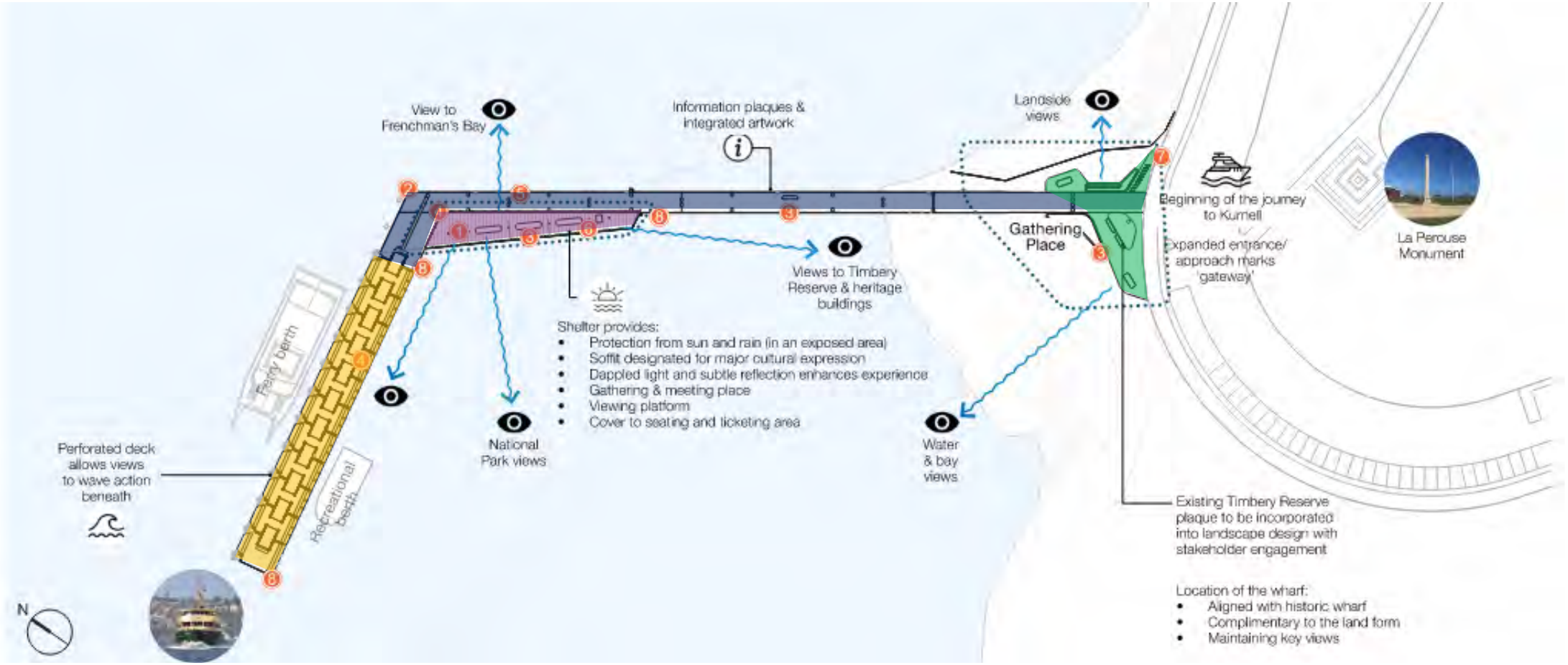
▲ Artist impression of wharf entrance at La Perouse

▲ Artist impression of wharf at Kurnell

- Connecting both sides of the National Park
- Recognising Aboriginal connections to the area
- Gathering and meeting places
- Native plants and trees
- Berthing for small vessels up to 20 metres in length and ferries up to 40 metres
- Safe fishing
- Protection from the weather
- Additional car and bike parking
- Accessible to all

