



A Guide for a Risk-Based Approach to Environmental Windows for Dredging and Navigation Infrastructure Works

We are pleased to announce the publication of PIANC EnviCom WG 227 on 'A Guide for a Risk-Based Approach to Environmental Windows for Dredging and Navigation Infrastructure Works'. This was a joint working group together with CEDA and IADC.

One of the key mitigation measures used to manage identified environmental risks for dredging and navigation infrastructure projects is the use of Environmental Windows (EWs). EWs are usually understood as the periods when in-water projects are allowed with consideration of relevant environmental sensitivities. However, some entities may use an opposite meaning; therefore, early communication around definitions and goals is recommended. For many projects, if there is uncertainty around particular environmental risks, an EW is applied as a precautionary measure. This can lead to impractical or unnecessary delays or conditions on in-water projects that in themselves can have an impact on the environment or safety.

This report provides guidance on the use of Source Pathway Receptor (SPR) models and Environmental Risk Management (ERM) to provide a structured, evidence-based process for evaluating risks, engaging stakeholders, and supporting transparent, defensible decisions regarding the application of EWs. The SPR model helps identify how environmental stressors (e.g. dredging operations) may impact receptors of interest (e.g. marine life) through various exposure pathways. Together, they support the tailored application of mitigation measures and the selection of the most appropriate EW type for each project.

Three main types of EW are discussed in this report each offering varying degrees of flexibility and responsiveness:

- Fixed EWs are periods where in-water work is only allowed during fixed times or at pre-determined locations; therefore, there are no measurements used to modify the EW. These EWs are simple to enforce, but are often overly conservative.
- Reactive Feedback EWs allow work to proceed unless various, often single-parameter, infield monitoring methodologies of SPR dynamics, detect that an environmental threshold has been exceeded. These EWs rely on predetermined response protocols in reaction to non-compliance observations.
- Proactive Feedback EWs allow work to proceed via reducing operational levels or establishing pre-emptive windows of temporal or spatial operations based on how environmental conditions influence stressor pathways. Proactive Feedback EWs are enacted via input from monitoring (e.g. various real-time and periodic) and predictive modelling input. These EWs can be proactively applied in near real-time, using continuous comprehensive SPR characterisation, thereby enabling dynamic decision-making and greater operational flexibility while being protective.

Guidance is provided how to decide which EW is best suited for a particular project. The guidance follows an ERM approach using well-established techniques, actions and decisions that need to be considered to establish the potential pathways of impact of the project using SPR models.



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