



PIANC
The World Association for Waterborne
Transport Infrastructure

A Guide for the Decision-Making Process Relating to Environmental Windows & Seasonal Restrictions for Dredging and Navigation Infrastructure Works

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Sponsors



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Objectives of the WG - TERMS OF REFERENCE

1. Define **environmental windows**: a common management (mitigation) practice used to minimize or avoid stresses from navigation infrastructure works on resident and transient environmental receptors
2. Expand on existing knowledge and **collect and collate information** on specific tools, steps, and practices needed to evaluate seasonal environmental restrictions
3. Create a **practical guide** to assist those tasked with making decisions such as regulators, project proponents and stakeholders who are planning / designing projects

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Terms of Reference (cont.)

4. Provide a **framework** (i.e., a method or approach) which is:
 - accessible (easy to understand and apply)
 - robust (consistently yields the correct result)
 - can be applied universally where seasonal restrictions are considered
5. Provide **guidance** on how to define:
 - the intensity of a window (what is possible); and
 - the 'borders' (how long) the restrictions need to be implemented
6. Provide a **methodology** for identifying the potential impact and managing the likely effects in the **context of natural variations**
 - in time (short / long term) & space (floods, storms, near field/far field)
 - other activities (e.g. commercial shipping, storm runoff, etc.)
 - the ability of the identified habitats or species to recover



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TARGET AUDIENCE

- Proponents of marine infrastructure works
- Regulators and permitting agencies
- Dredging
- Marine construction organizations
- Stakeholders of dredging and marine navigation projects



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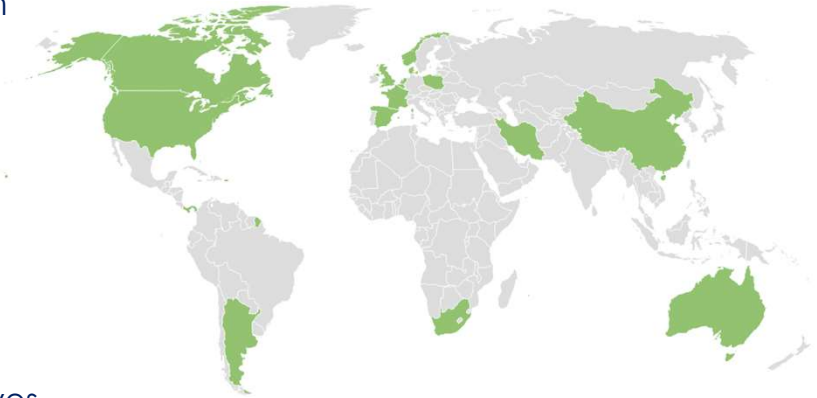
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WORKING GROUP MEMBERS

Wide representation from the PIANC Community

- Government
- Universities
- Ports
- Research Institutes
- Professional Services Firms (engineering, environment)
- Contractors
- Sector Representatives



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WORKING GROUP MEMBERS

NAME	ROLE	COMPANY	COUNTRY
Daan Rijks	Sponsor	PIANC EnvICOM	Netherlands
Rebecca Gardner	Chair	Anchor QEA	USA
Joshua Jon van Berkel	Co Chair	DHI	Canada
David Petch	Co Chair	GHD	Australia
Gerard van Raalte	Secretary	CEDA-IADC	Netherlands
Mercedes García Barroso	member	technoambiente	Spain
Roy van Balegooyen	member	WSP	South Africa
Frédérique Larrarte	member	Univ. Eiffel	France
Gerardo Bessone	member	Port of Bahia Blanca	Argentina
John Bleach	member	HRWallingford	UK
Lynnyrd de Wit	member	Deltares	Netherlands
Sofie Vriens	member	Jan de Nul	Belgium
Malgorzata Szyszko	member	ICHCA / Szczecin	Poland
Boudewijn Decrop	member	IMDC	Belgium
Angel Tribaldos	member	Pan Canal	Panama
Xiaoming Hou	member	CCCC-SDC	China
Xiaodan Mao	member	CCCC-SDC	China
Tonny Da Silva Madsen	member	Rhode Nielsen	Denmark
Zahra Gholami	member	Ports and Maritime	Iran
Maren Elise Bengtson	member	Port of Oslo	Norway



