



# Tuvalu Coastal Adaptation Project

## Environmental and Social Management Plan

12 May 2021



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# 1 INTRODUCTION

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1. This Environmental and Social Management Plan (ESMP) has been prepared in support of the Tuvalu Coastal Adaptation Project being implemented by the Government of Tuvalu and UNDP with funding provided by the Green Climate Fund (GCF).
2. The project will provide highly needed coastal protection infrastructure, both in the form of hard and soft infrastructure to protect the people of Tuvalu in the face of climate change, increasing sea level rise and impacts from more severe cyclones.
3. Screening using the UNDP Social and Environmental Screening Procedure (SESP), in addition to the findings of two separate Environmental and Social Impact Assessments (ESIAs), determined that the project has the potential for social and environmental impacts that have a moderate level of risk associated with them. As a project with moderate level risks, this project level ESMP has been prepared.
4. This ESMP provides the overarching controls and mitigation measures that will be applied during the project. Additional construction specific ESMPs (C-ESMPs) will be prepared by the contractor prior to undertaking construction activities (refer Section 5.2.3). The C-ESMPs will draw on this ESMP to ensure that there is consistency between the documents.

## 1.1.1 Environmental and Social Commitment

5. The project team is committed to an effective program of environmental and social management for the construction phase/delivery of the project. The effectiveness of the program will be assured by instilling a team-wide attitude that elevates the status of environmental and social issues to the highest level.
6. UNDP has a strategic commitment to promoting the 2030 Agenda for Sustainable Development. The UNDP Social and Environmental Standards (SES) underpin this commitment by ensuring social and environmental sustainability is mainstreamed across all programming. The SES require that all UNDP programming maximizes social and environmental opportunities and benefits as well as ensures that adverse social and environmental risks and impacts are avoided, minimized, mitigated, and managed. The SES assist UNDP staff, implementing partners and responsible parties to manage social and environmental risks and impacts of UNDP programmes and projects (refer Section 2.4).

## 1.1.2 Purpose and Objectives of the Environmental and Social Management Plan

7. An ESMP is a management tool used to assist in minimising the impact to the environment and socially; and establish a set of environmental and social objectives. To ensure the environmental and social objectives of the projects are met, this ESMP will be used by the project implementers (TCAP team and contractors) to structure and control the environmental and social management safeguards that are required to avoid or mitigate adverse effects on the environment and communities.
8. The environmental and social objectives of the ESMP are to:
  - minimise or prevent the pollution of land, air and water pollution;
  - protect native flora, fauna and important ecosystems;
  - encourage good management practices through planning, commitment and continuous improvement of environmental practices;
  - facilitate compliance with all applicable laws, regulations and standards for the protection of the environment;
  - adopt the best practicable means available to prevent or minimise environmental impact;



- describe monitoring procedures required to identify impacts on the environment; and
  - provide an overview of the obligations of the Government of Tuvalu (GoT) Department of Environment (DoE), UNDP/TCAP staff and contractors, regarding their environmental obligations.
9. The ESMP will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and DoE to incorporate changes in the detailed design phase of the projects.

### 1.1.3 Structure of the ESMP

10. This ESMP has been broken into the following major components:
- Introduction to the project and institutional arrangements.
  - Legal and compliance framework, including the application of the UNDP SES.
  - Risk assessment – section discusses the ESIA's that have been undertaken and the potential impacts and risks identified.
  - Environmental and social management strategies developed in response to the potential environmental risks and impacts associated with the proposed works (as identified in the ESIA).
  - Implementation arrangements – outlines roles and responsibilities for implementing this ESMP along with incident management.
  - Communication – summarises key aspects of the separate “Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM)”.

## 1.2 OVERVIEW OF THE PROJECT

### 1.2.1 Summary of Activities

11. The Project Objective is to reduce the vulnerability of three islands of Tuvalu to coastal inundation and erosion. This Objective is attained through the achievement of three Outputs (each of which corresponds to sub-component). The Outputs and project activities are detailed below:
- Output 1: Strengthening of institutions, human resources, awareness, and knowledge for resilient coastal management.
    - 1.1. Technical capacity, knowledge and awareness of the Government and community strengthened for coastal monitoring, protection, and maintenance of coastal protection infrastructure.
    - 1.2. Long-term national human resource capacity and awareness enhanced for sustainable coastal protection.
  - Output 2: Vulnerability of key coastal infrastructure including homes, schools, hospitals, and other assets is reduced against wave induced damages in Funafuti, Nanumea and Nanumaga.
    - 2.1. Coastal protection design, site-specific assessments and Environment and Social Impact Assessments (ESIA) undertaken in all islands in a participatory manner.
    - 2.2. Coastal protection measures implemented.
  - Output 3: A sustainable financing mechanism established for long-term adaptation efforts
    - 3.1. All Island Strategic Plans and annual budgets integrate island-specific climate risks through gender sensitive participatory processes.



- 3.2. Capacity of Kaupules, Falekaupules<sup>1</sup> and community members strengthened for monitoring coastal adaptation investments.

## 1.3 OVERVIEW OF INSTITUTIONAL ARRANGEMENTS FOR THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

12. The ESMP identifies potential risks to the environment and social matters from the projects and outlines strategies for managing those risks and minimising undesirable environmental and social impacts. Site/activity specific construction ESMPs (C-ESMPs) will be prepared (based on this ESMP) by the contractor for submission to TCAP and DoE for approval prior to commencement of construction.
13. The DoE and TCAP will be responsible for the supervision of the ESMP. The UNDP will gain the endorsement of the DoE and will ensure the ESMP is adequate and followed. The PMU will ensure timely remedial actions are taken by the contractor where necessary.

### 1.3.1 Administration

14. TCAP will be responsible for the revision or updates of this document during works. It is the responsibility of the person to whom the document is issued to ensure it remains current by contacting TCAP to obtain any updates.
15. A site supervisor is the person who is designated as responsible for day-to-day supervision of the site and who is authorised to initiate actions onsite. The site supervisor will be responsible for daily environmental inspections of the construction site. The TCAP will cross check these inspections by undertaking monthly audits.
16. The contractor(s) will maintain and keep all administrative and environmental records which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.
17. The contractor(s) will be responsible for the day-to-day compliance with the ESMP and will be responsible for the implementation of the C-ESMPs.
18. The UNDP will be the implementing agency and will be responsible for ensuring implementation and compliance with the ESMP via the collaborating partners and contractors. The ESMP will be part of any tender documentation.
19. The Supervising Engineer/Project Manager will supervise the contractor(s).

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<sup>1</sup> The Falekaupule Act 1977 governs the establishment and composition of a Falekaupule (island traditional assembly) and a Kaupule (island council) as well as their meetings, proceedings, and functions





## 2 LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

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### 2.1 LEGISLATION, POLICIES AND REGULATIONS

20. The legislative and policy basis for the provision of the coastal protection infrastructure projects comes under various pieces of Tuvalu legislation, including but not limited to:
- Conservation Areas Act 1999
  - Constitution of Tuvalu 1986 (Cap 1)
  - Crown Acquisition of Land Act (Cap 24)
  - Environmental Protection Act 2008 (Cap 30.25)
  - Falekaupule Act 1997
  - Foreshore and Land Reclamation Act (Cap 26)
  - Marine Resources Act 2006
  - Marine Zones Act 1983 (Cap 24A)
  - Native Lands Act (Cap 22)
  - Wildlife Conservation Act (Cap 47).
  - Tuvalu Environment & Social and Safeguard Systems
  - EIA amendment 2017

### 2.2 ENVIRONMENTAL IMPACT ASSESSMENT IN TUVALU

21. Environmental management and the requirement for an environmental impact assessment are controlled by the Environment Protection Act (EPA) 2008. The Department of Environment (DoE) administers the Act and Regulations. Specifically, Part 5 of the Act (sections 17 and 18) sets out the process and procedures for the undertaking of an Environmental Impact Assessment (EIA).
22. The Environmental Protection Regulations 2014 provides the regulatory management of EIA in Tuvalu. It provides for the undertaking of Preliminary Environmental Assessment Report (PEAR) or EIA. All projects must comply with the legislation and regulations. Under Regulation 4, the Minister determines what projects should have either a PEAR or EIA. Pursuant to Schedule 1 (9) public works that require either a PEAR or EIA include (d) soil erosion, beach erosion and siltation control; and (k), seawalls/land reclamation. Regulation 5 exempts routine maintenance of for example, seawalls; however, this project involves the construction of for example, seawalls, which is not routine maintenance.
23. The requirement for EIAs under the EPA 2008, and GCFs request for ESIA, have been met through the production of two ESIA: one for Funafuti; and one Nanumanga and Nanumea. The ESIA addressed the DoE requirements for EIAs and have been submitted to and approved by DoE on the 29<sup>th</sup> March 2021. The ESIA should be read in conjunction with this ESMP.



## 2.3 MULTILATERAL AGREEMENTS AND BIODIVERSITY PROTOCOLS

24. Tuvalu is a signatory to international and regional agreements and conventions that are related to the environment. They include:
- Protocol to The International Convention for the Prevention of Pollution from Ships 1978
  - International Convention on Standards of Training, Certification and Watchkeeping For Seafarers 1978
  - International Plant Protection Convention 1979
  - United Nations Convention on The Law of The Sea 1983
  - Convention for The Protection of The Ozone Layer 1985
  - Convention for The Protection of The Natural Resources and Environment of The South Pacific Region 1987
  - Protocol for The Prevention of Pollution of The South Pacific Region by Dumping 1986
  - United Nations Framework Convention on Climate Change 1992
  - Convention on Persistent Organic Pollutants 2001
  - International Convention on The Control of Harmful Anti-Fouling Systems on Ships 2001
  - International Convention for The Control and Management of Ships' Ballast Water and Sediments 2004
  - Paris Agreement under the United Nations Framework Convention on Climate Change 2016.

## 2.4 UNDP SOCIAL AND ENVIRONMENTAL STANDARDS

25. UNDP's Social and Environmental Standards (SES) underpin the organisations commitment to mainstream social and environmental sustainability into its programs and projects. The SES are an integral component of UNDP's quality assurance and risk management approach to programming. The project will be following the updated SES Policy 2021. Further details on the UNDP SES are available on the UNDP website.
26. The UNDP SES have been applied during the development of the project and the SES Policy 2021 during the latest review the project. The SES objectives are to:
- strengthen the social and environmental outcomes of programmes and projects;
  - avoid adverse impacts to people and the environment;
  - minimize, mitigate, and manage adverse impacts where avoidance is not possible;
  - strengthen UNDP and partner capacities for managing social and environmental risks; and
  - ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people.
27. The project has been screened against the UNDP SES using the UNDP Social and Environmental Screening Procedure template. The screening indicated that the project would trigger most of the UNDP social and environmental standards (Table 1).