Design Overview

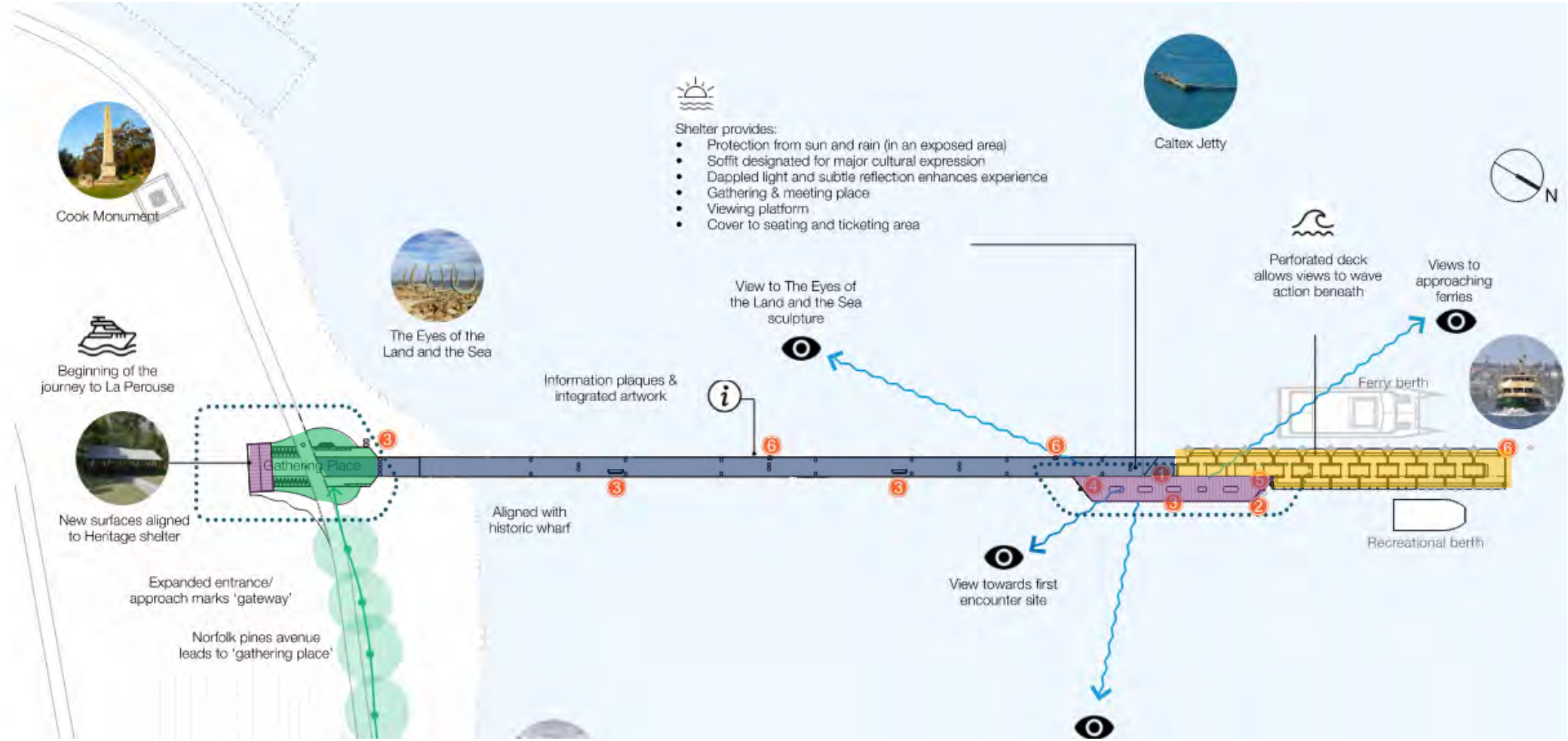
Design features



▲ Outline plan of wharf at La Perouse

Design Overview

Design features

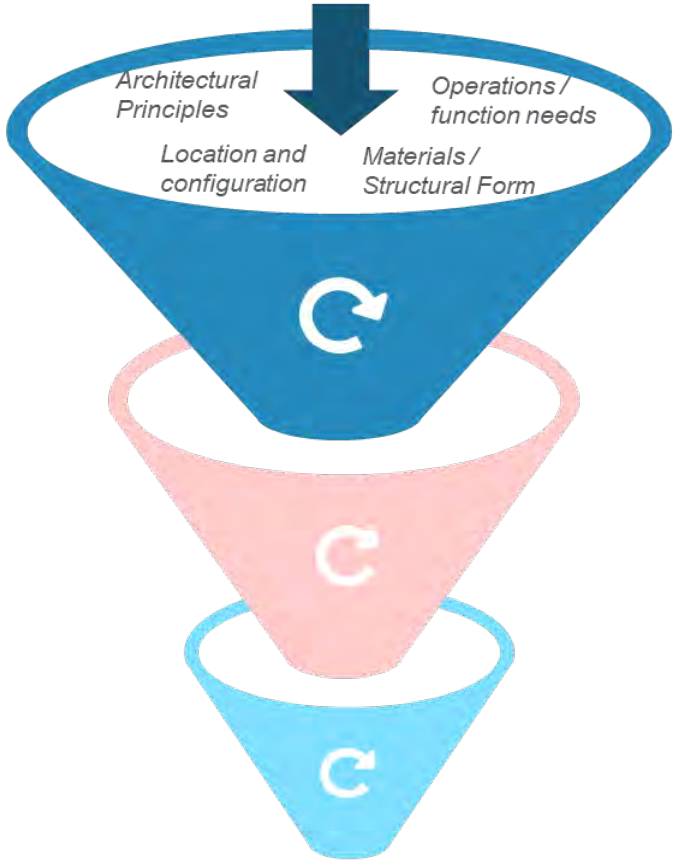


▲ Outline plan of wharf at Kurnell

Design Overview

Design process and studies

INPUTS: wide range of ideas, concepts, options and some out-the-box thinking



Design and scope elements considered in each project phase

Strategic Phase

- ✓ Preferred site location
- ✓ Wharf users and needs
- ✓ Wharf head options
- ✓ Design vessel and functional needs
- ✓ Berth size and water depth options
- ✓ Ferry layover and cribbing options
- ✓ Landside scope options - including shelter, amenities, car parking and intermodal connectivity.

