TUVALU HEALTH SYSTEM STRENGTHENING PROJECT (THSSP)
PRELIMINARY ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

GOVERNMENT OF TUVALU

February 2022

EXECUTIVE SUMMARY

In line with its National Health Strategic Plan for 2020-2024 (NHSP), the Government of Tuvalu (GoTv) is developing a Health System Strengthening Project (THSSP) which aims to increase the utilization of and strengthen the management of quality essential health services provided across Tuvalu, and to provide immediate and effective response in case of an eligible crisis or emergency. The project has four components, namely: Component 1 (Improvement of the Availability and Quality of Health Services) which would involve, among others, the improvement and expansion of the range of health care services, including the construction of additional wing at the Princess Margaret Hospital (PMH) as well as the upgrade of the facilities (mostly water and sanitation) of outer island clinics and the strengthening the country's Infection Prevention and Control and Medical Waste Management system; Component 2 (Strengthening of Systems for Better Health Service Management) which would involve the strengthening of information management for better service delivery and the strengthening of the health planning, budgeting, and implementation; Component 3 (Project Management, Monitoring and Technical Support) which would provide Project management support; and, Component 4: (Contingent Emergency Response Component or CERC) which would improve the GoTv's response capacity in the event of an emergency.

The Project is being considered for IDA funding and hence, is subject to the World Bank's Environmental and Social Framework (ESF). The initial screening by World Bank has identified applicability and relevance of the following World Bank Environmental and Social Standards (ESS): ESS1 (Assessment of Environmental and Social Impact and Risks), ESS2 (Labor and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety), and ESS10 (Stakeholder Engagement and Information Disclosure). The standards deemed not relevant are: ESS5 (Land Acquisition, Restriction of Access, and Involuntary Resettlement), ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), ESS7 (Indigenous People) and ESS8 (Cultural Heritage).

In partial fulfillment with ESS1, the GoTv and World Bank have agreed that a "Preliminary Project-Wide Environmental and Social Management Plan (Preliminary ESMP)" shall be prepared and be made available by Project Appraisal, pending the development of the detailed Project Design, thus this Preliminary ESMP. This Preliminary ESMP includes subsidiary ES management instruments designed to address specific issues and requirements of the WB ES Standards. These include Stakeholder Engagement Plan (SEP), Labor Management Procedures (LMP), Code of Social and Environmental Practice for Contractors (COSEP-C), Infection Prevention and Control Plan (IPCP), Waste Management Guidelines (WMG) and UXO Protocol.

This Preliminary ESMP: (i) provides a quick survey of the baseline social and environmental conditions in the country, including the prevailing social and environmental issues; (ii) identifies and assesses the potential impacts and risks of the project's activities; and (iii) identifies management measures for these risks and impacts. This Preliminary ESMP will be updated based on a more detailed project design specifications which are still to be developed during the first few months of the Project.

Baseline Conditions

Tuvalu is a small tropical country composed of nine low lying islands and atolls with a total land area of 25.9 sq km. Annual rainfall averages over 3,500 mm with most rain falling between November and February. The annual mean temperature is 30 degrees C. The terrestrial flora of Tuvalu is very poor dominated by introduced exotic species. The wildlife consists of Polynesian rat, a few species of lizards and a wide range of bird species. Tuvalu's marine waters contain diverse species of finfish, sharks, rays, eels, and invertebrates but all are reportedly declining due to overfishing.

Tuvalu has an estimated total population of 11,052 as of 2017 and growing at 0.82%. Literacy rate is high and life expectancy at birth in Tuvalu is 66.16 years with higher rate for women (68 years). Mainly Polynesians, Tuvaluans live is a closely-knit society with strong sense of community.

Tuvalu's economy is highly dependent on foreign earnings and official aid. The islands contain very few natural resources, and the primary economic activities are subsistence farming and fishing. The formal employment sector is very small 44% of which is government employment. Tuvalu's power supply comes mainly from diesel generators, and some Solar PV capacity. Rainwater collected and stored in individual household or communal tanks is the primary source of water supply. Most islands have wells which tap into the islands' freshwater lens but waters from these wells have high salinity. The country has no centralized sewerage system so households and establishments rely on onsite septic tank system. Solid waste collection services are inadequate. Most households disposed of their garbage by burying, burning, or by dumping them in their backyard or in the sea.

Prevailing Environmental and Social Issues

The following are the prevailing environmental and social issues in Tuvalu that are relevant to the Project.

1. High climate change vulnerability. Tuvalu is extremely vulnerable to the adverse impacts of climate change, variability, and extreme weather events.
2. Land degradation. Tuvalu experiencing land degradation due to compaction in highly built up and high traffic areas and deformation of landscape due to extraction of embankment/aggregate materials.
3. Coastal erosion is a major problem in Tuvalu, particularly on the western side of the islands.
4. Because the very low elevation, the islands are prone to coastal flooding from strong waves, high tides, and storm surges.
5. Groundwater quality is deteriorating in terms of increased salinity and pollution from pit latrines and septic tanks. This problem gets worse during dry seasons.
6. Illegal dumping of solid waste in the ocean and in abandoned borrow pits, due to the inadequacy of solid waste collection services.
7. The country lies just north of the main cyclone belt and is occasionally affected by tropical cyclones. Tuvalu was severely hit by the Tropical Cyclone Pam in 2015. The latest cyclone to affect the country was Tino in 2020 which brought high waves, causing catastrophic flooding.

8. Vulnerability to tsunami. Although not within the geologically active zone of the Pacific Ocean, the very low elevation of most of country's land mass makes it susceptible to tsunamis originating from geologically active regions.
9. Presence of unexploded ordnance. Due to its role in World War II, the atolls of Tuvalu are suspected to contain unexploded ordnance (UXO).
10. High rate of gender-based violence. Over a third of Tuvalu women reportedly has experienced physical violence during their lifetime with 25% having experienced physical violence in the previous 12 months.

ES Risks and Impacts

Risks and impacts during the Planning and Design Phase. There is a risk that the project may get unfavourable public perception and will not get the cooperation from other government agencies due to lack of involvement of key stakeholders and lack of accurate information about the project. There is also a risk of failure to undertake a satisfactory and ESF-compliant project preparation process and project design/plans (including final ESMP) that addresses operational risks. Finally, there is a risk of spread of infection during information drive and consultation process.

Risks and impacts during Construction and System Development Phase. The risks and impacts include those associated with labour and working conditions (WB ESS2), resource efficiency and pollution control (WB ESS3) and community health and safety (WB ESS4). Risks relating to ESS2 include possible violation of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages, etc.) by contractors and, risks of occupational health and safety-related injuries to construction workers.

ESS3-related risks and impacts include: (i) generation of noise and vibration at construction site, disturbing the residents within the immediate vicinity of the construction site as well as the patients and workers at the PMH; (ii) Soil erosion and sedimentation at the construction site drainage, due to possible earth movements and excavation; (iii) Deterioration of air quality within the construction site and immediate vicinity due to increase particulate matter from demolition, earth moving and operation of construction equipment and power tools; (iv) Potential nuisance from improperly disposed of construction/demolition spoils and solid wastes from workers' camp; (v) Soil/sand and water contamination due to release of hazardous materials particularly petroleum-based products, e.g., lubricants, hydraulic fluids, fuels during their storage, transfer, or use in equipment; (vi) Contamination of local waterbodies and soil with wastewater discharges from the construction activities and worker's camp; (vii) Potential damage or increased wear and tear of public facilities used by contractors; and, (viii) Risk that supplier of project's raw materials including borrow and aggregates use environmentally and socially destructive production methods, including possible use of child labour.

ESS4 - related risks and impacts include: (i) General Site Hazards - Projects should implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction and decommissioning. Risks may arise from inadvertent or intentional trespassing, including potential contact with hazardous materials, contaminated soils and other environmental media, buildings that are vacant or under construction, or excavations and

structures which may pose falling and entrapment hazards; (ii) Risk of outbreak/spread of infectious diseases, including STDs; (iii) Exposure of residents and children to construction traffic; (iv) Risk of unexploded ordnance (UXO); (v) Increase in incidence of sexual exploitation/abuse and harassment within local communities; and (vi) Increased demand/competition for goods and services from influx workforce, risks of poor behaviour of workers and amenity and social conflict impacts.

Risks and Impacts During Operations of HCFs and Strengthened Health Services. The ES risks and impacts during the operation of the strengthened health systems also relates to ESS2, ESS3 and ESS4. ESS2 related risks include: (i) possible non-observance of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages, freedom of assembly and collective bargaining); (ii) possible discrimination in hiring and benefits (i.e., based on gender, religion, or ethnicity); (iii) engagement of child and/or forced labour by health services contractors, and project management; (iv) Possible involvement of child labour by suppliers in the production of embankment and aggregate materials: and exposure of healthcare workers to Occupational Health and Safety (OHS) hazards such as infectious wastes, biological samples, and specimens, hazardous medical laboratory chemicals/reagents and wastes, operational hazards of medical equipment (electrical and physical hazards) and exposures of radiology workers to ionizing radiation.

The ESS3-related risks and impacts include: (i) Risk of contamination of coastal and ground water from septage during flooding events; (ii) Effluents from the septic tank could contaminate the soil around the septic tank outfall area and could flow or be carried by runoff into the beach area; (iii) Contamination of ordinary solid waste with health care wastes; and (iv) Generation of air pollutants from incineration of health care wastes

The ESS4-related risks and impacts include: (i) Risk of inundation of facility during coastal of flooding events, rendering it non-operational during and in the aftermath of a flood- causing disaster (such as cyclone or tsunami); (ii) Exposure of waste collectors and handlers to hazards from ordinary municipal solid wastes from hospital operations; (iii) Infrastructure risk from seismic events; (iv) Risk of hospital/health care facility fire; (v) Risk of accidental spillage of infectious wastes or hazardous chemicals; (vi) Health care waste hazard; (vii) Risk of water supply interruption; (viii) Risk on power supply interruption; (ix) Poor accessibility/inability of the facility to cater services to certain groups with special needs such as PWDs, elderly, pregnant women, or person with infants; (x) Risk of healthcare services (e.g., health screening, etc.) not being administered in accordance with GIIP, among vulnerable and remotely situated groups

Proposed Management Measures for ES Risks and Impacts

Measures during Planning and Design Phase. During the planning and design phase MoH will promote genuine involvement of stakeholders and secure public support for the through the implementation of the Project's Stakeholder Engagement Plan (SEP). To ensure compliance of the planning and preparation process with World Bank ESF, the Project will hire/appointment a PMU-based ES Safeguards Officer and will conduct of seminars on ESF requirements, among MoH, CPMO and PMU staff involved in the project. To minimize risk of infection throughout these activities, the MoH shall maximize the use of online platforms in the project information drive and

consultations with stakeholders as well as any interisland travels of staff by relying on locals to undertake field surveys.

The Project Design Development Team will consider the following design measures: (i) provision of additional embankments to raise the ground floor levels of new PMH structure and, as necessary, any additional structures to be built in outer island clinics, above historical flood levels; (ii) adoption of stronger foundation for buildings housing HCFs sufficient to resist erosive forces of floodwaters and waves during storm surges/tsunamis; (iii) provision of stronger structure, walls, windows, and roofs sufficient to withstand higher category cyclone winds; (iv) provisions of adequate fire escapes and use of fire-retardant materials in the building design specifications; (v) considerations of the principle of universal access (e.g., ramps and lift for PWDs and elderlies, facilities for persons with infants, etc.); (vi) any necessary improvements of the existing wastewater treatment facilities, the water supply systems as well as the power supply systems of PMH and outer island clinics, in order to ensure that they are able to accommodate additional demands for services from the new facilities and are resilient to natural disasters; and (vii) improvements of the existing HCWM system of the PMH and outer island clinics with the end view of integrating them with the national HCWM which will be developed under the Project.

***Measures during Construction and System Development Phase*.** Standard, common, and practical measures will be employed in construction activities. Primary contracting parties of construction activities will be required to prepare their own Environment and Social Management Plans (CESMPs) guided by the measures identified in this ESMP. Mitigation measures for risks and impacts during construction which are related to applicable World Bank ES Standards, namely ESS2, ESS3 and ESS4, have been identified in the ESMP while an Environmental and Social Code of Practice (ESCOP) for Contractors is being provided to further guide contractors in preparing their own CESMP. The common environmental impacts of construction such as generation of noise and dust, erosion and sedimentation and contamination of soil and water bodies from oil and grease are being addressed in the ESCOP.

To address labour-related risks, the Project will adopt and strictly implement the Labor Management Procedure (LMP) which was prepared based on the requirements of the World Bank's Standard for Labor and Working Conditions.

To protect surrounding residents and existing HCF workers from construction hazards, contractors should restrict access to the site, through a combination of institutional and administrative controls, including fencing, posting of signages, and removing hazardous conditions such as by covering openings and securing storage of hazardous materials. To address the risk of outbreak/spread of infectious diseases, including STDs, the Project will adopt and implement the Project's Infection Prevention and Control Plan (PIPCP). Standard precautions for possible presence of unexploded ordnance (UXO) shall be undertaken for any excavations on the hospital construction site, as well as in outer islands clinic sites. A simple UXO Procedure has been provided in case of encounter with UXO during construction. Contractors shall be responsible for the repair of any inadvertent damage to private properties as well as any wear and tear of public facilities used during construction. Suppliers of project's raw materials including borrow and aggregates must be subject to due diligence in terms of sources, production methods and child/forced labour issues. Finally,

Stakeholder Engagement and Grievance Redress Mechanism shall continue to be implemented throughout the construction period.

Measures during Operations and Maintenance Phase. The risks and potential negative impacts during the operations and maintenance phase will be addressed through appropriate design measures that would have been considered during the planning phase, as well as measures that can be applied during the operations of the HCFs and the strengthened health system. The principles of the Labor Management Procedure (LMP) and core principles of the fundamental ILO conventions shall continue to be adhered to. In addition, the management measures during the operations phase will include the implementation of the following plans which would have been developed, through TA, during the construction and system development phase:

1. TIPCP Infection Prevention and Control Plan/System (TIPCP)
2. Healthcare Waste Management (HCWM) Plan/System.
3. HCF Disaster Preparedness and Response Plan.
4. HCF Fire Prevention and Evacuation Plans.
5. Hazardous Spill Prevention, Containment and Clean Up Procedure.
6. Water Conservation and Water Supply Contingency/Drought Scenario Plan.

To address exposure of healthcare workers to occupational health and safety (OHS) hazards, MoH will develop and apply standard protocols, and provide adequate training in the operation of equipment and the handling hazardous materials and wastes. Included in these protocols will be the provision of appropriate and adequate PPEs to workers. The implementation of TIPCP and HCWM will also address exposure of Tuvalu's health workers, including waste collectors to infectious wastes, materials, and other infectious agents. The HCWM will also address the risk of contamination of the environment health care waste. The internal health care waste management systems of individual HCF facilities which will be integrated with the health sector HCWM will include necessary pre-treatment appropriate for the type of medical waste, strict segregation of ordinary solid waste from medical waste and proper labelling. Where incinerators are used, it should be provided with smokestack of adequate height and properly maintained.

The risks of inoperability during and after coastal of flooding events would be partly addressed by HCF facility designs. This will be complemented by the development and adoption of HCF Disaster Response Plan focused on cyclone and flooding events. To address the risks of contamination of coastal and ground water from septage during normal operations and during flooding events, MoH shall install, operate, and maintain adequate and flood-proof onsite sewerage systems in the PMH and in the outer island clinics. In terms of risks from seismic events, the design must conform to a suitable seismic code in the region and regular drills for seismic and/or tsunami events should be held. The risk of hospital fire would have been partly address by adequate facility design and the development and adoption of the individual HCF Fire Prevention and Evacuation Plans. To address the risk of accidental spillage of infectious wastes or hazardous chemicals, the HCF shall also prepare and adopt a Hazardous Spill Containment and Clean Up Plan. The Water Supply Crisis Response Plan/Drought Scenario Plan will address water supply interruption scenarios. To address possible power supply interruption during normal operations and during disaster events, MoH shall consider installing redundant generating capacities for the PMH as well as for outer island clinics and develop and adopt a Power Supply Emergency Plan.

To ensure accessibility of facility to certain groups with special needs such as PWDs, elderly, pregnant women, or person with infants, the design of the HCF must apply the principles of universal access. To ensure that healthcare services (e.g., health screening, etc.) are administered in accordance with GIIP, MoH will develop and adopt standard operating procedures in line with GIIP for screening programs, undertake capacity building of staff to ensure vulnerable group's issues and needs are understood. Finally, the SEP should include targeted engagement strategies for vulnerable groups and remotely located groups

Proposed Institutional Arrangements

The ESMP will be implemented by a Project Management Unit (PMU) to be set up at the MoH, with oversight from the Central Project Management Office under the MFED.

An ES Safeguards Officer shall be recruited nationally and be detailed at the PMU who would at the very least serve as the focal point or technical backstop for ES matters at the PMU.
The CPMO ES Management Experts shall provide oversight to the ESMP implementation. They shall review the monthly status reports of the PMU-ES Specialists and conduct site validations on the reports and random audits. They shall also provide technical advice to the PMU in case of compliance issues and constraints. The CPMO ES shall also be responsible for the preparation of the semi-annual report on project's compliance with the ESCP, ESMP, SEP, LMP and other requirements

Monitoring and Incident Reporting

This Preliminary ESMP has proposed for the preparation of *Monthly ES Management Reports* by the PMU ES Safeguards Officer for the Project Manager and the CPMO ES Management Experts who shall, based on their own reviews and field validations, prepare a *Semi-Annual ES Management Report* for submission to the World Bank. The monthly report shall cover: (a) the status of the project's ES commitments as provided in the Environmental and Social Commitment Plan (ESCP); (b) the status of the implementation of the ESMP management measures, including status of the pending corrective action/measures from previous months; (c) any delays, issues, and constraints encountered in the implementation and he proposed corrective actions/measures; and (e) summary and status of ES-related incidents encountered, if any. The semi-annual report shall contain a consolidate summary of the monthly reports. Any ES-related incident, including OSH incidents, that occur in the fields or in the construction sites should immediately be reported to the PMU ES Officer field staff of the project responsible for the ground implementation of the project activities.

Capacity Building

The PMU staff, the ES officer, and the field staff of the project in charge of administering the contracts or supervising the contractors at sites, shall, at the inception of the project, undertake familiarization training of this ESMP to be conducted by the CMPO. In addition, the ES officer shall undertake familiarization of the World Bank ESF through a one-on-one coaching by the CPMO ES Management Experts and through on-line seminar from the World Bank Website.

