

# Impact Assessment for Coastal Engineering in the Pacific

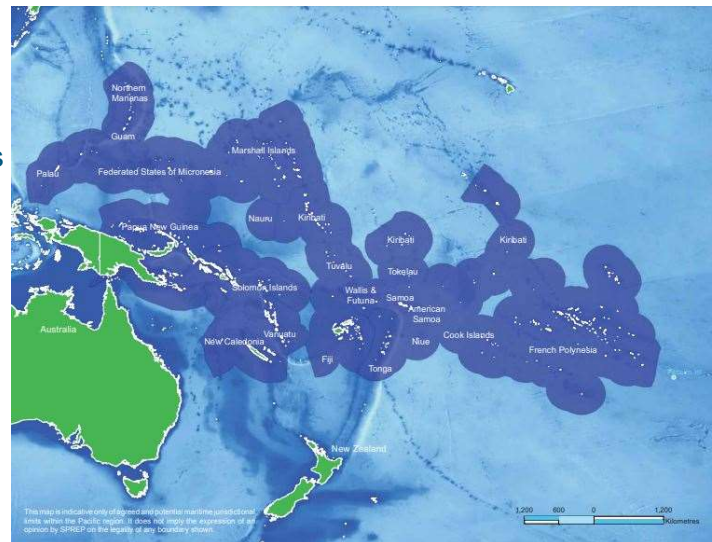


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## Introduction

- The Secretariat of the Pacific Regional Environment Programme (SPREP) has been promoting the use of Environmental Impact assessment (EIA), delivering EIA capacity-building and building on advances in global practice relating to EIA for more than 25-years.
- SPREP has 26 member countries or territories, 21 of which are in the Pacific region.
- The area occupied by SPREP members covers approximately 540,000 Km<sup>2</sup>



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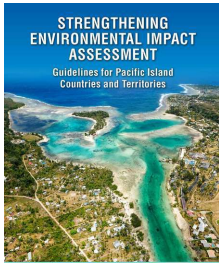
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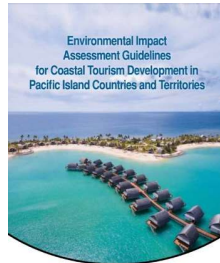
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## Current Guidance

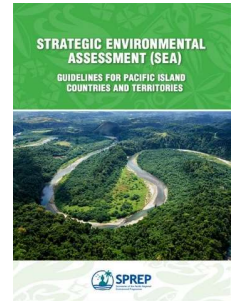
- To date SPREP has produced three guidance notes.
- SPREP 2016: *Strengthening environmental impact assessment (EIA) guidelines for Pacific Island countries and territories (PICT)*
- SPREP 2018: *EIA guidelines for coastal tourism development in PICTs*
- SPREP 2020: *Strategic Environmental Assessment (SEA) Guidelines for PICTs*



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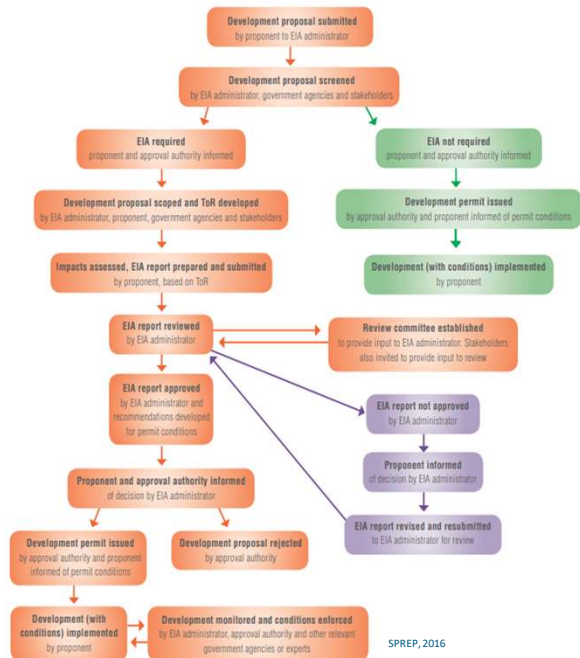
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- The SPREP 2016, 2018 and 2020 *Environmental Assessment Guidelines* provide a detailed overview of EIA and offer practical tips and tools to support PICT government officers managing the EIA process.
- They do not provide practical details on how to assess and mitigate impacts from specific developments, including the many projects in the Pacific that entail coastal engineering.



SPREP, 2016

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## Pacific Context

- Coastal environments in the Pacific are ecologically diverse and, in many instances, cover entire islands from reef to ridgetop.
- Coastal Environments supply valuable resources that support PICT lifestyles, livelihoods and cultural practices.
- Coastal Environments provide critical defences against storms, cyclones and tsunamis causing flooding and erosion, the frequency of which is expected to increase with climate change.



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- Coastal engineering projects can make a positive contribution to PICTs if they are designed to ensure that important coastal areas are not degraded.
- The EIA process is an important tool for achieving this by identifying likely impacts, alternatives and mitigation measures.



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## The Guidance Note

- Given this context, SPREP determined that guidance on good practice in EIA for coastal management and development projects would be valuable and the *Good Practice in EIA Guide for Coastal Engineering in the Pacific* was born.
- The guide is not intended to alter the established EIA process, but to build upon it, with a specific coastal engineering, adaptation, and management focus.
- It provides specific examples, approaches and mitigation measures relevant to the coastal environment in the Pacific



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- The Guide is made up of 2 parts parts:
  - a) a guidance note and
  - b) an environmental monitoring and management plan (EMMP) 'toolkit'
- The note introduces coastal systems in the Pacific and typical engineering projects; from dredging, reclamation, maritime facilities, breakwaters, seawalls, outfalls and moored structures, through to beach nourishment and other nature-based solutions.