Concept Phase

- ✓ Kurnell causeway options
- ✓ Wharf head type – preferred option selected
- ✓ Deck level and jetty width
- ✓ Berth size and orientation - optimised
- ✓ Recreational berth design - optimised
- ✓ Waiting and shelter - sizing and positioning
- ✓ Roof structure design intent
- ✓ Structural form and durability (high level)
- ✓ Landside scope and services

Detailed Design

- Substructure - optimisation
- Pile types and sockets - optimisation
- Topside and roof - optimisation
- Materials and durability - optimisation
- Wave loading - refine
- Constructability - detailed considerations
- O&M - detailed considerations

Specialist technical studies and investigations

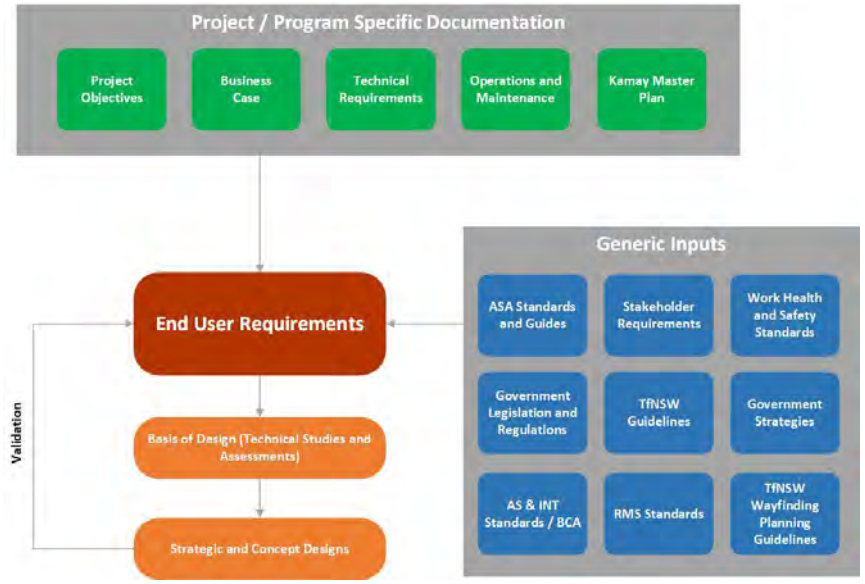
- Wharf Location Options
- Vessel Fleet Study
- Accessibility Requirements
- Vessel & Pontoon Motion Study
- Vessel Layover Study
- Coastal Modelling
- Traffic Count Survey
- Geophysics & Seabed Surveys
- Basis of Design
- End User requirements
- Market Soundings
- Demand Analysis
- Wharf Head Options
- Wharf Deck Level Assessment
- Traffic and Transport Study
- Constructability Assessment
- Topographic Survey
- Seagrass Mapping
- Intrusive GI
- Wave Run-Up/OT Assessment
- Wave Loading Analysis

Functional Outcomes

Establishing the end user requirements

Specialist studies and investigations

- Market Soundings and Stakeholder Consultation
- DDA and Accessibility Requirements
- Vessel Layover, Maintenance and Servicing Study
- Traffic and Transport Study
- Demand Analysis
- Vessel Fleet Study



Scope Item		Design Requirement
Recreational Berth	Recreational vessel	2-6m L_{OA} typical vessel. 20m L_{OA} maximum vessel. 55t max displacement.
	Recreational Berth	Dedicated berth for recreational activities to be segregated from ferry operations. Good weathering facility for 'pick up and drop off'. Must be DDA accessible.
	Berth box depth	-2.3mCD minimum based on maximum 1.8m draft and 0.5m underkeel clearance.

Future proofing for uncertain/changing conditions:

- Flexibility for wide range of vessel types to maximum.
- Testing of waiting area and boarding area space for high demand conditions.
- Provision for future potential services incl. to support battery-electric powered ferries.

Functional Outcomes

Disability access and safety considerations

Requirements:

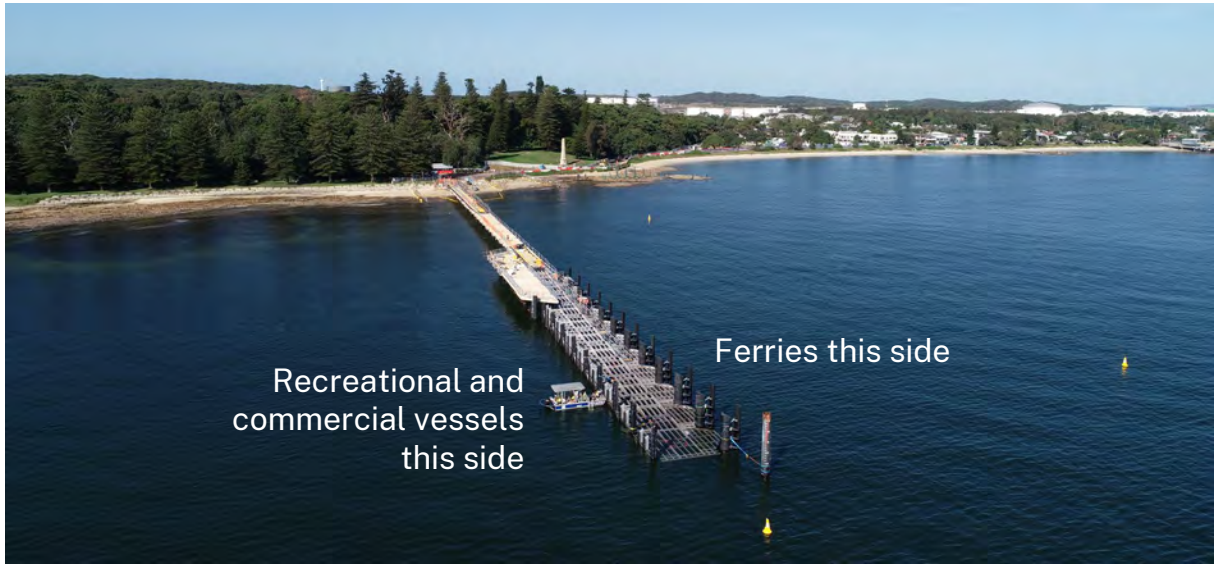
- Commonwealth Disability Discrimination Act 1992
- Commonwealth Disability (Access to Premises Buildings) Standards 2010, Schedule 1
- Commonwealth Disability Standards for Accessible Public Transport 2002
- The Building Code of Australia
- NSW Work Health and Safety Act 2011
- NSW Work Health and Safety Regulation 2017
- TfNSW Guidelines for Health and Safety in Design 2018
- Relevant Australian Standards

Key Measures:

- Space-proofing areas
- Handrailing
- Ramped access
- Accessible seating
- Lifebuoys and safety ladders
- Non-slip surface and tactile markers
- Lighting
- Fire hydrants and extinguishers
- Waiting areas shelter
- Access under wharves

Functional outcomes

Berthing at the wharves



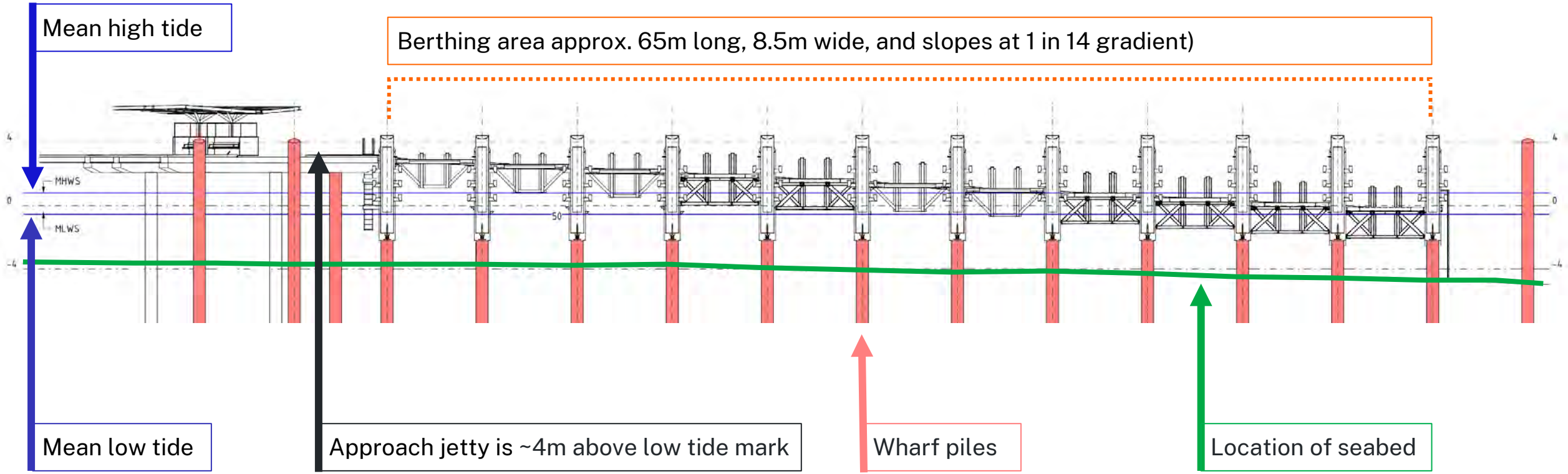
▲ Wharf at Kurnell (taken 15 May 2024)

▲ Wharf at La Perouse (taken 15 May 2024)