ACRONYMS

ADB	Asian Development Bank
CERC	Contingent Emergency Response Component
CPMO	Central Project Management Office
DoE	Department of Environment
DWM	Department of Waste Management
ES	Environmental and SocialESCP Environmental and Social Commitment Plan
ESMP	Environmental and Social Management Plan
GoTv, GoT	Government of Tuvalu
HCF	Health Care Facility
HCWM	Health Care Waste Management also Medical Waste Management
HWW	Hospital Wastewater
HWWT	Hospital Wastewater Treatment
ILO	International Labor Organization
LMP	Labor Management Procedure
MFED	Ministry of Finance and Economic Development
MoH	Ministry of Health, Social Welfare and Gender Affairs, also MoH for short
MWM	Medical Waste Management
NCD	Non-Communicable Disease
NIPCP	National Infection Prevention and Control Preliminary
ESMP	Preliminary Environmental and Social Management Plan
PIPCP	Project's Infection Prevention and Control Plan
PMH	Princess Margaret Hospital
PTU	Project Technical Unit
SEP	Stakeholder Engagement PlanMFEDMoHSTD Sexually Transmitted Disease
THSSP	Tuvalu Health System Strengthening Project
UXO	Unexploded Ordinance
WB ESF	World Bank Environmental and Social Framework
WB ESS	World Bank Environmental and Social Standard
WHO	World Health Organization
GoTv	Government of Tuvalu

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1. BACKGROUND

The Tuvalu Health System Strengthening Project (THSSP) is part of the Government of Tuvalu's (GoTv) effort to address the need to increase its health service delivery capacity which is made more pressing by the ongoing COVID pandemic. The project aims to deliver significant environmental benefits through the financing of Medical Waste Management (MWM) and Infection Prevention and Control (IPC) improvements. The project is being considered for funding by the World Bank and hence it is subject to its Environmental and Social Framework (ESF) particularly on World Bank Standard on Assessment and Management of Environmental and Social Risks and Impacts (WB ESS1) through which the applicability and relevance of the following will also be determined:

WB ESS2 - Labor and Working Conditions
WB ESS3 - Resource Efficiency and Pollution Prevention and Control
WB ESS4 - Community Health and Safety
WB ESS5 - Involuntary Resettlement and Restrictions of Access
WB ESS6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources
WB ESS7 - Indigenous People
WB ESS8 - Cultural Heritage
WB ESS10- Stakeholder Engagement

The Government of Tuvalu (GoTv) and World Bank have agreed that, based on the latter's initial assessment of the project's concept and pending the completion of detailed designs, a "Preliminary Project-Wide Environmental and Social Management Plan (Preliminary ESMP)" shall at least be made available by Project Appraisal as partial fulfillment of the WB ESS1 requirements. Thus, this document.

This Preliminary ESMP provides the following:

(1) A rapid general assessment of the potential environmental and social impacts and risks of the project activities, based on available technical information and a cursory study of the environmental and social conditions of the project's influence areas. This general assessment identifies and evaluates the significance of the project's potential impacts and risks relating to the WB ESS2-ESS10; and,

(2) A general environmental and social mitigation plan based on the results of the assessments, the capacities of the implementing agencies, and the requirements of the Tuvalu's laws and regulations, as well as the World Bank ESSs.

The risks and impacts, and management measures identified in this preliminary ESMP will inform the detailed planning and design specifications to be undertaken early during project implementation. The resulting detailed plans and design will in turn serve as a basis for further ES assessment and development of the updated ESMP and the updating of other ES instruments.

2. PROJECT DESCRIPTION

2.1 Project Objectives and Components

The project aims to (i) increase the utilization of and strengthen the management of quality essential health services provided across Tuvalu, and (ii) to provide immediate and effective response in case of an eligible crisis or emergency. It will support the implementation of Tuvalu National Health Strategic Plan for 2020-2024 (NHSP). It has the following components:

Component 1: Improved availability and quality of health services across Tuvalu (approximately US$ 12.75 million)

Subcomponent 1a: Improve the availability and quality of services provided at Princess Margaret Hospital (PMH). As part of its national health reform priorities, the MoH plans to substantially expand and improve the quality of services provided at PMH particularly for: diagnostic services (notably radiology and laboratory), emergency and other urgent care (including for domestic violence), national medical store/warehouse, surgical operations and post-operative recovery, intensive care and rehabilitation. A major emphasis will be placed on improving the patient experience and health outcomes through a dedicated outpatient center for integrated health promotion, detection, and management of NCDs. The urgency to be able to provide quality essential medical and surgical services locally is based on the extreme vulnerability of Tuvaluans to major service disruptions and foregone care as demonstrated by the recent COVID-19 pandemic experience. The exact health services that the expanded PMH will be able to provide will depend on three key linchpins including: (i) availability of human resources including through existing and training of national staff, contracted staff, regularly scheduled visiting teams and establishment of routine teleconsultation with international health provider; (ii) the financial trade-offs of building and operating services in Tuvalu as opposed to the cost of providing the service abroad; and (iii) the ability to ensure adequate quality with the patient volume that would be specifically available in the overall small population of Tuvalu. The Project activities would include:

(i) Conducting a more detailed assessment to define the service priorities and options taking into consideration the concerns mentioned;
(ii) Detailing the functional and physical description of the facility, including all necessary requirements for ensuring that the facility adapts to the local hazards, changing climatic conditions and energy efficiency;
(iii) Site specific plans for mitigation against environmental and social impact as specified in the requirements for environment and social standards;
(iv) Detailed architectural design;
(v) demolition and construction of a new hospital wing on the territory of the PMH complex, including the design characteristics for energy efficiency and resilience to significant weather and climate change events;
(vi) Purchase of related medical equipment and supplies;
(vii) Design and implementation of plans to supplement in-country human resources through established teleconsultation systems with an international provider, contracting of international medical providers, upgrade of Tuvalu general practitioners with specialists skills, and planning for routine visits of international medical teams for services in Tuvalu when possible again; and

(viii) Training and support for clinical governance arrangements such as mortality audits and IPC committee as well as defined standard operating procedures to improve the quality of certain priority service areas (i.e. operating theater, admittance and discharge procedures, diagnosis, treatment and referral for gender-based violence). Investments would include works, medical equipment (including radiological equipment) and supplies, technical assistance, and training. This may include training abroad for the attainment of specialist qualifications by Tuvalu medical staff. The scope may also include providing some recurrent costs associated with supporting international teleconsultation systems and visiting medical teams.

Subcomponent 1b: Strengthen the capacity of core public health programs. This subcomponent would generally build the capacity of the public health system for public health screening of the population and its environment for interventions that can be managed in Tuvalu. Activities would include:

(i) Design and establishment of a larger public health lab (in the new PMH Wing included under subcomponent 1a), building on the capacity that was established under the partner support for COVID-19 related screening, including field vehicles for specimen collections and outreach services;
(ii) Assessment of the needs and implementation of a plan for defining standard operating procedures and training of the public health lab staff;
(iii) Design and undertake an external peer review of the public health lab from a more established regional public health lab to provide support in establishing good quality control;
(iv) Design and implementation of an integrated screening program of the adult population, including for diagnosis and risk stratification for NCDs, particularly hypertension and diabetes; and
(v) Capacity building for the design and implementation of strategic public health communications, in coordination with other development partners such as ADB, WHO and UNICEF, but with specific analysis and planning due to gender, location, and other key differences in risk patterns and health seeking behavior. The Project would also support health communication strategies to embed cross-cutting issues like gender-based violence. Investments would include equipment, laboratory reagents, vehicles, technical assistance, and training. It will be important to work with technical partners such as WHO and SPC in the design and quality assurance mechanisms for the expanded laboratory and population screening plans.

Subcomponent 1c: Improved management of Non-Communicable Diseases (NCDs) in the community and outer island clinics. Given the high burden of NCDs in the population and the financial strain of treating severe complications through the overseas medical treatment scheme, it is important to significantly improve the early management of the disease for those who are at high risk and for those who can be treated effectively on an outpatient basis through the system of clinics and through a specialized NCD clinic which will be established under PMH. Activities would include:

(i) Ensuring standard treatment protocols for the management and referral of hypertensive and diabetic patients at primary health care level are available and staff are trained in their use;

(ii) Defining standards and ensuring readiness of facilities to detect and manage cases of hypertension and diabetes , including through point of care diagnostic equipment where feasible, training, and availability of essential medicines;
(iii) Enhancing the teleconsultation capacity between outer island clinics and PMH; and
(iv) Promoting and building capacity for self-help patient groups for peer-to-peer support. Where possible, training on NCDs would be integrated with other primary health care training needs including those that are related to emergency response and injury in case of hazardous or other trauma event; prevention and awareness raising for heat-related illnesses; and detection and referral in case of gender-based violence. Investments could include technical assistance and training; point of care diagnostic technologies; and information, communication, and technology (ICT) related equipment. At the moment, it is considered that the Project would piggy-back on the improved internet connectivity initiatives already underway and, therefore, not have to directly invest in satellite or broadband connections themselves though it will be further investigated during preparation to the extent that those initiatives will directly benefit and link with the health facilities.

The Project will coordinate with WHO which is working with the MoH on strengthening NCD prevention and control, including introducing the Package of Essential NCD Interventions (PEN). The Project will provide the resources to expand upon and roll out the support initiated by WHO and other partners.

Subcomponent 1d: Strengthen Infection Prevention and Control and Medical Waste Management. As a foundation to the improved quality of essential health services, this subcomponent would aim to improve the infection prevention control and medical waste management systems in practice at PMH and across the island clinics. Activities would include:

(i) Assessment of current system, standard operating procedures, capacities of human resources and gaps for proper hygiene and infection control management and waste management;
(ii) Development of procedures and training of staff based on the gaps defined;
(iii) Upgrade of the water, sanitation and hand-hygiene facilities in the outer island health clinics, i.e. through improving and expanding the rain water collection and storage facilities, functioning hand-washing stations with appropriate soaps, and functioning and environmentally appropriate latrines for men, women and disabled access; and
(iv) Investment in a vehicle to be used on Funafuti island (including from ports for waste of outer island health clinics) for the transport of waste (medical and otherwise) to designated points of disposal and incineration. Investments would include small infrastructure, technical assistance, training, and vehicle.

This subcomponent will need to be carefully coordinated with the support from (i) Taiwan for an incinerator to be used for medical waste, (ii) the ADB through UNICEF on IPC and medical waste in conjunction with the COVID-19 vaccine deployment, and (iii) SPC and WHO on IPC policy and guidelines.

Component 2: Strengthen systems for better health service management (approximately US$ 1.5 million)

Subcomponent 2.1: Strengthen information management for better service delivery. One of the big constraints for better patient management is the lack of patient-centered information that can used to manage to track patients over time and through the referral system and generally the fragmentation and ill-use of existing health information related systems. The Project would support the adaptation and roll-out of a simplified digital patient record that can be used from the point of screening, stratification and management of NCDs which could be used across the system from community, health care clinics, and for the management of chronic disease patients at PMH. The simplified system would have the capability to be integrated with any larger scale management information system at the PMH and export summary information for general public health reporting, and, therefore, would not be the development of another parallel system. At the same time, the Project would support an assessment of the PMH hospital management information system in order to lay out a step-wise plan for the upgrade or replacement of the current system to make it functional across the different components (patient records, lab, radiology, pharmacy, administration, etc.). The replacement of the system would be outside the Project, but any minor investments in hardware, local area network connections or similar that may improve the use of the existing system may be supported. The Project would also support the collection and routine update of health facility readiness information both to ensure the ability to provide quality essential health services, but also ensure a minimum readiness in case of hazardous event. Investments would include: (i) technical assistance and training; (ii) software application adaptation and training; and (iii) ICT equipment and related small in-hospital works to establish network. The Project will coordinate with MFAT and DFAT development support that has been focused on the roll-out of the mSupply logistics management information system to promote the use of mSupply for the purposes of regular monitoring of pharmaceuticals and other essential health commodities availability, but also to determine if the support could be expanded to include related elements such as the patient monitoring system and facility readiness surveys.

Subcomponent 2.2: Strengthen the health planning, budgeting, and implementation. Given the Project investments in expanding service delivery and quality, this has significant implications to ensure that the recurrent costs for operations and maintenance are planned and budgeted adequately. While it is expected that DFAT will provide general technical advisory assistance in health sector planning, specific technical assistance for planning, budgeting and budget implementation of the increased operation and maintenance cost is expected to be needed. The draft NHSP identifies the need to have a prioritized and costed facility maintenance and repair plan and to establish an asset management system that would identify life cycle, repair and maintenance schedule for health assets. Since these would support the sustained operation and maintenance of the facilities supported by the Project, the subcomponent would also provide technical assistance to support the MoH with such plans. Also as a complement to the DFAT advisory support, the component may provide support for the generation of evidence on health system performance, provide feedback from the citizenry on the availability and quality of health services and provide a format through a national health assembly type of approach to engage with the citizens on the priorities for health. United Nations Development Programme (UNDP), with other partners, is providing support through a regional Project in strengthening climate information and early warning systems that includes Tuvalu. Though there is support from WHO and UNDP-financed by the Global Environment Facility to make progress according to the indicators listed in the Health and Climate Change Country Profile, the subcomponent may provide discrete technical

assistance towards this progress as needed. Investments would include: (i) technical assistance; (ii) surveys; and (iii) meeting and workshop related expenses.

Component 3: Project Management, Monitoring and Technical Support (approximately $1.00 million).

In order to facilitate the achievement of the Project objectives, activities and administrative procedures, this component would support the necessary full-time consultant team (as defined in the Project Implementation Arrangements) that would constitute the Project Technical Unit (PTU) to support the MoH in its responsibilities as the Implementing Agency of the Project; short-term technical assistance in areas of project management as may be required, such as part-time consultants in specific areas to comply with the environment and social standards; the cost of equipping and furnishing a project office; and incremental operating costs in support of Project management, including travel related costs associated with Project management. It would also include key technical assistance particularly as it relates to the detailed functional and architectural design of the PMH Wing proposed under subcomponent 1a.

Component 4: Contingent emergency response component (CERC) (US$ 0.0 Million).

The objective of this component is to improve the GoTv's response capacity in the event of an emergency, following the procedures governed by World Bank Operational and Bank Policy (OP/BP) 8.00 on rapid response to crisis and emergencies. The component would support a rapid response to a request from the Ministry of Finance, Economy and Development (MFED) for urgent assistance in respect of an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact to Tuvalu associated with a natural or man-made crisis or disaster. In the event of an emergency, financial support could be mobilized by reallocation of funds from other components to support expenditures on a positive list of goods and/or specific works and services required for emergency recovery. A CERC operational manual, governing implementation arrangements for this component, will be prepared with support under the project.

2.2 Project Location

The Project will be implemented nationwide. The physical activities will be located in existing health care facilities sites, particularly the Princess Margaret Hospital (PMH) in the Funafuti (Figures 2 and 3) and in outer island clinics.

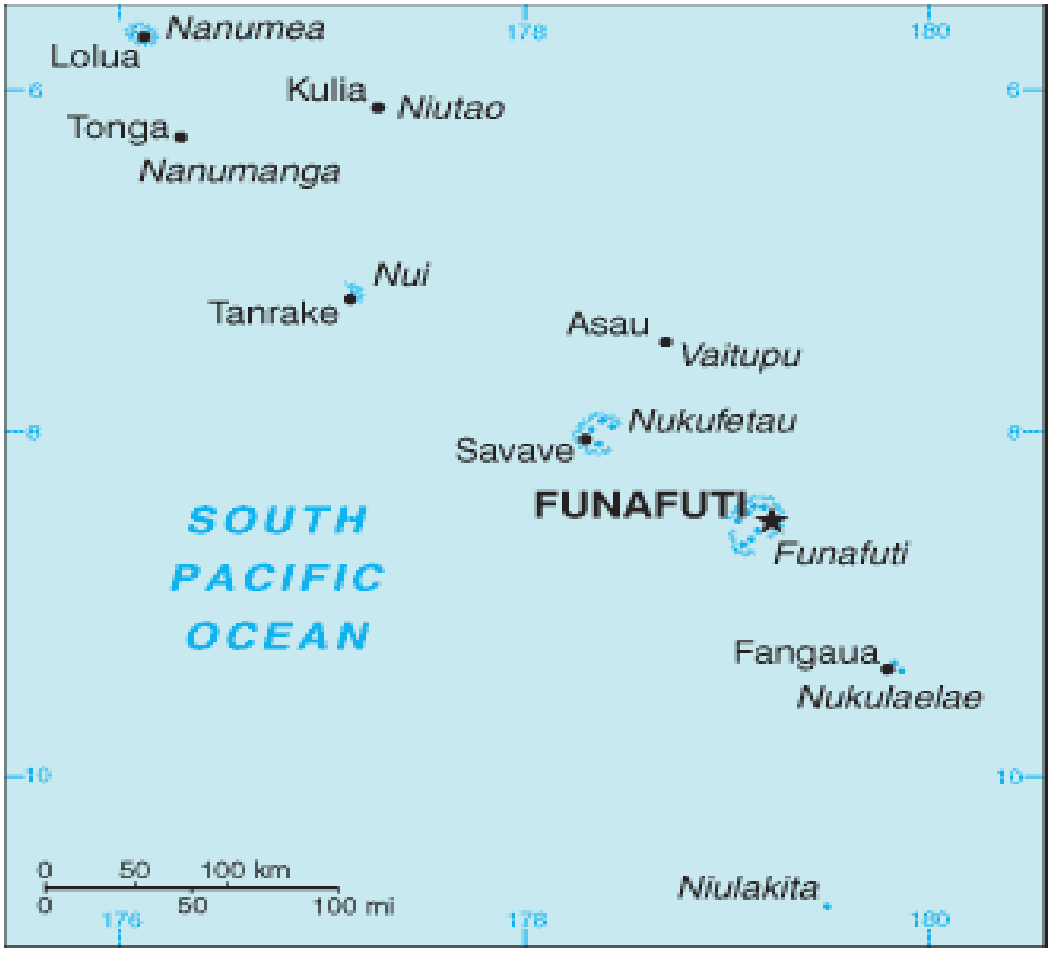

Figure 1. Map of Tuvalu showing the nine atolls/islands (in italics) and their main villages.

Figure 2. Map of Tuvalu's capital Funafuti, showing the location of Princess Margaret Hospital

Figure 3. Close-up map of Princess Margaret Hospital showing its proximity to the beach of the lagoon side of the seashore

2.3 Project Implementation Arrangements

The Ministry of Health, Social Welfare and Gender Affairs (MoH) will be the executing agency with overall implementation responsibility resting with the CEO of Health with support from technical departments, particularly the Director of Health. Given his direct role in the administration of the sector, the Director of Health will be the Project Manager and given responsibility for regular oversight. To support the MoH with its project management functions, a Project Technical Unit (PTU) within the MoH will be established that will coordinate and support the implementation of the Project on a day-to-day basis, including a Project Coordinator, technical, fiduciary and safeguard and support staff. Alongside this, the Ministry of Finance, Economy and Development (MFED) has set up a Central Project Management Office (CPMO) which is staffed with international and national consultants who are experts in project management, procurement, financial management, environment, and social risk management, and monitoring and evaluation. The CPMO will provide support in setting up the PTU, training and in continuous advisory support. The institutional arrangement for the management of the project is illustrated in **Error! Reference source not found.**.

The MFED is the representative of the Government in its relationship with the World Bank and will support Project preparation and implementation. Under the Tuvalu Learning Project (P171681), MFED has established a Central Project Management Office (CPMO) with the mandate to support World Bank financed or co-financed operations during preparation and implementation. Tuvalu HSSP will use the CPMO for the initial procurement planning, execution, and financial management support until such time as the PTU under the MoH has been established.

