



JOINT WEBINAR | MAY 28, 2021



**Western Dredging Association and
World Association for Waterborne Transport Infrastructure**

A Practical Guide to Environmental Risk Management (ERM) for Navigation Infrastructure Projects

Presented by:



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Working Group Objective

World Association for Waterborne Transport Infrastructure (PIANC) EnviCom Working Group 175 was tasked with developing a practical guide derived from existing approaches and best practices for informing decision makers managing environmental risk associated with waterborne transport infrastructure projects.

Guidance Objectives

- Provide technical information to decision makers regarding risk management process for waterborne infrastructure
- Provide methodology to inform risk management decisions for comprehensive range of environmental risks pertinent to waterborne infrastructure
- Provide practical approach for managing effects of project components in context of natural change in time and space, and ability of environmental resources to recover from or compensate for damage
- Provide recent case studies
- Incorporate PIANC's related goals and initiatives

Risk Terminology

Risk

- Probability that an event or activity will result in consequences that may affect something that society values

Risk Assessment

- Quantitative process for establishing the likelihood and the potential consequences of an event

Risk Management

- Systematic application of management policies, procedures and programs to identify, analyze, assess, treat, and monitor risks

Environmental Risk Management (ERM)

“...the process of identifying, evaluating, selecting, and implementing actions to reduce risk to human health and to ecosystems. The goal of risk management is scientifically sound, cost-effective, integrated actions that reduce or prevent risks while taking into account social, cultural, ethical, political, and legal considerations”

- Presidential/Congressional Commission on Risk Assessment and Risk Management (Omenn et al. 1997)

The ERM Process



The ERM Process

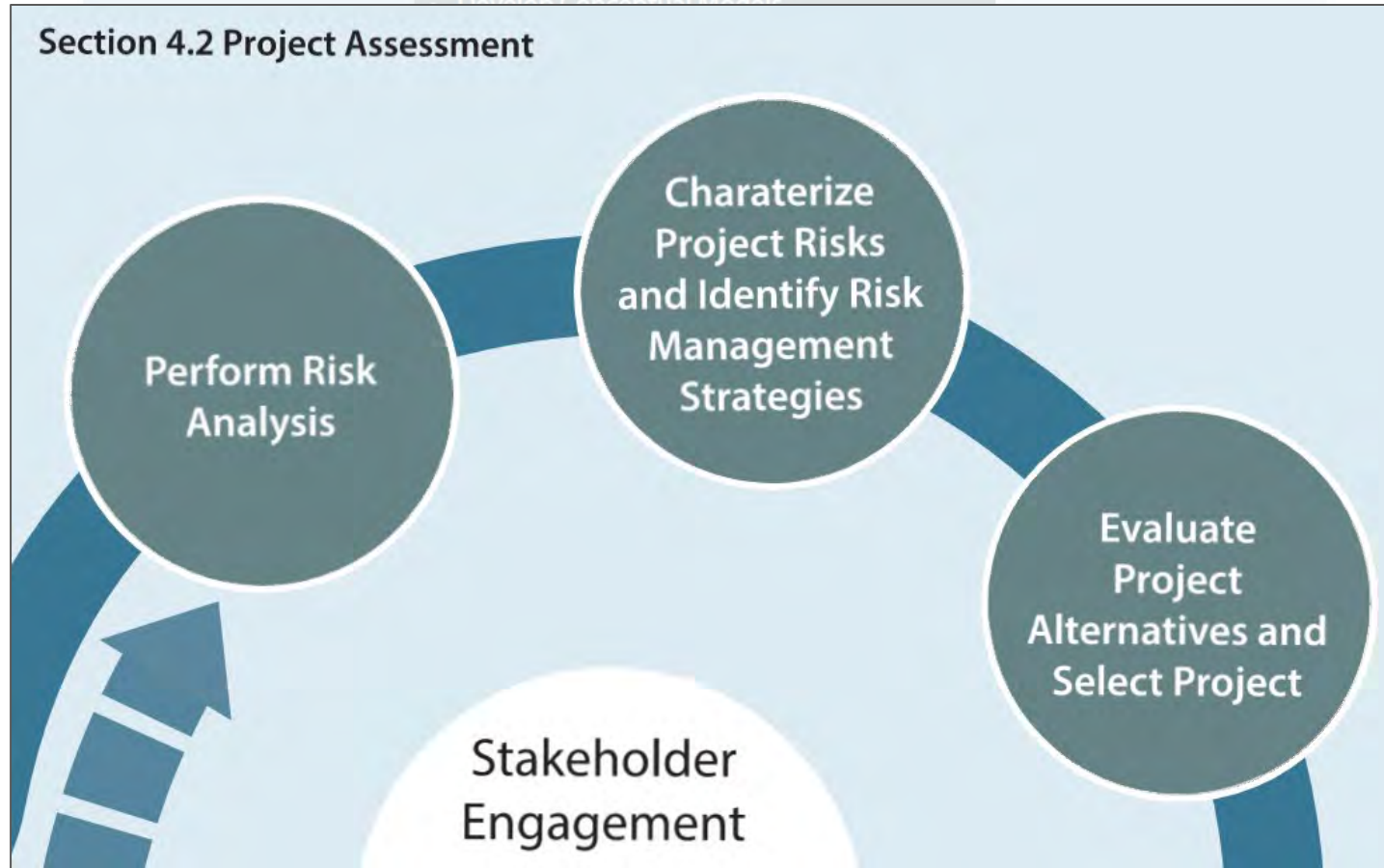
- Section 4.1 Project Formulation
- Prepare Project Needs Assessment
 - Define Project Activities
 - Identify Key Environmental Values
 - Perform Constraints Assessment, Mapping, and Gap Evaluation
 - Identify Preliminary Alternatives
 - Develop Conceptual Models