Functional outcomes

Berthing at the wharves

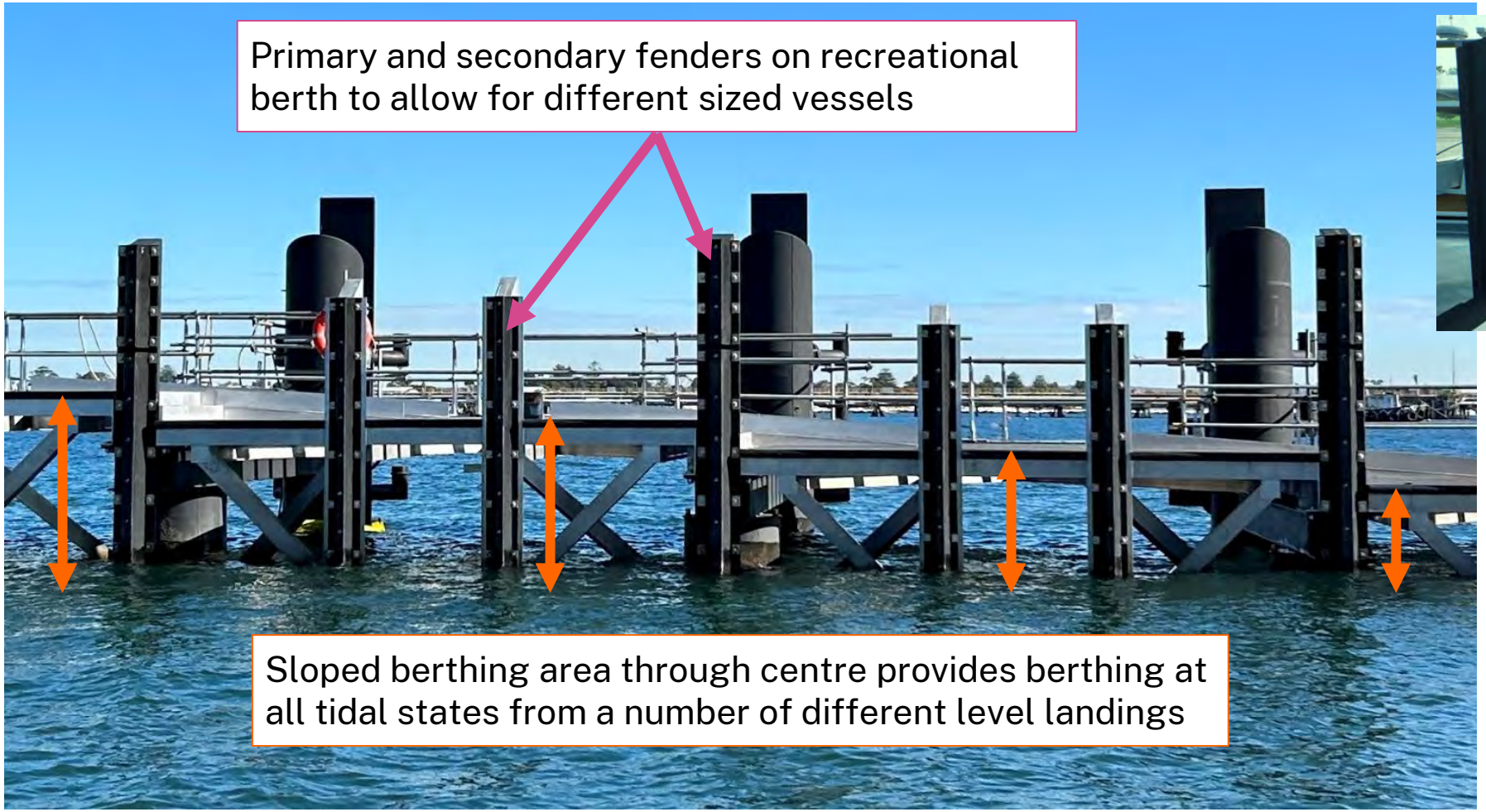
- The berthing area is fixed, accessible, and slopes downward to provide berthing areas at all tidal states
- The number of vessels that can berth at any one time is dependent on the tide, length of the vessel and freeboard, and where passengers will disembark



Elevation section of wharf at Kurnell for illustrative purposes only, not to scale

Functional outcomes

Berthing at the wharves



For illustrative purposes only, not to scale

Non-slip grated mesh deck

Vessels will tie on to 350mm aluminium double horn cleats bolted to the deck

Resilient Outcomes

Hydrodynamic and Sea Level Rise impacts (1)

Specialist studies and investigations

- Wharf Location Options
- Coastal Modelling (Cardno)
- Vessel & Pontoon Motion and Downtime Study (Baird)
- Geophysics & Seabed Surveys
- Intrusive Ground Investigation
- Wharf Head Options Assessment
- Wharf Deck Level Assessment
- Wave Run-Up/OT Assessment
- Wave Loading Analysis

Table 1: Swell 1-year ARI design wave parameters at both sites.

Parameter / Site	Hs (m)	Tp (s)
Kurnell	0.61	14.1
La Perouse	0.64	12.9

Table 2: Swell 500-year ARI design wave parameters at both sites.