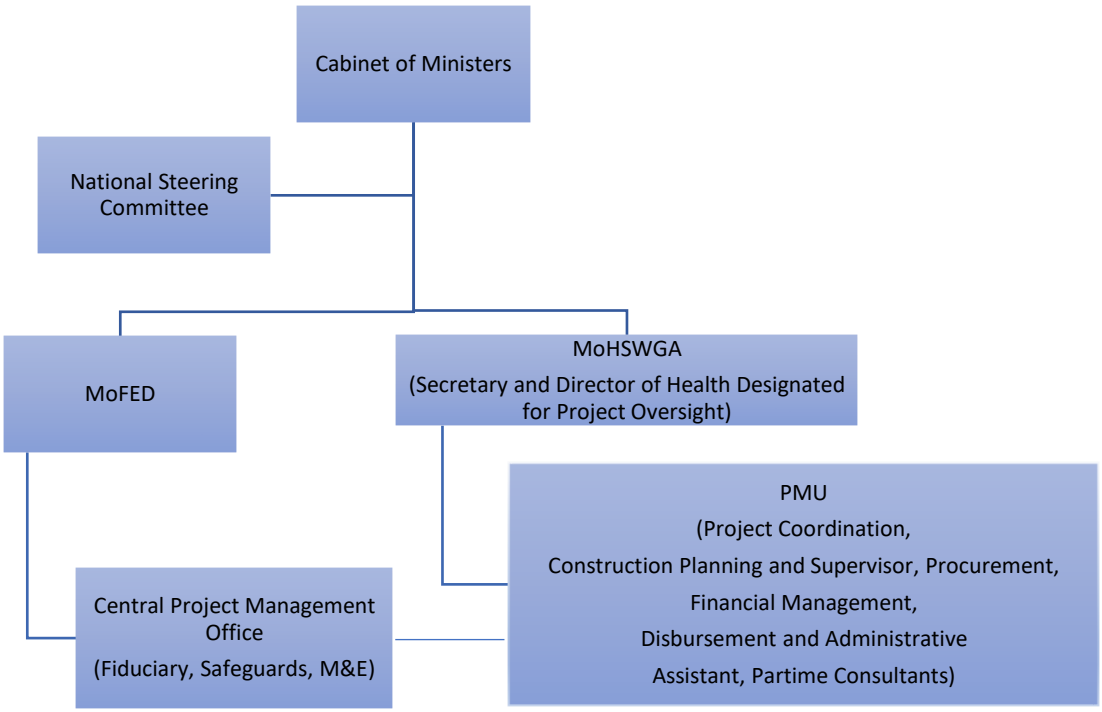

Figure 4. Proposed institutional arrangements for the THSSP

2.4 Activities which have Potential Environmental Impacts/Issues and Co-benefits Relating to WB ESSs

The potential direct environmental and social impacts and risks would mainly come from: (i) the expansion of the PMH which would involve demolition works of existing structure, construction of a building and the installation and operation of new facilities and equipment; (ii) any construction and installation and operation of new equipment at the outer island clinics which may involve water and sanitation facilities; and (iii) the implementation of the HCWM system (i.e., collection, transport, and disposal of health care wastes). Table 1 provides a summary of the project interventions and their potential environmental and social impacts and risks, and co-benefits.

Potential environmental and social impacts/risks of construction at PMH. The construction works at PMH will have the following potential impacts and risks:

- Non-observance of basic workers' rights (i.e., clear terms of employment, normal working hours and overtime compensation, prompt and regular payment of wages, freedom of association, access to grievance redress mechanism)
- Discrimination in hiring and giving of benefits
- Use of child labour in construction works, or employing minors for hazardous tasks
- Potential non-observance of OHS standards (i.e., wearing of PPE, etc.)
- Possible exposure to hazardous materials from demolished structures (e.g., asbestos, lead, etc.)

- Exposure of residents and communities to general construction-related hazards at construction sites and routes (e.g., sharp objects, deep trenches)
- Possible spread of infectious diseases from non-resident workers to locally hired workers and residents
- Impacts of extraction/sourcing of borrow/embankment materials and aggregates; ecological impacts and physical impacts to land and reefs
- Localized air and noise pollution during construction
- Pollution of soil and nearby beach from discharges of construction wastewater, including those from workers' camp, if any
- Potential nuisance from improperly disposed of construction/demolition spoils and solid wastes
- Unanticipated damage to private structures and properties during construction
- Possible damage or increased wear and tear of public facilities (i.e., roads, causeways, ports) used by the project
- Possible destruction of chanced archaeological finds during construction
- Risk of UXO

Impacts and risks of any construction/installation works at outer island clinics. The provision of services in outer island clinics will likely entail repair or rehabilitation of structure and facilities, including the provision of water and sanitation. The same risks and impacts above will apply albeit at a very low level at the outer island clinics. The provision of water and sanitation may include issues of safe water source, and contamination of groundwater.

Health system operations. The operation of the expanded PMH to include laboratory and radiology services will pose additional occupational health and safety risks due to radiation and hazardous substances and wastes. The collection, transport and disposal of hazardous wastes will also pose a risk to healthcare workers and communities.

Table 1. Summary of the project interventions and potential environmental and social impacts or risks

Level of Intervention	Location	Intervention	Potential Environmental and Social Impacts and Risks/Co-benefits
Hospital	Funafuti	Construction of new wing and operation of related equipment and functions in the new building.	• Construction workers basic rights and occupational health and safety • Construction-related safety hazards to nearby residents • Source of borrow and aggregates; Impacts of quarrying or aggregate extraction • Air and noise pollution during construction • Pollution and contamination from construction waste • Displacement and/or damage of nearby private properties and structures

Level of Intervention	Location	Intervention	Potential Environmental and Social Impacts and Risks/Co-benefits
			• Risks of destruction archaeological artifacts during construction • Building design-related safety hazards • Hospital workers rights and occupational health and safety
		Expansion of PMH to include diagnostic (lab, radiology), operation and post-operation capacity, integrated NCD outpatient center (for screening, counselling, management), GBV Counselling	• Risk of exposure and contamination from hazardous substances, materials, and wastes • Improved community health due to additional services
		Digital patient record system for chronic disease management. Further develop analysis of existing Hospital Information System for roadmap to replace or adapt.	More efficient delivery of community health services due to improved information system
		Hospital practices for IPC and Waste Management	• Improved community health due to IPC • Risk of exposure and contamination from hazardous waste during operation
		Ensuring investments consider climate change and adaptation needs	• Climate friendly operation • Climate resilient design and operations
		Asset management	
Outpatient Management / Secondary Prevention	Outer Island Clinics (TBD)	Support further rollout of PEN package. Support and monitoring of service readiness to deliver PEN package including use of point of care technologies, HR training, regular supervision support from PMH, support community engagement and patient groups	Improved community health due to delivery of PEN
		Further teleconsultation with PMH as connectivity improves	Improved community health due to availability of consultative services in remote areas
		Digital patient record system for chronic disease management	Improved community health due to efficient record system
		Water and sanitation at outer island health clinics	• Improved community health • Hazards related to construction/installation of water and sanitation facilities (See above) • Displacement and/or damage to private properties due to construction/installation of water and sanitation facilities • Risks of exposure to contaminated water

Level of Intervention	Location	Intervention	Potential Environmental and Social Impacts and Risks/Co-benefits
Population-based Screening	Funafuti and Outer Islands	Support for design and roll-out of screening of adult population for detection and defining those at risk, linking with digital patient record system. Use of information for analysis (gender, geography).	Improved community health due to better detection and hence better targeting of health intervention and information campaign
Primary Prevention on Key Risk Factors	Funafuti and Outer Islands	In case of need based on on-going DP dialogue	Improved community health due to coordinated efforts among DP
WB Technical Support	National	Tuvalu's Medical Treatment Scheme (TMTS) Policy revision	-
		Analysis of needs and options for PMH Expansion	Improved and cost-effective health care services delivery
		Regional work on OI models of care and use of teleconsultation	Improved and cost-effective health care service delivery
		NCD Cascade Gaps and Opportunities	Improved and cost-effective health care service delivery
		Budget Planning and Analysis	
CERC	National	(To be determined during detailed planning and design in consultation with stakeholders)	

Environmental and social co-benefits that can potentially be enhanced. The project activities themselves will provide environmental and social co-benefits.

- One of the main outcomes of the project is better community health due to increased access of people to health care services.
- The project will provide specific interventions targeting victims of gender-based violence. The project could be enhanced further by adopting differentiated measures for women and other vulnerable groups.
- The building design will incorporate climate friendly and climate resilient features.
- The waste management system will reduce risk of contamination and exposure of workers and communities to hazards of medical wastes.

Figure 5. The Princess Margaret Hospital in Funafuti.

2.5 Applicable WB ES Standards

Table 2 provides an initial screening of the applicable World Bank ES Standards based on the types, scales, and locations of the activities to be undertaken. The applicable standards are ESS1, ESS2, ESS3, ESS4, and ESS10. The rests of the standards can be ruled out as not applicable.

Table 2. Applicable World Bank ES Standards

WB ES Standard	Relevance	Description
ESS1 Assessment and Management of Environmental and Social Risks and Impacts	Applicable	This Standard applies to all World Bank supported investment projects. It is through the assessment under this standard that the applicability of other standards will be determined.
ESS2 Labor and Working Conditions	Applicable	This standard applies to all World Bank supported investment projects that involve workers, whether directly hired by the government to work for the project (direct workers), hired by contractors (contracted workers) or workers of the project's primary suppliers. The HSSP will involve both direct workers and contracted workers. Direct workers will include employees and consultants of the Project Technical Unit (PTU) and CPMO. Contracted workers will likely include selected private providers and construction workers.
ESS3 Resource Efficiency and	Applicable	The renovation and rebuild of the left wing and central medical store at the PMH and the upgrading works in the outer islands will use finite resources such as construction materials, water,

Pollution Control and Prevention		and energy. The construction at PMH may also involve emissions of particulate matter, noise and vibration, wastewater from concrete mixer washings, domestic wastewater from workers camp, if any will be established. The project will include setting up an implementation of Medical Waste Management Plan (MWMP).
ESS4 - Community Health and Safety	Applicable	During the construction period, the construction activities will pose a risk to the safety of nearby residents as well as the workers and patients of PMH. During the implementation of the IPC and MWM, improper handling, storage and disposal of medical waste and improper design and operation of sanitation facilities may pose a risk to both community members and health care workers.
ESS5 Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	Not relevant	The project does not require any land acquisition. All civil works will take place within the boundary of existing facilities.
ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not relevant	The physical activities of the project will all be located in built-up areas and far away from any significant natural habitat or declared conservation areas.
ESS7 Indigenous Peoples	Not relevant	The overwhelming majority of people in Tuvalu identify themselves as pure Tuvaluans (92%) or of mixed Tuvaluan-Tuvalu ethnicity (7%). There are no group that would qualify as indigenous group as per ESS7.
ESS8 Cultural Heritage	Applicable	The sites to be developed in PMH and the outer islands Health Clinics are not expected to contain any cultural heritage structures. However, there may be chanced discoveries of archaeological artifacts during construction.
ESS9 - Financial Intermediation	Not relevant	The standard does not apply as the Project does not propose to include financial intermediaries.
ESS10 - Stakeholder Engagement and Information Disclosure	Applicable	This standard is applicable to all projects funded by the World Bank.

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3. APPLICABLE LAWS AND REGULATIONS

This section discusses the current Tuvalu laws and regulations related to the applicable ES Standards and the Tuvalu health sector.

3.1 Tuvalu's EIA Law

Environmental Protection Act 2008. The Environmental Protection Act (EPA) is the main law governing the protection and management of the environment. This act defines the government's role in relation to all environmental management and decision-making processes.

Environmental Protection (Environmental Impact Assessment) Regulations 2012. These regulations set out the process for undertaking environmental impact assessments. All developments require a preliminary environmental assessment report (PEAR) to be submitted to assess whether a full EIA is required. In brief, the regulations require a full assessment to contain: (a) a summary of the development proposal and its consequences; (b) a description of the development proposal and objectives; (c) a description of the development proposal including technical description, site boundaries and justification for the proposal; (d) review of the alternatives; (e) a description of the affected environment; (f) analysis of environmental consequences. In addition to these requirements, a full assessment of baseline conditions and a schedule of compliance monitoring should be included in the EIA. The Regulations also make provision for the DoE to identify and use a suitably skilled and qualified external review consultant to support the DoE at the cost of the project proponent. The Regulations state that after review of the full assessment, the DoE may issue instructions for the proponent to undertake consultations and may provide full details for the proposed consultations process.

3.2 Laws Relating to ESS2 (Labor and Working Conditions)

Employment Act 2008. Under this Act, any employer must secure a recruitment license when: (a) the employer employs more than 25 people at one time; or (b) the workers are to be recruited from more than 25 miles from the place of work. The issuance of this license is to enable the GoTv to consider the impact of removing several adult males from their home area for the duration of employment. The application for this license requires detailed information on the health, safety, and welfare of the employees.

The Act also provides for the hiring minors. Section 43 of the Act states that no person shall recruit a worker under the apparent age of 18. The Commissioner may grant permission to employ persons from 15 years of age with parental or guardian consent for employment in Tuvalu for light work duties.

The act also stipulates the maternity arrangements for female employees, including 12 weeks paid maternity leave with at least 25% of her regular salary, and makes provisions for the allowance of twice daily breaks to breastfeed any nursing babies. It protects women from dismissal for absences relating to pregnancy complications, unless this absence exceeds 12 weeks.

Part XI of the act provides for the care of workers and details the legal requirements governing the following: rations, water, sanitary arrangements, housing, medical care and treatment, hospital maintained by the employer, conveyance of workers by sea and reporting of deaths. The Ministry of Labour, Works, and Communications is responsible for overseeing labour practices and law.

Trade Unions Act. The Trade Unions Act provides for the freedom of association among workers and the registration and protection of trade unions and its members from intimidation and suits of torts and conspiracy.

Industrial Relations Code. The Industrial Relations Code is a comprehensive legislation concerning the settlement of trade disputes and regulating industrial relations. It sets forth the procedures for settlement of disputes and deals with conciliation, arbitration, settlements, and inquiries into trade disputes. It also makes provision for protection of essential services, life and property and miscellaneous other provisions.

ILO Conventions. Tuvalu has ratified only two (2) of the 190 ILO conventions, including only (1) of the eight (8) fundamental conventions, the Worst Forms of Child Labor Convention of 1999. The other convention that Tuvalu has ratified is the Maritime Labor Convention of 2006. Tuvalu is currently reviewing the Employment Act to align it with the ILO conventions that it has ratified.

3.3 Laws Relating to ESS3 (Resource Efficiency and Pollution Control)

Environmental Protection Act. Pollution prevention and control is governed under the EPA. The Act empowers the Department of Environment (DoE) to regulate waste collection and disposal systems and set operational standards by applying guidelines for waste management operations within Tuvalu. The Act also sets out provisions for regulations dealing with pollution control and dealing with hazardous waste and substances.

Waste Management Act 2017. This act is Tuvalu's main legislation on waste management replacing the Waste Operations and Services Act 2009 and the Environmental Protection Regulation (Litter and Waste Control) Regulations 2013. It covers all types of wastes and places the overall responsibility for the regulation of wastes in the Department of Waste Management of the Ministry of Home Affairs and Rural Development while defining the roles and responsibilities for waste management of other agencies as follows:

a. Regulatory control of waste dumps and waste disposal sites will be the joint responsibility of the designated Waste management operators (which are the Kaupule or their designated waste management operators) and the DOE for environmental impact assessment procedures and other relevant provisions of the EPA 2008.
b. Regulatory control of waste disposal at sea by dumping and incineration at sea will remain the responsibility of the Department of Marine and Port Services in accordance with the Marine Pollution Act 1991 (as amended)
c. Management and regulatory control of medical waste will be the responsibility of MoH
d. The management of hazardous wastes in relation to implementation of international conventions will be the responsibility of the Department of Waste Management
e. Provision of waste collection services for residential and commercial premises will be the responsibility of designated authorities
f. Collection and disposal of wastes that cannot be managed by the provision of normal waste collection services to residential and commercial premises are be undertaken by the Department of Waste Management
g. The storage and disposal of hazardous wastes is to be undertaken by the designated waste management operators (which are the Kaupules of the service area).

This Act also empowers the Department of Waste Management to require the preparation of a Waste Management Plan for a major development project.

3.4 Laws Relating to ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources)

***Conservation Areas Act 2008*.** This Act makes provisions for the declarations and management of conservation areas. The minister may declare any part of the territory of Tuvalu as a conservation area upon the requires of a Kaupule after due consultation with the Kaupule recommending the establishment of a Conservation Area (CA). The objective of the CA is to protect the coastal, marine, and terrestrial environment; to conserve the living and non-living natural resources of the island communities and to provide for their sustainable utilization by present and future generations; to preserve biological diversity of the CA, especially those species which are endemic, threatened, or of special concern and the coastal and marine habitats upon which the survival of these species would depend. Of Tuvalu's 11 marine and terrestrial Conservation Areas, only Funafuti CA is covered by a formal Marine Protected Area which has been legally gazetted through national legislation. Nanumaga Kaupule has implemented an informal community managed Locally Managed Marine Area (LMMA) using traditional management practices with limited enforcement capabilities.

Convention on Biological Diversity (CBD). Tuvalu has ratified the CBD in 2002 and has developed its National Biodiversity Strategies and Action Plan as part of its obligations to the CBD. The NBSAP provides that all development activities regardless of nature and magnitude shall be subject to EIA.

Convention on the Conservation of Migratory Species of Wild Animals (CMS). This Convention aims to conserve terrestrial, marine, and avian migratory species throughout their range. It is an intergovernmental treaty under the United Nations Environment Program concerned with conservation of wildlife and habitats on a global scale. Tuvalu is not yet a party to the CMS, however it has signed two Memorandum of Understanding regarding Pacific Island Cetaceans (2010) and Sharks (2010). Within Tuvaluan waters there are 14 species that are related to the CMS, including the humpback whale, blue whale, migratory birds, and several shark and turtle species.

3.5 Laws Relating to ESS4 (Community Health and Safety)

Building Act 2019. The Building Act 2019 empowers the government make regulations prescribing a Building Code and provides for its enforcement through issuance of building permits and inspections. However, there is still currently no building code in place for Tuvalu. There has been a draft National Building Codes (from 1990) under and Australian funded program which serves as guide for infrastructural development on general construction undertaking (GoT and PHT, 2020).

Waigani Convention. The objective of the Convention is to reduce and eliminate transboundary movements of hazardous and radioactive waste, to minimize the production of hazardous and toxic wastes in the Pacific region and to ensure that disposal of wastes in the Convention area is carried

out in an environmentally sound manner. The Waigani Convention is modelled on the Basel Convention and constitutes the regional implementation of the international hazardous waste control regime. Tuvalu became a signatory to the Waigani Convention in 2001 and is therefore obliged to: (i) take all appropriate measures to ban the import and export of hazardous waste to and from the Convention area (Art. 4.1); (ii) prohibit dumping of hazardous wastes and radioactive wastes in the Convention Area (4.2); (iii) ensure that within the areas of their jurisdiction the generation of hazardous wastes is reduced (art.4.4); (iv) ensure availability of adequate treatment and disposal facilities for the environmentally sound management of hazardous wastes in the Convention Area (4.5)

3.6 Health Sector Laws

Public Health and Safety Regulations (Revised 1990). These regulations set out the required standards in and around villages for maintaining public health. The following are particularly applicable to the project's construction sites and field offices:

(a) No stagnant water shall be allowed to lie in such lands for more than 24 hours unless treated to the satisfaction of a sanitary inspector by efficient drainage or with petroleum or other suitable oil;
(b) No tins, bottles, or receptacles capable of holding water shall be allowed to remain upon any such premises or land;
(c) All tanks, vats and vessels used for retaining water shall be efficiently covered with mosquito proof gauze, or shall be treated with petroleum or other suitable oil to the satisfaction of a sanitary inspector;
(d) No person shall deposit or cause to be deposited any empty tin, bottle or other receptacle in any street road or public place;
(e) Every house or building in daily occupation shall be provided by the owner thereof with latrine accommodation approved by the sanitary inspector;
(f) All garbage and rubbish which can be readily destroyed by fire shall be so destroyed; and all other garbage and rubbish shall be placed in tins and covered with fly proof covers, and such tins shall be placed daily in positions convenient for collection.