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Section 4.3 Projection Execution

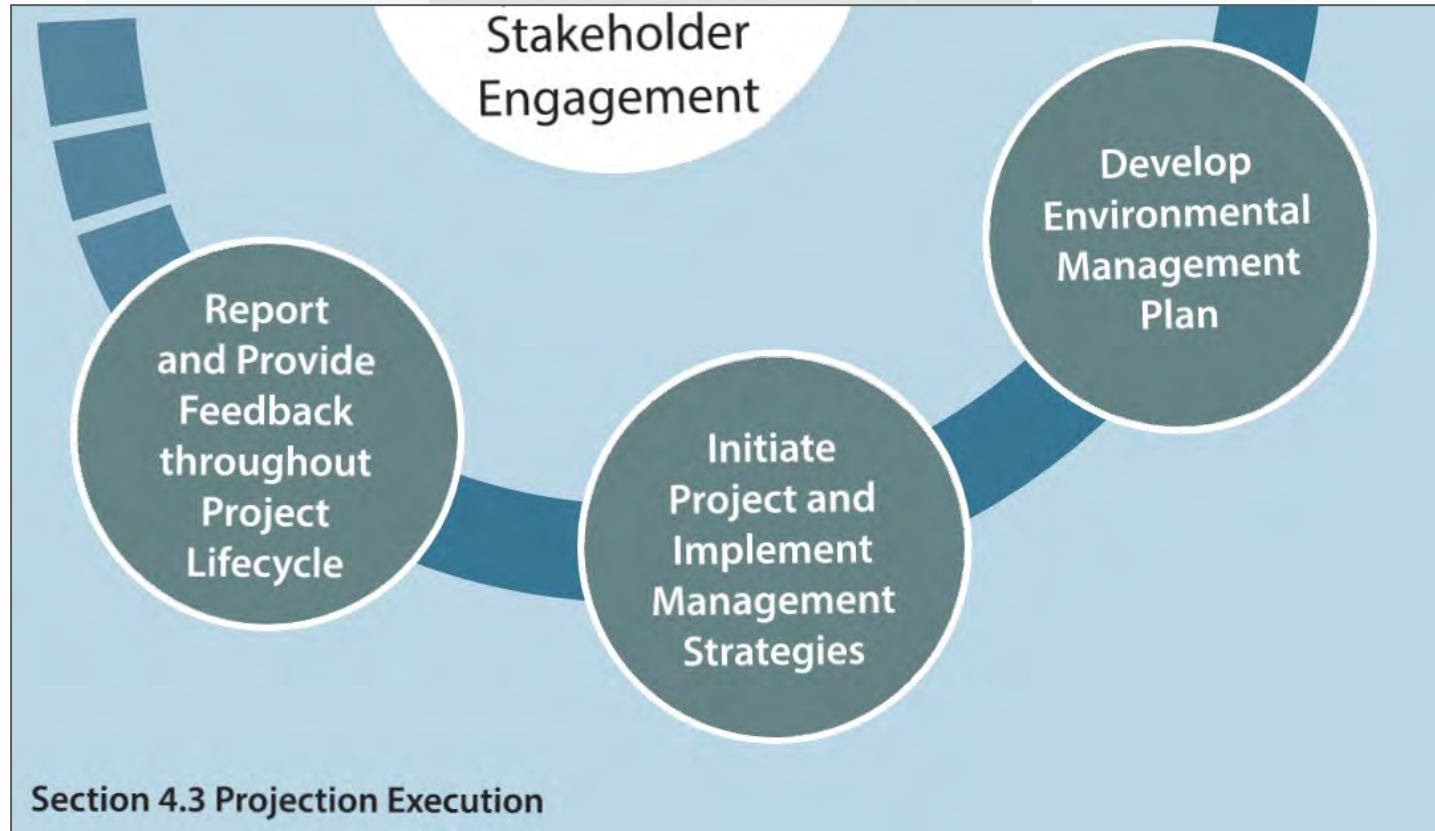
Management/
Deciding

Assessment/
Understanding

Section 4.2 Project Assessment