Table 1 Summary of UNDP Social and Environmental Standards triggered by the project and their requirements for the project

	Triggered	Requirements Relevant to Project	Relevant Tuvaluan Polices, Legislation, Regulations
<b>Programming Principles</b>			
Overarching Principle: Leave No One Behind	Yes	<ul style="list-style-type: none"> <li>Follow the rights-based approach to development, including the application of a gender perspective.</li> <li>Identify and include poor, vulnerable, excluded, and marginalised groups.</li> </ul>	<b>The Constitution of Tuvalu 2008</b> <b>National Human Rights Institution of Tuvalu Act 2017</b> - the purpose of this Act is to recognise, respect, protect and fulfil the dignity of humankind enshrined in the Constitution and international human rights law sustaining a foundation of a fair, just and sustainable and peaceful society.
Human Rights	No		
Gender Equality and Women's Empowerment	Yes	<ul style="list-style-type: none"> <li>Promotion of gender equality and the empowerment of women.</li> </ul>	<b>The Constitution of Tuvalu 2008</b> <b>Employment Act 2008</b> <b>Family Protection and Domestic Violence Act 2014</b> <b>National Human Rights Institution of Tuvalu Act 2017</b> <b>Leadership Code Act 2008</b>
Accountability	No	<ul style="list-style-type: none"> <li>Compliance with national law and obligations under international law, whichever is the higher standard.</li> </ul>	<b>The Constitution of Tuvalu 2008</b> <b>Falekaupule Act 2008</b>



		<ul style="list-style-type: none"> <li>• Enable active local community engagement and participation in decision-making, particularly those at risk of being left behind.</li> <li>• Transparency through provision of timely, accessible and functional information regarding supported activities, including on potential environmental and social risks and impacts and management measures.</li> <li>• Ensure stakeholders can communicate their concerns and have access to rights-compatible complaints redress processes and mechanisms.</li> <li>• Effective monitoring.</li> </ul>	<p><b>Leadership Code Act 2008</b></p> <p><b>Laws of Tuvalu Act 1987</b></p>
<p><b>Project Level Standards</b></p>			
<p>Standard 1. Biodiversity Conservation and Sustainable Natural Resource Management</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• Precautionary approach to be applied.</li> <li>• Risk identification and assessment: Identify and address direct and indirect impacts on natural resources, biodiversity, ecosystems and ecosystem services.</li> <li>• Use of experts.</li> <li>• Siting preference.</li> <li>• Modified habitats and natural habitats.</li> <li>• Risk reduction measures follow a mitigation hierarchy that favours avoidance of potential adverse impacts over minimization, mitigation where adverse residual impacts remain, and, as a last resort, application of offset and compensation measures.</li> <li>• Management of ecosystems services – avoid adverse impacts.</li> <li>• no adverse impacts on critical habitats.</li> </ul>	<p><b>Conservation Areas Act 2008</b> – provides for the declaration and management of conservation areas and related purposes.</p> <p><b>Environmental Protection 2008</b> – provides for the protection of the environment in Tuvalu and related purposes.</p> <p><b>Biosecurity Act 2017</b> – an Act to establish the biosecurity administration for the safe importation and monitoring of animals, plants and their products into Tuvalu.</p> <p><b>Wildlife Conservation Act 2008</b> – provides for the conservation of wildlife.</p>



		<ul style="list-style-type: none"> <li>• under no circumstances will species known to be invasive be introduced into new environments.</li> <li>• Avoid, and where avoidance is not possible, minimize adverse impacts on soils, their biodiversity, organic content, productivity, structure, water-retention capacity.</li> </ul>	
Standard 2. Climate Change and Disaster Risks	Yes	<ul style="list-style-type: none"> <li>• Climate change and disaster risk analysis, planning and implementation – assess for climate change and disaster risks and their impacts to project activities and outputs as well as the possibility that project activities could increase exposure to such risks.</li> </ul>	<p><b>Climate Change Resilience Act 2019</b> - to build the resilience of Tuvalu’s infrastructure, built environment and communities through effective adaptation and disaster preparedness actions; to manage Tuvalu’s natural resources, environment, ecosystems and biodiversity to promote their resilience to the impacts of climate change; to protect specific needs, taking into consideration special circumstances of Tuvalu and its vulnerability to the adverse effects of climate change; to promote and support Tuvalu’s islands, industries and communities to adjust to the changes and impacts arising from reducing greenhouse gas emissions across the economy; coordinating planning efforts on climate change adaptation initiatives.</p>
Standard 3. Community Health, Safety and Security	Yes	<ul style="list-style-type: none"> <li>• Protect communities from hazards caused and/or exacerbated by project activities (including flooding, landslides, contamination or other natural or human-made hazards), disease, and the accidental collapse or failure of project structural elements.</li> <li>• Assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of projects and establish preventive measures and plans to address</li> </ul>	<p><b>Public Health and Safety Regulations (Revised 1990)</b> - these regulations set out the required standards in and around villages for maintaining public health.</p> <p><b>Quarantine Act 1931</b> – measures for the inspection, exclusion, detention, observation, segregation, isolation, protection, treatment, sanitary regulation and disinfection of vessels,</p>



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	<p>them in a manner commensurate with the identified risks and impacts.</p> <ul style="list-style-type: none"> <li>- Avoid or minimize the potential for community exposure to health risks and diseases that could result from or be exacerbated by project activities.</li> <li>- Infrastructure design and safety to be in accordance with national legal requirements, good international practices, and any international obligations and standards.</li> <li>- For construction activities, ensure appropriate control of site access, use of appropriate personal protective equipment, safely designed work platforms, appropriate engineering and administrative controls, and safety barriers. Construction personnel will have appropriate qualifications and training.</li> <li>- Apply concept of universal access in the design and construction of facilities and services.</li> <li>- Avoid, or where avoidance is not possible, minimize potential community exposure to hazardous materials and substances that may be utilized in or released by project activities.</li> <li>- Be prepared for emergencies e.g. plans, training, equipment. and resources.</li> <li>- Avoid, mitigate, and manage the risks and potential adverse impacts on health and safety of communities arising from the influx of project-related workers.</li> <li>- Avoid, or where avoidance is not possible, minimize such adverse impacts and implement appropriate</li> </ul>	<p>persons, goods and things in order to prevent the introduction or spread of diseases or pests.</p> <p><b>Climate Change Resilience Act 2019</b> - contribute to the protection of the climate system for the benefit of present and future generations of humankind; to support vulnerable communities and populations and promote social justice and intergenerational equity on matters related to this Act; and to the greatest extent possible, guarantee the security of the people of Tuvalu from the impacts of climate change, to ensure their sustainability and to maintain national sovereignty.</p> <p><b>Employment Act 2008</b> – provides for workers’ rights and care.</p> <p><b>Emergencies and Threatened Emergencies (Special Powers) Act 2008</b></p>
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		<p>mitigation measures that aim to maintain the value and functionality of ecosystem services of relevance to local communities.</p> <ul style="list-style-type: none"> <li>• Emergency preparedness: ensure that all parties involved in the project are prepared to respond to accidental and emergency situations.</li> <li>• Risks associated with influx of workers.</li> <li>• Impacts on ecosystem services which may result in adverse health and safety risks to communities.</li> </ul>	
Standard 4. Cultural Heritage	No		
Standard 5. Displacement and Resettlement	No	<ul style="list-style-type: none"> <li>• Avoid, minimize, and mitigate physical and economic displacement.</li> </ul>	<p><b>Laws of Tuvalu Act 1987</b>– provides guidance for determination and recognition of customary law including on rights in, over or in connection with 'native land'.</p> <p><b>Tuvalu Land Code 2008</b></p>
Standard 6. Indigenous Peoples	No		
Standard 7. Labour and Working Conditions	Yes	<ul style="list-style-type: none"> <li>• Terms and conditions of employment – written labour management procedures. Workers to be advised of conditions of their employment.</li> <li>• Non-discrimination and equal opportunity.</li> <li>• Workers organizations – freedom of association and recognition of the right to collective bargaining</li> <li>• No forced or child labour.</li> </ul>	<p><b>Employment Act 2008</b></p> <ul style="list-style-type: none"> <li>- Part 2 establishes employment relationships, including written contracts, wages and conditions. Part 11 covers requirements for the care of workers.</li> <li>- Part 5 covers equal employment opportunities, while Part 6 deals with OHS.</li> </ul>





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		<ul style="list-style-type: none"> <li>Occupational health and safety - protect and promote the safety and health of workers.</li> <li>Workplace grievance mechanism (distinct from project-level grievance)</li> </ul>	<ul style="list-style-type: none"> <li>Part 3 deals with the employment of young persons and specifies no child labour. Part 4 prohibits the worst forms of child labour and forced labour.</li> <li>Part 7 gives the right to trade unions and employer organisations and Part 8 deals with collective bargaining. See also <b>Trade Unions Act 1946</b>.</li> <li>Part 9 covers workplace grievance and settlement of disputes. Also see Tuvalu Industrial Relations Code 2008.</li> </ul> <p><b>Workmen's Compensation Act 1949</b> – makes provision for compensation for injured workers.</p>
<p>Standard 8. Pollution Prevention and Resource Efficiency</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>Pollution prevention: avoid release of pollutants, where not avoidable, minimise and/or control intensity and mass flow of their release.</li> <li>Wastes: seek to avoid generation of waste, where not possible adopt waste management hierarchy (reduce, reuse, recycle).</li> <li>Hazardous materials: avoid or minimise and control release and exposure to hazardous materials.</li> <li>Resource efficiency: design and implement project in manner that promotes efficient use and consumption of resources.</li> </ul>	<p><b>Environmental Protection Act 2008</b> – Part 6 covers pollution control and waste management and resource efficiency. Part 7 deals with international and regional environmental obligations.</p> <p><b>Waste Management Act 2017</b> and <b>Waste Operations and Services Act 2009</b> – Acts for defining roles and responsibilities for waste management, including planning, and for the collection and disposal of solid wastes and other waste related operations.</p> <p><b>Marine Pollution Act 1992</b> – and Act to make provision for preventing and dealing with pollution of the sea, and to enable effect to be given to the international conventions for the prevention of marine pollution and protection of the marine environment.</p>





			<p><b>Petroleum Act</b> – regulates the importation, storage and sale of petroleum and provides for matters relating and incidental thereto.</p>
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## 2.4.1 Screening of New or Changed Project Elements

28. The UNDP SES and GCF Environmental and Social Safeguards (ESS) applies to all phases of the project, therefore, during project implementation, it may be necessary to screen any new or significantly modified sub-activities prior to implementation. Screening will be done against the UNDP SESP. Any activities that meet the criteria of the Exclusion List (below) will not be considered further.

### 2.4.1.1 Exclusion List

29. No activities considered potentially “high-risk” when screened using the UNDP SESP will be permitted.
30. In addition, project activities will be screened against the following “negative list” or “exclusion list”. The following sub-projects or activities will be deemed ineligible for the project if they:
- Involve significant conversion or degradation of natural habitats and/or may cause measurable adverse impacts to critical natural habitats;
  - Risk the introduction of alien and potentially invasive alien species;
  - May negatively affect endangered species;
  - Involve physical or economic displacement of people;
  - Could result in damage or loss to cultural heritage;
  - Do not meet minimum design standards with poor design or construction quality, particularly if located in vulnerable areas; or
  - Require or involve:
    - Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements;
    - Purchase, application or storage of harmful pesticides or hazardous materials;
    - Production or activities involving forced labour / harmful child labour;
    - Production or trade in wood or other forestry products from unmanaged forests; or
    - Trade in wildlife or wildlife products regulated under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

### 2.4.1.2 Screening process

31. This section sets out a process for screening sub-projects and associated elements during project implementation. Any sub-project and associated elements developed during the Project should be evaluated according to the screening process described below to determine the potential risk of associated environmental and social impacts, and associated mitigation options.

32. The process consists of the following steps:

- Step1: in developing Terms of Reference, new or amended activities shall be screened and categorized, with a decision made to proceed with further project formulation, or to “design out” potential adverse impacts, by modifying the proposal to ensure it remains within Moderate or Low risk categories and identify relevant safeguards instruments.