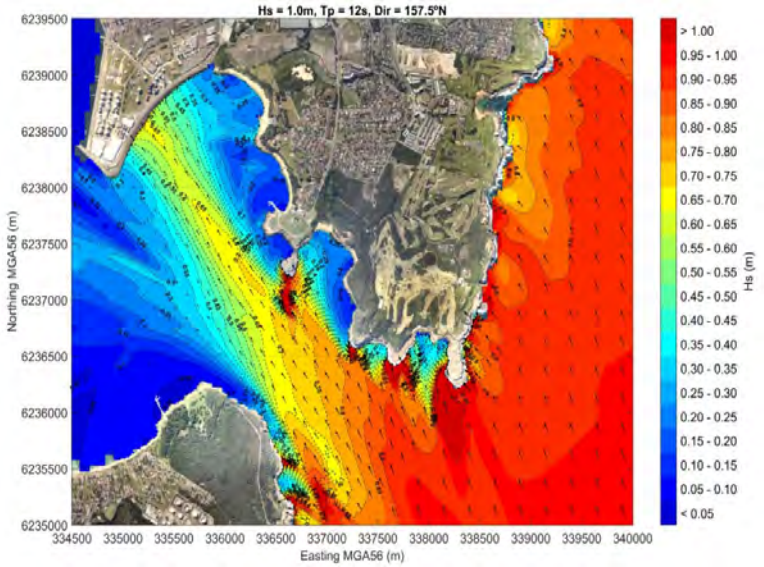
Parameter / Site	Hs (m)	Tp (s)
Kurnell	1.02	16.6
La Perouse	1.28	15.4

Table 3: Sea waves for 1-year and 500-year ARI conditions at both sites.

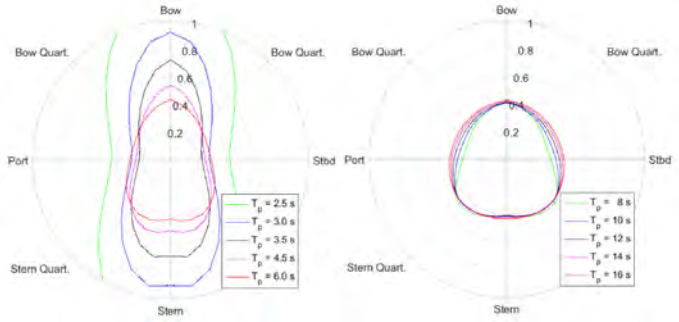
Parameter / Site	1-year ARI		500-year ARI	
	Hs (m)	Tp (s)	Hs (m)	Tp (s)
Kurnell	0.61	2.8	1.17	3.6
La Perouse	0.55	3.0	0.98	3.7

Table 5: Adopted Project Sea Level Rise.

Design Life	Year	Adopted Sea Level Rise,
50	2075	0.47m



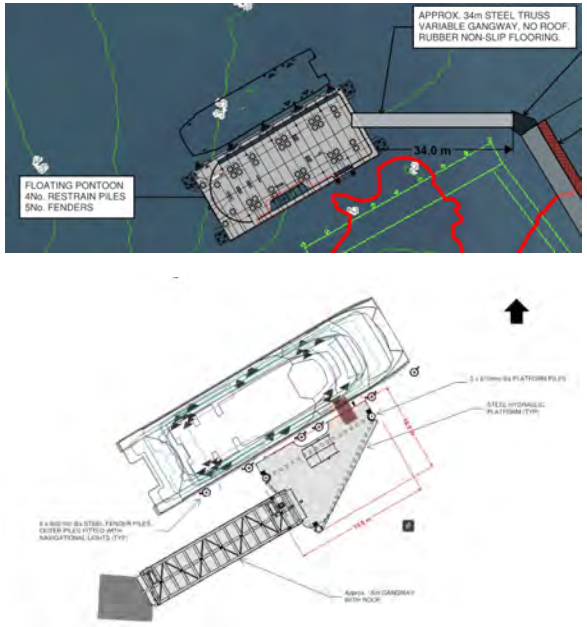
▲ Swell wave climate heatmap in Botany Bay from offshore wave conditions of Hs = 1.0m, 12s period from 157.5ºN. (Cardno, 2020)



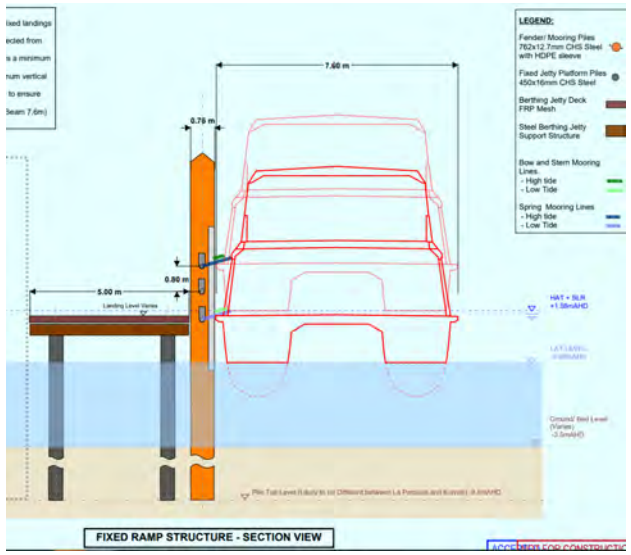
▲ Heave motion response at berth under sea and swell waves for a design vessel (Baird, 2020)