3.7 Laws Pertaining to ESS8 (Cultural Heritage)

Convention for the Protection of the World Cultural and Natural Heritage. This convention established the UNESCO World Heritage Sites List. To be a site on this list, it must be a place of special cultural or physical significance. The program catalogues names and conserves sites of outstanding cultural or natural importance to the common heritage of humanity. Tuvalu has acceded to this convention in 2004 but has not yet ratified it. Tuvalu still does not have any approved sites on the UNESCO List.

3.8 Laws Relating to ESS10 (Stakeholder Engagement and Information Disclosure)

Environmental Protection Regulations 2012. The Environmental Protection Regulations 2012 state that after review of the full assessment, the DoE may issue instructions for the proponent to undertake consultations and may provide full details for the proposed consultations process.

Falekaupule (Local Government) Act 1977. This act determines that each March, and at 3 monthly intervals throughout the year an assemble of all residents of the Falekaupule area will be held to discuss treasury matters, local development plans and any other matters. Under the act, there is a local development plan for each Falekaupule which will set out programs and priorities for social and economic development for that area. The local development plan shall be reviewed each year by the Falekaupule Assembly.

3.9 Laws on Local Governance

Falekaupule (Local Government) Act 1977. The Local Government Act 1977 provides for the establishment and composition of a Falekaupule and a Kaupule as well as their meetings, proceedings, and functions. The act states that the Kaupule on each island shall be the executive arm of the Falekaupule and shall perform all the functions conferred on the Falekaupule by this or any other Act and generally maintain order and good government and promote development within the area of its authority. Schedule 3 of the Act details the functions of the Falekaupule in, among others, building and town or village planning, public health, and public safety, etc. Specifically, the Falekaupule has the mandate to, among others:

(i) Regulate and control by bylaws the erection and construction, demolition, re-erection and reconstruction, conversion and re-conversion, alteration, repair, sanitation, and ventilation of any public or private building or structure;
(ii) Prevent and control erosion of land by the sea or other cause;
(iii) Safeguard public health and promote public health, including prevention and dealing with any outbreak of the prevalence of any disease in accordance with the Public Health Act;
(iv) Prevent the pollution of any water, and by bylaws to prevent access to any polluted water;
(v) Make, alter, divert, and maintain roads, streets, parking, paths, culverts; causeways, bridges, drains and watercourses;
(ix) Regulate or prohibit by bylaws the planting, cutting or destruction of trees or vegetation growing along any street, road, path or in any public place;
(x) Establish, maintain, and provide information and publicity services;

4. RELEVANT BASELINES

The following is a cursory assessment of baseline conditions of aspects of the environment deemed relevant to the project. A more focused discussion on Funafuti Atoll and particularly around the vicinities of the PMH is provided where information is available.

4.1 Physical Environment

4.1.1 Geography

Tuvalu is an archipelago consisting of nine (9) small islands and atolls scattered over an area of Pacific Ocean from the latitude of 5°S to 10°S and longitude of 176°W to 180°W encompassing approximately 900,000km^2 of exclusive economic zone (EEZ) waters. With a total land area of only approximately 26km^2, the country is the fourth smallest country in the world. Tuvalu lies over

an area of the South Pacific Ocean approximately 500km long and 28km wide halfway between Australia and Hawai'i (Figure 66) and approximately 1,000km northeast of Fiji. Funafuti is the largest atoll and comprises of numerous islets around a central lagoon that is approximately 25.1km by 18.5km in an east west direction and is centered on 179°7'E and 8°30'S. On the atolls, an annular reef rim surrounds the lagoon with several natural reef channels. The town of Funafuti, which is the capital town Tuvalu, is in the Funafuti atoll. The profile of the eight (8) outer islands is provided in Annex

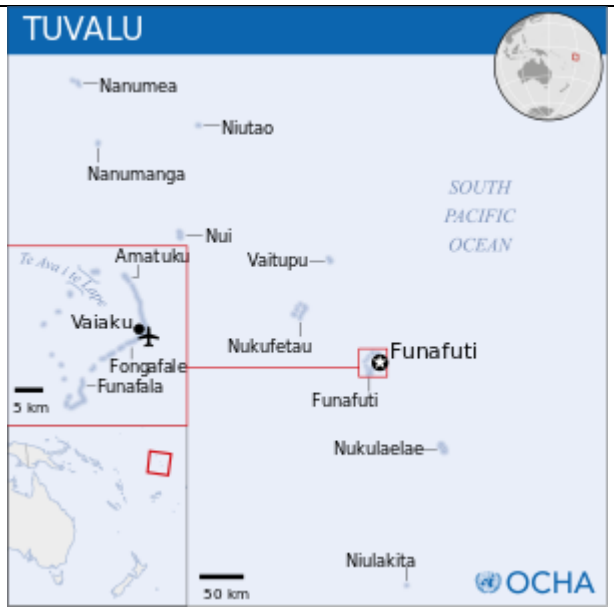

Figure 6: Geographic context of Tuvalu

4.1.2 Geology

Tuvalu is a volcanic archipelago consisting of three reef islands: Nanumaga, Niutao, Niulakita and six true atolls: Funafuti, Nanumea, Nui, Nukufetau, Nukulaelae and Vaitupu. These islands and atolls are very low-lying with an average elevation of only two (2) meters above sea level. Like other coral atolls and islands, the soil is derived from limestone which has been formed through coral formation over thousands of years. Tuvalu is geologically very young, with most of its islands having poorly developed sandy or gravel coastline soils. Five of the nine islands that make up Tuvalu can be considered true atolls (i.e., Nanumea, Nui, Nukufetau, Funafuti and Nukulaelae), three are table reef islands (Nanumaga, Niutao and Niulakita) while Vaitupu (with the largest land area) has composite characteristics of an atoll and a table reef island.

Tuvalu's' islands and atolls are geologically very young, with most islands having poorly developed infertile, sandy or gravel coralline soils. The atolls are also very dynamic with sediments constantly being produced and continued reef growth where they are not impacted by human activities. The islands themselves are subject to continual erosion and deposition, some of this occurring over a relatively long period but some occurring very rapidly because of major storms (Lane, 1994).

The land is very low-lying, with narrow coral atolls. The highest elevation is 4.6 meters above sea level on Niulakita. Over 4 decades, there had been a net increase in land area of the islets of 73.5 ha (2.9%), although the changes are not uniform, with 74% increasing and 27% decreasing in size. The sea level at the Funafuti tide gauge has risen at 3.9 mm per year, which is approximately twice the global average. The rising sea levels are identified as creating an increased transfer of wave energy across reef surfaces, which shifts sand, resulting in accretion to island shorelines, although this process does not result in additional habitable land (Wikipedia).

Tuvalu is situated in a relatively quiet seismic area. Although the atolls are volcanic in origin, there are no active volcanos in Tuvalu. According to the Global Facility for Disaster Reduction and Recovery (GFDRR), Tuvalu has a very low seismic risk. Tuvalu has a 40% chance in the next 50 years of experiencing, at least once, extremely weak levels of ground shaking. These levels of shaking are not expected to cause damage to well-engineered buildings and infrastructure assets (GFDRR, 2011). In terms of risks of Tsunami however, Tuvalu is rated at medium risk (See GFDRR, 2020). Although Tuvalu is situated in a relatively quiet seismic area, it is surrounded by the Pacific "ring of fire," which aligns with the boundaries of the tectonic plates. These tectonic plate boundaries are extremely active seismic zones capable of generating large earthquakes which causes tsunamis that can travel great distances. In 1899, a large earthquake off the eastern coast of New Ireland, Papua New Guinea generated a large tsunami that resulted in destructive waves at Nukufetau atoll.

4.1.3 Meteorology

The climate of Tuvalu is tropical throughout the year and is divided into two predominant seasons, a wet (November to April) and dry (May – October) season however rainfall averages more than 200mm each month of the year in Funafuti and more than 160mm in Nanumea (Figure 7). This is due to the location of Tuvalu near the West Pacific Warm Pool where thunderstorm activity occurs year-round.

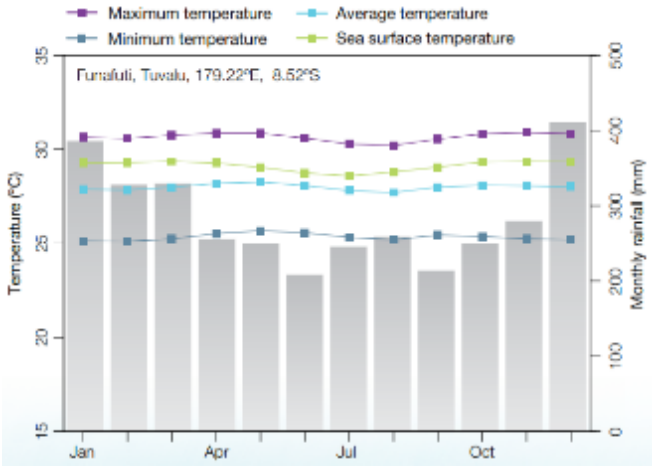

Figure 7: Seasonal rainfall and temperature in Funafuti

Annually, the average rainfall in the period 1942-2005 is 2875mm however rainfall varies from 3500mm/year in the southern islands to 2700mm/year in the northern islands. Dry spells and droughts are relatively uncommon but does occur. Rainfall in the southern Tuvalu atolls is high

and reliable throughout the year but less so in northern atolls. Sixty percent of the rain falls in the November to April period, and it is in this wetter season that the heaviest rates are recorded. There is a significant inverse relationship between rainfall and the El Nino/Southern Oscillation Index leading the rainfall response by several months.

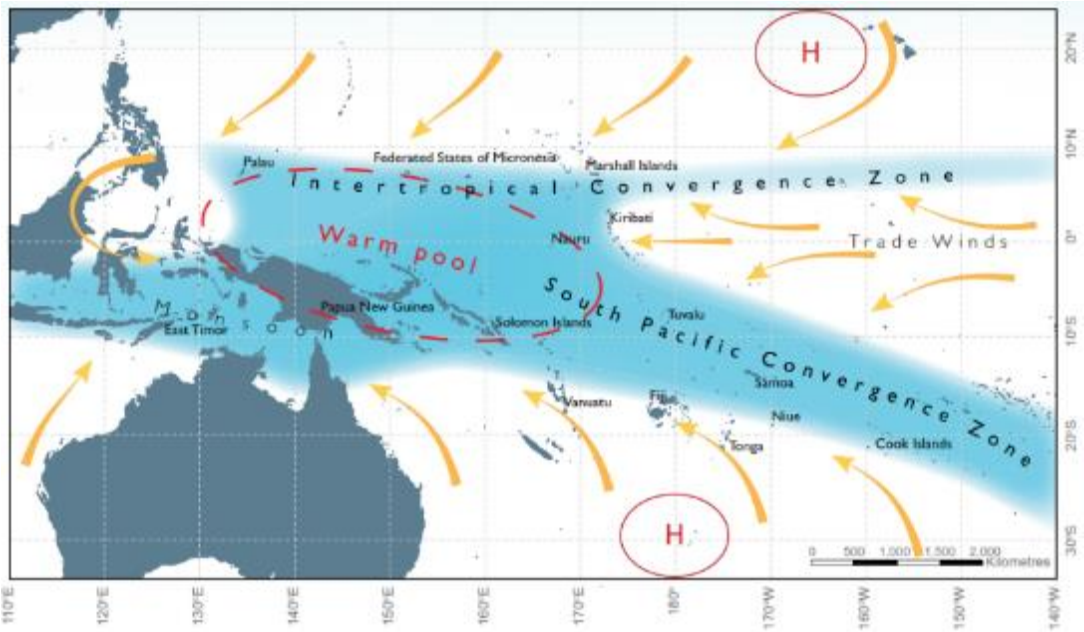

Figure 8: The average positions of the major climate features in November to April.

Tuvalu's wet season is affected by the movement of the South Pacific Convergence Zone. This band of heavy rainfall is caused by air rising over warm waters where winds converge, resulting in thunderstorm activity. The West Pacific Monsoon can also bring heavy rainfall to Tuvalu during the wet season. The Monsoon is driven by large differences in temperature between the land and ocean, and its arrival usually brings a switch from very dry to very wet conditions.

In Funafuti there is little variation in temperature throughout the year. The maximum temperature is between 31-32°C and the minimum temperature between 25-26°C all year round. Air temperatures are strongly tied to the ocean temperatures surrounding the islands and atolls of the country.

From December to March winds mainly come from the WNW and ENE, while stronger winds mainly come from the WNW. In the remaining months, wind comes mainly from the E and ESE (Figure 9). Median wind speeds range between 5 and 7m/s, with little variation in magnitude throughout the year. Winds over Tuvalu are dominated by the south-east pacific trade wind belt just south of the dry belt of the equatorial oceanic climate zone. The cyclone season is from November to April with winds from the W to NW when strong winds and high rainfall can be expected. From May to October, the south-east trade winds are generally light. The predominant wind direction ranges between ENE to ESE for all the islands of Tuvalu.

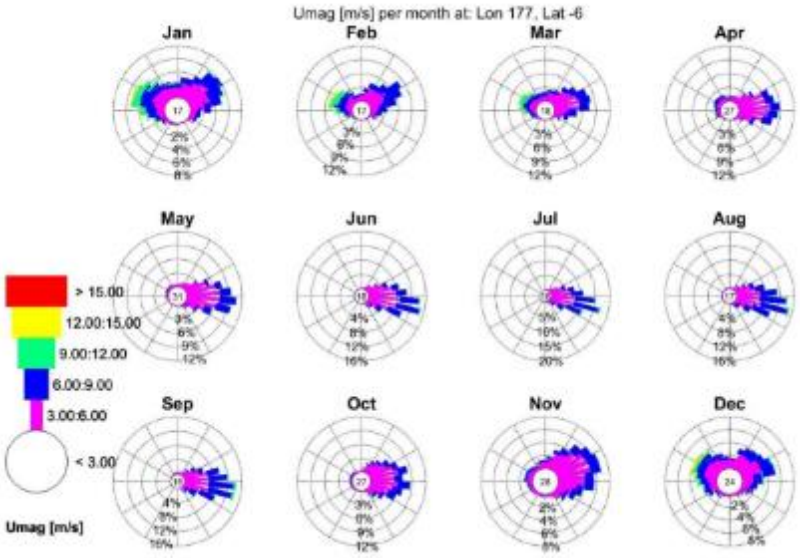

Figure 9: Monthly average wind directions for Nanumaga. Source: Deltares Vulnerability Assessment.

4.2 Biological Environment

4.2.1 Terrestrial Biology

Flora. The indigenous terrestrial flora of Tuvalu is very poor, highly disturbed, and now numerically dominated by introduced exotic species. This has been due to the selective removal of indigenous species and vegetation for growth of settlements, construction, boatbuilding, firewood, medicine, tools and handicrafts and other purposes; and the deliberate and accidental introduction of a wide range of non-indigenous plants, some of which have important cultural plant and some invasive weeds. The resultant total number of terrestrial vascular plants reported present, at some time in Tuvalu is about 362 species, or distinct varieties, of which only about 59 (16%) are possibly indigenous (See GOT, 2017).

The indigenous vegetation of Funafuti is highly disturbed and now dominated by introduced exotic species. 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. The total recorded flora of Funafuti is about 349 species, only 16% of which are indigenous. The most common trees found on all islands are coconut (Cocos nucifera) stands, hibiscus (Hibiscus tiliaceus), papaya (Carica papaya), pandanus (Pandanus tectorius), salt bush (Scaevola sericea), Premna serratofolia, Tournefortia samoensis, zebra wood (Guettarda speciosa), kanava (Cordia subcordata) and terminalia (Terminalia samoensis). Indigenous broadleaf species, including Calophyllum inophyllum, make up single trees or small stands around the coastal margin (TCAP, ESIA for Funafuti).

Fauna. The indigenous terrestrial vertebrate fauna of Tuvalu includes no indigenous land mammals, amphibians, or freshwater fishes. There are some of terrestrial reptiles, all lizards, one

of which is Tuvalu's only recorded endemic vertebrate, the Tuvalu forest gecko (Lepidodactylus tepukapili, which was found on Tupuka Islet, Funafuti. Of particular importance are 28 species of indigenous birds, approximately 20 of which are sea birds, and a few are migratory species. Birds are also a very important traditional food source and a hunted. Notable terrestrial invertebrates include land or shore crabs, including the coconut crab, wide range of birds have been traditionally with most of the smaller crabs, including hermit crabs, being used as fish bait. Also, important area range of land snails that are used to make shell leis and handicrafts, and four endemic land snails and two jumping spiders were reported from Hedley's expedition in the late 1800s. There is also a range of largely unassessed other invertebrates (See GOT 2017).

4.2.2 Marine Ecosystem

Tuvalu's marine environment is the main local source of animal protein, products, such as shells, for handicraft production, and revenue from licensing agreements with foreign fishing nations fishing within Tuvalu's EEZ. Exploitation at the local level is mainly for subsistence use, although there has been limited local commercial fishing for finfish and shellfish for local sale and limited export on Funafuti.

Studies of Tuvalu's finfish resources, including sharks, rays, and eels, suggest that the total number of inshore fish and offshore species could be 900 or more, about 500 of which are recognized by Tuvaluan names (Thaman et al 2015). The marine invertebrate fauna includes an incredible but threatened diversity of bivalve, gastropod and cephalopod molluscs, crustaceans, echinoderms, corals, and other marine invertebrates. Almost of these species have been overfished or in declining numbers.

4.3 Socio-economic Profile

4.3.1 Political and Administrative Structure

Outer Island Structure and Governance. The local decision-making structure and governance for each island is defined in the chart below (Figure 101010). The "Falekaupule" is the supreme decision maker. It is defined as the 'traditional assembly that composed according to the local customs of each island'. The local government structures consist of 3 main bodies: the Falekaupule, the Kaupule which is the executive arm of the Falekaupule, and the Falekaupule Assembly which is the consultative forum where issues are tabled for discussion and includes anyone from the community 18 years or above. The Falekaupule normally holds its meetings monthly in which they are briefed on minutes of the Island Kaupule meetings and on issues that concern the community (GoT, 2018).

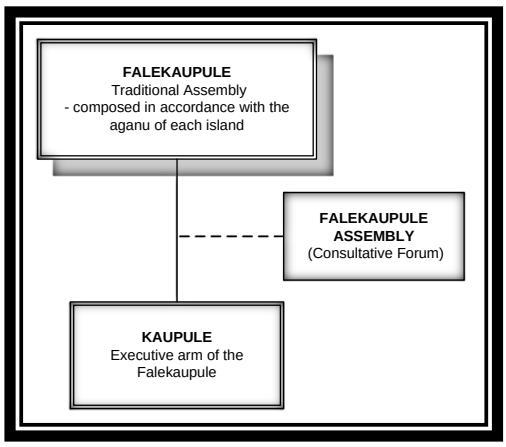

Figure 1010: Local decision-making structure of outer islands

Under the Falekaupule Act, the general functions of a Falekaupule includes local government functions related to agriculture, livestock, and fisheries; building and town or village planning; education; forestry and trees; land; relief of famine or drought; markets; public health; public order; peace and safety; communications and public utilities and trade and industry. The local government system (as defined by Falekaupule Act) falls under the administration of the Ministry of Home Affairs, Rural and Urban Development. (GoT, 2018)

4.3.2 Demographics

As of 2017, Tuvalu has an estimated population of 11,052 and growing at 0.82%. The population is relatively young with median age of 25.2 years. The country has a high out-migration rate with about 6.81 migrants per 1000 population. There is slightly higher number of females than males with about 103 females per 100 males. The capital Funafuti accounts for 57.2% of Tuvalu's population as of the 2012 census with a population density at Funafuti of 2,220 per sq. km. In terms of ethnicity Tuvaluans are 96% Polynesian and about 4% Micronesian. Religion is more than 99% Christians, with 97% members of the Church of Tuvalu. The languages are Tuvuluan, English, Samoan and Ikirabati (principally on the Island of Nui).

