PIANC

The Australian Northern Chapter of the World Association for Waterborne Transport Infrastructure

CONCRETE DURABILITY & MAINTENANCE IN MARITIME INFRASTRUCTURE

Program

Arrival and Registration — **3:45- 4:00 pm**

- check-in and collect guest name badge

Introduction and Welcome to Country — **4:00 - 4:10 pm**

AS 3600 2025 Concrete Structure Code Update — **4:10 - 4:20 pm**

- Sam Mazaheri

Presentation by Amanda O'Connor - Cementaid — **4:20 - 4:40 pm**

- The use of hydrophobic admixture to achieve maintenance-free design-life durability of pre-cast and in-situ maritime concrete. Case Study: Project Seabird 2003 - 2023 – Indian Naval Base.

Presentation by Gitte Goffin - Aurecon — **4:40 - 5:00 pm**

- A review of durability design options for marine concrete structures on the basis of service life, maintenance and whole of life cost.

Presentation by Brodie Chan - Port of Brisbane — **5:00 - 5:20 pm**

- History of the Port of Brisbane's asset base and asset management approach. Inspection, testing and renewal & life extension.

Presentation by Jack McLean - Freyssinet — **5:20 - 5:40 pm**

- Corrosion of prestressed concrete – its impacts and mitigation techniques: Corrosion Under Stress: The Development & Application of Corrosion Control Solutions for Prestressed Concrete Structures. Case Study: BLB 1 project –NSW Ports

Panel session Q & A — **5:40 - 6:10 pm**

- Engage with our speakers in an interactive Q & A

Networking — **6:10 - 7:00 pm**

- Connect with peers and speakers over light refreshments

Introduction and Welcome

- Dr. Sam Mazaheri
- Chair, PIANC AU-NZ Northern Chapter (QLD & NT)

Acknowledgement of Country

- PIANC AU-NZ acknowledges the Traditional Custodians of Country throughout Australia, including the land on which we gather and meet today, and recognises their continuing connection to land, waters, and community.
- We pay our respects to them, their cultures, and to elders past, present, and emerging.

PIANC

The World Association for Waterborne Transport Infrastructure

PIANC - A Legacy of Leadership in Waterborne Transport

Where It All Began - A Historical Perspective

1885: First Navigation Congress in Brussels

Highlighting the growing need for international collaboration to address the challenges of expanding maritime trade

1914: Opening of the Panama Canal

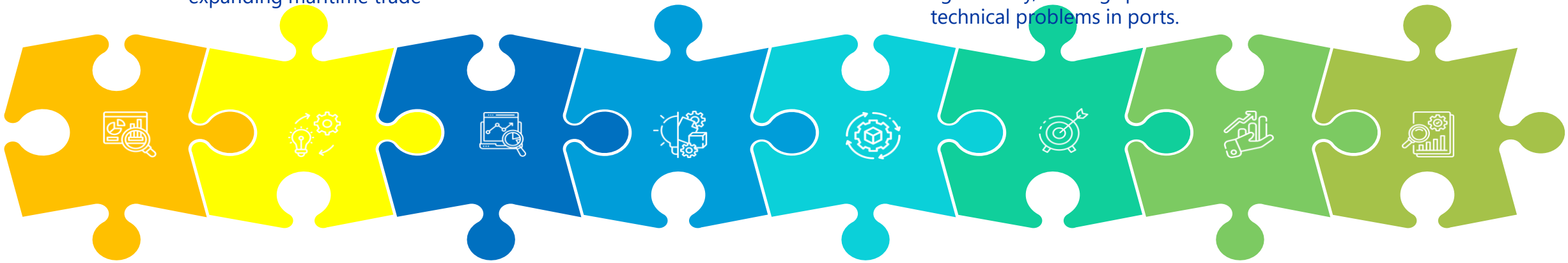
Further demonstrating the impact of infrastructure development on global trade.

2000-2010

During the first decade of the 21st century, the size and number of cruise and container vessels increased significantly, causing specific technical problems in ports.

2024

Technological advancement, Climate change and its impact on coastal and maritime infrastructure



1869: Opening the Suez Canal and building the Cutty Sark

Illustrating the rapid evolution of maritime technology..

1902: Formal establishment of PIANC

Showcasing its enduring legacy as a global leader in waterborne transport infrastructure..

1950s Container Ships: Revolution in Sea Transportation

In 1956 the first shipload of fifty-eight containers sailed from Newark to Houston.

2002

First Navigational Congress was held in Australia (Sydney)

At the opening ceremony of Congresses, there usually is reference to the culture of the host country. In Sydney, 2002, an aboriginal didgeridoo player gave a demonstration of traditional Australian music. At this Congress there were individual papers only.

The Changing world – Transition to a Sustainable Maritime Future

Key global trends

- Population growth and increasing demand for maritime trade
- Climate change and its impacts on coastal and marine environments
- Technological advancements and the drive for innovation in maritime transport.