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- The Guide provides information on the supporting studies typically required for EIA and approaches suited to the Pacific (but is not a survey or site investigation guide) and covers in detail typical impacts and mitigation strategies relating to:
  - changes in coastal processes;
  - changes to marine water and sediment quality;
  - direct and indirect implications for benthic communities and habitats;
  - direct and indirect implications for marine fauna and avifauna;
  - potential effects on terrestrial habitats; and,
  - potential effects on communities (air quality, noise and societal implications).

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## Environmental Management and Monitoring (EMMP) Template

- Project specific EMMPs are generally required as a step to attaining approval to start work and form part of the approval conditions and environmental licences or permits for a project. EMMPs typically follow from EIA, with the objective of implementing and ensuring mitigation, monitoring and management actions.
- The EMMP toolkit sets out the core requirements for environmental monitoring and management and plan scope and structure. Of potentially more value, however, it provides an EMMP template and a review checklist, as well as example EMMP measures.

Project activity	Predicted impact	Management / Mitigation measure		Monitoring	
		Action	Responsibility	Approach & Timing	Responsibility
Excavation	Sediment laden runoff leaving site	Install sediment fences	Site Manager	<ul style="list-style-type: none"> <li>• Daily visual inspection of sediment fences to ensure they are installed correctly and capable of retaining sediment on site.</li> <li>• Visual inspection of sediment fences during rain events to ensure no sediment is washed from site</li> </ul>	Site Manager

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## Examples, Tips and Points of Interest

- Throughout both the guide and the EMMP template to assist PICT assessment officer, Examples, Tips and Points of Interest were included to give more practical context to the guidance.

### Example - Project Description

*'Dredging and the disposal of dredged material is to be carried out to provide a larger vessel (with a draft of 6.0m) with access to a new wharf and a berth adjacent to an existing boat ramp.*

*The dredge footprint is 13,000m<sup>2</sup> with a dredged volume of 52,500m<sup>3</sup>. Dredging is proposed to take approximately 9 weeks in the dry season. The preferred method of dredging is a high-rise excavator working from the reef platform, loading the dredged material onto dumper trucks which will then be unloaded onshore (in the works site).*

*The dredged material will be stockpiled, with 13,500m<sup>3</sup> of the material to be used as backfill for the wharf to be located adjacent to a new berth. The remainder of the dredge material is expected to be used for the wharf pavement, hardstand leveling and maintenance purposes on the project site, depending on volumes of backfill required and the suitability of the dredged material.*

*The wharf is to be constructed of concrete caissons, which are large watertight containers that form the foundation of the structure, to be secured to the reef platform with steel bars and backfilled. The caissons will be pre-cast and delivered to site. The deck will be poured in-situ from an onsite concrete batching plant and crushed dredged material. The wharf construction is expected to take 9 months, including railings, fenders (barriers which prevent ships from hitting the structure), lighting, a new boat ramp, a passenger walkway and terminal building etc.'*

*This project description is succinct and captures all the main information required to characterise the works.*



Figure 15: Example wharf and new dredged berth, adjacent to existing boat ramp.

### Tip – Other guidance material

As discussed above, underwater piling can have negative impacts on marine life, in particular cetaceans. A useful document to understand the impacts and potential mitigation measures is the *Underwater Piling Noise Guidelines* prepared by the Government of South Australia (Department of Planning, Transport and Infrastructure, 2012) **These are currently under review and being updated with latest guidance due to be released here <https://www.dit.sa.gov.au/documents/EHTM>**.

Similarly, for light impacts, reference can be made to the *National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds* prepared by the Commonwealth of Australia (2020).

### Point of interest – Apia Green Port

The 'vision' for Apia Green Port in Samoa has two parts:

- to optimise energy efficiency, adopt environmentally sustainable practices and develop in a sustainable manner; and,
- to be operationally efficient, safe and resilient to future climate change and commercial challenges.

Its priorities are to:

- measure and reduce annual use of electric power and diesel; and,
- measure and improve waste and wastewater management (from vessels and on the yard), reuse/recycling, and water use.

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## Effective EIA

- Scoping is the process of identifying the issues to be addressed in EIA and the level of detail to which an issue is to be examined. Scoping is a fundamental early stage of the EIA process that enables the resources available to be focussed on the key issues, saving time and money.
- Good consultation is crucial to a successful EIA process and requires a considered and continuous approach. It should identify sites of importance, risks and hazards, and support the design of appropriate solutions.
- In the Pacific, the approach taken to stakeholder engagement must also account for the cultural norms and hierarchy of the location where the project is taking place.



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- The EIA process does not end once consent is issued; as development approvals are typically contingent on conditions set by the regulator, which often refer directly to the mitigation measures identified in the EIA and/or specific conditions to be implemented through an EMMP.
- The need for environmental monitoring & management (in line with the EIA) continues for the life of the project. To this end an EMMP should be a living document that is periodically reviewed and amended to reflect changing environmental conditions, project details and developments in good environmental management.



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## Key Learnings and Challenges

- The capability of agencies in PICTs in the EIA space is an unknown and can change dramatically dependent on the movements of individuals.
- Getting access to equipment and expertise in PICTs is difficult.
- The region is geographically, ecologically and culturally diverse, providing guidance that is relevant to the majority of stakeholders requires a very broad approach.
- Gaining consensus from the vast array of agencies involved proved time consuming



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