4.3.3 Educational Profile

Tuvalu's literacy rate is high. Average educational attainment in 2019 is 9.1 years (IHME, 2021). There are 1,658 at the secondary school age population and about 965 at tertiary levels in Tuvalu (COL, 2021). The Gross Enrolment Ratio (GER) in Secondary Education in 2019 is 47.2% for females and 35% for males. Tuvalu, being a small island state with very limited resources relies heavily on its human manpower as its main asset. In this aspect the GoTv allocates the largest portion of its annual budget to the education sector with a total of around AU$6.1million which is 22% of the budget. Tuvalu government's support to education focuses on vocational education.

On Funafuti there is one government primary school and one Seventh Day Adventist primary school which have a register of over 900 pupils. There is one secondary school on Funafuti run by the Church of Tuvalu (EKT). The University of the South Pacific (USP) Extension Center on Funafuti operates the Augmented Foundation Program for sixth form students who pass their Pacific Secondary School Certificate so that students can enter tertiary education outside Tuvalu. On Funafuti is also the Tuvalu Maritime Training Institute which provides training to approximately 120 maritime cadets each year to provide them with the basic skills necessary for employment as seafarers on merchant shipping.

4.3.4 Sociocultural Profile

The Tuvaluans are Polynesians and their language is closely related to Samoan. Tuvaluan society is closely-knit and people have exceptionally strong sense of community. Kinship groups and island communities continue to take primary responsibility for welfare and social services. Tuvalu has a strong tradition of volunteerism, whereby persons and families present food, services, and money to the community on occasions such as a child's educational achievement or a wedding. Feeding the entire island is also a common way of asking for communal forgiveness for a transgression. Competitive fund-raising and other forms of resource pooling occur frequently. Individuals, groups, and communities can gain considerable prestige from generous contributions to such efforts. Conversely, the system can place less fortunate individuals under substantial strain (World Culture Encyclopedia, 2021).
An assessment by ADB (2003) reported increasing social problems such as alcoholism, drug abuse, gambling, lack of respect for elders, and school absenteeism. Consumption of alcohol by youths and men, particularly construction workers and paid laborers are blamed for most domestic altercations. Although the traditional support system in the communities was perceived to still be strong, some elderly people feel they have no one to support them financially or help them cultivate the land.

4.3.5 Health Profile

Life expectancy at birth in Tuvalu is 66.16 years with higher rate for women (68 years). Infant mortality rate is about 30.8 per 1,000. Under 5 mortality is 13.6 per 1000. Total fertility rate is about 3 children born/woman. In 2019, the top 10 causes of deaths in Tuvalu are (1) ischemic heart disease; (2) stroke; (3) diabetes; (4) COPD; (5) Lower Respiratory Infection; (7) Lung Cancer; (8) Hypertensive Heart Disease; (9) Road Injuries; and (10) Cirrhosis. Of these eight (8) are non-communicable diseases. The top risks factors that cause diseases and disabilities are: (1) High fasting plasma glucose; (2) High body-mass index; (3) High blood pressure; (4) Tobacco; (5) Dietary risks; (6) High LDL; (7) Kidney dysfunction; (8) Malnutrition; (9) Air pollution; (10) Occupational risks (IHME, 2021). Tuvalu's disease profile generally follows similar trend with the Pacific Islands region.

4.3.6 Economy

Classified as a least-developed country, the islands contain very few natural resources. The primary economic activities of the country are subsistence farming and fishing; income from foreign aid is an important part of the economy. Tuvalu also sells some stamps, coins and, in the

last 10 years, has sold use of their Internet domain ".tv"—an action that contributes a substantial amount of revenue to their overall Gross Domestic Product (CIA, 2011).

Tuvalu's economy is highly dependent on foreign earnings and official aid. Foreign earnings include interest received from the Tuvalu Trust Fund (TTF) and the Falekaupule Trust Fund (FTF), fisheries licensing, remittances from migrant labour and Tuvaluans residing abroad. Official aid is from Australia, China, EU, Japan, New Zealand, World Bank, ADB, UN agencies, Pacific regional development agencies, and others. Gross National Income (GNI) is a more useful measure to economic activity in Tuvalu compared with gross domestic product due to this high dependence on foreign earnings. GNI per capita averaged A$4,970 annually in 2015, making Tuvalu ready for Least Developed Country (LDC) graduation, although the Government resists such graduation due to the country's environmental and economic fragility. There are few career-oriented opportunities outside the government with slow growth in the private sector.

4.3.7 Labour Sector

The country has a very small formal employment sector. The government is the main employment provider in Funafuti accounting for 44% of the employed population. The private sector accounts for 20% of the employed, followed by public corporations and NGOs at 10% and 9.8% respectively. Seafarers make up 9.3% of the employed, while self-employed people and the Kaupule makes 3.8% and 2.8% respectively. Females are consistently represented in most fields of employment, except in the seafaring industry. About 3.8% of employed population are self-employed. These ventures include operating a canteen, a bike hire shops, printing, fuel retail, construction, handicraft, and design. Self-employment in food and textiles accounts for 12.9%, mechanic and carpenters 11.3% and commercial fishing 8%. Many laborers work abroad and send wages home. The informal sector includes subsistence fishing, gathering coconuts and domestic works.

As signatory to the eight (8) fundamental ILO conventions, Tuvalu protects the right of workers to organize and to strike. The law sets the regular work hours at eight (8) hours. It also set a minimum wage which applies only to public sector. Wage scales in the private sector are determined by the market. The only registered trade union is the Tuvalu Seamen's Union which is affiliated with the International Transportation Workers' Federation. However, government workers belong to associations that have some features of unions (Nations Encyclopedia, 2021).

Forced or compulsory labour is prohibited. The minimum working age is 14 (15 for industrial employment). The minimum age for shipboard employment is 18. Employers are required to provide adequate potable water, sanitary facilities, and medical care.

Generally, children do not work in the formal sector but there is evidence that children are employed in informal sector, mostly fishing and domestic work. The government has not specified, by national law or regulation, the types of hazardous work prohibited for children, leaving children vulnerable to the worst forms of child labour (USDOL, 2020). Basic health and safety standards, such as clean drinking water, are mandated by law but irregularly enforced (Encyclopedia of Nations, 2021).

4.3.8 Infrastructure and Services

Energy Sources. Tuvalu's power supply comes mainly from electricity generation facilities that use imported diesel brought in by ships, and some Solar PV capacity. The Tuvalu Electricity Corporation (TEC) on the main island of Funafuti operates the large power station (2000 kW). There are also old generators that are on standby to provide back-up to the main system. The installed PV capacity in Funafuti in 2020 was 735 kW compared.

Seven (7) of the eight (8) outer islands are powered by 48-80kW each diesel generators with a total generating capacity per island averaging 176 kW, although Vaitupu generates 208 kW and Nukulaelae generates 144 kW. Niulakita operates individual direct current home solar systems. In the other islands the diesel generators have been run for 12–18 hours per day. For the small power stations on the outlying islands, fuel must be transferred to 200-liter barrels and offloaded from the ships. Nanumaga now runs on almost 100% solar power. It has a 205kW solar array which provides electricity 24 hours a day to all connected buildings. The capacity of the batteries coupled with the current level of demand on Nanumaga means that usage levels are at 20% of supply and the island can go up to four days without sun before the back-up generator is used.

Water Supply and Sewerage. Rainfall and rainwater harvesting is the primary source of water supply in Tuvalu. In the early 1980s most families took advantage of an aid project for provision of ferro-cement storage tanks attached to small areas of roofing sheets providing the catchment and shelter for an external kitchen area. The tanks had an approximate capacity of 3.6 m^3 and were intended only to meet drinking water demands. However once supplied, usage increased, and the available water quickly depleted.

Most 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 from these wells is often poor and is now seldom used for drinking. It should be noted that during periods of low rainfall the quality can deteriorate and becomes more saline.

Groundwater is used for domestic needs in the outer islands. 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. 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. (SPC, 2021).

There is no centralized sewerage system and 100% of households depend upon onsite wastewater systems and/or practices. Also, most households also rely on individual or communal rainwater tanks, so water management is largely in the hands of the community (SOPAC, 2007).

Health Services. Tuvalu has a network of public health facilities covering both Funafuti Island and the outer island clinics but has limits in covering the health needs of the population. The publicly financed and delivered health system places a central service role on the lone hospital in the country, the Princess Margaret Hospital (PMH), located on the main island of Funafuti. PMH

provides primary and secondary care for patients in Funafuti and those who are referred from outer islands. The hospital has 50 beds with separate wards for men, women, and infants. It offers basic routine medical, surgical, obstetric, and gynaecologic services. There is a basic Intensive Care Unit (ICU), a surgery room and nurses' station. PMH also provides accident and emergency services. The hospital has established a specialist department to study and manage climate change-related illnesses, such as dengue and food-born illnesses. Two health clinics, one south and the other north of Funafuti, provide primary clinical services.

Eight (8) health centers covering outer islands are staffed by nurses who provide primary health care and public health services as well as emergency deliveries. Many of these centers are not that old but are exhibiting wear and tear due to limited maintenance and need adaptation based on the challenging climatic environment. Patients needing more relatively basic hospital-level diagnostic and clinical care, that is beyond the scope of services offered at PMH, are referred to overseas hospitals through the Tuvalu Medical Treatment Scheme. At present, all doctors in Tuvalu are based at PMH, but also provide community outreach services to the nine outer island medical centers. The outer island health centers are expected to be staffed by a midwife, a registered nurse, a nurse aide, and an environmental health officer but this varies between islands due to staff capacity and shortages. Staff shortages, both nursing (in 2018, 15 of the 72 MoH nursing positions were vacant) and medical (of the 11 approved doctor position in 2018, 8 were training overseas) present a challenge in ensuring quality and equitable care is available to residents throughout Tuvalu. Most of the medical officers are general practitioners and eight of the current established number of doctors are currently training overseas in the specialty fields of anaesthetics, surgery, paediatrics, emergency medicine and obstetrics and gynaecology. Post graduate training of medical staff is ongoing for doctors, nurses, and allied health staff. Tuvalu has also contracted with overseas medical workers and receives visiting medical teams to address shortages in health workers.

There are no private formal medical services on Funafuti. NGOs such as the Tuvalu Red Cross Society, Fusi Alofa (for the care and rehabilitation of disabled children), the Tuvalu Family Health Association and the Tuvalu Diabetics Association all have offices in Funafuti.

Waste Management. Solid waste collection services are inadequate. Garbage collection is irregular and is often interrupted by mechanical problems with the rubbish collection trucks, resulting in solid waste not being collected for long periods of time. The Solid Waste Authority of Tuvalu (SWAT) maintains large, communal waste bins at selected sites around Funafuti, along the main roads, and outside all community meeting halls for people to dispose of wastes. However, illegal dumping and burning of wastes are commonly practiced. In many households, wastes are disposed of in the ocean, or in abandoned borrow pits. ADB (2014).

In terms of health care waste, the responsibility for their management falls under the MoH. The main source of health care waste is the Princess Margaret Hospital (PMH) as the sole hospital in the country. PMH has its own internal health care waste management system which uses a wood-fired incinerator located at the landfill. The existing system has a lot of issues. Segregation of waste is poor with large volumes of general wastes deposited into the healthcare waste stream. Wastes are stored in an unsecured open area prior to collection, there are no signages, there are no training program in place for workers, management and for waste handlers, PPEs are absent or inadequate

and collection and incineration are not supervised (SREP, 2014). Healthcare wastes at the outer island clinics are usually collected twice a week and incinerated.

4.4 Prevailing environmental and social Issues that are deemed relevant to the project

1. Climate Change Vulnerability. Tuvalu is extremely vulnerable to the adverse impacts of climate change, variability, and extreme weather events. The wet season (October to March) brings tropical cyclones which inflict extensive damage on local infrastructure, agriculture, and major food sources. The dry season (June to September) is characterized by an increasing number of droughts which contribute to the depletion of freshwater sources. The main source of freshwater in Tuvalu is rainwater. Groundwater resources are no longer suitable for human consumption due to pollution from saltwater intrusion caused by rising sea levels. Salinity intrusion enhanced by the porosity of soil in Tuvalu destroys the swamp taro (puluka) crop and decreases the yields of various other fruit trees (see Box 1). Rising sea levels combined with extreme weather events is contributing to the inundation of low-lying areas. Rising sea temperatures are also contributing to coral bleaching which decreases marine productivity (UNDP, 2021).

2. Land degradation. Funafuti is a coral atoll and as such the surface soils are derived from limestone which is the result of coral reef deposits. While generally limestone derived soils tend to be highly porous, in the more densely populated and developed areas of Funafuti compaction of the soil, particularly on road verges and on the heavy trafficked area around the port causes localized flooding during heavy rainfall events. Moreover, there are several active borrow pits or quarries on Funafuti. Historically, extraction of embankment/aggregate materials on Funafuti have resulted in large pits that have been filled with salt water during king tides and became dumping grounds for waste. Significant dredging and infilling works have been undertaken on Funafuti since 2012 to recover 10 old borrow pits and reclaim the land as useful habitable land.

3. Coastal erosion. Coastal erosion is a major problem in Tuvalu, particularly on the western side of the islands. Studies on land loss in Tuvalu reveal that coastal erosion is consistent with or results mainly from human-induced erosion. The land loss in Tuvalu is mainly caused by inappropriate human activities including coastal engineering and aggregate mining, and partly caused by cyclones (Chunting, 2005).

4. Coastal flooding. Barely a few meters above sea level mass, the country is experiencing coastal flooding in increasing frequency. Coastal flooding occurs due to strong waves, high tides, heavy rainfall from coastal storms, and storm surges during cyclones. On February 19, 2015, flooding from King tides peaked at 3.4m and caused considerable road damage across Tuvalu. According to Global Facility for Disaster Reduction and Recovery, Tuvalu's coastal flood hazard is classified as high which means potentially damaging waves are expected to flood the coast at least once in the next 10 years (GFDRR, 2021).

Box 1. Coastal flooding and its impacts in Tuvalu

The following are signs and indications of sea level rise in Tuvalu as observed by Mason (2021):

1. Salt water is flooding the shores and killing coconut palms. Many large parcels of land used for palm plantations are no longer of any value, greatly affecting the local subsistence economy. The nation's chief export of dried coconut meat is threatened.
2. Pulaka is the staple diet of the people of Tuvalu. Salt water has seeped into the island's pulaka pits, which are used to grow the food crop, making the pits unfit for further cultivation. In some places, three-quarters of the plants have died, leaving people reliant on imported foods. Fruit trees and pandanis are also suffering. Salt-water intrusion has already affected communal crop gardens on six of Tuvalu's eight islands.
3. In general, the people of Tuvalu are having difficulties growing their crops because of salination of the soil.
4. Areas of the island are flooding that would not have flooded ten or fifteen years ago.
5. Spring tides have steadily gotten higher. King tides have also grown over the last years with the increase of the average atmosphere temperatures; sea water is now bubbling up through the porous coral landscape.
6. Groundwater is increasingly becoming undrinkable due to sea-water intrusion. It is brackish and salty. Islanders are relying on rainwater catchment because saltwater intrusion into their aquifers is adversely affecting drinking water.
7. Several months of the year planes have difficulty landing because the airport's runway is partly underwater. That is something new.
8. Some Tuvalu residents have been forced to evacuate parts of the country because of rising sea levels. The New Zealand government established an immigration program called the Pacific Access Category to help qualifying Tuvaluans start over in a safer environment.
9. Family burial plots are sinking into the ocean or being moved to higher ground.
10. Water levels on the island are often ankle-deep. Ponds of seawater can appear anywhere and do. Severe lowland flooding is regularly seen on Tuvalu.
11. Floods used to occur twice a year. Now it is every month. One of the smallest islands, called Te Pukasavilivili disappeared in 1997.
12. New houses are all currently built on 10-foot-tall stilts, something never seen in the traditional architecture of the island groupings. Nightclubs, restaurants, and hotels are also being raised.
13. Islands in the atolls have shrunk, some to half their original size.
14. Encroachment from the sea has claimed at least one percent of the 10 square miles of land that make up the archipelago. What used to be a sandy beach north of the wharf is now stony foreshore below the hotel where a retaining wall has been built to temporarily stave off the inevitable.
15. Tepuka Savilivili, a small island on the rim of Funafuti atoll, was washed over by waves a few years ago and its vegetation destroyed. It simply vanished in 1997.
16. The roots of coconut trees are rotted by the ocean, as every year sees more trees get swallowed up and replaced by beach. On the nearby islet of Vasafua, the coconut trees are dying. Entire atolls covered with trees have been stripped bare.

Figure 1111. Coastal flooding in Tuvalu (Source: Mason, 2021)

5. Deteriorating quality of groundwater especially during drought. Groundwater has been available in the villages. However, because of the extensive use of pit latrines and septic tanks the water is contaminated. Water from wells has been observed to also become more saline in periods of low rainfall. 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.

6. Illegal Dumping of Solid Waste. Illegal dumping and burning of wastes are commonly practiced around Funafuti given the inadequacy of solid waste collection services. Wastes are disposed of in the ocean, or in abandoned "borrow pits" around the island. During World War II, borrow pits were created when aggregate was excavated from the island to construct the airport runway. These pits on Funafuti are filled with all kinds of solid wastes, including plastics, aluminium cans and other metal wastes, old clothes, electronics, refrigerators, and freezers. The wastes create significant environmental and health hazards (ADB, 2014).

7. Cyclone. Tuvalu is cyclone prone. In the 41-year period between 1969 and 2010, 33 tropical cyclones passed within 400km of Funafuti, an average of just under one cyclone per season (GA

and PCCSP (2011). The number of cyclones varies widely from year to year, with none some seasons but up to three in others. Notable cyclones include:

i. Tropical Cyclone (TC) Bebe in 1972, a Category 3 cyclone, which knocked down 90% of the houses on Funafuti and resulted in flooding because of sea water coming up through the coral to a depth of 1.5m;
ii. In March 2015, Category 5 TC Pam resulted in 3-5m waves causing significant damage to agriculture and infrastructure on most islands. The impact of TC Pam was compounded in Tuvalu by previous flooding from King Tides which peaked at 3.4m on 19th February and caused considerable road damage across Tuvalu. Nanumaga suffered damage to houses, crops and infrastructure because of the storm surges with areas of the village up to the top of the berm subject to damage; and,
iii. More recently, Category 4 TC Ula affected Tuvalu in early 2016 with 3-4m waves affecting all the islands (MTET, 2020).

Of these cyclones, most important to note in the context of the Nanumaga works is the Category 5 TC Pam in March 2015, which resulted in 3-5m waves causing significant damage to agriculture and infrastructure on most islands. Nanumaga suffered damage to houses, crops and infrastructure because of the storm surges with areas of the village up to the top of the berm subject to damage. As well as high winds and rainfall, tropical cyclones also cause storm surges and swells. When combined with high tides, this can result in waves washing over low section of the atolls. The resulting flooding causes agricultural losses (particularly of Taro crops) increase soil salinity, damage buildings, disrupt road access, contaminate groundwater, and enhance coastal erosions processes.