Sub-projects will be screened against Tuvalu Law as part of Step 1. Activities will be assessed against DoE requirements to determine whether an ESIA will be required.

- Step 2: Preparation of required safeguards instruments (ESIA &/or ESMP) including stakeholder consultations, as necessary.



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- Step 3: Review of prepared safeguards instruments as per Tuvalu law and UNDP/GCF safeguards policies; additional stakeholder consultations as deemed necessary.
- Step 4: Disclosure of approved instruments locally and on UNDP's website. In the case of moderate risk activities, the ESIA and/or ESMP will be disclosed at least 30 days in advance of the approval decision. The reports will be submitted to GCF and made available to public via electronic links in both UNDPs and the GCF's websites, as well as in locations convenient to affected peoples as per the requirements of UNDP and GCF Information Disclosure Policies and Section 7.1 of (Information Disclosure) of GCF Environmental and Social Policy.
- Step 5: Implementation – monitoring, reporting and remedial measures. Ongoing consultations and community engagement.



### 3 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENTS

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33. As noted in the previous section, the project has been screened against the UNDP SES and a number of moderate risks were identified using the UNDP SESP.
34. The areas identified to have moderate risk included:
- Stakeholder expectations and consultation
  - Impacts on terrestrial and marine habitats
  - Terrestrial and marine noise
  - Natural hazards (cyclones, storm surges and climate change)
  - Worker and community safety associated with construction and UXO
  - Potential for spills from vessels, machinery or fuel storage areas
  - Impacts from influx of workers
  - Changes to land use.
35. Other areas of risk include:
- Design of structures
  - Employment opportunities for women
  - Waste management
  - Material handling – stockpiles and laydown areas
  - Gender, social inclusion and gender-based violence
  - Community services and infrastructure
  - Community engagement.
36. The UNDP SES does not require a full ESIA to be prepared for projects of moderate risk, however, Tuvaluan law required the preparation of ESIA's for the Funafuti, Nanumea and Nanumaga works. Two ESIA's have been produced (one for the Funafuti works and one for the works on Nanumea and Nanamaga) to ensure integration of environmental and social stewardship into the project as required by Tuvalu's Environmental Protection (Environmental Impact Assessment) Amendment Regulations 2017 and to also fulfill the requirements of the Green Climate Fund's project approval process.
37. The ESIA's documented baseline conditions and assessed the potential impacts that the project could have based on the project proposal at that time. For details on the potential impacts refer to the two ESIA's.
38. Both ESIA's were submitted to the DoE for assessment and public disclosure. The Government of Tuvalu subsequently approved the proposed developments and issued development conditions, which included the preparation of C-ESMPs.
39. The ESIA's also contain recommended mitigation measures to manage impacts and identified a number of plans that should be prepared. A series of overarching environmental and social plans have already been developed, including:
- Environmental and Social Management Plan (this document)
  - Stakeholder Engagement Plan
  - Gender Strategy and Action Plan



40. This ESMP builds upon the recommendations of the ESIA's develops them into a set of management and mitigation strategies that can be applied across the various project activities and which will assist in developing sub-plans.

41. The following sub-plans are also as required:

- C-ESMPs
- Dredge Management Plan and Sampling and Analysis Plan
- Dredge Fill and Operation Plan
- Waste Management Plan
- Emergency and Spill Response Plan
- UXO/ERW Plan
- Erosion Drainage and Sediment Control Plan
- Code of Conduct



## 4 ENVIRONMENTAL AND SOCIAL MANAGEMENT STRATEGIES

42. This section identifies the key environmental and social indicators identified for the project and outlines respective management objectives, potential impacts, and management strategies.
43. This section further addresses the need for monitoring and reporting of environmental performance with the aim of communicating the success and failures of control procedures, distinguish issues that require rectification and identify measures that will allow continuous improvement in the processes by which the projects are managed.
44. Environmental and social strategies have been devised to mitigate potential impacts during delivery of the project in the following areas:
  - Ecology (FF)
  - Groundwater (GW)
  - Surface Water (SW)
  - Air Quality (AQ)
  - Noise and Vibration (NV)
  - Erosion, Drainage and Sediment Control (EC)
  - Waste Management (WM)
  - Unexploded Ordinance (UXO)
  - Social Management (SM)
  - Archaeology and Cultural Heritage (CH)
  - Emergency Response (ER).

### 4.1 ECOLOGY

#### 4.1.1 Background

##### 4.1.1.1 Terrestrial

45. Of the approximately 200 plants species recorded in Tuvalu, it is estimated about 50 are indigenous. Most of the exotic species are ornamental, food plants or weeds. There are no endemic plant species unique to Tuvalu, and almost all the indigenous plants are widespread, easily dispersed pantropical, Indo-Pacific, or pan-Pacific coastal species that are adaptable to environments with loose shifting sands, high salinity, strong sunlight, periods of drought, and poor soil development.
46. There are no indigenous land mammals, amphibians, or freshwater fishes in Tuvalu. There are a number of terrestrial reptiles, all lizards, one of which is Tuvalu's only recorded endemic vertebrate, the Tuvalu Forest Gecko (*Lepidodactylus tepukapili*), which is found on Tepuka Islet, Funafuti (NBSAP, 2016).<sup>2</sup> Of particular importance are 28 species of indigenous birds, approximately 20 of which are sea birds, and a few are migratory species<sup>3</sup>.
47. Notable terrestrial invertebrates are land and shore crabs including Paikea (*Cardisoma rotundum*), Tupa (*Cardisoma carniflex*), kamakama (*Grapsus albolineatus*), a range of hermit crabs, uga (*Coenobita spp*) and the coconut crab, uu (*Birgus latro*). Seven of the crab species are reported to be eaten in Tuvalu with most of the smaller crabs being used as fish bait and bait for bird traps (NBSAP

<sup>2</sup> Tuvalu 5<sup>th</sup> National Biodiversity Strategy and Action Plan, Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour, 2016

<sup>3</sup> Watling, D. 1998. Funafuti Marine Conservation Area, Tuvalu. Report of the bird survey. Environmental Consultants Fiji, Suva



5). Also important are a range of land snails, *Melampus spp*) used to make shell leis (ula) and handicrafts.

48. There are a number of pest species, both animals and plants, that occur in Tuvalu, including pigs, kou leafworm, yellow crazy ants, coconut scale insect, pink mealybug, black mirid garden flea hoppers, aphids, delphacid planthopper, fruit flies, and Wedelia or trailing daisy.

#### 4.1.1.2 Marine

49. The current IUCN Red List database indicates that for Tuvalu there are a total number of 1023 of animal species listed, including those that are endangered, vulnerable and near threatened. A large proportion of those species are lower risk/least concern and/or data deficient. These include several species of sharks and rays, sea snakes, whales, marine turtles, and corals from at least 12 families.
50. The living reef systems and reef flats around the islands of Tuvalu produce the sand that is on the islands. Coral cover and species density vary from location to location. For coral species, reef surveys undertaken for the WB MCIRO project show that, only three families of coral were identified: Merulinidae (one *Favites Sp.*), Pocilloporidae (two *Pocilloporal Spp.*) and Poritidae (one *Poritites Sp.*). In the IUCN Red List species-specific information for the south-west pacific marine region, all *Favites Spp.*, *Pocilloporal Spp.*, and *Poritites Spp.* are listed as vulnerable. In the project survey Site No. 146 recorded 3 of these 4 vulnerable species and Site No. 145 recorded the remaining one. Most corals in the south-west pacific are listed as vulnerable or higher on the IUCN Red List.
51. Tuvalu has recorded 607 species of fish in its waters, with the commonly calculated Coral Fish Diversity Index (CFDI) bringing the estimated number of fish for Tuvalu to 711 species. A comparison between Tuvalu's CFDI and comparable Indo-Pacific locations shows that Tuvalu's fish diversity is close to the upper third of the regional estimates.

#### 4.1.1.3 Invasive Seaweed

52. The rapid spread of a non-native brown seaweed (*Sargassum polycystum*) in Fogafale lagoon, beginning in 2011, is a major concern with its dense coverage reducing sunlight and outcompeting corals and making fishing difficult. It is suspected that the seaweed was brought via international shipping (through ballast waters, hulls, or anchors), possibly from Wallis and Futuna where it is present.

#### 4.1.2 Performance Criteria

53. The following performance criteria are set for the construction of the projects:
- no clearance of vegetation outside of the designated clearing boundaries;
  - no death to native fauna as a result of clearing activities;
  - no deleterious impacts on aquatic environments and terrestrial habitats;
  - no introduction of new weed species as a result of construction activities; and
  - no increase in existing weed proliferation within or outside of any project footprint as a result of construction activities.

#### 4.1.3 Monitoring

54. A flora and fauna monitoring program will be implemented (see Table 2).
55. Weed monitoring will be undertaken and appropriate action taken in the event of alien or noxious species being identified.
56. The delivery organisation/contractor will, when undertaking works, compile a weekly report to TCAP outlining:
- any non-conformances to this ESMP;



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- the areas that have been rehabilitated during the preceding week; and
- details of the corrective action undertaken.

#### 4.1.4 Reporting

57. All flora and fauna monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The TCAP and DoE must be notified in the event of any suspected instances of death to native fauna and where vegetation is detrimentally impacted.





Table 2 Flora and Fauna Management Measures

Issue	Control Activity (and Source)	Action Timing	Responsibility	Monitoring and Reporting
FF1. Habitat loss and disturbance of fauna	FF1.1: Limit vegetation clearing and minimise habitat disturbance through adequate protection and management of retained vegetation.	During construction	Contractor	Maintain records
	FF1.2: Minimise noise levels and lighting intrusion throughout construction and operation in the vicinity of any sensitive locations.	During construction	Contractor	Daily and maintain records
	FF1.3: Ensure that all site personnel are made aware of sensitive fauna/habitat areas and the requirements for the protection of these areas.	During construction	Contractor	Daily and maintain records
	FF1.4: Minimise disturbance to on-site fauna and recover and rescue any injured or orphaned fauna during construction and operation.	During construction	Contractor	Maintain records, Report
FF2. Introduced flora and weed species	FF2.1: Implement an ESCP to reduce the spread of weeds through erosion and sediment entering any waterways and therefore spreading.	Pre and during construction	Contractor	Maintain records
	FF2.2: Revegetate disturbed areas using native and locally endemic species that have high habitat value.	During construction	Contractor	As required and maintain records
	FF2.3: Minimise disturbance to mature remnant vegetation, particularly canopy trees.	During construction	Contractor	Maintain records
	FF2.4: Seed is to be weed free.	Operation	Contractor	Maintain records
	FF2.5: Environmental weeds and noxious weeds within the project footprints shall be controlled.	During and post construction	Contractor	Weekly and maintain records



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## 4.2 GROUNDWATER

### 4.2.1 Background

58. Limited groundwater is available on all the islands. The majority of islands have wells, some wells are just holes dug down to the groundwater lens and are not protected from contamination and pollution. However, within the villages most wells are protected by coral stone walls, capped, and provided with hand pumps (diaphragm type) with latrines often adjacent. Water quality is often poor.
59. Well water is now seldom used for drinking and it has been observed that during periods of low rainfall the quality can deteriorate and become more saline. Groundwater is used for domestic needs in the outer islands as an emergency supply in times of drought. Over-extraction in 1999 and 2000 resulted in groundwater becoming brackish/salty, the water level dropped with serious consequences for the vegetation as witnessed in Vaitupu.
60. On many of the islands, groundwater is available under the villages, which is probably why the villages were originally settled in that location. However, because of the extensive use of pit latrines and septic tanks the water is contaminated, and its use can lead to disease. On Funafuti groundwater is only used for feeding pigs, washing pig pens, and flushing toilets. During droughts its use extends to washing clothes, bathing, and flushing toilets.