The ERM Process

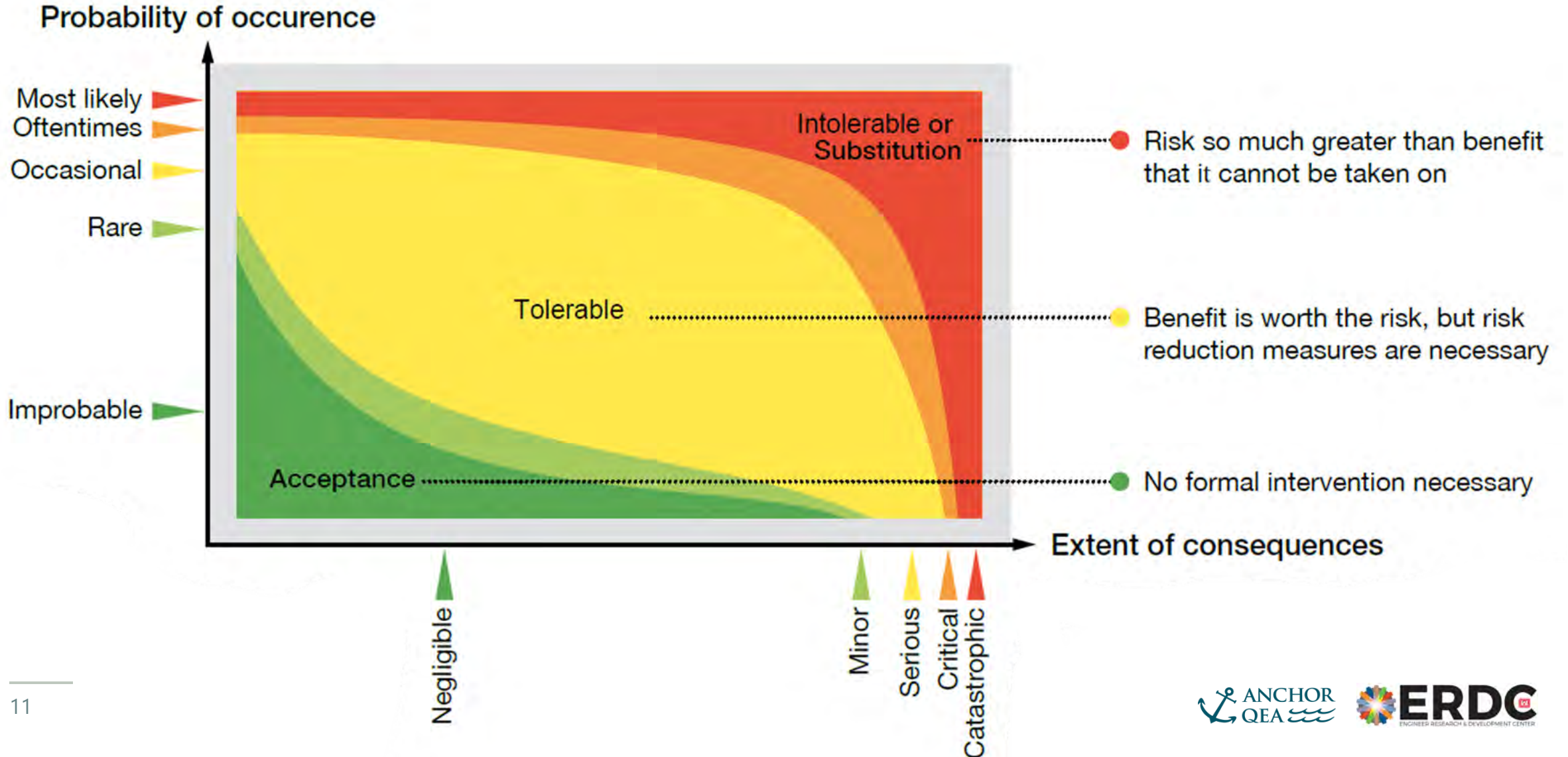
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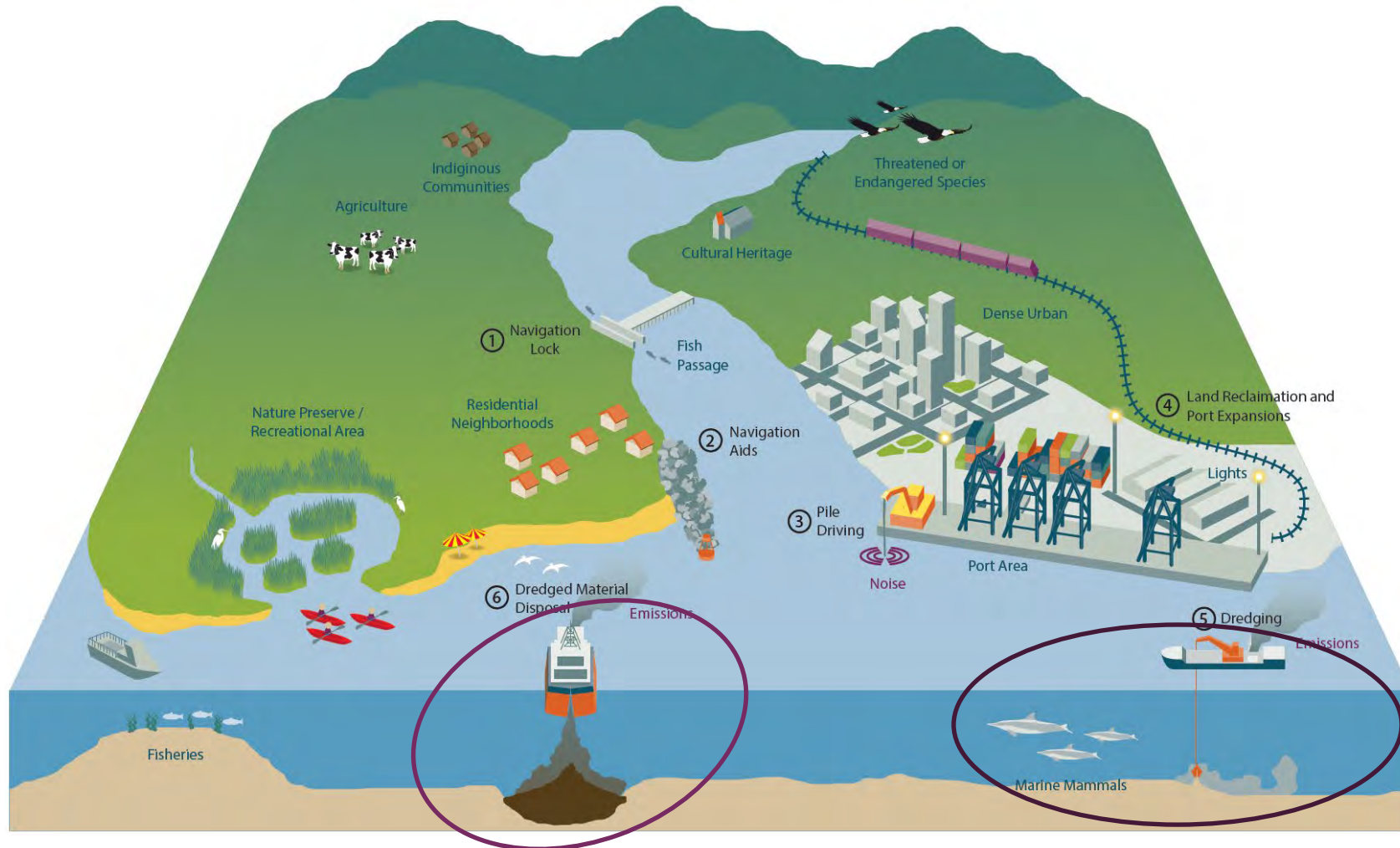
Project Formulation and Assessment