Resilient Outcomes

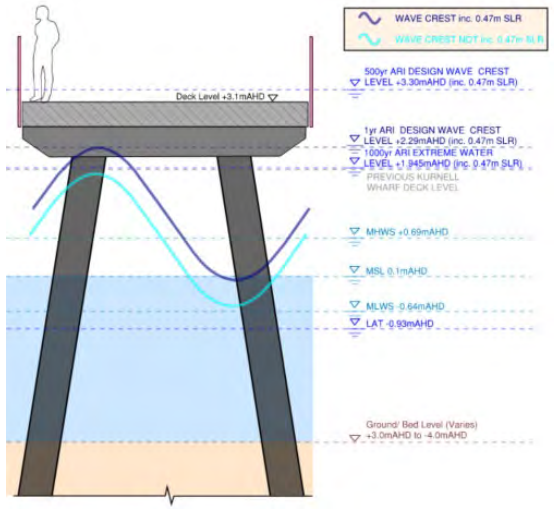
Hydrodynamic and Sea Level Rise impacts (2)



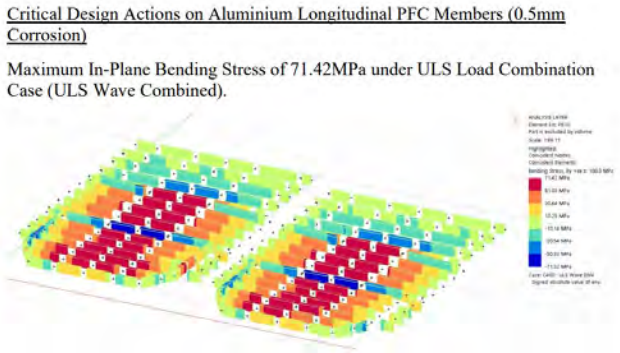
▲ Discounted boarding floating pontoon (top) and hydraulic gangway wharf head (bottom) options



▲ Geometric alignment assessment of vessel at berth for water level range (incl. sea level rise)



▲ Wharf Deck Level Assessment output



▲ Wave loading analysis for structural design of boarding area beams

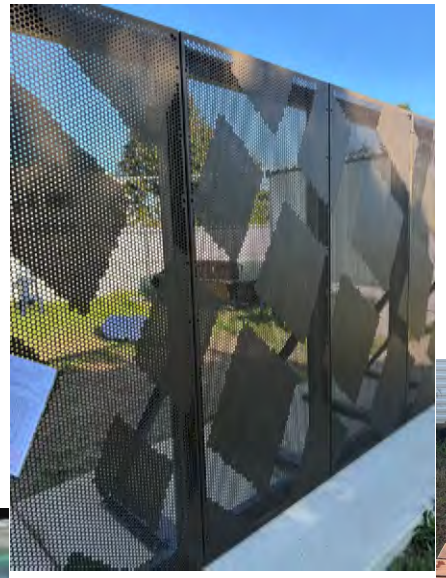
ARUP

Resilient Outcomes

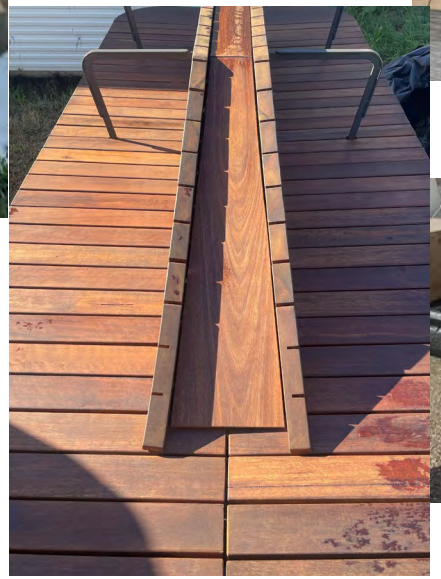
Materials durability in marine environment

▲ Installed steel piles with protective marine-grade coating

▲ Pile paint protection thickness testing



▲ Waiting area roof underside with artwork pattern



▲ Prototype of waiting area timber seating

▲ Test samples for timber and concrete materials

Community and Sustainable Outcomes

Setting design objectives and principles

CONNECTING WITH COUNTRY COMMITMENTS

1. We will respect the rights of Aboriginal peoples to Indigenous cultural intellectual property, and we will support the right of Country to be cared for.
2. We will prioritise Aboriginal people's relationship to Country, and their cultural protocols, through education and enterprise by and for Aboriginal people.
3. We will prioritise financial and economic benefits to the Country where we are working, and by extension to the Traditional Custodians of that Country.
4. We will share tangible and intangible benefits with the Country where we are working, and by extension the Traditional Custodians of that Country, including current and future generations.
5. We will respect the diversity of Aboriginal cultures, but we will prioritise the local, place specific cultural identity of the Country we're working on.
6. We will prioritise recognition and responsibility of Aboriginal people, supporting capacity building across Aboriginal and non-Aboriginal communities, and across government project teams.
7. We will support Aboriginal people to continue their practices of managing land, water, and air through their ongoing reciprocal relationships with Country.