### 5.3.1 Performance Criteria

61. The following performance criteria are set for the project:
  - no significant decrease in the quality and quantity of groundwater as a result of construction and operational activities in proximity to the projects; and
  - effective implementation of site-specific Erosion, Drainage and Sediment Control Management Plans (EDSCPs) and other measures to protect groundwater.
62. By following the management measures set out in the ESMP the project will not have a significant impact on water quality across the broader area.

### 4.2.2 Monitoring

63. Refer to Table 3 for the requirements for groundwater.

### 4.2.3 Reporting

64. All incidents will be tabulated and reported as outlined in the ESMP. The DoE and TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.



Table 3 Groundwater management measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
GW 1: Increase of gross pollutants, hydrocarbons, metals, and other chemical pollutants into the groundwater.	GW1.1: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage.	Construction and operation phase	DoE/Contractor	Keep records
	GW1.2: Undertake refuelling at designated places away from water systems.	All phases	All personnel	Report any spills
	GW1.3: Check all vehicles, equipment and material storage areas daily for possible fuel, oil and chemical leaks.	All phases	All Personnel	Weekly
	GW1.4: Minimise the use of herbicides, pesticides and other chemicals and use only biodegradable herbicides that have minimal impact on water quality and fauna. Use only as per directions.	All phases	All Personnel	Maintain records



## 4.3 SURFACE WATER

### 4.3.1 Background

65. Output 2 of the Project involves improving the understanding of marine flooding hazard at a National level and will implement appropriate coastal works to reduce the threat of marine hazards on Fogafale's lagoon shore and on Nanumaga and Nanumea's village oceanside shore.
66. Central Fogafale's nearshore lagoon area has been subject to profound engineering changes since WWII when most of this shoreline was subject to reclamation and dredging and destruction of natural longshore sedimentary processes. Today this shore is a patchwork of ad hoc seawalls and areas of erosion and overall, the shore is unstable and flood prone and greatly changed from its original pre-WWII state. Over time, the gradual urbanisation of Fogafale (the National Capital) has led to intense overfishing, continual physical disturbance of remnant reefs and near shore areas and inevitable nearshore water quality degradation (eutrophication) evidenced by dense thickets of macroalgae which now grow routinely in shallow areas. Such macroalgae is a direct indication of artificial nutrient enrichment in what are otherwise strictly oligotrophic systems. The recent JICA Pilot Gravel Beach Nourishment Project (2012 – 2014) took nearshore lagoon water samples and found the concentrations of inorganic nitrogen (NH<sub>4</sub>) and inorganic phosphorus (PO<sub>4</sub>) exceeded likely thresholds for eutrophication on coral reefs and that live coral cover is now very low. They found ongoing poor water quality to be the main cause.
67. Coastal protection infrastructure can result in the movement of fine silt or sediment into the marine environment. In the case of Fogafale, none of the coastal protection infrastructure will be constructed in protected or pristine environments so deleterious impacts are not expected. However, at all locations ambient water quality parameters must be determined and appropriate standards and mitigation measures implemented to protect the environment from any potential harmful impacts.
68. TCAP does not plan to build any foreshore infrastructure in pristine environments where functional sedimentary systems maintain shoreline integrity. This is particularly the situation on Nanumea and Nanumaga and interventions will be designed not to disturb functional longshore sedimentary systems.
69. The construction of coastal protection infrastructure can result in changes to small and medium scale hydrodynamic processes. This is already the case in Fogafale which has a greatly changed and disturbed foreshore system. TCAP infrastructure in Fogafale is in fact expected to reduce this pre-existing problem in the Central Fogafale nearshore lagoon environment as the planned reclamation will reinstate a single, higher energy foreshore environment and reduce the number of artificially built, quiet pockets along this shore which can potentially lead to the deposition of fines and organic matter and aggravate water quality issues.
70. On the outer islands works are expected to be concentrated above the intertidal zone and thus they will not interact with normal or daily hydrodynamic regimes.
71. In one area on Nanumea it is likely a foreshore seawall will be reinstated over the footprint of an existing wall damaged during TC Pam (the church compound). However, this is the upper intertidal zone and the neighbouring soft shore processes have long since adjusted to the presence of a wall in this location. Thus, reinstating the wall with a well designed and built structure under TCAP is not expected to cause any new problems or change on this shore. In fact, failure to rebuild the old broken wall will result in this broader shoreline area gradually readjusting to its former pre-wall position of over 60 years ago and consequently a number of property's and homes will be lost, let alone those on the church compound.

### 4.3.2 Performance Criteria

72. The following performance criteria are set for the construction of the projects:
  - no significant decrease in water quality as a result of construction and operational activities;



- no significant decrease in water quality as a result of dredging activities;
- water quality shall conform to any approval conditions stipulated by DoE and/or other government departments, or in the absence of such conditions follow a 'no worsening' methodology; and
- effective implementation of site-specific EDSCPs.

#### 4.3.3 Monitoring

73. A water quality monitoring program will be developed as part of the C-ESMP. The Site Supervisor will be required to conduct a daily visual inspection turbidity within or adjacent to their work area as a part of the daily site inspection checklist. Refer to Table 4 for the requirements for surface water.

#### 4.3.4 Reporting

74. All water quality monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The DoE and TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.



Table 4 Water Quality Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
SW1: Elevated suspended solids and other contaminants in surface water systems.	SW1.1: Develop and implement a site-specific Erosion, Drainage and Sediment Control Plan (EDSCP) to address drainage control, sediment and erosion controls and stockpiling of materials including soil during construction of all components of the projects.	Pre-Earthworks	Contractor	Initial set up and then as required with reporting to DoE and TCAP
	SW1.2: EDSCP measures to be inspected regularly to ensure all devices are functioning effectively.	Construction	Site Supervisor	Weekly and maintain records
	SW1.3: Designated areas for storage of fuels, oils, chemicals, or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	Entire construction and operation phase	All Personnel	Weekly with reporting to DoE and TCAP
	SW1.4: Schedule works in stages to ensure that disturbed areas are revegetated and stabilised progressively and as soon as practicable after completion of works.	Avoid undertaking bulk earthworks during wet season	Contractor	Maintain records
	SW1.5: Construction materials will not be stockpiled in proximity to aquatic environment that may allow for release into the environment. Construction equipment will be removed from in proximity to the aquatic environment at the end of each working day or if heavy rainfall is predicted	Entire construction and operation phase	Contractor	Maintain daily records
	SW1.6: Appropriate spill response plan in place.	Pre-construction / Construction	Contractor	Maintain record
	SW.1.7: Laydown areas established on pre-approved sites (as per C-ESMPs).	Pre-construction	Contractor	Maintain record



## 4.4 AIR QUALITY

### 4.4.1 Background

75. As a small island nation, air quality in Tuvalu is generally good. The project areas are predominantly village in character. Existing air quality reflects those environments, with localised dust, vehicle emission and smoke being the main air quality nuisances.
76. All construction activities have the potential to cause air quality nuisance.
77. Workers involved in construction and operation activities should be familiar with methods minimising the impacts of deleterious air quality and alternative construction procedures as contained in Tuvalu legislation or good international industry practice.

### 4.4.2 Performance Criteria

78. The following performance criteria are set for the construction of the projects:
  - release of dust/particle matter must not cause an environmental nuisance;
  - undertake measures to assist in minimising the air quality impacts associated with construction and operation activities; and
  - corrective action to respond to complaints and/or grievances is to occur within 48 hours.

### 4.4.3 Monitoring

79. Mitigation and management strategies for air quality have been developed (Table 5). Importantly:
  - the requirement for dust suppression will be visually observed by site personnel daily and by DoE and TCAP staff when undertaking routine site inspections; and
  - Vehicles and machinery emissions – visual monitoring and measured when deemed excessive.

### 4.4.4 Reporting

80. All air quality monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The DoE and TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to air quality is exceeded.



Table 5 Air Quality Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
AQ.1 Increase in dust levels at sensitive receptors	AQ1.1: Implement effective dust management measures in all areas during construction.	Pre and during construction	Contractor	Daily and maintain records
	AQ1.2: Restrict speeds on roads and access tracks.	During construction	Contractor	Daily and maintain records
	AQ1.3: Manage dust/particulate matter generating activities to ensure that emissions do not cause an environmental nuisance at any sensitive locations.	During construction	Contractor	Daily and maintain records
	AQ1.4: Construction activities should minimise risks associated with climatic events (check forecasts).	During construction	Contractor	Daily and maintain records
	AQ1.5: Implement scheduling/staging of proposed works to ensure major vegetation disturbance and earthworks are minimised.	Entire construction	Contractor	Daily and maintain records
	AQ1.6: Locate material stockpile areas as far as practicable from sensitive receptors. Cover if appropriate.	During construction	Contractor	Daily and maintain records
	AQ1.7: Source sufficient water of a suitable quality for dust suppression activities complying with any water restrictions.	During construction	Contractor	Daily and maintain records
	AQ1.8: Schedule revegetation activities to ensure optimum survival of vegetation species.	During construction	Contractor	Maintain records
	AQ1.9: Rubbish receptacles should be covered and located as far as practicable from sensitive locations.	During construction	Contractor	Maintain records





Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
AQ2. Increase in vehicle / machinery emissions	AQ2.1: Ensure vehicles/machines are switched off when not in use.	During construction	Contractor	Daily and maintain records
	AQ2.2: Ensure only vehicles required to undertake works are operated onsite.	During construction	Contractor	Daily and maintain records
	AQ2.3: Ensure all construction vehicles, plant and machinery are maintained and operated in accordance with design standards and specifications.	During construction	Contractor	Daily and maintain records
	AQ2.4: Develop and implement an induction program for all site personnel, which includes as a minimum an outline of the minimum requirements for environmental management relating to the site.	Pre and during construction	Contractor	Daily and maintain records
	AQ2.5: Locate construction vehicle/plant/equipment storage areas as far as practicable from sensitive locations.	During construction	Contractor	Daily and maintain records
	AQ2.6: Direct exhaust emissions of mobile plant away from the ground.	During construction	Contractor	Daily and maintain records



## 4.5 NOISE AND VIBRATION

### 4.5.1 Background

81. Tuvalu does not have any heavy industry and although some areas are densely urbanised, environmental noise is relatively low. However, the low topography and large expanses of water means that noise is readily transmitted across large distances. Sources of noise include aircraft (limited flights), motor vehicles, ships and boats utilising the lagoons, generators and heavy machinery and general urban noise.
82. All construction and operation activities have the potential to cause noise nuisance. Blasting is not required to be undertaken as part of this project.
83. The use of machinery or introduction of noise generating facilities could have an adverse effect on the environment and residents if not appropriately managed.
84. Contractors involved in construction activities should be familiar with methods of controlling noisy machines and alternative construction procedures as contained within specific Tuvalu legislation or in its absence, good international industry practice may be used if the legislation has not been enacted.

### 4.5.2 Performance Criteria

85. The following performance criteria are set for the construction of the projects:
  - noise from construction and operational activities must not cause an environmental nuisance at any noise sensitive place;
  - always undertake measures to assist in minimising the noise associated with construction activities;
  - no damage to off-site property caused by vibration from construction and operation activities; and
  - corrective action to respond to complaints and/or grievances is to occur within 48 hours.