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CONTENT/STRUCTURE OF FINAL REPORT (1)

1. Introduction
 - Report Scope
 - What are Environmental Windows (EW) and Seasonal restrictions
 - Rationale for Risk Management Approach to EW
2. Environmental Risk Management as a Basis For Decision Making
 - Environmental Risk Management (ERM)
 - Framework for implementing ERM in EW context
3. Pre-Project Assessments
 - Project Considerations
 - Risk Assessment Tools (Techniques)
 - EW Decision Making



CONTENT/STRUCTURE OF FINAL REPORT (2)

4. How to Develop and Implement Dynamic EWs
 - Dynamic EW Management Steps and Tools
 - Pre-Project Arrangements
 - Project Execution EW Management
 - Proactive Implementation of Dynamic EW
 - Scalability of the Approach
5. Case Studies
6. Recommendations
7. References



Environmental Windows

What is an Environmental Window?

- Periods during which for environmental reasons activity cannot occur
- Periods during which for environmental reasons activity can occur with restrictions
- Periods during which for environmental reasons activity can occur in some locations but not in other locations



Examples of time-based environmental restrictions

Marine Mammal Migration



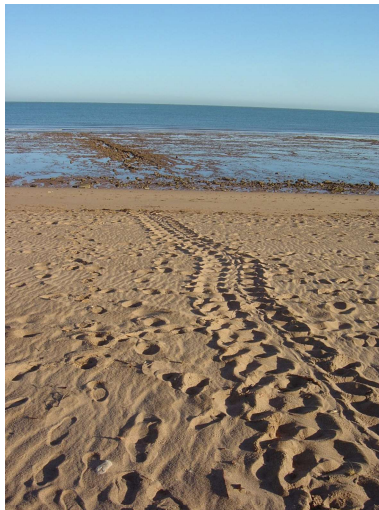
Examples of time-based environmental restrictions

Fishing Seasons



Examples of time-based environmental restrictions

Turtle Nesting



Examples of time-based environmental restrictions

Coral spawning



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Assessing Environmental Windows

Risk Management Approach

- Risk based methods as per PIANC WG 175
 - Problem formulation
 - Risk Analysis
 - Risk Characterisation
 - Identify mitigations



Figure 2: An Environmental Risk Management framework for navigation infrastructure projects



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Case Study – Port Hedland Maintenance Dredging



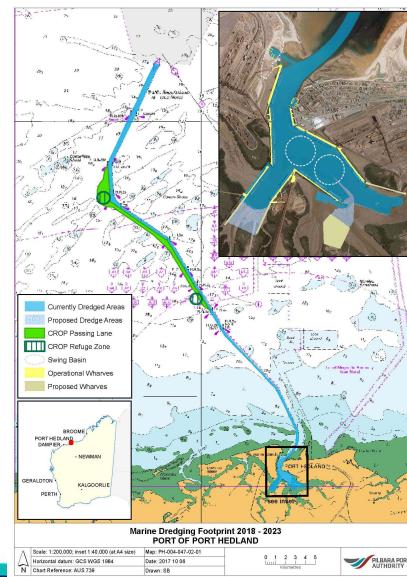
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Case Study – Port Hedland Maintenance Dredging

- World's Largest bulk export port
- ~ 1.5 million tonnes exported per day
- 42 km unidirectional channel
- Approx. 500,000 m³ of sediment dredged annually as part of maintenance dredging
- Maintenance dredging essential to maintain navigational safety and economic activity in the port
- Any incidence such as a grounding could be significant at the national level
- So when can dredging occur?