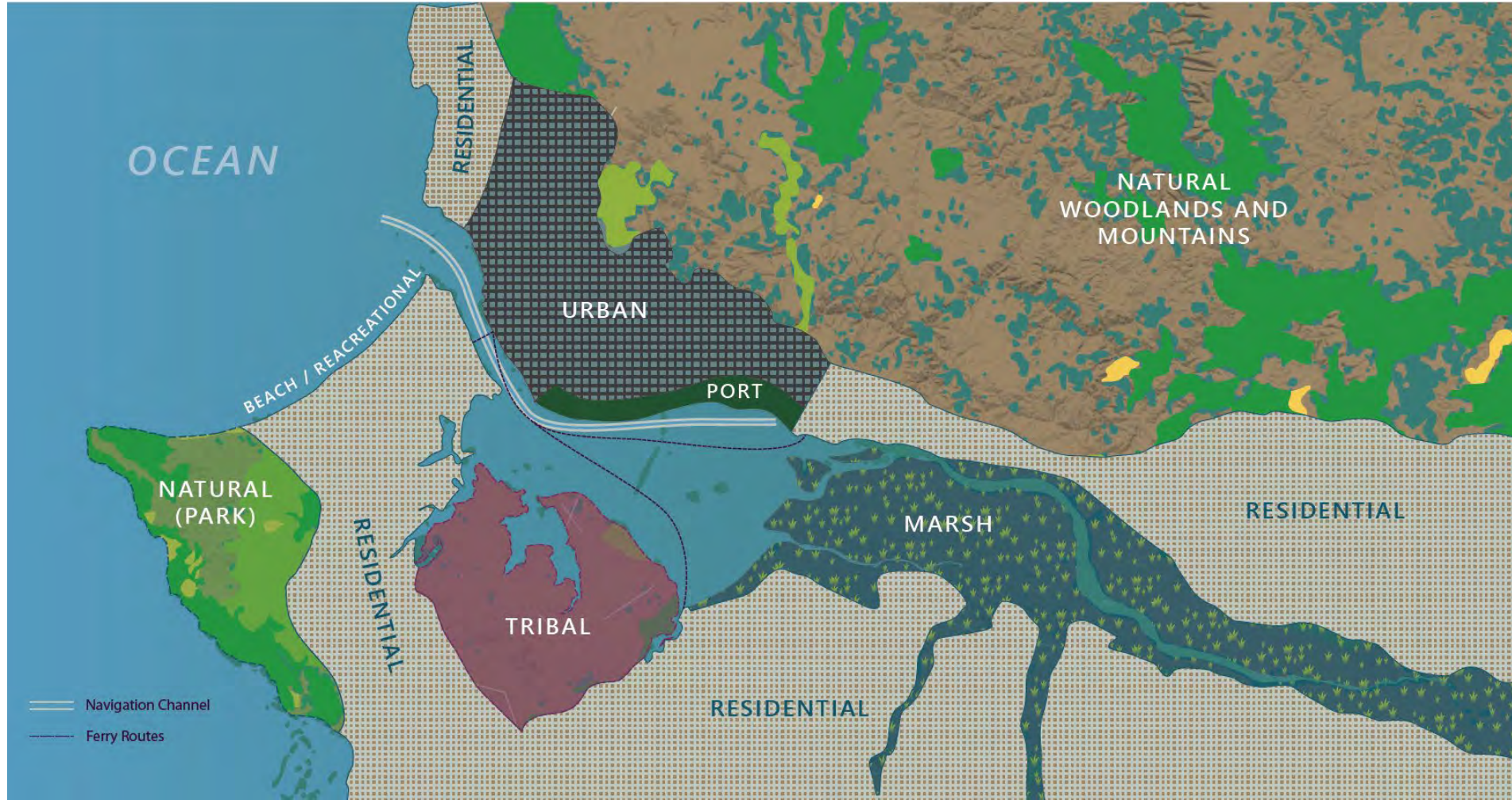
Risk Assessment



Risk Management



Hypothetical Case Study



Case Study: Port of Brisbane, AUS Land Reclamation

- Port at mouth of Brisbane River in Moreton Bay
- Initial expansion in mid-1990s; extension in 2005
- Evidence that initial project protected existing seagrass area
- Preliminary concerns that extension might have a negative effect



