



## Funded PhD Opportunity: Enhancing Coastal Resilience through Innovative Nature-based Mangrove Designs



Coastal inundation and erosion pose significant challenges in the tropical Pacific region. These challenges are intensified by rising sea levels due to climate change and nature-based solutions are critical not only for the protection of coastal communities but also for the preservation of coastal ecosystems and important ecosystem services. Mangroves play a crucial role in attenuating wave energy, reducing coastal erosion, stabilising sedimentation, and providing shelter for various marine species. However, their distribution is typically limited to intertidal zones of tropical and subtropical coastlines, as mangroves require periodic wetting and drying of their roots. Integrating mangroves with pontoons or breakwaters could create new opportunities for coastal protection and biodiversity conservation. Implementing this innovative solution may enhance coastal resilience, bring nature back into highly urbanised environments, mitigate the impacts of wave action, provide income diversification opportunities, and contribute to the conservation of Fiji's valuable coastal ecosystems.

This PhD is part of a research project called [Project Halophyte](#), a collaborative effort between the University of New South Wales (UNSW) and the University of South Pacific (USP). The project aims to contribute to the global effort to enhance coastal resilience by developing innovative solutions that integrate nature-based solutions with maritime infrastructure to create effective coastal protection. We work closely with local communities, government agencies, and environmental organizations in Fiji to ensure that our research outcomes are aligned with the needs of coastal communities.

As part of the PhD program, the successful candidate will have the opportunity to participate in a large multidisciplinary international project, engaging in the design, build, optimization, and experimental testing in wave flumes at UNSW's Water Research Laboratory. This experience will not only enrich the candidate's research but also provide valuable insights into the practical application of coastal protection. Additionally, the successful candidate will have opportunities to conduct part of their research in Fiji, present their findings at conferences, publish in peer-reviewed journals, and engage with industry and policy stakeholders. The successful candidate will work with experienced researchers and engineers to support the candidate's professional development and academic growth throughout the PhD journey.

The research outcomes from this project have the potential to make significant contributions to the fields of coastal eco-engineering and climate change adaptation. The successful candidate will be equipped with the skills, knowledge, and experience to pursue a career in engineering, research, academia, government, or industry, and create a positive impact on coastal communities and ecosystems worldwide. The successful candidate will become an integral part of a dynamic, multidisciplinary team and should possess exceptional research and communication skills. We encourage candidates with backgrounds in environmental engineering/science, product design, ocean science, physics, or related fields, with a keen interest and willingness to learn to how to conduct wave flume experiments and data analysis, to apply.

Opportunity to enrol in a [Cotutelle PhD](#) with both UNSW and USP is available as part of Project Halophyte and considered on a case-by-case basis with each applicant, with a PhD degree awarded by both UNSW and USP upon completion of the PhD. The successful domestic or international candidate will be eligible to receive a Research Scholarship for 3.5 years funded and a potential top-up scholarship is available for exceptional candidates. Domestic applicants will need to be competitive for an Australian Government Research Training Program (RTP) Fees Offset Scholarship to cover tuition fees. A successful international candidate will need to satisfy the requirements for a Research Training Program Fee offset or Tuition Fee Scholarship. Please see <https://research.unsw.edu.au/higher-degree-research-programs> for information on your eligibility, competitiveness and PhD entry requirements.

For further inquiries or to express your interest in the project, please contact Dr. Andrew Dansie ([a.dansie@unsw.edu.au](mailto:a.dansie@unsw.edu.au)) or Dr. Danica Tothova ([d.tothova@unsw.edu.au](mailto:d.tothova@unsw.edu.au)).