PIANC AU-NZ Northern Chapter

Northern Chapter – Events in 2024

1. March: QGHL Technical Talk & Site Visit
2. April: Challenges and Opportunities for Hydrogen in the Port Industry, EA Auditorium, Brisbane
3. 3 June: Recent Developments in Design of Breakwaters, Griffith University, Gold Coast
4. 27 June: YP Industrial Breakfast, WGA, Brisbane
5. 4 July: Darwin Seminar & Port Tour
6. 24 July: Fender New Guideline, WG211, Jacobs, Brisbane
7. 27-30 Aug: PIANC APAC 2024
8. October (early): Offshore Wind Seminar, QU, Brisbane
9. October (24): Gladstone Technical Seminar and Port Tour
10. November (late): Final Year Celebration followed by Xmas Drinks, Brisbane

Northern Chapter – Events in 2025

1. Feb: Smartship Australia simulator Facility Visit
2. May: Climate Change workshop: The Impact of Climate Change and Extreme Events on Port Infrastructure
3. Collaboration with universities: UQ, CQU, Griffith
4. 19 June: Concrete Maintenance and Durability in Maritime Infrastructure
5. 2 July: Menard Oceania – Brisbane Site Tour and Networking
6. 30 July: Navigating through New Fender Guideline (WG211) – half-a-day
7. 18-21 Aug: Coasts and Ports
8. 16 Oct: Sustainability in Ports and Working with Nature (Darwin)
9. 30 October : YP Leadership Breakfast
10. November (late): Year End Celebration followed by Xmas Drinks, Brisbane

AS 3600 Concrete Code (2025) Outlook

Dr. Sam Mazaheri

Chair, PIANC AU-NZ Northern Chapter (QLD & NT)

The use of hydrophobic admixture to achieve maintenance-free design-life durability of pre-cast and in-situ maritime concrete. Case Study: Project Seabird 2003 - 2023 – Indian Naval Base. Amanda O'Connor - Cementaid

Synopsis – Achieving Maintenance-Free Durability in Maritime Concrete Using a Hydrophobic Admixture
Maritime infrastructure demands high-performance concrete capable of withstanding aggressive chloride environments without significant maintenance. This presentation explores the use of a pore-blocking hydrophobic admixture to achieve long-term durability in precast and in-situ marine concrete.

Bio: Amanda O'Connor is a Technical Sales Specialist with Cementaid, supporting projects across the Pilbara, Northern Territory, and Queensland. She works with engineers and asset owners to deliver durable, maintenance-free concrete solutions using hydrophobic admixture technology, particularly for challenging marine and remote environments.

A review of durability design options for marine concrete structures on the basis of service life, maintenance and whole of life cost, Gitte Goffin - Aurecon

Synopsis – This review focusses on durability design options for concrete in marine environments with high chloride concentrations. The impacts of various supplementary cementitious materials on the service life are discussed and compared to the effects of chemical inhibitors. Furthermore, the principles of cathodic protection are reviewed and design options compared in terms of maintenance and whole of life cost.

Bio - Dr Gitte Goffin is a senior civil materials engineer at Aurecon with over 13 years' experience in academic research and consulting. She has extensive experience in asset integrity and durability design of civil structures as well as expertise in non-destructive testing and corrosion science. She specialises in the durability design, service life modelling, condition assessment and rehabilitation of civil structures ranging from hydro dams and coal terminals to tunnels and marine structures.

History of the Port of Brisbane's asset base and asset management approach. Inspection, testing and renewal & life extension - Brodie Chan - Port of Brisbane

Synopsis – The Port of Brisbane is one of Australia's largest and most diverse ports, providing vital access to global import and export markets for trade communities along the east coast. Central to this activity are the Port's wharf assets. This critical infrastructure is not only of high operational importance and high capital value but situated in one of the most aggressive exposure environments. This presentation will explore the Port's asset management strategy, focusing on how it ensures reliability, resilience, and long-term serviceability throughout the asset lifecycle.

Bio - Brodie Chan is the Head of Asset Strategy for the Port of Brisbane Pty Ltd. He has extensive experience in the renewal, life extension and management of civil and maritime infrastructure for private and public sector clients throughout Australia, New Zealand, South-East Asia and the South Pacific region. This includes most recently as the Associate Director for Asset Advisory at ADG Engineers and the Manager Asset Services for the Port of Brisbane Pty Ltd. Brodie graduated from Griffith University in 2014 with a Bachelor of Civil and practices as a Registered Professional Engineer of Queensland, Chartered Professional Engineer and APEC Engineer.

Corrosion of prestressed concrete – its impacts and mitigation techniques: Corrosion Under Stress: The Development & Application of Corrosion Control Solutions for Prestressed Concrete Structures. Case Study: BLB 1 project –NSW Ports

Synopsis - Corrosion of Prestressed concrete elements can present substantial challenges for asset owners and managers. Being particularly aggressive and insidious in certain conditions, as well as difficult to identify by traditional visual inspection; The identification, management and control of this type of corrosion is of utmost importance for corrosion practitioners to ensure the future serviceability of these structures.

This presentation focuses on the challenges faced for asset owners and the mitigation techniques available to corrosion control practitioners when confronted with this issue. This will be discussed through the lens of a turnkey hybrid anode corrosion protection project, recently completed at the Bulk Liquids Berth No 1 (BLB 1) in Port Botany, NSW.

Bio - Jack McLean is the national engineering manager at Freyssinet Australia. Bringing a number of years of project management and technical expertise in both a contracting and consulting role, Jack is responsible for overseeing the successful delivery and management of remedial and cathodic protection projects across Australia. As part of this role, Jack is responsible for all methods engineering, durability engineering, condition assessment works, cathodic protection system design as well as all maintenance and monitoring programs nationally, within the Freyssinet business.

Panel Session Q & A

Sam Mazaheri, Chair, PIANC AU-NZ Northern Chapter (QLD & NT)

Amanda O'Connor, Technical Sales Specialist, CEMENTAID

Brodie Chan, Head of Asset Strategy, Port of Brisbane

Gitte Goffin - Aurecon

Jack McLean, National Engineering Manager, Freyssinet