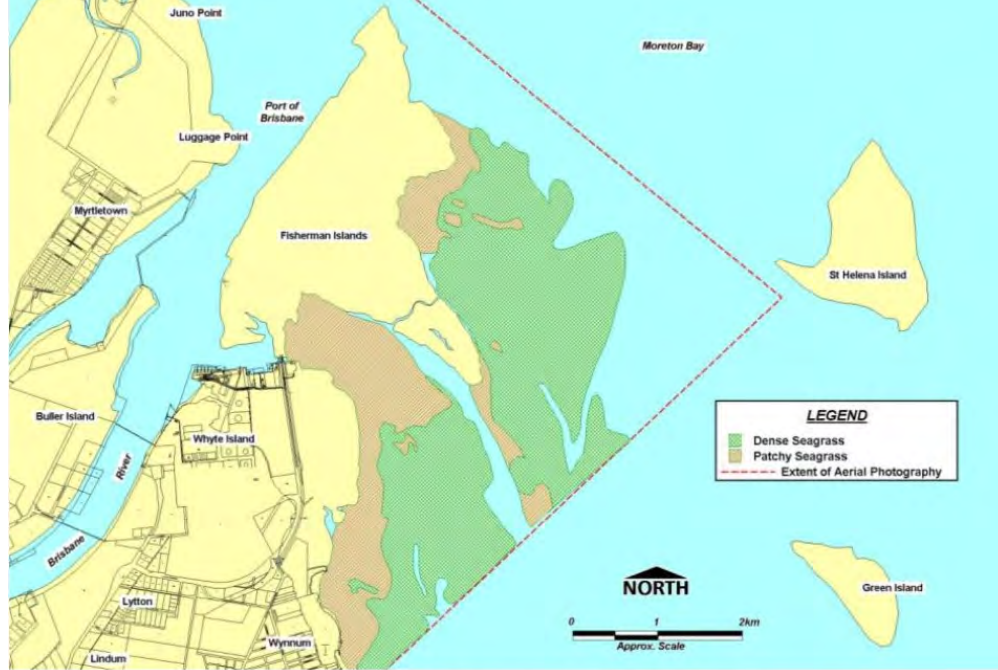


Figure 7.4.1: Seagrass growth in 1992

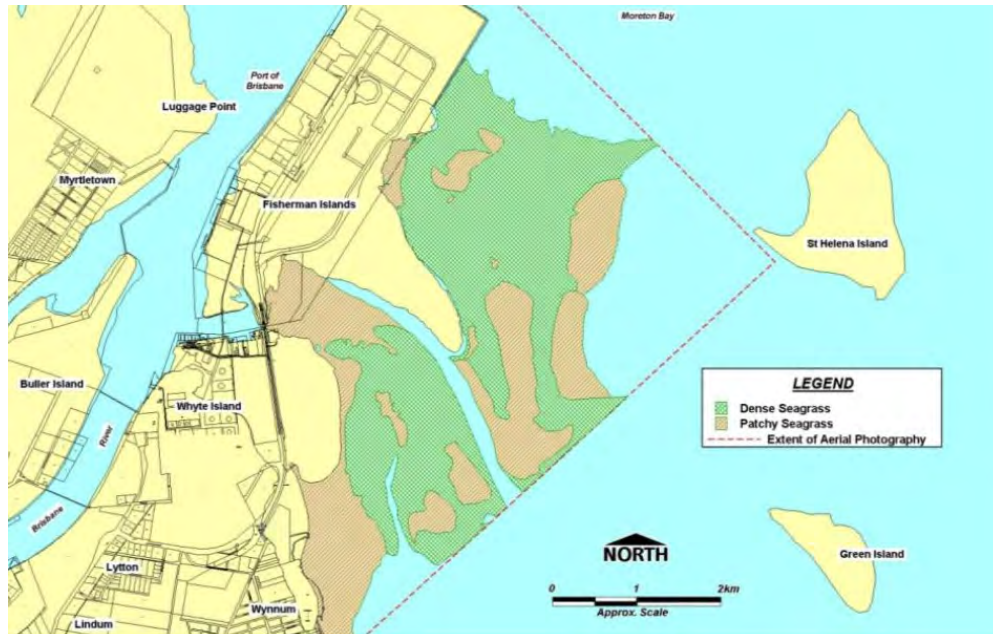
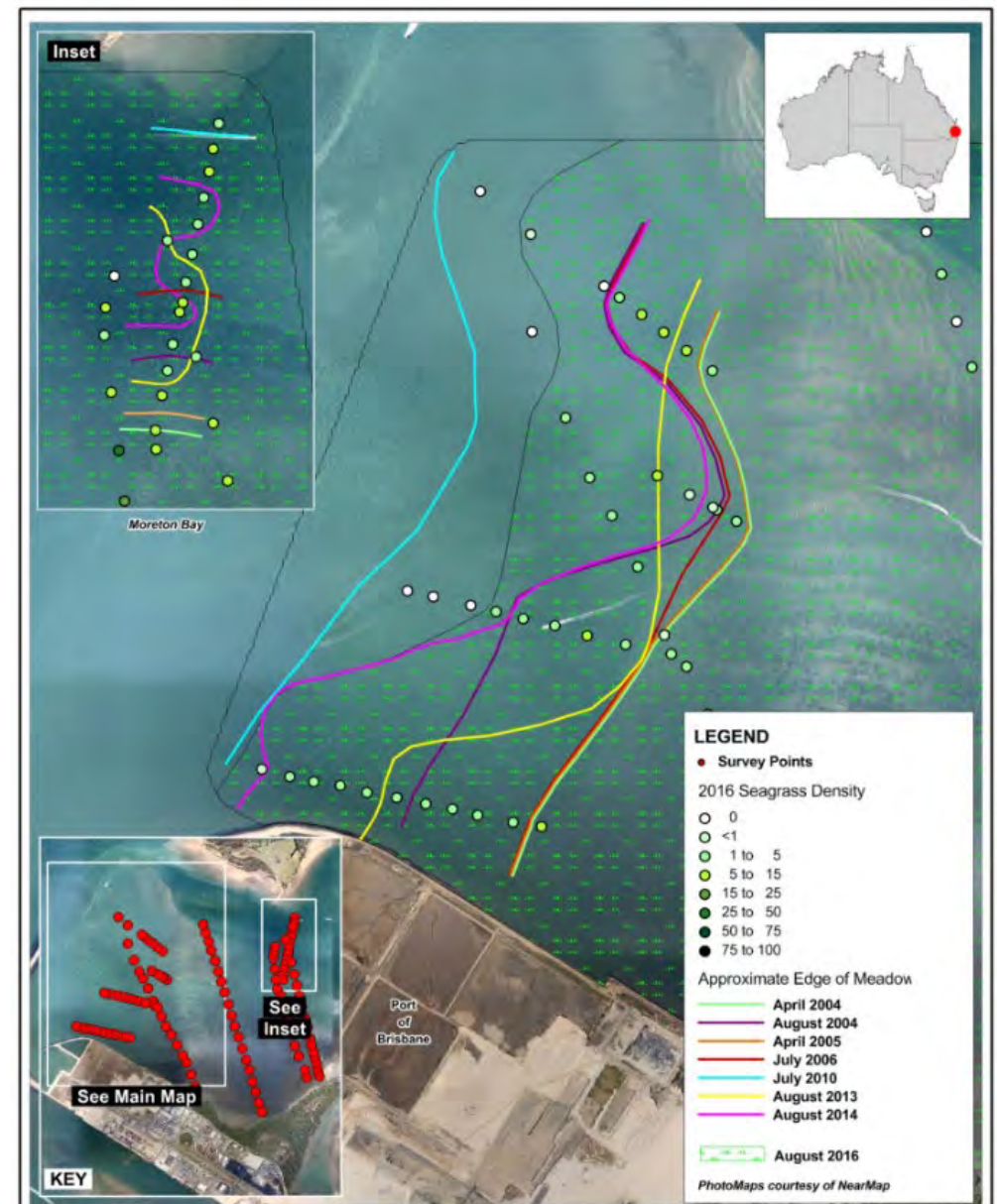