### 4.5.3 Monitoring

86. Monitoring and reporting requirements for noise and vibration are noted in Table 6. The program is subject to review and update at least every two months from the date of issue. Importantly, contractor will:
  - ensure equipment and machinery is regularly maintained and appropriately operated; and
  - carry out potentially noisy construction activities during 'daytime' hours only.

### 4.5.4 Reporting

87. All noise monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to noise is exceeded.



Table 6 Noise and Vibration Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
NV1: Increased noise levels	NV1.1: Select plant and equipment and specific design work practices to ensure that noise emissions are minimised during construction and operation including all pumping equipment.	All phases	Contractor	Maintain records
	NV1.2: Specific noise reduction devices such as silencers and mufflers shall be installed as appropriate to site plant and equipment.	Pre and during construction	Contractor	Maintain records
	NV1.3: Minimise the need for and limit the emissions as far as practicable if noise generating construction works are to be carried out outside of the hours: 7am-5.30pm.	Construction phase	All Personnel	Daily and maintain records
	NV1.4: Consultation with nearby residents in advance of construction activities particularly if noise generating construction activities are to be carried out outside of 'daytime' hours: 7am-5.30pm.	Construction phase	All Personnel	Daily and maintain records
	NV1.5: Provide temporary construction noise barriers in the form of solid hoardings where there may be an impact on specific residents.	Construction phase	Contractor	Daily and maintain records
	NV1.6: All incidents, complaints and non-compliances related to noise shall be reported in accordance with the site incident reporting procedures and summarised in the register.	Construction phase	Contractor/TCAP	Maintain records



NV1.7: The contractor should conduct employee and operator training to improve awareness of the need to minimise excessive noise in work practices through implementation of measures.

Pre and during construction

Contractor

Maintain records



## 4.6 EROSION, DRAINAGE AND SEDIMENT CONTROL

### 4.6.1 Background

#### 4.6.1.1 Topography, geology, and soils

88. The islands of Tuvalu are very low lying with an average height of 2 m above sea level. Like other coral atolls and islands, the soil is derived from limestone that has been formed because of coral formation over thousands of years. Tuvalu is geologically very young, with most of its islands having poorly developed sandy or gravel coastline soils.
89. The atoll soils of Tuvalu are young, shallow, and alkaline like the original core limestone parent material. They range from 250mm to 1m in depth and consist of a variable layer of organic material, coral sand, and rock fragments overlaying a limestone platform. The chemical structure of the soils makes the scarce trace elements of iron, manganese, copper, and zinc unavailable to plants. Activity of soil microorganisms is limited, soil water holding capacity is low, and the groundwater is often saline.
90. Acid Sulphate Soils (ASS) are commonly associated with continental tropical / sub-tropical wetlands which have large nearshore wetland areas with an abundance of organic matter, comparatively iron-rich soils, and potential for extensive anoxic soil / clay layers.
91. Atoll soils have none of these features and ASS are yet unrecorded in atoll system foreshores. Atoll soils are widely understood to be free draining, permeable and well aeriated with limited organic matter, no clay content and generally low nutrient status. Furthermore, key micronutrient mobility or availability (in this case the necessity of abundant iron required to form ASS) is widely understood and reported to be low in atoll carbonate soil's which also have naturally high pH. Therefore, ASS are not relevant in the context of this Project.
92. Soil erosion depends on several parameters such as type of soil, slope, vegetation, the nature of topography and rainfall intensity. The loss of soil stability and soil erosion can take place due to the removal of vegetation cover, and numerous construction activities. It can cause the loss of soil fertility and induce slope instability. Land preparation for the project could result in blockage or alteration of natural flow paths causing changes in the drainage patterns in the area. Effective and efficient mitigation measures can not only reduce but could improve the conditions over the existing conditions.
93. Rainfall can have a significant impact on the ability to manage environmental impacts, particularly in terms of managing drainage, erosion, and sedimentation. Therefore, activities that involve significant disturbance of soil or operating with drainage lines and waterways should be planned to be undertaken during the driest months. It is also important to ensure that all required erosion and sediment control mechanisms are in place before the onset of the wet season.
94. Activities that have the potential to cause erosion should be undertaken with the likely weather conditions in mind.

#### 4.6.1.2 Marine Sediments

95. For the works at Funafuti, dredging of marine sediments will be required. Gibb (1985)<sup>4</sup> conducted a study to determine presence and qualities of reclamation materials in the Funafuti Lagoon. The study concluded that "for use as general land reclamation material, a medium to fine calcareous sand deposit varying in thickness to 25 m and generally in depths of water wherein excavation by dredging is practicable (2-4 m thick) blankets virtually the whole lagoon bed in water over 10 m deep". Smith (1995)<sup>5</sup> conducted a detailed study in the lagoon adjacent to Fongafale islet to map in detail the

<sup>4</sup> Gibb, A (1985), Tuvalu Lagoon Bed Resources Survey Report. Australian Development Assistance Bureau (Volume 1-2).

<sup>5</sup> Smith, R (1995), Assessment of Lagoon Sand and Aggregate Resources Funafuti Atoll, Tuvalu. SOPAC Technical Report 212.



quantities and qualities of sediment available for reclamation purposes in this area of the lagoon. The study incorporated and built upon previous data collected by Gibb (1985).

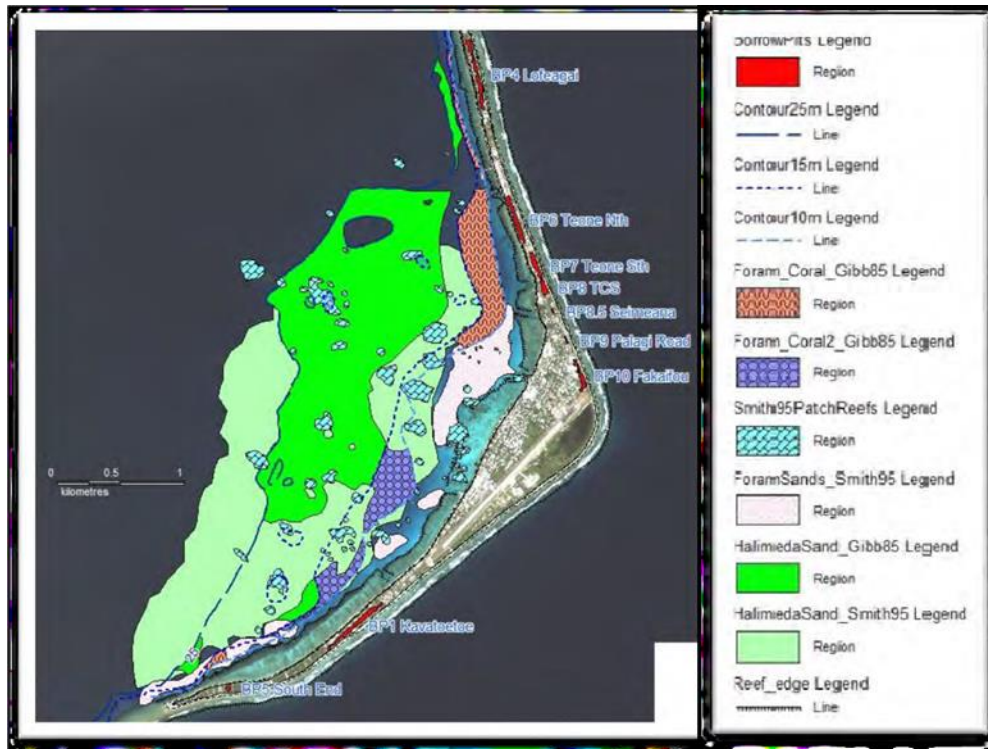


Figure 1 Lagoon sediments available near Fogafale islet as mapped by Gibb (1985) and Smith (1995). Source: Tuvalu Borrow Pits ESIA

96. The sediment is typically characterised as Halimeda-rich gravelly sand and sandy gravel, with occasional localised areas of foraminifera-rich sand. The sediment typically contains only traces of silt, which is a favourable characteristic in terms of reducing the potential for turbidity and sedimentation associated with dredging.

#### 4.6.2 Performance Criteria

97. The following performance criteria are set for the projects:

- no build-up of sediment in the aquatic environments and/or surface and/or groundwater as a result of construction and operation activities;
- no degradation of water quality on or off site of all projects;
- all water exiting the project site and/or into groundwater systems is to have passed through best practice erosion, drainage and sediment controls; and
- effective implementation of site-specific EDSCP.

98. By following the management measures set out in the ESMP, construction and operation activities of the projects will not have a significant impact as a result of sedimentation across the broader area.

#### 4.6.3 Monitoring

99. Sediment control monitoring should be as per Table 7. The program is subject to review and update at least every two months from the date of issue. The Contractor will be required to:



- conduct site inspections on a weekly basis or after rainfall events exceeding 20 mm in a 24-hour period;
- develop a site-specific checklist to document non-conformances to this ESMP or any applicable EDSCPs; and
- communicate the results of inspections and/or water quality testing and ensure that any issues associated with control failures are rapidly rectified and processes are put in place to ensure that similar failures are not repeated.

#### 4.6.4 Reporting

100. All sediment and erosion control monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The DoE and TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to erosion and sediment control is exceeded.





Table 7 Erosion, Drainage and Sediment Control Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
EC1: Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	EC1.1: Develop and implement an EDSCP for any surface works, embankments and excavation work, water crossings and stormwater pathways.	Construction phase	Contractor	Maintain records
	EC1.2: Ensure that erosion and sediment control devices are installed, inspected, and maintained as required.	Construction phase	Contractor	Maintain records
	EC1.3: Schedule / work staging to minimise cleared areas and exposed soils at all times.	Pre and during construction	Contractor	Maintain records
	EC1.4: Incorporate the design and location of temporary and permanent EDSC measures for all exposed areas and drainage lines. These shall be implemented prior to pre-construction activities and shall remain onsite during work.	Pre and during construction	Contractor	Maintain records
	EC1.5: Schedule/stage proposed works to ensure that major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds.	Pre and during construction	Contractor	Maintain records
	EC1.6: Ensure any stockpile sites are appropriately bunded or fenced to prevent sediment runoff.	Pre and during construction	Contractor	Maintain records
	EC1.7: Schedule/stage works to minimise the duration of stockpiling topsoil material. Vegetate stockpiles if storage required for long periods.	During construction	All Personnel	Maintain records
	EC1.8: Locate stockpile areas away from drainage pathways, waterways, and sensitive locations. Consultation with Kaupule undertaken in finalizing location of stockpile and laydown sites.	Pre and during construction	Contractor	Maintain records





Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
<p>EC1: Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities</p>	<p>EC1.9: Design stormwater management measures to reduce flow velocities and avoid concentrating runoff.</p>	<p>Pre and during construction</p>	<p>Contractor</p>	<p>Maintain records</p>
	<p>EC1.10: Include check dams in drainage lines where necessary to reduce flow velocities and provide some filtration of sediment. Regularly inspect and maintain check dams.</p>	<p>Pre and during construction</p>	<p>Contractor</p>	<p>Maintain records</p>
	<p>EC1.11: Mulching shall be used as a form of erosion and sediment control and where used on any slopes (dependent on-site selection), include extra sediment fencing during high rainfall.</p>	<p>During construction</p>	<p>All Personnel</p>	<p>Maintain records</p>
	<p>EC1.12: Bunding shall be used either within watercourses or around sensitive/dangerous goods as necessary.</p>	<p>During construction</p>	<p>All Personnel</p>	<p>Maintain records</p>
	<p>EC1.13: Vegetated buffer strips around sites will be retained.</p>	<p>During construction</p>	<p>Site Supervisor</p>	<p>Maintain records</p>
	<p>EC1.14: Silt fences or similar structures to be installed to protect from increased sediment loads.</p>	<p>During construction</p>	<p>Contractors</p>	<p>Maintain records</p>
	<p>EC1.15: Excess sediment in all erosion and sediment control structures (e.g. sediment basins, check dams) shall be removed when necessary to allow for adequate holding capacity.</p>	<p>During construction</p>	<p>Contractors</p>	<p>Maintain records</p>
<p>EC2: Soil Contamination</p>	<p>EC2.1: If contamination is uncovered or suspected, undertake a Stage 1 preliminary site contamination investigation. The contractor should cease work if previously unidentified contamination is encountered and activate management procedures and obtain advice/permits/approval (as required).</p>	<p>Construction phase</p>	<p>All Personnel</p>	<p>Daily and maintain records</p>



Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
EC2: Soil Contamination	EC2.2: Adherence to best practice for the removal and disposal of contaminated soil/ material from site (if required), including contaminated soil within the project footprints.	Construction phase	Contractor	Daily and maintain records
	EC2.3: Drainage control measures to ensure runoff does not contact contaminated areas (including contaminated material within the project footprints) and is directed/diverted to stable areas for release.	Construction phase	Contractor	Daily and maintain records
	EC2.4: Avoid importing fill that may result in site contamination and lacks accompanying certification/documentation. Where fill is not available through on-site cut, it must be tested in accordance with geotechnical specifications.	Construction phase	Contractor	Daily and maintain records
	EC2.5: Vehicle washdown and concrete protection areas will be at the laydown site and will be bunded with all wastewater collected and treated prior to discharge.	Construction	Contractor	Maintain records
	EC2.6: UXO – refer to Section 4.8 for management requirements for UXO.	Pre-construction and construction	Contractor	Maintain records



## 4.7 WASTE MANAGEMENT

### 4.7.1 Background

101. As one of the implementing agencies, the DoE advocate good waste management practice. The preferred waste management hierarchy and principles for achieving good waste management is as follows:

- a. waste avoidance (avoid using unnecessary material on the projects);
- b. waste re-use (re-use material and reduce disposing);
- c. waste recycling (recycle material such as cans, bottles, etc.); and
- d. waste disposal (all putrescible and/or contaminated waste to be dumped at approved landfills).

102. The key waste streams generated during construction are likely to include residual sediment and construction wastes such as:

- the excavation wastes unsuitable for reuse during earthworks;
- wastes from construction equipment maintenance. Various heavy vehicles and construction equipment will be utilised for the duration of the construction phase. Liquid hazardous wastes from cleaning, repairing and maintenance of this equipment may be generated. Likewise, leakage or spillage of fuels/oils within the site needs to be managed and disposed of appropriately;
- non-hazardous liquid wastes will be generated through the use of workers' facilities such as toilets; and
- general wastes including scrap materials and biodegradable wastes.

### 4.7.2 Performance Criteria

103. The following performance criteria are set for the construction of the projects:

- waste generation is minimised through the implementation of the waste hierarchy (avoidance, reduce, reuse, recycle);
- no litter will be observed within the project area or surrounds as a result of activities by site personnel;
- no complaints received regarding waste generation and management;
- any waste from on-site portable sanitary facilities will be sent off-site for disposal by a waste licensed contractor; and
- waste oils will be collected and disposed or recycled off-site.

### 4.7.3 Monitoring

104. A waste management monitoring has been recommended (Table 8) additional requirements may be imposed by DoE following review of C-ESMPs. The program is subject to review and update at least every six months from the date of issue.

### 4.7.4 Reporting

105. The DoE and TCAP must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to waste is exceeded.



Table 8 Waste Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
WW1: Production of wastes and excessive use of resources	WW1.1: Preference shall be given to materials that can be used to construct the project that would reduce the direct and indirect waste generated.	Pre and during construction	Contractor	Maintain records
	WW1.2: Daily waste practices shall be carried out unless these are delegated to the activities of external waste management bodies.	During construction	Contractor	Daily and maintain records
	WW1.3: The use of construction materials shall be optimised and where possible a recycling policy adopted.	During construction	Contractor	Weekly and maintain records
	WW1.4: Separate waste streams shall always be maintained i.e. general domestic waste, construction, and contaminated waste. Specific areas on site shall be designated for the temporary management of the various waste streams.	During construction	Contractor	Weekly and maintain records
	WW1.5: Contractor will consult with GoT Department of Waste Management on export of hazardous substances.	During construction	Contractor	Weekly and maintain records
	WW1.6: Recyclable waste (including oil and some construction waste) shall be collected separately and disposed of correctly.	During construction	Contractor	Weekly and maintain records
	WW1.7: Waste sites shall be sufficiently covered to ensure that wildlife does not have access.	During construction	Contractor	Daily
	WW1.8: Disposal of waste shall be carried out in accordance with the Government of Tuvalu requirements.	During construction	Contractor	Weekly and maintain records
	WW1.9: Fuel and lubricant leakages from vehicles and plant shall be immediately rectified.	During construction	Contractor	Daily and maintain records



Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
WW1: Production of wastes and excessive use of resources	WW1.10: Major maintenance and repairs shall be carried out off-site whenever practicable.	During construction	Contractor	Weekly and maintain records
	WW1.11: Where possible, fuel and chemical storage and handling shall be undertaken at central fuel and chemical storage facilities, such as petrol stations.	During Construction	Contractor	Daily and maintain records
	WW1.12: On-site storage of fuel and chemicals shall be kept to a minimum.	During Construction	Contractor	Daily, maintain records and report any incidents
	WW1.13: All Project staff will be trained on these requirements and attendance will be recorded.	All phases	Contractor / TCAP	Maintain records



## 4.8 UNEXPLODED ORDNANCE

### 4.8.1 Background

106. Smith (2015a)<sup>6</sup> conducted a magnetic survey in potential borrow areas in the lagoon to identify the potential risks posed by unexploded ordnance (UXO) or Explosive Remnant of War (ERW). An area identified as ‘Borrow Area 9 and 10’ returned numerous, but low intensity, anomalies. Anomaly sizes suggest small targets, mostly buried by a superficial layer of sediment. As this area was the designated seaplane base during the war, many of these anomalies may be items dropped or dumped during routine servicing; and loading/unloading operations. The limited documentation found on wartime activities in this area indicates some seaplanes were bombed and destroyed; but it is not clear if this was at the mooring base or on land. As moored seaplanes would have been priority targets in a bombing raid, it is considered that this area has a higher risk factor for buried UXO.” This highlights the elevated risk of UXO within the vicinity of the Catalina Harbour located at the northern extent of the proposed TCAP reclamation.

107. Additional magnetometric surveys were conducted by Smith (2015) to investigate the UXO risk associated with dredging for the Queen Elizabeth Park reclamation works. The surveys also identified a series of magnetic anomalies as shown in Figure 2. This further identifies the need for TCAP to carefully manage risks posed by UXOs during the proposed reclamation works (see Table 9).

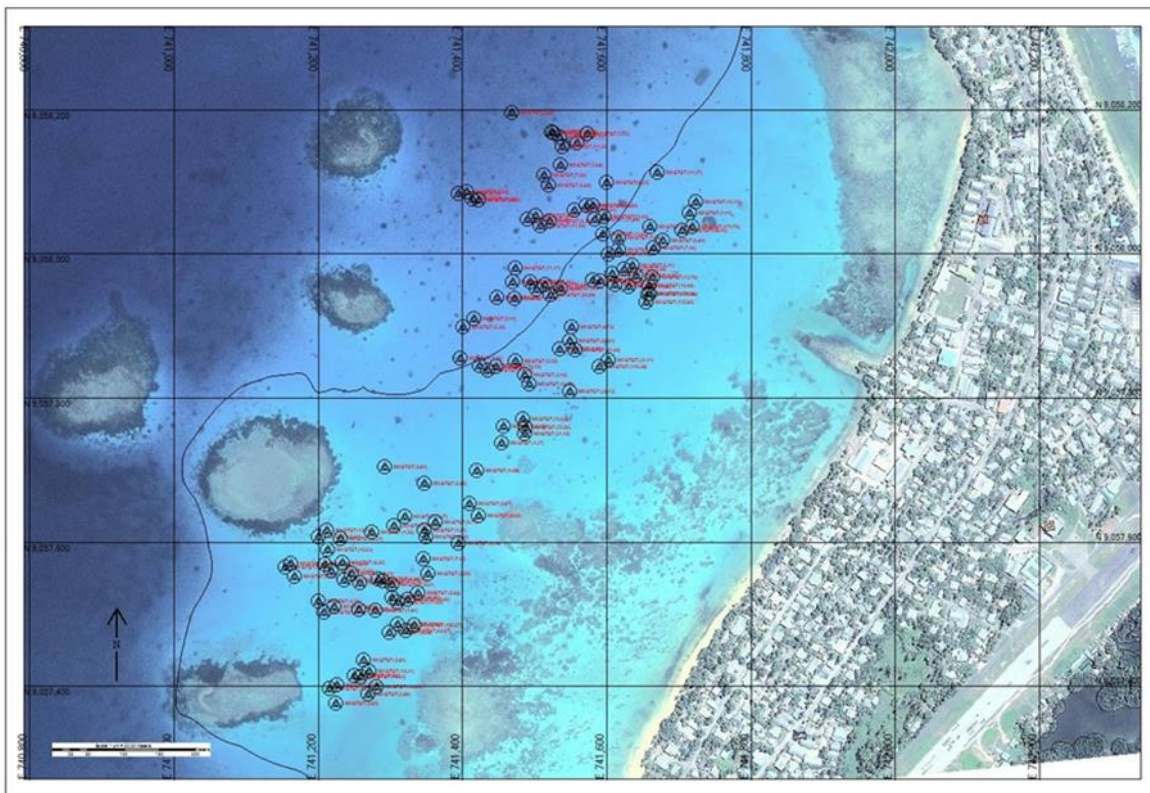


Figure 2 Magnetometer survey results (Smith 2015a)

<sup>6</sup> Smith, R (2015a), Sand Resources and UXO Survey, Funafuti Lagoon, Tuvalu. SPC Geoscience Division Technical Report PR209





Table 9 Unexploded Ordinance Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
UXO1: Presence of unexploded ordinance	UXO1.1: Updated magnetometry survey to confirm presence/absence of UXO/ERW.	Prior to commencement of finalised dredge planning	Contractor	Survey report
	UXO1.2: Dredge to be fitted with a suitable screen to exclude ERW at the cutter head and a beach-screening cage to capture ERW at the discharge end of the dredge pipe.	Construction	Contractor	Daily records
	WT1.3: The Contractor's C-ESMP will detail the way in which they will safely handle and dispose of ERW if any ERW are encountered during construction.	Pre-construction	Contractor	Maintain records



## 4.9 SOCIAL MANAGEMENT

### 4.9.1 Background

108. Fogafale, as the capital and Tuvalu's main business center has seen outer island populations steadily migrating to Funafuti for economic and education prospects. In 1979, Funafuti's population size was 2,120 and had increased to 5,274 by 2011. Population density has equally increased from 1,610 people per km<sup>2</sup> in 2002, to 2,220 in 2012, to 2,257 in 2017.
109. The governance and decision-making structures are uniform across the islands of Tuvalu. All island affairs are discussed and debated at the Falekaupule Assembly, a consultative forum which includes everyone above the age of 18. The assembly is operated under the leadership of the "aliki" or "pule fenua" and the "matai(s)" of the island. The Falekaupule normally holds its meetings monthly, where they are briefed on minutes of the Island Kaupule meetings and on issues that concern the community. In accordance with the Act, the Falekaupule assembly is obliged to convene a meeting once every three months to discuss traditional and development matters. The current practice is that meetings are conducted monthly and whenever there is an urgent matter to discuss before the semestrial meeting. From the meeting minutes, all the motions agreed upon will be executed by the Kaupule. The Kaupule is operated with the support of staff and executives or Kaupule members remunerated by the Government under the Ministry of Local Government and Agriculture (MLGA).