8. Tsunamis. Since all the nine islands of Tuvalu are low lying atolls and reef islands, the lack of any high ground may appear to make these islands especially vulnerable to tsunami. On the other hand, because such atolls often have steep drop-offs in which ocean depths increase very rapidly with distance from the fringing reef, there may not be a pronounced shoaling effect (Thomas et al. 2007). However, even relatively small tsunami, when timed with high tides may have a significant impact on communities on low lying atolls (AGBM, 2009).

9. Unexploded Ordnance. Due to its role in World War II, the atolls of Tuvalu, particularly Funafuti, are suspected to contain unexploded ordnance (UXO). UXO are present in some outer islands such as Nanumea Island.

10. Gender Based Violence. Over a third of Tuvalu women reportedly has experienced physical violence during their lifetime with 25% having experienced physical violence in the previous 12 months and 8% during pregnancy. Most women reporting physical violence said that a current husband or intimate partner had been violent towards them (90%), with a small number reporting violence by a sibling (8%).

5. ASSESSMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND POTENTIAL IMPACTS AND CO-BENEFITS

5.1 Co-Benefits

The expanded hospital will improve Tuvaluan's access to quality health care and will redound to a long-term improvement of the health and life expectancy of the Tuvaluan population. The setting up and operation of an MWM system where there was none, or where there was only an inefficient and highly risky system, will also reduce the risk of environmental contamination and spread of infections. The increased availability of medical services and facilities in remote and vulnerable outer islands communities, improves the equity in health care access between urban and rural population.

5.2 Risks and Potential Negative Impacts

5.2.1 Pre-construction/Planning and Detailed Design Phase

Table 3. ES risks and impacts during planning phase

Environmental and Social Risks and Impacts	Rating	Description
1. Lack of involvement of key stakeholders may result in poor sense of ownership by government agencies of the project	Substantial	The project although to be implemented by MoH, needs the cooperation and support of other agencies and local/island governments.
2. Lack of accurate information on the project may result in unfavourable perception by the public about the project	Low	Speculations/false information may spread about the scope and scale of the project resulting in various groups/ residents/ villages forming their own perceptions and expectations about the project.
3..Risk of failure to undertake a satisfactory and ESF-compliant project preparation process and project design/plans (including updated ESMP) that addresses operational risks.	Substantial	The Government Project preparation team/CPMO is still unfamiliar with the new requirements under the World Bank ESF.
4.Risks of spread of COVID-19 infection during information drive and consultation process	Moderate	Maximize the use of online platforms in the project information drive and consultations with stakeholders. Minimize interisland travel by relying on locals to undertake field surveys. Preparation, adoption and implementation of the Project's IPC Plan (Annex 4)

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5.2.2 Construction and System Development Phase

Based on the project description, there will be two types of construction activities under this project: (1) the PMH expansion; and (2) the upgrade of water and sanitation facilities of outer island clinics. This section will assess the ES risks and potential negative impacts of these construction activities.

PMH Expansion. A rapid assessment of the proposed new wing site is given in the Annex 1. The new wing will be constructed on a lot currently occupied by two existing single story concrete building that are used for storage of medical equipment. The lot is inside the existing PMH

compound and does not share borders with any private properties. The lot is also low-lying with ground level that is lower than the existing main hospital structure. The site is about 20 meters from the lagoon side beach. There are about 15 residential houses within 100-meter radius from the proposed sites. Table 4Table 4 below provides an assessment of the risks and potential negative impacts of the construction activities.

Table 4. Assessment of ES risks and potential negative impacts of the construction of additional PMH Building

Risks/Potential Impacts during construction - PMH expansion	**Rating**	**Description**
ESS 1 – related risks	***Moderate***	
Failure to satisfactorily implement the measures in the updated ESMP	Moderate	Provide periodic refresher trainings to the project staff on the ESMP measures and other ES Management requirements World Bank Implementation Support Missions during the first year should include a full ES team
ESS2 - related risks	*Moderate*	
1. Possible non-observance of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages)	Moderate	As discussed in Section 4.3.6, the country has a very small formal labour sector and very few are employed in construction. The laws are also aligned with international standards in as far as the basic workers' rights are concerned. However, enforcements of the law had been weak and there is uncertainty as to prevalence of violations among private employers for lack of data. The rating of this risks therefore is placed at Moderate.
2. Risk of denial of freedom of assembly and collective bargaining	Negligible	The construction period is expected to be brief, no more than 12 months, too short for the need for the formation of union and realization of any collective bargaining. Also the number of construction workers would be fewer than 50 and mostly temporary or hired on a casual basis.
3. Possible discrimination in hiring and benefits (i.e., based on gender, religion or ethnicity)	Negligible	There were no documented indications of employment discrimination in Tuvalu. The ethnicity profile in the country is also homogeneous.
3a. Possible engagement of child and/or forced labour by contractor, and project management.	Negligible	Children are highly unlikely to be hired in construction works in Tuvalu. As the discussed in 4.3.6, the issue of child labour may be present in the informal sector but not in the formal sector.
4. Possible involvement of child labour by suppliers in the production of embankment and aggregate materials.	Negligible	Children are not known to be involved in sand mining in the Pacific Islands. The possibility that suppliers of sands and gravel utilized child labour would be very low.
5. Risk Occupational Health and Safety (OHS)-related injuries to construction workers:	Moderate (Overall)	Construction workers will be exposed to a variety of hazards at their respective workstations. The most common specific hazardous situations and the ratings for this project, are enumerated below:
(a) Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction	Moderate	The construction work could be too costly for a full array of construction equipment and machinery. Chances are the contractor will rely mostly on manual labour to accomplish the task, in terms of lifting and pushing of tools and materials.

Risks/Potential Impacts during construction - PMH expansion	Rating	Description
(b) Slips and falls associated with poor housekeeping	Moderate	This risk is always present when the housekeeping is poor in the construction site. This is more of a factor of the contractor's corporate/company culture of safety.
(c) Risk of falls from elevation	Moderate	The structure to be constructed will likely not be higher than three levels above ground level. Still, the risk of a fall from second level is significant and should not be ignored.
(d) Risk of being struck by objects	Moderate	Construction and demolition activities may pose significant hazards related to the potential fall of materials or tools, as well as ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities.
(e) Risk of being hit by machineries and equipment	Low	Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site will pose a risk to workers on the ground. The project however are not expected to involve many machineries and these would most probably be small.
(f) Risk of exposure to harmful dusts and fumes	Moderate	Worker's working on excavation, batching plant and concrete demolition could be exposed to high amounts of dust.
(g) Risk of working in confined spaces and excavations hazards	Low	The construction work will not have significant confined space and excavation work environment
(h) Risk of exposure to hazardous materials at workstations	Low	The construction work will not involve use of substantial amounts of hazardous materials/chemicals.
(i) Risk of infection with COVID-19 and other endemic diseases in the construction site	Moderate	There had been no confirmed case of COVID infection in Tuvalu. The construction works would also involve only a few workers in the built-up areas. The potential for importation of the disease through the workers or imported materials, exist. This is also moderate risks for outbreak of endemic vector borne diseases such as Dengue and Zika.
ESS3 - related risks and impacts	***Moderate***	***Overall risk is rated moderate due to construction impacts to the nearby beach***
6. Generation of noise and vibration at construction site, disturbing the residents within the immediate vicinity of the construction site as well as the patients and workers at the PMH	Moderate	The construction of an additional wing of PMH which will also involve some demolition could disturb surrounding residents during the construction period. However, such is likely to be minimal as the construction site is surrounded by existing hospital structures and the nearest resident is 66 meters from the site. The dust and noise may however impact workers and patients at the hospital which will continue to be in operation during construction. If not controlled, construction dusts/particulate matter may impact the indoor air quality at the hospital and noise could disturb workers and patients.
7. Soil erosion and sedimentation at the construction site drainage, due to possible earth movements and excavation.	Moderate	It is expected that the earthmoving requirements in the construction would be minor. However, pending availability of detailed engineering, it is still uncertain whether significant embankment will be required.
8. Deterioration of air quality within the construction site and immediate vicinity due to increase particulate matter from demolition, sand transportation and its storage at the construction site can lead to	Moderate	Excavation and earthmoving are expected to be minimal, but this may still be significant depending on the detailed engineering design. There could concrete demolition which could generate particulate matter and get into the hospital and nearby residents. The hospital setting of the construction makes the risk high.

Risks/Potential Impacts during construction - PMH expansion	Rating	Description
windblown dust problems, earth moving and operation of construction equipment and power tools		
9. Potential nuisance from improperly disposed of construction/demolition spoils and solid wastes from workers' camp.	Moderate	The construction is not expected to generate large amounts of solid waste. Construction spoils are expected to consist mainly of unusable materials and debris from the dismantling of existing structure and topsoil not suitable for filling materials which are expected to be small quantity. However, the number of non-resident workers needed at peak of construction and whether they would need to be camped in the site is still not known. Still, construction wastes if not collected and disposed of properly may cause nuisance and garbage may end up in the beach area
10. Soil/sand and water contamination due to release of hazardous materials particularly petroleum-based products, e.g., lubricants, hydraulic fluids, fuels during their storage, transfer, or use in equipment.	Moderate	The construction is not expected to involve the use of substantial amounts of petroleum-based materials because the equipment and machineries involved would be few. The contractor may use its own diesel generator which would run a mixer and power tools. It may also include the use of trucks to haul materials from the port or from the beach to the construction site. However, the proximity of the site to the beach makes this risk significant.
11. Contamination of local waterbodies and soil with wastewater discharges from the construction activities and worker's camp.	Low	The wastewater from the construction activity would mainly come from concrete mixer/batching plant washings and from worker's camp if any will be established. These are expected to be generated in low quantities and can be handled by simple settling pits in the case of the mixer washings and a standard septic tank in the case of domestic wastewater from worker’s camp.
12. Exacerbation of land degradation in the islands due to exploitation of borrow pits/aggregate quarries source	No risk	Extraction of any borrow materials and aggregates are currently prohibited for all World Bank funded projects in Tuvalu. Materials and aggregates for this project will sourced from abroad.
13. Exacerbation of water scarcity due to water requirements of construction	Low	The volume of freshwater required in construction of the building is expected to be small.
13. Possible unanticipated damage to private structures and properties during construction	Negligible	The building will be constructed inside the existing PMH property. There are no private properties directly adjacent to the construction site. However, damages to private properties could still be incurred outside the construction site during transport of materials and equipment.
14. Potential damage or increased wear and tear of public facilities used by contractors	Low	The construction activity is small scale. Still some damage could be incurred in public infrastructure (such as port, roads, causeways) by construction traffic especially that most materials and equipment may need to be brought into the island.
15. Risk that supplier of project's raw materials including borrow and aggregates use environmentally and socially destructive production methods, including possible use of child labour.	Low	The project and contractors are unlikely to source raw materials from legitimate and licensed sources from neighbouring countries. There are no indications that children are being employed in the construction or aggregate mining in the South Pacific Region.

Risks/Potential Impacts during construction - PMH expansion	Rating	Description
ESS4 - related risks and impacts	***Moderate***	
16. Exposure of the residents and hospital employees and visitors to general construction site hazards	Negligible	Some residents, hospital employees and visitors or passers-by could venture into the construction site and get exposed to sharp objects, chemical spills, falling objects, deep excavations, etc. Hazardous objects at construction site include sharp objects, steel bars, and broken glass. The chances of residents venturing into the site however is very low as the site is inside the hospital compound.
17. Risk of outbreak/spread of infectious diseases, including STDs	Moderate	Non-resident workers could inadvertently spread new diseases into the local population or facilitate the spread of existing diseases due to their interactions with the local population. The number of workers from outside the community is expected to be fewer than 50 at the peak of the construction activities. They are expected to find accommodation within Funafuti.
18. Exposure of residents and children to construction traffic	Low	The transport of construction materials and equipment into the construction site and wastes into the disposal sites will increase the traffic of vehicles on the small streets and roads toward the hospital or even in the beach area. However, construction traffic is not expected to be significant.
19. Risk of unexploded ordnance (UXO)	Low	All proposed construction sites are within existing infrastructure sites which are already disturbed by human activities. The chances of encountering unexploded ordnance in these sites would be very low.
20. Increase in incidence of sexual exploitation/abuse and harassment within local communities	Moderate	Based on the baseline information, cases of SEA/SH are significant in Tuvalu (See 4.4). The influx of non-resident workers, albeit expected to be few, increases risks of sexual harassments among women in project communities. Incomes from construction works may also increase consumption of alcohol and lead to more domestic violence among workers families.
ESS 5 - related risks and impacts	No risk	The project is not expected to involve any acquisition of private lands. All construction activities will utilize existing government lands. Activities requiring private and customary land acquisition are not eligible for funding under the project.
ESS6 -related risks and impacts	No risk	The construction site will be undertaken within government own lot. No borrow pits or quarry site will be developed or utilized as aggregates and embankment materials will be sourced from outside the country.
ESS7 - related risks and impacts	No risk	ESS7 is not applicable to this project.
ESS8 - related risks and impacts		
21. Risks of destruction of artefacts during excavation works at construction site	Negligible	The construction site is inside the hospital compound which had been disturbed in recent times by construction activities. The chance of encountering archaeological artifacts is very low.

Upgrade of Outer Island Clinics Water and Sanitation. Construction activities at outer island clinics will be limited to improvements of Water and Sanitation facilities. This will include improving and expanding the rainwater collection and storage facilities, functioning hand-washing

stations with appropriate soaps, and functioning and environmentally appropriate latrines for men, women, and disabled access. Rapid assessments of the outer island clinic sites have been undertaken (Annex 2). A summary of the key environmental and social features of these clinic sites are given below (Table 5Table 5). The clinics are located generally within 30 to 100 m distance from the nearest beach, three of which are at the ocean side; a few are close to some residential houses, but the sites are generally sparsely populated. All clinics segregate healthcare wastes from the ordinary wastes and dispose them through incineration. All clinics have septic tanks for treating wastewater, power supply from solar panels, and water supply from rainwater tanks.

Table 5. Baseline environmental and social conditions of the outer island clinic sites

Island	Location Village	Vegetation	Distance nearest Residence (m)	Distance to nearest beach (m) Lag/Ocean	Medical Waste Disposal	WWT	Power Supply	Water Supply
Nanumaga	Tobekelau	Coconut	32	159 Lag.	Seg-Incin.	S. Tank	Solar	Rain
Nui	Tabontebike	Coconut	124	88 Ocean	Seg-Incin.	S. Tank	Solar	Rain
Vaiputu	Asau	Coconut	37	39 Lag.	Seg-Incin.	S. Tank	Solar	Rain
Nukulaelae	Betio	Coconut	9	36 Lag.	Seg-Incin.	S. Tank	Solar	Rain
Nanumea	Lolua	Coconut	15	47 Lag.	Seg-Incin.	S. Tank	Solar	Rain
Niutao	Kulia	Coconut	32	46 Ocean	Seg-Incin.	S. Tank	Solar	Rain
Niulakita	Niulakita	Coconut	10	43 Ocean	Seg-Incin	S. Tank	Solar	Rain
Nukufetau	Tematavaliki	Coconut	8	56 Lag.	Seg-Incin	S. Tank	Solar	Rain

*Lag=lagoon side; Ocean=Ocean side; Seg-Incin =Segregation and Incineration; S.Tank=Septic Tank;

The risks and potential negative impacts of the construction activities are summarized in Table 6Table 6 below.

Table 6. Assessment of ES Risks and potential negative impacts of construction activities at outer island clinics.

Risks/Potential Impacts during construction -Outer islands health clinics	Rating	Description
ESS2 - related risks		
1. Possible non-observance of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages,	Moderate	Tuvalu's labour laws protects basic workers' rights. However, enforcements of the law had been weak and there is uncertainty as to prevalence of violations among private employers for lack of data. Very few workers are likely to be involved in the construction at each outer island clinics. But there would be 8 sites. The rating of this risks therefore is placed at Moderate.
2. Risk of denial of freedom of assembly and collective bargaining	Negligible	The construction period is expected to be brief, no more than 12 months, too short for the need for the formation of union and realization of any collective bargaining. Also the number of construction workers would be fewer than 50 and mostly temporary or hired on a casual basis.
3. Possible discrimination in hiring and benefits (i.e., based on gender, religion, or ethnicity)	Negligible	There were no documented indications of employment discrimination in Tuvalu. The ethnicity profile in the country is also homogeneous.
4. Possible engagement of child and/or forced labour by contractor, and project management.	Negligible	Children are highly unlikely to be hired in construction works in Tuvalu. As the discussed in 4.3.6, the issue of child labour may be present in the informal sector but not in the formal sector.

Risks/Potential Impacts during construction -Outer islands health clinics	Rating	Description
5. Possible involvement of child labour by suppliers in the production of embankment and aggregate materials.	Negligible	Children are not known to be involved in sand mining in the Pacific Islands. The possibility that suppliers of sands and gravel utilized child labour would be very low.
6. Risk Occupational Health and Safety (OHS)-related injuries to construction workers:	Low (Overall)	Construction related hazards at outer island clinics will be few and minor. The most common specific hazardous situations are assessed below:
(a) Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction	Low	There will be very few tasks that would involve heavy lifting and pushing in the construction of water and sanitation facilities at each outer clinic sites.
(b) Slips and falls associated with poor housekeeping	Low	This risk is always present when the housekeeping is poor in the construction site. However, works at outer island clinic would not involve complex tasks and materials.
(c) Risk of falls from elevation	Low	The structure to be constructed will likely only at the ground levels. There is a small risk of falling into septic tank excavation and from water tank stand/pedestal or from roof gutters.
(d) Risk of being struck by objects	Low	The construction works in the outer island clinics would not involve complex tasks and materials. The risks of being accidentally struck by objects is assessed to be low.
(e) Risk of moving machinery outboard side of a turn while moving	Negligible	There would not be any machinery traffic in the outer island clinic construction, except perhaps during transport of water tanks and materials.
(f) Risk of exposure to harmful dusts and fumes	Negligible	Worker's working on excavation, concrete mixing, and concrete demolition could be exposed to high amounts of dust. These tasks, if required, would be very minor and could be completed in a very short period. The risk is therefore very low.
(g) Risk of working in confined spaces and excavations hazards	Low	Excavations are limited to construction of septic tanks and small foundations. The work may involve water tank cleaning.
(h) Risk of exposure to hazardous materials at workstations	Negligible	The construction work will not involve use of hazardous materials
(I) Risk of exposure to electrical energy, noise and vibration	Low	This risk is always present during the construction work which can be reduced by using PPEs
ESS3 - related risks and impacts	***Low***	
7. Generation of noise and vibration at construction site, disturbing the residents within the immediate vicinity of the construction site	Low	The construction of small water and sanitation facilities at each clinic is not expected to generate significant amounts of noise in a prolonged period and therefore can be easily scheduled during hours where residents are less susceptible to noise nuisance
8. Soil erosion and sedimentation at the construction site drainage, due to possible earth movements and excavation.	Low	Excavated materials may be washed out by runoff during heavy rains. However, these materials are expected to be very small and easily protected from runoff.
9. Deterioration of air quality within the construction site and immediate vicinity due to increase	Negligible	The construction works at outer island clinics are not expected to release significant amounts of dusts. Construction involving works that generate dusts are

Risks/Potential Impacts during construction -Outer islands health clinics	Rating	Description
particulate matter from demolition, earth moving and operation of construction equipment and power tools		expected to be completed in a few days and therefore can be easily controlled.
10. Potential nuisance from improperly disposed of construction/demolition spoils and solid wastes from workers' camp.	Negligible	The construction of water and sanitation would likely involve only a few workers and would not generate significant amounts of waste materials.
11. Soil/sand and water contamination due to release of hazardous materials particularly petroleum-based products, e.g., lubricants, hydraulic fluids, fuels during their storage, transfer, or use in equipment.	Negligible	The construction is not expected to involve the use of significant amounts of petroleum-based materials or any significant quantity of hazardous materials.
12. Contamination of local waterbodies and soil with wastewater discharges from the construction activities and worker's camp.	Negligible	The workers are not going to generate significant amount of wastewater and there would not likely be a need for workers' camp. Concrete mixing would be small and would not generate significant effluent.
13. Exacerbation of land degradation in the islands due to exploitation of borrow pits/aggregate quarries source	No risk	Extraction of any borrow materials and aggregates are currently prohibited for all World Bank funded projects in Tuvalu. Materials and aggregates for this project will sourced from abroad.
14. Exacerbation of water scarcity in the community due to water requirements of construction	Low	Water requirements for construction in outer island clinics would be very small.
15. Possible unanticipated damage to private structures and properties during construction	No risk	There are no private properties directly adjacent to the construction site. However, damages to private properties could still be incurred outside the construction site during transport of materials and equipment.
16. Potential damage or increased wear and tear of public facilities used by contractors	No risk	The construction activity is small scale. Still some damage could be incurred in public infrastructure (such as port, roads, causeways) by construction traffic especially that most materials and equipment may need to be brought into the island.
17. Risk that supplier of project's raw materials including borrow and aggregates use environmentally and socially destructive production methods, including possible use of child labour.	Low	The project and contractors are unlikely to source raw materials from legitimate and licensed sources from neighbouring countries. There are no indications that children are being employed in the construction or aggregate mining in the South Pacific Region.
ESS4 - related risks and impacts		
18. Exposure of the residents and hospital employees and visitors to general construction site hazards	Low	Some residents, health care employees and visitors or passers-by could venture into the construction area and get exposed to sharp objects, chemical spills, falling objects, deep excavations, etc. Hazardous objects at construction site include sharp objects, steel bars, and broken glass. The chances of residents venturing into the are however is low.