Figure 7.4.2: Seagrass growth in 1998

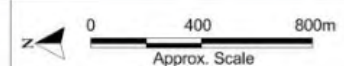


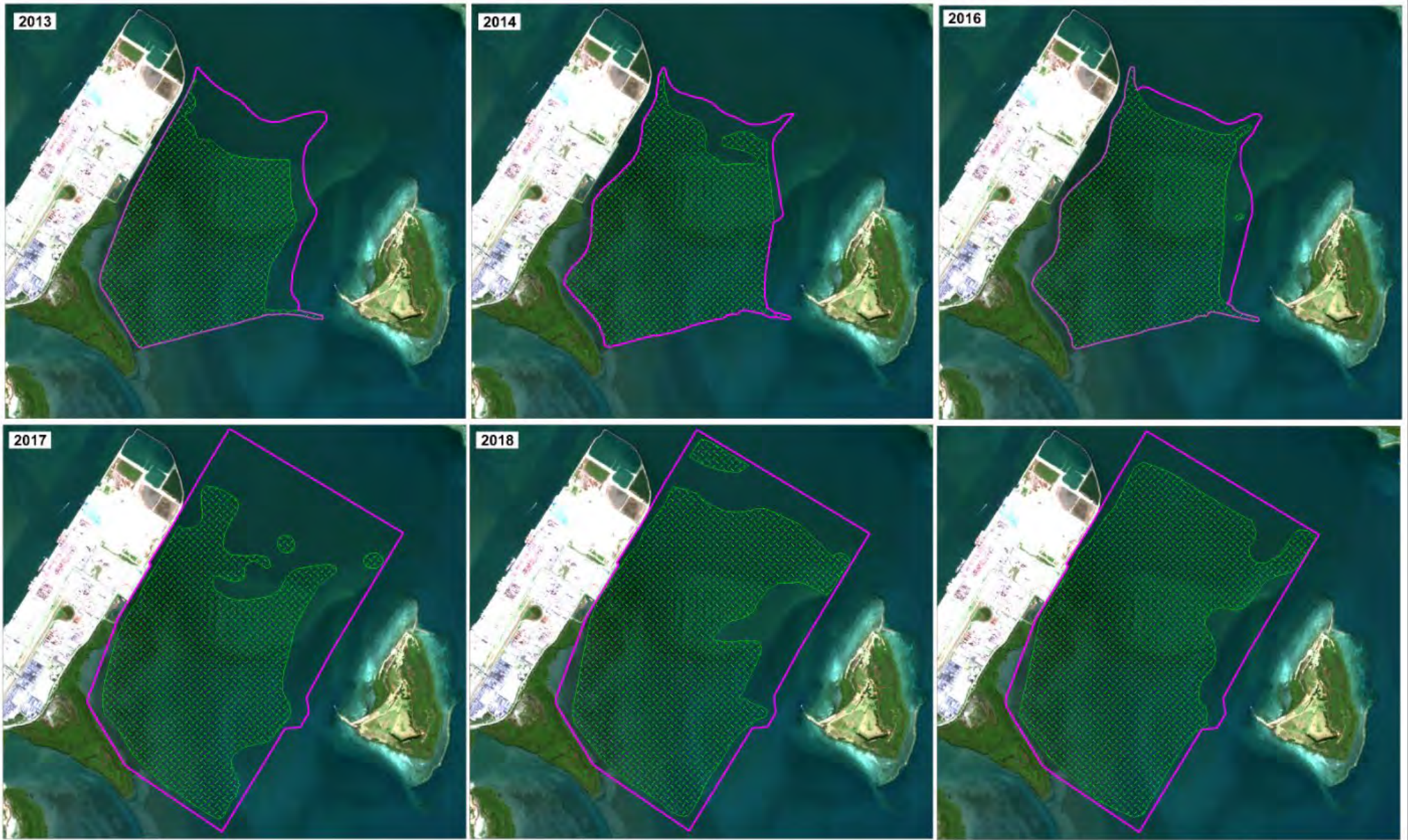
Title:
Temporal Variation in Seagrass Edge of Meadow Adjacent to Port of Brisbane

Figure:
4-12

Rev:
B

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.