#### 4.9.1.1 Gender

110. Tuvalu has been progressive in its efforts to improve gender equality by ratifying the Convention on Elimination of all Forms of Discrimination against Women in 1999. In terms of population proportions, women have been under-represented in parliament since independence in 1978.
111. Tuvalu, although primarily a patriarchal and patrilineal society, has evidence of matrilineal practices. A traditional society is under the leadership of the *ulu aliki* (chief) supported by the *matai*, which are the heads of family units. Traditionally, women are responsible for domestic duties and child rearing, while men tend to work outside the home in areas such as fishing and subsistence farming. Traditionally, it is not common for women to hold positions of *ulu aliki* or *matai*; however, with recent developments in gender empowerment, women have taken up leadership roles as *matai*, Kaupule members, and Kaupule presidents (Pule Kaupule/s).
112. Like many patriarchal societies, domestic violence is common to everyday life in Tuvalu. Forty percent of women have experienced physical and/or sexual violence in their lifetime.
113. For further details regarding gender and relevance to the project, refer to the TCAP Gender Analysis and Action Plan and the TCAP Gender Strategy and Action Plan.

#### 4.9.1.2 Community Engagement

114. The project has been designed with the assistance of stakeholders and aims to provide benefits to the broader community. Notwithstanding, as with any project that involves construction, some dissatisfaction can occur, and conflicts may arise. It is important that potential areas of tension are recognised early, and appropriate actions taken to avoid or minimise conflict.

### 4.9.2 Performance Criteria

115. The following performance criteria are set for the project:
- the community has been consulted and project elements have been designed with their informed consultation and participation throughout the project;
  - all stakeholders are appropriately represented;
  - avoid adverse impacts to local community during construction and operations and where not possible, minimise, restore, or compensate for these impacts;





- cultural heritage is not adversely impacted;
- community health and safety is protected and overall well-being benefits derived from the project;
- complaint and grievance mechanisms are put in place and proactively managed; and
- long-term social benefits are achieved.

116. Local stakeholders and community members have a key role to play in the implementation and monitoring of the project.

117. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the project, its progress, and any changes in the project. It will also assist in identifying any issues as they arise.

118. The Department of Local Government (DLG) is responsible for advisory support and extensions services to local beneficiaries along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

#### 4.9.3 Monitoring and Reporting

119. Records of all consultations are to be kept and reported on monthly basis.

120. The TCAP must be notified in the event of any individual or community complaint or dissatisfaction and ensure its Grievance Redress Mechanism is complied with.



Table 10: Social Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
SM1: Land and Resource Use	SM 1.1: Conduct a stakeholder mapping and analysis of the landowners and non-landowning households in the adjacent community and other groups that the project may affect. Identifying the most vulnerable and disadvantaged group will be important for tailoring resilience-building mitigation measure to offset the negative impacts of the project.	Pre-construction	TCAP	Maintain records
	SM 1.2: Facilitate the development of a community-based local planning and M&E process.	Pre-construction	DLG	Maintain records
	SM 1.3: Ensure compliance with the Grievance Redress Mechanism process.	All phases	TCAP	Maintain records
SM2: Public nuisance caused by construction/operation activities (eg noise, dust etc)	SM 2.1: Carry out community consultation prior to undertaking activities.	Pre-construction	TCAP	Maintain records
	SM 2.2: Implement appropriate management plans (refer to Noise, Air, ESCP, and Waste sections of the ESMP).	Construction	Contractor	Daily and maintain records
	SM 2.3: Ensure compliance with the Grievance Redress Mechanism process.	All phases	TCAP	Maintain records
SM3: Gender, Social Inclusion & GBV	SM3.1: Implement Gender Strategy and Action Plan.	All phases	All personnel	Maintain records
	SM3.2: Incorporation of gender-based violence into the Stakeholder Engagement and Consultation Plan.	All phases	TCAP	Maintain records
	SM3.3: Code of conduct will be signed by all workers (including project management) to demonstrate commitment to prevention of gender-based Violence and the prevention of the spread of sexually transmitted diseases such as HIV/AIDs.	Construction	Contractor	Maintain records



Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
SM4: Workers and Project Accommodation	SM4.1: Use of existing accommodation for project office and project personnel.	All phases	All personnel	Maintain records
	SM4.2: Minimise number of workers from off-island.	All phases	TCAP / Constructor	Maintain records
	SM4.3: All imported project staff will abide by Tuvalu immigration policy and provide all required documentation, including health checks.	All phases	All personnel	Maintain records
	SM4.4: Overseas workers will undergo cultural familiarisation induction upon arrival and sign a code of conduct applicable for the duration of their contract.	Construction	Contractor	Maintain records
	SM4.5: Contractor will supply all required food for workers to the community to enable community members to be appointed to cook and prepare food for a fee.	Construction	Contractor	Maintain records
	SM4.6: Contractor will provide first aid facilities and trained first aiders.	Construction	Contractor	Maintain records



## 4.10 ARCHAEOLOGICAL AND CULTURAL HERITAGE

### 4.10.1 Background

121. Culture shapes the way people live and thrive in Tuvalu's atoll environment. Tuvalu's culture is generally characterized largely by communal values, whereby extended family and kinship networks channel the flow of knowledge and resources within and between islands as well extending to relatives abroad. Shaped largely by a history of atoll life and journeys, Tuvalu's communal culture has been a source of community resilience in times of pressure stemming from disasters, climate change, and other pressures.
122. Tuvalu is rich in tangible cultural and natural heritage (e.g. monuments, artistic creations) and intangible (practices, stories, dances, expressions, knowledge, and skills) cultural heritage. Some of the more significant examples of intangible cultural heritage are the fatele (traditional song and dance performance), alofa (presentation of performing arts and gifts such as mats and handicrafts to conclude visitors' welcome events), and traditional craftsmanship such as mat-weaving, fan-making, and shell necklace-making<sup>7</sup>. Other key elements of intangible cultural heritage include pulaka (giant swamp taro) agriculture, traditional community fishing practices, canoe-building, and Te Ano games (cross between volleyball and murderball) played on communal malae (ground), all of which support wellbeing and livelihoods.
123. Local stakeholders and community members have a key role to play in the implementation and monitoring of the project.
124. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the project, its progress, and any changes in the project. It will also assist in identifying any issues as they arise.

### 4.10.2 Performance

125. The following performance criteria are set for cultural heritage issues related to the project:
- There will be no impact on any important Archaeological, Indigenous and/or Cultural Heritage sites; and
  - Manage any specific sites of important Archaeological, Indigenous and/or Cultural significance (significant sites).

### 4.10.3 Monitoring and Reporting

126. Records of all consultations and any cultural heritage finds, or impacts are to be kept and reported on monthly basis.

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<sup>7</sup> Government of Tuvalu, 2018, Tuvalu National Culture Policy Strategic Plan 2018-2024, Published by the Government of Tuvalu ([http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Apia/pdf/265528e\\_compressed.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Apia/pdf/265528e_compressed.pdf))



Table 11: Archaeological and Cultural Heritage

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
CH1: Damage or disturbance to significant important Archaeological, Indigenous and/or Cultural Heritage during the earth disturbances and land clearing activities	CH1.1: Should any Archaeological, Indigenous and/or Cultural Heritage sites be identified, immediately cease work within the area that the site has been observed and consult with the relevant Museum/traditional owner groups, TCAP and DoE. An archaeologist may be required if find significant.	Pre and during construction	Contractor	Maintain records and immediately notify TCAP and DoE of any find
	CH1.2: Implement Stakeholder Engagement Plan.	All phases	All personnel	Maintain records



## 4.11 EMERGENCY RESPONSE

127. In the event of actions occurring, which may result in serious health, safety and environmental (catastrophic) damage, emergency response or contingency actions will be implemented as soon as possible to limit the extent of environmental damage.

128. The delivery organisation/contractor will need to incorporate emergency responses into the project complying with the requirements under the Occupational, Health and Safety Policy of the delivery organisation and the relevant Tuvalu legislation.

### 4.11.1 Performance Criteria

129. The following performance criteria are set for the construction of the projects:

- no incident of fire outbreak;
- no failure of water retaining structures;
- no major chemical or fuel spills;
- no preventable industrial or work-related accidents;
- provide an immediate and effective response to incidents that represent a risk to public health, safety or the environment; and
- minimise environmental harm due to unforeseen incidents.

### 4.11.2 Monitoring

130. Monitoring and record keeping are to be as indicated in Table 12.

### 4.11.3 Reporting

131. Emergency Services must be notified immediately in the event of any emergency by telephoning 911. TCAP should also be notified of any emergencies related to the project.



Table 12 Emergency Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
EM1. Fire and Emergency management and prevention strategies implemented	EM1.1: Flammable and combustible liquids bunding/storage areas to be designed in accordance with appropriate international standards.	Pre and during construction	Contractor	Daily and maintain records
	EM1.2: Fire extinguishers are to be available on site.	During construction	Contractor	maintain records
	EM1.3: No open fires are permitted within the project area.	During construction	All personnel	Daily and maintain records
	EM1.4: Communication equipment and emergency protocols to be established prior to commencement of construction activities.	Pre-construction	Contractor	Maintain records
	EM1.5: Train all staff in emergency preparedness and response (cover health and safety at the work site).	During construction	Contractor	Maintain records
	EM1.6: Check and replenish First Aid Kits.	Construction	Contractor	Monthly and maintain records
	EM1.7: Use of Personal Protection Equipment.	Construction	All Personnel	Daily and maintain records
EM2. Spill Response	EM2.1: Spill response plan will be developed to ensure that all fuels and lubricants used during the construction phase in machinery, equipment, generators and on marine vessels are contained, collected, treated and disposed of.	Construction	Contractor	Maintain records
	EM2.2: Identify areas within the project site and nearby vicinity that are sensitive to spills and releases of hazardous materials and locations of any water intakes.	Pre-construction	DoE	Maintain records
	EM2.3: Include regular training schedules and simulated spill incident and response exercise for response personnel in spill alert and reporting procedures, the deployment of spill control equipment, and the emergency care/treatment of people or wildlife impacted by the spill.	Construction	Contractor	Maintain records



## 5 IMPLEMENTATION

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### 5.1 GENERAL MANAGEMENT STRUCTURE AND RESPONSIBILITIES

132. The project is being implemented following UNDP's Direct Implementation Modality (DIM) at the request from the Government of Tuvalu and the GCF National Designated Authority. Under the DIM arrangement, UNDP assumes overall management responsibility and accountability for project implementation.

#### 5.1.1 Project Board

133. The Project Board (PB) is co-chaired by UNDP's Resident Representative or his/her deputy and the National Designated Authority (Ministry of Finance). The Project Board is comprised of Ministry of Finance, Climate Change Department, Department of Environment, Public Works Department, Department of Lands and Survey, Department of Local Government, Ministry of Education, Youth and Sport, representatives from the NGO association (TANGO), the Tuvalu National Council of Women, and each island: Funafuti, Nanumea and Nanumaga.