Risks/Potential Impacts during construction -Outer islands health clinics	Rating	Description
19. Risk of outbreak/spread of infectious diseases, including STDs	Low	Non-resident workers could inadvertently spread new diseases into the local population or facilitate the spread of existing diseases due to their interactions with the local population. Construction works would involve only very few workers but may require the skill of workers from outside the island. The workers will likely find accommodation in local residents' homes.
20. Exposure of residents and children to construction traffic	No risk	There will not be construction traffic during construction of water and sanitation facilities at outer island clinics.
19. Risk of unexploded ordnance (UXO)	Low	All construction works will be at the existing Clinic facilities but not necessarily be previously disturbed by construction. The chances of encountering unexploded ordnance in these sites would be low.
21. Increase in incidence of sexual exploitation/abuse and harassment within local communities	Low	Based on the baseline information, cases of SEA/SH are significant in Tuvalu (See 4.4). The works will involve only very few workers per outer island clinics. Labour influx would not be significant.
22. Increased demand/competition for goods and services from influx workforce, risks of poor behaviour of workers and amenity and social conflict impacts.	Low	The influx workforce would be low. If contracted to a local firm/organisation, there is a high likelihood of either local (on island) workers or Tuvaluan workers familiar with outer island cultural norms. There is a higher risk if an external firm is contracted to perform outer island upgrades.
ESS 5 - related risks and impacts	No risk	The project will not involve any acquisition of private lands. All construction activities will utilize existing government lands. Activities requiring private and customary land acquisition are not eligible for funding under the project.
ESS6 -related risks and impacts	No risk	The construction site will be undertaken within government own lot. No borrow pits or quarry site will be developed or utilized as aggregates and embankment materials will be sourced from outside the country.
ESS7 - related risks and impacts	No risk	ESS7 is not applicable to this project.
ESS8 - related risks and impacts	Negligible	
22. Risks of destruction of artefacts during excavation works at construction site	Negligible	The excavation works would be involved a very small area. The chance of encountering archaeological artifacts is very low.

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5.2.3 Operations Phase

This section assesses the risks and potential negative impacts of the operations phase of the project's facilities and systems. As discussed earlier these include infrastructure safety risks including risk of inoperability of the HCF during and after disasters, health care wastes risks, risk of environmental contamination of coastal waters from wastewater of the facilities, occupational health and safety risks for healthcare workers. The risks and potential negative impacts are assessed in Table 7Table 7 below.

Table 7. Assessment of ES risks and potential impacts of the operations of the enhanced/strengthened health system.

Risk and Impacts during Operations	**Rating**	**Assessment**
ESS2-related risks and impacts	***Moderate***	***The overall risk is assessed as Moderate since hospital/health care facilities operations are small scale***
1. Possible non-observance of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages, freedom of assembly and collective bargaining)	Low	Tuvalu's labour laws protect basic workers' rights. Most health care workers will be employed by the government and subject to government hiring and human resource management policies.
2. Possible denial of rights to assembly and collective bargaining.	Low	Most of the employees of the strengthened systems will be government employees. As noted in the Socioeconomic Baseline of the ESMP, government employees have their own associations which appear to function like a union.
2. Possible discrimination in hiring and benefits (i.e., based on gender, religion, or ethnicity)	Negligible	There were no documented indications of employment discrimination in Tuvalu. The ethnicity profile in the country is also homogeneous. Also appears to be no systematic discrimination of female workers. Females are consistently represented in most fields of employment, except in the seafaring industry.
3. Possible engagement of child and/or forced labour by contractor, and project management.	Negligible	Children are highly unlikely to be hired in health care tasks in Tuvalu.
4. Possible involvement of child labour by suppliers in the production of embankment and aggregate materials.	Negligible	Children are unlikely to be involved in the production of health care supplies.
5. Exposure of healthcare workers to Occupational Health and Safety (OHS) hazards	Moderate	
(a) Exposure to infectious wastes, biological samples and specimen	Moderate	Healthcare workers are generally at risks of being infected through exposure with infected patients and infectious health care wastes and laboratory samples/specimen (e.g., blood, other body fluids and contaminated fluids), infected materials (water used, syringes, bed sheets etc.).
(b) Exposure to hazardous medical laboratory chemicals/reagents and wastes	Moderate	Workers of medical laboratories are also exposed to laboratory chemicals, reagents, and other substances.
(c) Exposure to operational hazards of medical equipment (electrical and physical hazards)	Moderate	Healthcare workers are also exposed to physical and electrical hazards from medical equipment. Improper use of these equipment could result to injuries of workers and patients. There are human health risks associated with misuse of, poor quality, and/or poorly managed medical equipment, materials and services arising from potential constrained ability to use the equipment and materials.
(d) Exposure to radiology workers to ionizing radiation	Moderate	Workers of radiology units will be exposed to radiation.
ESS3-related risks and impacts	***Moderate***	***Overall risk is moderate since hospital/health care facilities operations are small scale and system for handing healthcare waste is in place***
6. Risk of contamination of coastal and ground water from septage during flooding events.	Moderate	If the septic tank of the facility is not watertight and/or the outlet is reached by the water level during flooding events, hazardous waste from the septic tank could contaminate the well water which in some islands people still use for washing and sometimes drinking. The septic tank may also

Risk and Impacts during Operations	Rating	Assessment
		malfunction and become inoperable after a disaster event that cause flooding.
7. Effluents from the septic tank could contaminate the soil around the septic tank outfall area and could flow or be carried by runoff into the beach area	Moderate	The hospital and particularly the new wing to be constructed will just be 20 meters from the lagoon side beach. Based on the rapid site assessment of the hospital is currently using septic tank system to treat wastewater from its operations. There is currently no provision for treating the effluents from the septic tanks. Wastewater from hospital is likely to be contaminated with liquid healthcare waste which may not degrade by septic tank treatment such, as pharmaceuticals, and other hazardous chemicals. Some viruses and bacteria may also survive and may be present in the effluent. Also, the expansion of the hospital operations with the new facilities would certainly add to the volume of wastewater from the PMH. The same is true to a lesser extend with some outer island laboratories.
8. Contamination of ordinary solid waste with health care wastes	Moderate	Solid waste collected from healthcare facilities are always at risks of being contaminated with biohazards and hazardous chemicals and pharmaceuticals, even with segregation system in place. If disposed of improperly with domestic wastes may contaminate the environment.
9. Generation of air pollutants from incineration of health care wastes	Low	Incineration of healthcare waste could produce air pollutants such as dioxins and furans aside from particulate matter. The volume of health care waste however is not much and is expected to be low during normal operations.
ESS4-related risks and impacts	***Moderate***	***Overall risk is moderate,,*** these are known, temporary, and/or have management measures that are predictable and likely to be effective
6. Risk of inundation of facility during coastal of flooding events, becoming non-operational during and in the aftermath of a flood causing disaster (such as cyclone or tsunami).	Moderate	The PMH extension will be just 20 meters from the lagoon side of the beach where the ground level lower than the existing hospital. If this is not addressed by adequate design measures, the building will be susceptible to coastal flooding events. Hospitals plays a critical role in disaster response. Hence, it is important that it continues to operate during and in the aftermath of a disaster event such as cyclones. This will also be true to clinics that are situated in low-lying areas, especially those situated towards the ocean side of the atoll. Only the clinic of Namumaga appears to be situated on a slightly elevated ground.
7. Exposure of waste collectors and handlers to hazards from ordinary municipal solid wastes from hospital operations	Moderate	The hospital or health care facility will generate ordinary solid wastes from its canteen operations and offices. There is a good chance that despite segregation of waste, these could contain hazardous health care wastes.
8. Infrastructure risk from seismic events	Low	The Tuvalu region of the pacific is relatively quiet in terms of seismic activity. The health care facility buildings are also relatively light structures. The overall risk from earthquakes would be low.
9. Risk of hospital/health care facility fire	Moderate	Hospital operations are complex and replete with activities and equipment that pose fire hazard. Fire in a hospital is often catastrophic due to the presence of patients who may be struggling with mobility or who are dependent on some fixed equipment. Catastrophic hospital fires have been documented all over the world usually involving large complex hospital

Risk and Impacts during Operations	Rating	Assessment
		operations. The risk for PMH may be a lower as it is only a small-scale hospital operation.
10. Risk of accidental spillage of infectious wastes or hazardous chemicals	Moderate	Accidental spills of hazardous waste or chemical could occur in the health care facility.
11.Poor accessibility/inability of the facility to cater services to certain groups with special needs such as PWDs, elderly, pregnant women, or person with infants	Moderate	The hospital expansion and clinics may be designed poorly in terms of accessibility or may fail to provide adequate facilities for certain patients with special needs such as PWDs, elderlies, pregnant women, and persons with infants.
12. Risk of healthcare services (e.g., health screening, etc.) not being administered in accordance with GIIP, among vulnerable and remotely situated groups	Moderate	Health services in remote areas may be provided at substandard quality due to lack of appropriate or adequately trained expertise or lack of equipment or supplies.
.		
ESS5 -related risks and impacts	***No risk***	***Not applicable***
ESS6-related risks and impacts	***No risk***	***Not applicable***
ESS7-related risks and impacts	***No risk***	***Not applicable***
ESS8-related risks and impacts	***No risk***	***Not applicable***

6. MANAGEMENT MEASURES

This section identifies management measures for risks and potential impacts that are assessed as "Low" to "Moderate" in the previous section. The management measures include design considerations and implementation of various ES management instruments that have been developed as part of this ESMP. The instruments include Stakeholder Engagement Plan (SEP), Code of Good Labor Management Practice (LMP), Code of Social and Environmental Practice for Contractors (COSEP-C), Infection Prevention and Control Plan (IPCP), Waste Management Guidelines (WMG) and UXO Protocol. The design considerations shall be input into further planning and detailed design which will be undertaken by the Project Development Team at the inception of the project. These include elevated ground level to protect the HCF floors from coastal flooding; stronger foundation to resist erosion by floodwaters; watertight septic tanks with outlet higher than historical flood levels and with septage effluent treatment; and use of fire-retardant materials. It is recommended that the water, power, and wastewater treatment (septic tank) capacities shall be assessed if: (a) they are able to accommodate the expanded services and additional facilities; and (b) they are resilient against extreme weather events such as prolonged drought (water supply), prolonged rainy days (solar power), and inundation (for septic tank). Otherwise, additional capacities for these utilities should be provided under the project.

The management measures described herein shall be updated based on the result of further assessments during the planning and design phase upon the availability of additional design details. The updated ESMP will also describe the design measures adopted. The subsidiary instruments will also be updated as necessary.

6.1. Planning Phase

The project will still undergo further planning and detailed engineering design in consultation with various stakeholders. The measures include information campaign and stakeholder engagement, and considerations of proposed design measures to address the significant risks and potential impacts of the operations of the enhanced facilities and the strengthened healthcare system.

Table 8. Management measures during Planning Phase

Risks and Potential Impacts	Mitigation/Management Measure	Responsibility
Public Awareness and Stakeholder Engagements		
1. Lack of involvement of key stakeholders may result in poor sense of ownership by government agencies of the project	Conduct information campaign and consultation with stakeholders. A Stakeholder Engagement Plan (SEP) has been prepared (Annex 4).	MoH
2. Lack of accurate information on the project may result in unfavourable perception by the public about the project	Conduct information campaign and consultation with stakeholders. A Stakeholder Engagement Plan (SEP) has been prepared (Annex 4).	MoH
3. Risk of failure to undertake a satisfactory and ESF-compliant project preparation process and project design/plans (including updated ESMP) that addresses operational risks.	Hiring/appointment of a PTU-based E&S Advisor Conduct of Seminar among MoH, CPMO and PTU staff involved in the project on World Bank ESF The Project will be provided support from CPMO World Bank support will also be provided during project preparation	MoH MFED
4. Risks of spread of infection during information drive and consultation process	Maximize the use of online platforms in the project information drive and consultations with stakeholders. Minimize interisland travel by relying on locals to undertake field surveys. Preparation, adoption and implementation of the Project's IPC Plan (Annex 4)	MoH MFED
Further Planning and Design Considerations		
3. Risks of inundation of HCF during cyclone and coastal flooding events	• Additional embankments to raise the ground level of new PMH structure and, as necessary, any additional structures to be built in outer island clinics. Ground floor levels of buildings should be above the historical flood levels plus anticipated increase due to climate change. • The buildings should have stronger foundation that could resist erosive forces of floodwaters and waves during storm surges. • The structure, walls, windows, and roofs should be able to withstand cyclone winds. • PMH wastewater treatment facility for the hospital wastewater (HWW): assessment and improvement of the existing system in place, able to accommodate additional waste and is resilient to coastal flooding events.	MoH

Risks and Potential Impacts	Mitigation/Management Measure	Responsibility
4. Adequacy of wastewater treatment facility	• Assess the existing PMH wastewater treatment facility for the hospital if it is: (a) able to accommodate additional wastewater from the expanded hospital operations and services; (b) resilient to coastal flooding events; and (c) environmentally sound. • Identify necessary improvements to the system such as additional septic tank capacity and provision of post-septic tank (secondary) treatment such as soak bed, etc.	MoH
5. Adequacy of water supply system	• Assess the existing water supply system of PMH to determine if it is: (a) able to accommodate additional demand from expanded of PMH operation and services; (b) resilient to prolonged drought. • Identify necessary improvements to the system such as additional water storage capacity or utilization of underground source for non-potable uses.	MoH
6. Adequacy of power supply system	• Assess and improve the existing power supply system at PMH and determine if it is: (a) able to accommodate new facilities; and (b) able to remain operational during natural disasters • Identify the necessary improvements to the system such as the installation of solar panels.	MoH
7. Risk of Health Care Waste	Assess and improve the existing HCWM system of the PMH and integrate it with the national HCWM Any improvements of the system should conform with GIIP.	MoH
8. Risk of fire	Include fire escapes and use of fire-retardant materials in the building design specifications	MoH
9. Accessibility	The design of the new facility should be based on the principle of universal access (e.g., ramps and lift for PWDs and elderlies, facilities for persons with infants, etc.).	MoH

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6.2 Construction and System Development Phase

Table 9. Management measures during construction/Project Implementation Phase

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
ESS2 - related risks		
1. Possible non-observance of basic workers' rights (i.e., clear terms of employment, working	The strict implementation of the policies and procedures in the Labor Management Procedure will ensure that all direct and contracted workers will be accorded basic workers rights.	MoH Contractor

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
hours, and prompt payment of wages,)		
.		
5. Risk Occupational Health and Safety (OHS)-related injuries to construction workers:		
(a) Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction	Recommendations for their prevention and control include: • Training of workers in lifting and materials handling techniques in construction and decommissioning projects, including the placement of weight limits above which mechanical assists or two-person lifts are necessary • Planning work site layout to minimize the need for manual transfer of heavy loads • Selecting tools and designing workstations that reduce force requirements and holding times, and which promote improved postures, including, where applicable, user adjustable workstations • Implementing administrative controls into work processes, such as job rotations and rest or stretch breaks	
(b) Slips and falls associated with poor housekeeping	Recommended methods for the prevention of slips and falls from, or on, the same elevation include: • Implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths • Cleaning up excessive waste debris and liquid spills regularly • Locating electrical cords and ropes in common areas and marked corridors • Use of slip retardant footwear	
(c) Risk of falls from elevation	If fall hazards exist, a fall protection plan should be in place which includes one or more of the following aspects, depending on the nature of the fall hazard: • Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters or at any height if the risk includes falling into operating machinery, into water or other liquid, into hazardous substances, or through an opening in a work surface • Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards able to support 5000 pounds (also described in this section in Working at Heights above), as well as fall rescue procedures to deal with workers whose fall has	

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
	been successfully arrested. The tie in point of the fall arresting system should also be able to support 5000 pounds • Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labelling covers for openings in floors, roofs, or walking surfaces	
(d) Risk of being struck by objects	Techniques for the prevention and control of these hazards include: • Using a designated and restricted waste drop or discharge zones, and/or a chute for safe movement of wastes from upper to lower levels • Conducting sawing, cutting, grinding, sanding, chipping or chiselling with proper guards and anchoring as applicable • Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap • Use of temporary fall protection measures in scaffolds and out edges of elevated work surfaces, such as handrails and toe boards to prevent materials from being dislodged • Evacuating work areas during blasting operations, and using blast mats or other means of deflection to minimize fly rock or ejection of demolition debris if work is conducted in proximity to people or structures • Wearing appropriate PPE, such as safety glasses with side shields, face shields, hard hats, and safety shoes	
(e) Risk of moving machinery outboard side of a turn while moving	Techniques for the prevention and control of these impacts include: • Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic using one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic • Ensuring the visibility of personnel through their use of high visibility vests when working in or walking through heavy equipment operating areas, and training of workers to verify eye contact with equipment operators before approaching the operating vehicle • Ensuring moving equipment is outfitted with audible back-up alarms • Using inspected and well-maintained lifting devices that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations.	