LEGEND

 Study Area

 Seagrass Meadow Extent

Title:
Seagrass Meadow Extent between 2013-19

Figure: **4-1** Rev: **A**

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Filepath: I:\B23621 PoB Monitoring 2019-25\DRG\2019_Seagrass\ECO_005_190819_Seagrass_meadow_extent_POB.wor

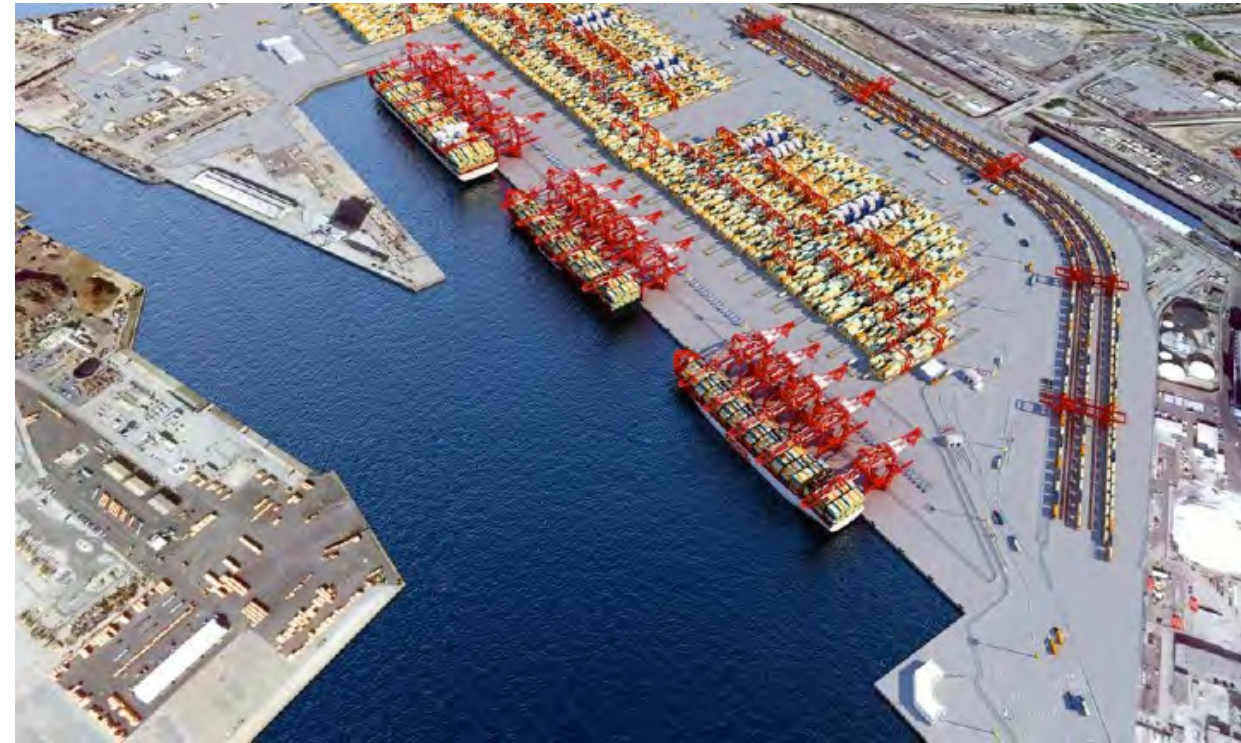
Port of Brisbane, AUS: Key Takeaways

- Look for opportunities to balance potential environmental impacts with other benefits
- Engineering evaluations to balance development goals with environmental benefit potential