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Potential Environmental Windows Port Hedland Dredging

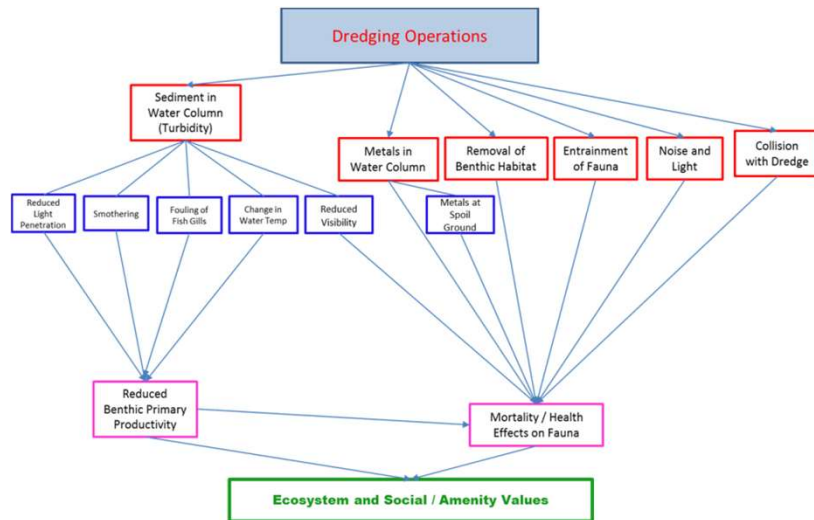
Environmental Sensitivity	J	F	M	A	M	J	J	A	S	O	N	D
Humpback Whale migration						■	■	■	■	■		
Coral Spawning		■	■	■						■	■	
Flatback Turtle nesting	■	■	■								■	■
Hawkesbill Turtle nesting	■										■	■
Green Turtle nesting	■	■	■							■	■	■
Green Sawfish Pupping										■	■	

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Case Study – Port Hedland Maintenance Dredging




- Problem formulation
 - Identify
 - Action
 - Scale
 - Receptors
 - Conceptual model
 - Risk Analysis Plan



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Case Study – Port Hedland Maintenance Dredging




- Risk Analysis
 - Determination of probability and magnitude of adverse effect
 - Risk Register to assess risks of components of action
 - Risks identified in stakeholder workshop


Environmental / Social / Amenity Value	Threat	Consequence Rating				Association	Inherent Risk - Current Situation			
		Magnitude	Duration	Significance	Cons Score		Likelihood	Risk Score	Comments	
Marine mammals	Dredge Operations	1	2	National	1	Medium	1	L	Generally whale migration pathways outside dredging operations area but whales will occur within area. Likelihood of collision with slow moving dredge is low. In WA there have been no reported incidents to date of collisions between dredge and megafauna.	Marine fauna observers to be used on dredge. Crew education and training on actions in the case of a sighting of a marine mammal.
Marine mammals	Small vessel operations	2	2	National	2	Medium	2	L	Smaller vessels may move at higher speeds than the dredge.	
Marine mammals	Destruction of benthic habitat	1	2	National	1	Low	1	L	Nominated dredge area and spoil grounds is not known as critical resting / breeding / feeding area for marine mammals.	

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Case Study – Port Hedland Maintenance Dredging



- Risk Characterisation
 - Evaluation and reporting to inform decision making and risk management
- Decision Making and Risk Management
 - Identification of mitigation measures and controls
 - Marine Megafauna Observers
 - Tickler Chains
 - Dredge Speeds
- **With mitigation dredging can occur at any time of the year**



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PROGRESS of WG227

- Key roles in the Group filled
- Range of meetings held
- Report Table of Contents
- Drafts of Report being prepared



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NEXT STEPS for the WG

- Meeting scheduled for September to review drafts
- Meeting in Seattle in December to prepare final draft
- Reviews in early 2023
- Approval for release mid 2023
- Seeking further examples of Case Studies – **can you help?**



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QUESTIONS?



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