#### 5.1.2 Project Management Unit

134. The National Project Manager runs the project on a day-to-day basis on behalf of the UNDP within the constraints laid down by the Project Board. The Project Manager's function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP, has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

#### 5.1.3 Project Assurance

135. The 'project assurance' function of UNDP is to support the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project assurance must be independent of the Project Manager; therefore, the Steering Committee cannot delegate any of its assurance responsibilities to the Project Manager. Furthermore, as the Senior Supplier, UNDP provides quality assurance for the project; ensures adherence to the Direct Implementation Modality (DIM) guidelines and ensures compliance with GCF and UNDP policies and procedures.

#### 5.1.4 Site Supervisors

136. Each site will have a site supervisor responsible for ensuring the implementation of the ESMP. The role of site supervisor may be delegated by TCAP to the contractor through the contract. Site supervisors will be responsible for day-to-day management of the sites. Site supervisors are to liaise with TCAP safeguards and communications teams to ensure that any issues or potential issues are raised at the earliest opportunity.

### 5.2 PROJECT DELIVERY AND ADMINISTRATION

#### 5.2.1 Project Delivery

137. The project will be delivered on the ground by UNDP via TCAP PMU, with the Climate Change Department (CCD) as its focal GoT point of contact, and with assistance from other government





Departments. In addition, collaboration with island Kaupules, existing NGOs and local communities is expected.

### 5.2.2 Administration of Environmental and Social Management Plan

138. As the implementing agency, UNDP will be responsible for ensuring that the ESMP is implemented by delivery organisations.
139. The ESMP will be part of any tender documentation. The UNDP via TCAP PMU will be responsible for the revision or updates of this document during the project. It is the responsibility of the person to whom the document is issued to ensure it is the most up to date version (refer Section 5.4.1).
140. The UNDP and DoE are accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (e.g. contractors and/or NGOs) and for environmental and social monitoring and reporting. The DoE or its delegate will assess the environmental and social performance of the delivery organisations (e.g. contractors) in charge of delivering each component throughout the project and ensure compliance with the ESMP. During operations the delivery organisations will be accountable for implementation of the ESMP. Personnel working on the projects have accountability for preventing or minimising environmental and social impacts.
141. The Site Supervisor will be responsible for daily environmental inspections of the project/construction sites. The DoE or its delegate will cross check these inspections by undertaking monthly regular audits.
142. The delivery organisation/contractor will maintain and keep all administrative and environmental records, which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.
143. The delivery organisation/contractor will be responsible for the day-to-day compliance of the ESMPs.

### 5.2.3 Contractor C-ESMPs and Site Plans

144. The Contractor for the TCAP works will be required to produce Construction Environmental and Social Management Plans (C-ESMPs). The C-ESMPs will provide details as to how the outcomes required by the ESMPs and the ESMP be achieved i.e. the C-ESMPs will provide site level detail of what mitigation measures will be applied and where.
145. It is recommended that the Contractor utilises this ESMP and its mitigation strategies in the preparation of the C-ESMPs. Site level information can be readily documented by annotating construction drawings (Site Plans) with the relevant mitigation strategies (note, each strategy presented in this ESMP has a unique identifier for that purpose) this will assist in ensuring that site personnel are aware of what controls need to be put in place and where they need to be. Further, the use of construction drawings can provide a ready audit trail as drawings can be signed off as “implemented” and any variations to the mitigation strategies can be noted directly onto the signed drawings. This can make preparation of compliance reports easier.
146. The C-ESMPs will need to be reviewed and approved by the TCAP PMU and DoE and disclosed prior to commencement of civil works.

### 5.2.4 Environmental Incident Reporting

147. Any incidents, including non-conformances to the procedures of the ESMP are to be recorded using an Incident Record and the details entered into a register. For any incident that causes or has the potential to cause material or serious environmental harm, the Site Supervisor shall notify the Project Manager as soon as possible. The delivery organisation/contractor must cease work until remediation has been completed as per the approval of DoE.



### 5.2.5 Daily, Weekly and Monthly Performance Reporting

148. A daily environmental checklist is to be completed at each work site by the contractor and maintained within a register. The Contractor will also prepare weekly and monthly compliance reports, including reference to any issues identified in the daily checklists. The completed checklist is to be forwarded to TCAP and DoE for review and follow-up if any issues are identified.

### 5.2.6 Corrective Actions

149. Any non-conformances to the ESMP are to be noted in weekly environmental inspections and logged into the register. The Site Supervisor is to document actions taken or, depending on the severity of the non-conformance, specify the proposed corrective actions on the weekly site inspection report. The progress of all corrective actions will be tracked using the register. Any non-conformances and the issue of corrective actions are to be advised to TCAP. TCAP may also specify corrective actions if deemed necessary.

### 5.2.7 Review and Auditing

150. The ESMP and its procedures are to be reviewed at least every six months by the TCAP. The objective of the review is to update the document to reflect knowledge gained during project delivery/construction and to reflect new knowledge and changed community standards (values).

151. The ESMP will be reviewed, and amendments made in the event of any of the following:

- There are relevant changes to environmental conditions or generally accepted environmental practices;
- New or previously unidentified environmental risks are identified;
- Information from the project monitoring and surveillance methods indicate that current control measures require amendment to be effective;
- There are changes to environmental legislation that are relevant to the project;
- There is a request made by a relevant regulatory authority; or
- Any changes are to be developed and implemented in consultation with TCAP and DoE. When an update is made, all site personnel are to be made aware of the revision as soon as possible e.g. through a toolbox meeting or written notification.

## 5.3 TRAINING

152. Delivery organisations have the responsibility for ensuring systems are in place so that relevant employees, contractors, and other workers are aware of the environmental and social requirements for construction, including the ESMP.

153. All project personnel will attend an induction that covers health, safety, environment, and cultural requirements.

154. All workers engaged in any activity with the potential to cause serious environmental harm (e.g. handling of hazardous materials) will receive task specific environmental training.

## 5.4 CONTROLS

155. Effective environmental and social management will require traceable and up-to-date document control. This section illustrates the simple, yet thorough, processes that have been created to ensure that such document control occurs.



#### 5.4.1 Controlled Documents

156. This ESMP will be maintained as a 'controlled document' to ensure that all relevant parties are kept abreast of any changes in the procedures and actions that could potentially affect the environment of the TCAP project.
157. As such, this document and others deemed 'controlled' documents shall be reviewed and approved by the TCAP Project Manager or their authorised TCAP representative, prior to issue.
158. All controlled documents issued to staff and contractors will be recorded in the Document Register, where the name and date that this document was issued will be recorded for future reference. The document register will be of particular use when revisions or amendments are made to controlled documents.
159. Amendments or revisions made to part of the document are to be recorded alphabetically (a, b, c, d, etc.), whilst updates of the document in its entirety will be recorded numerically (1, 2, 3, etc.). The footer of the updated sections/documents will display the dates of such amendments and revisions.
160. This control shall ensure that appropriate documents are available for operations essential to the effective functioning of the environmental and social management and that all obsolete documents are promptly removed from points of issue or use.

#### 5.4.2 Records

161. Environmental and social management records will include, but not be limited to:

- ESIA's
- ESMP (this document)
- C-ESMPs and site plans
- Document register (register of document issue)
- Document control record (changes to the ESMP)
- Daily checklists
- Weekly and monthly compliance reports
- Audit reports
- Inspection and maintenance reports
- Non-conformance and corrective actions
- Training records
- Stakeholder engagement records
- Complaints and grievance redress actions
- Approvals, certification, and licences issued by statutory authorities.



## 6 COMMUNICATION

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### 6.1 PUBLIC CONSULTATION AND ENVIRONMENTAL AND SOCIAL DISCLOSURE

162. The project has been developed in consultation with numerous stakeholders, from both donor, government, and civil society. It is recognised that stakeholder engagement is an important aspect of environmental and social management, and the management of stakeholder issues can be very complex and for this project it was determined that a Stakeholder Engagement Plan (SEP) separate from the ESMP was warranted. None the less, the SEP must be implemented alongside the ESMP.
163. A SEP has been prepared for the project and this plan should be referenced and implemented by all personnel working on the project. The SEP has been developed to provide schedule of engagement activities and who is responsible for their delivery. The programme draws on and is consistent with the approved Project Communication Strategy and Action Plan.
164. The purpose of the stakeholder engagement programme is to:
- develop partnerships with stakeholders;
  - provide stakeholders with updates on the project;
  - create an avenue for stakeholder feedback;
  - fulfil the requirements of GCF, UNDP and GoT;
  - help build knowledge and capacity within the stakeholder groups to assist with future projects; and
  - provide a timeline of engagement activities and identify who will be responsible for their delivery.
165. A variety of engagement methods (and technologies) will be employed as part of the engagement programme, they include:
- TCAP Board meetings;
  - community consultation and meetings;
  - government Departments consultation, workshops, and meetings;
  - sharing (virtual and/or face to face) of project implementation reports, notes, briefs, etc.
  - TCAP website (<https://tcap.tv/>) including videos, articles, blogs, newsletters, Board meeting minutes, other endorsed documents;
  - Twitter @TCAPforTu8;
  - Facebook - Tuvalu Coastal Adaptation Project;
  - project resources/materials such as banners, billboards, brochures, presentations; and
  - press releases, TV and radio programs.
166. The SEP also contains a stakeholder register and describes how stakeholder engagement will be recorded, monitored, and reported.
167. Refer to the SEP for further requirements regarding consultation activities and the management of grievances.



## 6.2 COMPLAINTS REGISTER AND GRIEVANCE REDRESS MECHANISM

168. During the construction and implementation phases of any project, a person or group of people can be adversely affected, directly or indirectly due to the project activities.
169. The project allows those that have a complaint or that feel aggrieved by the project to be able to communicate their concern, complaints and/or grievances through an appropriate process. As noted above, the SEP contains details regarding consultation requirements, including grievances, and must be implemented along with this ESMP.
170. The Complaints Register and Grievance Redress Mechanism form an appendix to the Stakeholder Engagement Plan.

### 6.2.1 Grievance Redress Mechanism

171. The table below outlines the key steps involved in the GRM. For further details refer to the GRM appendix in the Stakeholder Management Plan.

Step	Process	Duration
1.	Affected person (AP) makes complaint to the TCAP	Anytime
2.	Complaint is logged in Complaint Register	24
3.	TCAP receives the issue and in consultation with the implementer of TCAP activity or whoever the complaint is directing towards (if appropriate) and assigns responsible person. Complainant notified of complaint registration and commencement of resolution process.	48 hours
4.	TCAP reports back to AP and gets clearance from the complainant	15 days
5.	Agreed actions are implemented and confirmation of satisfactory outcome obtained.	1-3 months
5.	Complaint closed out in complaint register.	1-3 months
<b>If unresolved</b>		
6.	TCAP takes grievance to the Grievance Committee for resolution	As soon as it is apparent that issue cannot be resolved at project level or after 1 month, whichever comes first
7.	Grievance Redress Committee meets and initiates second tier of resolution process.	Within 4 weeks of matter being referred
8.	Grievance Redress Committee will communicate proposed responses to the complainant formally.	Within 3 months
9.	The response will be implemented and the complaint and/or grievance closed	GRC to advise on timeframe
<b>If unresolved or if at any stage AP is not satisfied</b>		
	AP can take the matter to appropriate national court	As per the judicial system
	AP can utilise UNDP and/or GCF redress mechanisms	As per institutions' timeframes