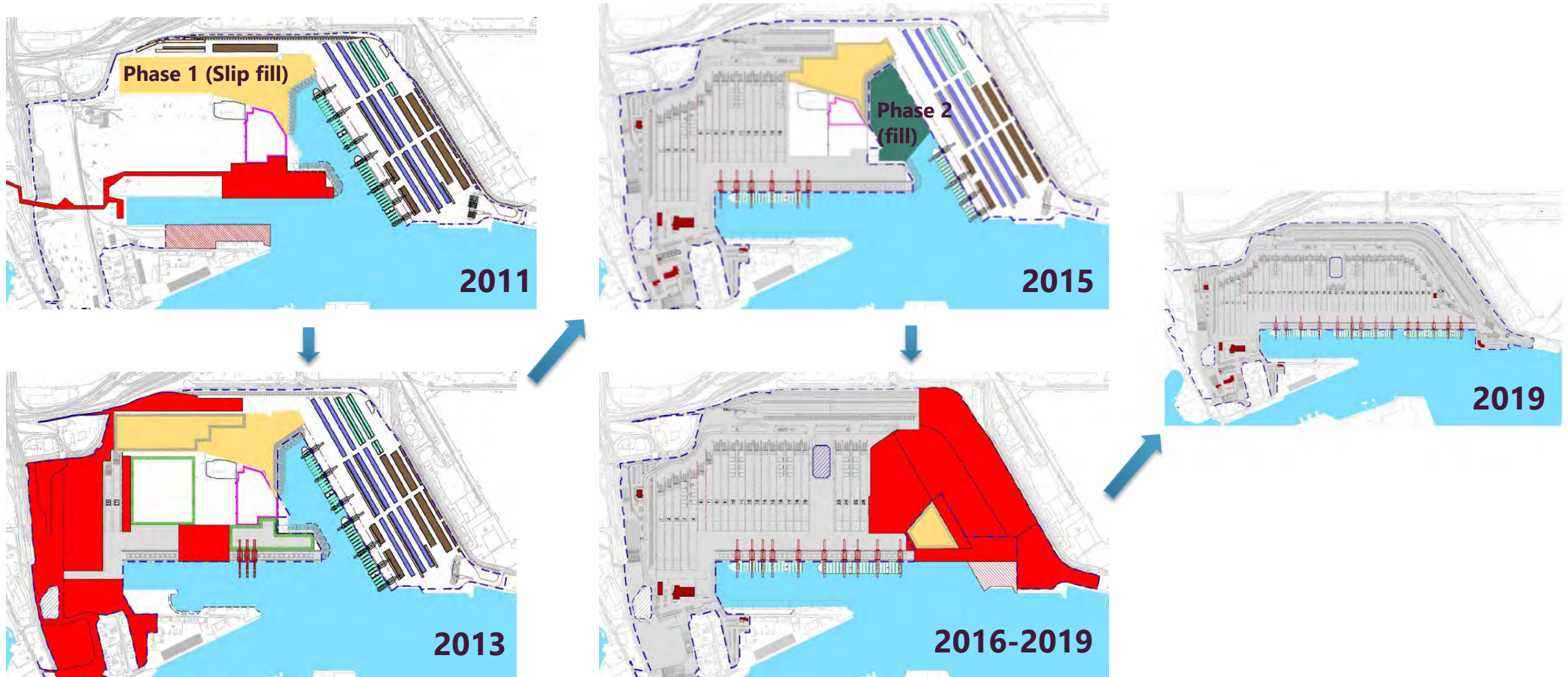


Case Study: Port of Long Beach Middle Harbor Redevelopment

- Development of a new container terminal optimized to handle larger vessels and expand Port's TEU capacity
- Near fully electric, near 0 emission.
- **Bonus:** provided opportunity to address contaminated sediments in the region



Case Study: Port of Long Beach Middle Harbor Redevelopment



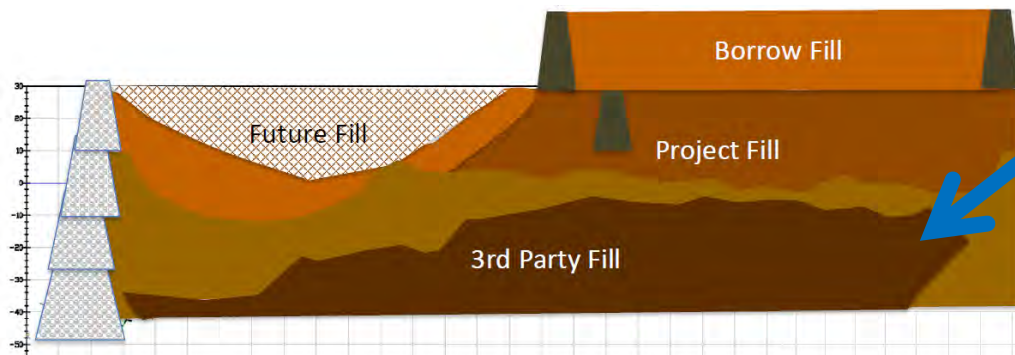
Case Study: Port of Long Beach Middle Harbor Redevelopment

Required approx. 4,000,000 cy of fill material

- 1,900,000 cy generated from Middle Harbor Projects
- 900,000 cy from 3rd party material
- 400,000 cy from other Port and outside projects
- 800,000 cy from approved borrow locations within the project site

Contaminated sediments from other projects in the region meeting pre-specified criteria:

- Contaminant Levels
- Geotechnical Characteristics
- Schedule



Summary

ERM...

- Provides a practical methodology for managing the effects of project components in the context of time and space, natural changes, and social attributes
- Accommodates a diverse range of policies, perspectives, risk attitudes and personal values that drive risk management decision making
- Incorporates the principles of sustainability, adaptive management, resiliency, and working with nature

Workgroup Members

- Burton C. Suedel (Chair) – Research Biologist, USACE Engineering Research and Development Center
- Kevin Kane (Co-Chair) – Senior Manager Environment and Planning, North Queensland Bulk Ports Corporation
- Todd S. Bridges (Mentor) – Senior Research Scientist, USACE Engineering Research and Development Center
- Capt. Kevin Allen – Harbour Master, Belfast Harbour
- Rebecca Gardner, PE – Principal Engineer, Anchor QEA, LLC
- John Lally, PE – Principal Engineer, Lally Consulting LLC
- David W. Moore – Senior Research Biologist, USACE ERDC Environmental Laboratory
- Amy Parry – Formerly Senior Marine Environmental Scientist, Atkins
- Miran Vanwonderghem – Project Engineer, Flanders Agency for Maritime and Coastal Services



PIANC

EnviCom WG Report
n° 175 - 2019



**A PRACTICAL GUIDE TO ENVIRONMENTAL
RISK MANAGEMENT (ERM) FOR NAVIGATION
INFRASTRUCTURE PROJECTS**

The World Association for Waterborne Transport Infrastructure

Questions?



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