BEYOND THE PAVEMENT PRINCIPLES

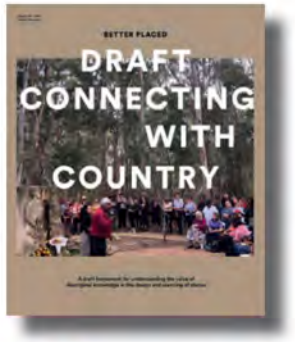
1. Contributing to urban structure, urban quality and economy
2. Fitting with the built fabric
3. Connecting modes and communities and promoting active transport
4. Fitting with the land form
5. Contributing to green infrastructure and responding to natural systems
6. Connecting with Country and incorporating heritage and cultural contexts
7. Designing an experience in movement
8. Designing self-explaining roads that safely respond to their role and context
9. Achieving integrated and minimal maintenance design

BETTER PLACED DIRECTIONS

1. Better fit contextual, local and of its place
2. Better performance sustainable, adaptable and durable
3. Better for community inclusive, connected and diverse
4. Better for people safe, comfortable and livable
5. Better working functional, efficient and fit for purpose
6. Better value creating and adding value
7. Better look and feel engaging, inviting and attractive.

KAMAY FERRY WHARVES PROJECT

1. Responding to historical and contextual placemaking
2. A Wharf for people
3. Celebration of past, present and future maritime use of the two sites.



Draft Connecting with Country (2020)

Community and Sustainable Outcomes

Cultural interpretation co-design

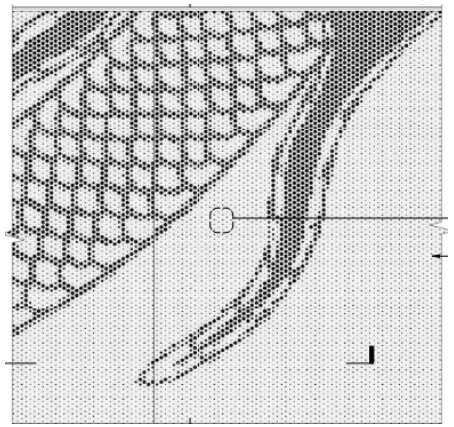
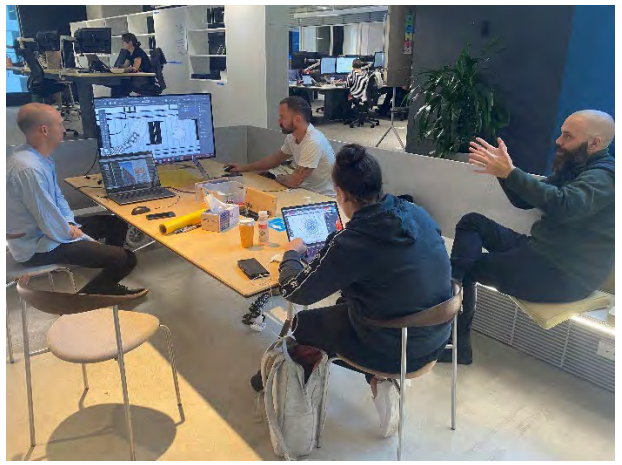
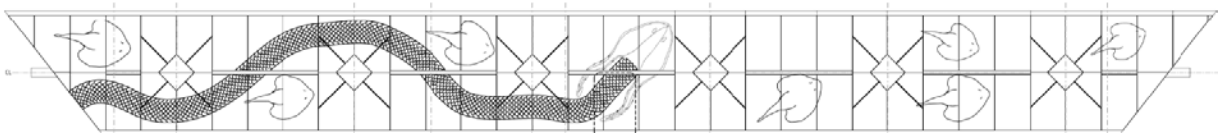


FIGURE 26 INTEGRATION OF ARTWORK ON CONCRETE APPROACH JETTY THROUGH SANDBLASTING

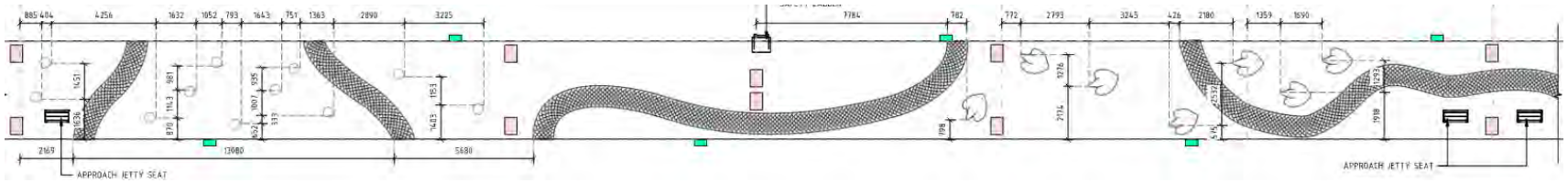
FIGURE 27 INTEGRATION OF ARTWORK ON ROOF CEILING THROUGH PERFO-RATED METAL PANELS



▲ Local artists from the Aboriginal community in a collaborative workshop with the lead wharves architect



▲ Cultural artwork embedded into soffit of wharf at Kurnell waiting area roof



▲ Cultural artwork embedded into wharf at Kurnell approach jetty deck

Community and Sustainable Outcomes

Minimising and managing environmental impacts

▲ Existing seagrass mapping at La Perouse showing protected *Posidonia Australis* seagrass species in dark green and red outline of new wharf (Niche, 2020)

▲ Single-row pile design for approach jetty to minimise piling and seabed impact

QUESTIONS

Share your feedback on tonight's session

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THANK YOU
ARUP AND ATTENDEES