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
(f) Risk of exposure to harmful dusts and fumes	• Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements. • PPE, such as dusk masks, should be used where dust levels are excessive	
(g) Risk of working in confined spaces and excavations hazards	• In addition to the guidance provided in Section 2.8 the occupational hazards associated with confined spaces and excavations in construction and decommissioning sites should be prevented according to the following recommendations • Providing safe means of access and egress from excavations, such as graded slopes, graded access route, or stairs and ladders • Avoiding the operation of combustion equipment for prolonged periods inside excavations areas where other workers are required to enter unless the area is actively ventilated	
(h) Risk of exposure to hazardous materials at workstations	Other Site Hazards which should be prevented through the implementation of project- specific plans and other applicable management practices, including: • Use of specially trained personnel to identify and remove waste materials from tanks, vessels, processing equipment or contaminated land as a first step in decommissioning activities to allow for safe excavation, construction, dismantling or demolition • Use of specially trained personnel to identify and selectively remove potentially hazardous materials in building elements prior to dismantling or demolition including, for example, insulation or structural elements containing asbestos and Polychlorinated Biphenyls (PCBs), electrical components containing mercury • Use of waste-specific PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection	
ESS3 - related risks and impacts		
6. Generation of noise and vibration at construction site, disturbing the residents within the immediate vicinity of the construction site as well as the patients and workers at the PMH	Restrict construction activities during the day. Provide noise barriers and/or mufflers.	

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
7. Soil erosion and sedimentation at the construction site drainage, due to possible earth movements and excavation.	• Scheduling of earthmoving and excavation in dry season • Immediate compaction of loose embankments • Revegetating exposed areas • Provide channels and ditches around stored materials/boulders • Provide proper drainage channels with benign gradient around construction areas	
8. Deterioration of air quality within the construction site and immediate vicinity due to increase particulate matter from demolition, earth moving and operation of construction equipment and power tools	• Minimize sources, provide enclosures/covers of sources and water suppression. • Dust suppression techniques should be implemented, such as application of water during concrete demolition and on exposed grounds • Selectively removing potential hazardous air pollutants such as asbestos from existing infrastructure prior to demolition. Removal of asbestos should follow GIIP • Avoiding open burning of solids	
9. Potential nuisance from improperly disposed of construction/demolition spoils and solid wastes from workers' camp.	• Practice good housekeeping at construction site • Regularly collect solid wastes and disposed at village/municipal landfills • Temporarily store construction debris on safe and secure places before disposal to landfills	
10. Soil/sand and water contamination due to release of hazardous materials particularly petroleum-based products, e.g., lubricants, hydraulic fluids, fuels during their storage, transfer, or use in equipment.	Techniques for prevention, minimization, and control of these impacts include: • Providing adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids, • Using impervious surfaces for refuelling areas and other fluid transfer areas • Training workers on the correct transfer and handling of fuels and chemicals and the response to spills • Providing portable spill containment and clean-up equipment on site and training in the equipment deployment • Assessing the contents of hazardous materials and petroleum-based products in building systems (e.g., PCB containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities, and managing their treatment and disposal according to Sections 1.5 and 1.6 on Hazardous Materials and Hazardous Waste Management, respectively • Assessing the presence of hazardous substances in or on building materials (e.g.,	

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
	polychlorinated biphenyls, asbestos- containing flooring or insulation) and decontaminating or properly managing contaminated building materials	
11. Contamination of local waterbodies and soil with wastewater discharges from the construction activities and worker's camp.	Adequate portable or permanent sanitation facilities serving all workers should be provided at all construction sites. Sanitary wastewater in construction and other sites should be managed as described in Section 1.3.	
14. Potential damage or increased wear and tear of public facilities used by contractors		
15. Risk that supplier of project's raw materials including borrow and aggregates use environmentally and socially destructive production methods, including possible use of child labour.		
ESS4 - related risks and impacts		
17. General Site Hazards - Projects should implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction and decommissioning. Risks may arise from inadvertent or intentional trespassing, including potential contact with hazardous materials, contaminated soils and other environmental media, buildings that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards.	Risk management strategies may include: (i) Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high-risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community; and (ii) Removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small, confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials	
17. Risk of outbreak/spread of infectious diseases, including STDs	Recommendations for the prevention and control of communicable and vector-borne diseases also applicable to construction phase activities are provided in Section 3.6 (Disease Prevention). Adopt and implement the IPC Plan (Annex 7)	
18. Exposure of residents and children to construction traffic	The incidence of road accidents involving project vehicles during construction should be minimized through a combination of education and awareness-raising, and the adoption of procedures described in Section 3.4 (Traffic Safety).	
19. Risk of unexploded ordnance (UXO)	It is important that unless absence of UXO is confirmed, standard precautions shall be undertaken for any excavations on the hospital construction site, the borrow site if any, as well as in outer islands clinic sites.	

Risks/Potential Impacts during construction - PMH expansion	Mitigation/Management Measures	Responsibility
20. Increase in incidence of sexual exploitation/abuse and harassment within local communities	.All direct and contracted workers shall subscribed to the Workers Code of Conduct for Workers in the LMP (LMP, Appendix A) .	
21. Increased demand/competition for goods and services from influx workforce, risks of poor behaviour of workers and amenity and social conflict impacts.	.All direct and contracted workers shall subscribed to the Workers Code of Conduct for Workers in the LMP (LMP, Appendix A). The CESMPs will include measures to locate workers in low impact locations, manage impacts of work sites, and worker behaviour.	

Contractor Environment and Social Management Plans (CESMPs) will be prepared by primary contracting companies completing demolition and civil works in compliance with both the final ESMP and local legislation prior to the commencement of demolition or construction activities. The contractor shall be guided by this ESMP and the Code of Environmental and Social Practice for Contractors (Annex 6).

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6.3. Operations and Maintenance Phase

The risks and potential negative impacts during the operations phase can be addressed through appropriate design measures as well as measures that can be applied during the operations phase. Design measures are discussed 6.1 above while this section discusses the measures that can be applied during the operations of the facilities and the strengthened health systems.

Table 10. Management measures during the Operations Phase

Risk and Impacts during Operations	Mitigation/Management Measures	Responsibility
ESS2-related risks and impacts		
1. Possible non-observance of basic workers' rights (i.e., clear terms of employment, working hours, and prompt payment of wages, freedom of assembly and collective bargaining)	• Conformance with the LMP and Tuvalu's labour laws, particularly the Employment Act.	MoH PMH Management
2. Possible discrimination in hiring and benefits (i.e., based on gender, religion, or ethnicity)	• Conformance with the LMP	MoH PMH Management
3. Possible engagement of child and/or forced labour by contractor, and project management.	• Conformance with the LMP and Tuvalu's labour laws, particularly the Employment Act.	MoH PMH Management
4. Possible involvement of child labour by suppliers in the production of embankment and aggregate materials.	• Conformance with the LMP and Tuvalu's laws, particularly the Employment Act.	MoH PMH Management
5. Exposure of healthcare workers to Occupational Health and Safety (OHS) hazards	See below:	MoH PMH Management
(a) Exposure to infectious wastes, biological samples, and specimens	• Provide standard protocols and adequate training in handling infectious waste and materials	MoH PMH Management

Risk and Impacts during Operations	Mitigation/Management Measures	Responsibility
	• Provide appropriate and adequate PPEs to workers (including associated training) • Development and implementation of **Infection Prevention and Control (IPC)** systems for PMH and outer island clinics	
(b) Exposure to hazardous medical laboratory chemicals/reagents and wastes	• Provide standard protocols and adequate training in handling of chemicals and laboratory wastes. • Provide appropriate and adequate PPEs to workers.	MoH PMH Management
(c) Exposure to operational hazards of medical equipment (electrical and physical hazards)	• Provide adequate training in proper use of medical equipment. • Provide appropriate and adequate PPEs to workers.	MoH PMH Management
(d) Exposure to radiology workers to ionizing radiation	• Provide standard protocols and adequate training to workers • Provide appropriate and adequate PPEs to workers.	MoH PMH Management
ESS3-related risks and impacts		
6. Risk of contamination of coastal and ground water from septage during flooding events.	• Install, operate, and maintain a flood proof sewerage system (See Section 6.1) • Undertake proper and regular maintenance of septic tank systems, including their outlets and any secondary treatment	MoH PMH Management
7. Effluents from the septic tank could contaminate the soil around the septic tank outfall area and could flow or be carried by runoff into the beach area	• Undertake proper and regular maintenance of septic tank and provide secondary treatment of effluents prior to discharge to environment	MoH PMH Management
8. Contamination of ordinary solid waste with health care wastes	• Practice strict segregation of ordinary solid waste from medical waste. • Containers of hazardous waste and infectious waste should be properly labelled.	MoH PMH Management
9. Generation of air pollutants from incineration of health care wastes	• Incinerators should be provided with smokestack of adequate height, especially if located within the hospital and/or in populated area. • Undertake regular and proper maintenance of the incinerator.	MoH PMH Management
ESS4-related risks and impacts		
6. Risk of inundation of facility during coastal of flooding events, rendering it non-operational during and in the aftermath of a flood-causing disaster (such as cyclone or tsunami).	• Building design must consider threats of flooding and adopt designs that address those threats (See discussions on design considerations in discussions in 6.1) • Develop and implement a **Disaster Response Plan** focused on cyclone and	MoH PMH Management

Risk and Impacts during Operations	Mitigation/Management Measures	Responsibility
	flooding events either due to storm surge or tsunamis	
7. Exposure of waste collectors and handlers to hazards from ordinary municipal solid wastes from hospital operations	• Health care waste must be segregated from ordinary solid waste of the HCF. • Collectors must exercise extra precautions in handling solid wastes from health care facilities, such as proper labelling and use of plastic bags.	MoH PMH Management
8. Infrastructure risk from seismic events	• Adopt and conform with suitable seismic code in the region. • Require regular drills for seismic and/or tsunami events.	MoH PMH Management
9. Risk of hospital/health care facility fire	• Use fire retarding materials in HCF building. Provide adequate fire exits and for extinguishers along with appropriate training. • Prepare and adopt an HCF Fire Prevention and Evacuation Plan • Undertake regular fire drills	MoH PMH Management
10. Risk of accidental spillage of infectious wastes or hazardous chemicals	• Prepare and adopt a Hazardous Spill Containment and Clean Up Plan	MoH PMH Management
11. Health care waste hazard	• Prepare, adopt and implement an HCF's own internal **Health Care Waste Management Plans** which is aligned with the national HCWM. The national HCWM will be developed as part of the project under Subcomponent 1d.	MoH PMH Management
11. Risk of water supply	• Prepare a Water Supply Crisis Response Plan/Drought Scenario Plan	MoH PMH Management
12. Risk on power supply	• Install a redundant generating capacity for hospital. • Prepare and adopt a Power Supply Emergency Plan	MoH PMH Management
11.Poor accessibility/inability of the facility to cater services to certain groups with special needs such as PWDs, elderly, pregnant women, or person with infants	• Apply principles of universal access in the design of HCF	MoH PMH Management
.	•	
..Risk of healthcare services (e.g., health screening, etc.) not being administered in accordance with GIIP, among vulnerable and remotely situated groups	• Development and adopt standard operating procedures in line with GIIP for screening programs. This will be provided under Component 2. • Undertake capacity building of staff to ensure vulnerable group's issues and needs	MoH

Risk and Impacts during Operations	Mitigation/Management Measures	Responsibility
	are understood. This will be provided under Component 2. • SEP to ensure targeted engagement strategies for vulnerable groups and remotely located groups	
.		
ESS5 -related risks and impacts	N/A	
ESS6-related risks and impacts	N/A	
ESS7-related risks and impacts	N/A	
ESS8-related risks and impacts	N/A	

The management measures during the operations phase will include development and implementation of various operating plans as follows:

(1) National Infection Prevention and Control Plan/System (NIPC). The existing operational IPC in practice at PMH and outer island clinics will be strengthened and improved under Subcomponent 1d. It is recommended that the strengthened NIPC system for the entire healthcare system shall be developed and written down as an operating plan/manual document. The IPC system will contain high level requirements, based on WHO guidance and other GIIP, for the safe operation of health facilities and associated activities and will inform the development of operational management plans. (Please note that this NIPCP is intended for the operation of the HCF and is different from the Project IPCP in Annex 7 which is intended to be used to prevent and control infection among project personnel and communities during project implementation).

(2) Healthcare Waste Management (HCWM) Plan/System. Subcomponent 1d of THSSP will also strengthen and improve the Health Care Waste Management (HCWM) systems at PMH and across the island clinics. The plan will include detailed procedures for the management of e-waste, healthcare waste, radioactive waste, expired pharmaceutical supplies including an assessment of suitable waste management options and the procedures for waste management and disposal. Individual HCF waste management shall be aligned and integrated into the system.

(3) HCF Disaster Preparedness and Response Plan. Aside from design features discussed in 6.1, to further address the risks of cyclone and coastal flooding, MoH shall develop and adopt a disaster response plan focused on cyclone and catastrophic coastal flooding scenarios. The plan shall anticipate scenarios based on past experiences (e.g., TC Pam) and include contingencies for resources, supplies, transport, and utilities (i.e., water, power, and communication). The aim of the plan is to ensure continued operation of the HCF during and in the aftermath of a cyclone/flooding event and focus services and resources to providing emergency and priority health care needs of the communities affected by disaster.

(4) HCF Fire Prevention and Evacuation Plans. In addition to the design consideration discussed in 6.1 regarding use of fire-retardant materials and provision of adequate fire escapes, the PMH shall develop, adopt, and implement a Fire Prevention and Evacuation Plan. Much simpler plans can be prepared for the outer island clinics. Training and regular drills based on these plans shall be undertaken.

(5) Hazardous Spill Prevention, Containment and Clean Up Procedure. Hazardous chemical and infectious waste spills should be prevented (e.g., handling of chemicals should follow their respective MSDS) but when they happen should be immediately contained/controlled and cleaned up. The PMH should develop and adopt a spill containment and clean up procedure, addressing the types of hazardous chemicals, substances, and infectious materials that hospital handles in accordance with their material safety data sheet. The procedure shall identify and inventory the types of hazardous chemicals and materials in the HCF, identify recommended spill clean-up methods, spill control materials (e.g., dispersant) and equipment (e.g., brushes, scoops, containers), personal protective equipment (e.g., respirator, gloves, protective clothing, etc.). If practical, Spill Control Kits should be placed in the strategic places of the HCF. A much simpler procedure may be adopted for the outer island clinics based on Material Safety Data Sheets of chemicals and based on Infection Prevention and Control for infectious materials.

(6) Water Conservation and Water Supply Contingency/Drought Scenario Plan. All HCFs, including PMH rely on rainwater harvesting and storage for their water supply. Water supply is a critical limiting factor for their continued operations. Also, a prolonged drought would be a serious threat to the continued operation of the facilities. An alternative or source should be developed for HCFs such as the utilization of low-quality underground water lenses for other non-potable uses to reduce demand for rainwater. However, the hospital should also develop and adopt: (a) a water conservation plan; (b) an emergency water supply contingency plan; (b) a prolonged drought scenario water usage plan.

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6.4 Detailed assessment and finalization of the ESMP

During the Planning and Design Phase the Project Team will flesh out the proposed project activities and specify the following in consultation with key stakeholders:

(i) Detailed engineering design of the new PMH building, the facilities/equipment to be installed and the services to be provided.

(i) Types of improvements and detailed engineering of construction works to be undertaken at each outer island clinic.

(ii) Detailed design specifications of new systems/services to be provided including: (a) Health Screening Program; (b) Teleconsultation.

(iv) Technical assistance on the development of various systems, including HCWM or MWM system, IPC, including the HCF management systems that is recommended in this ESMP such as HCF Disaster Preparedness and Response Plan, Spill Prevention, Containment and Clean Up Procedures, etc. (See Section 6.3 above for other recommended plans).

(v) List and detailed specifications of potential CERC activities

In specifying the above, the Project Team shall consider the results and recommendations of this preliminary ESMP, particularly the recommended design considerations, operational systems and plans. The resulting detailed design in turn will become the basis for additional assessments and the development of the final ESMP.

7. STAKEHOLDER ENGAGEMENT AND GRIEVANCE REDRESS

The Project recognizes that citizen engagement in the design and implementation of the Project are important to the achievement of the development objective as the delivery of quality essential health services must consider feedback from citizens on whether the availability and quality are in line with their needs, provide an appropriate environment for seeking care, is respectful and inclusive. This section summarizes the stakeholder engagement for this project. A Stakeholder Engagement Plan (SEP) has been prepared and provided as Annex 4 of this ESMP.

7.1 Stakeholder Engagement During the Preparation of this Document

This preliminary ESMP has been presented, through virtual meetings, to key government agencies which will be involved in the project and has incorporated their comments.

MoH

7.2 Stakeholder Engagement During Implementation and Grievance Redress Mechanism

A Stakeholder Engagement Plan (SEP) has been prepared to guide further engagements with key stakeholders during project implementation. The SEP outlines (i) who the key stakeholders are; (ii) how they are to be engaged including methods, tools, techniques, and channels such as key message dissemination through community-based organizations, radio and social media to address the gathering limitations of COVID-19 pandemic; (iii) how often the engagement will occur throughout the project; (iv) how feedback will be solicited, recorded and monitored over the project; (v) who will be charged/responsible with this engagement; (vi) timeline for this engagement, (vii) resources for engagement, and so on. The SEP will be disclosed prior to appraisal and updated as relevant throughout implementation.

The SEP also sets out the project's Grievance Redress Mechanisms (GRM) which will be set up at the start of project implementation to address grievances and receive feedback from all stakeholders and beneficiaries in a timely manner and following due process. The GRM will be cognizant of and follow required levels of discretion, and cultural appropriateness, especially when dealing with cases of sexual harassment and GBV. The GRM will be accessible to all stakeholders, especially poor and vulnerable people.

During the Planning and Design Phase, this preliminary ESMP will be presented to the key stakeholders across the country which include health workers of PMH and outer island clinics, residents within 50-meter radius of the PMH, key officials of the MoH, MoE, Funafuti Kaupule, SPC, World Bank and their development partners, through online meetings. Their comments and feedbacks will be incorporated into the final ESMP document, along with results of additional assessments based on detailed design. The final ESMP will be presented again to key stakeholders for their final comments and concurrence.

8. IMPLEMENTATION ARRANGEMENTS

The implementation of this ESMP will be a key item in the Environmental and Social Commitment Plan (ESCP) which will be agreed with the World Bank. The ESCP will set out the material measures and actions required for the project to meet the ESSs over a specified timeframe and will be part of the legal agreement between GoTv and the World Bank.

8.1 ES Risk Management Capacity of the Implementing Agency

The MoH has no previous experience executing a World Bank financed project or any other similar multi-lateral agency development projects, though there has been some experience in providing technical input to the execution of the COVID-triggered Contingent Emergency Response Component (CERC). Based on lessons learned from the CERC, the MoH has been responsive to Environmental and Social risk management requirements, however, due to low staff numbers and capacity, in-country resources are stretched and there have been delays in responding to project requirements.

The MoH also participates in an ADB-financed regional project supporting the introduction of new vaccines, which provides additional support for COVID-19 related vaccine deployment. Other cooperation with development partners is largely in receipt of technical assistance or direct aid from UN agencies, regional entities (The Pacific Community) and bilateral partners (Australia, New Zealand, and Taiwan being of note).

8.2 Proposed Institutional Arrangements

Based on Project Implementation Arrangements described in Section 2.3, the project's ESMP will be implemented by a Project Technical Unit (PTU) to be set up at the MoH, with technical support and oversight from the Central Project Management Office (CPMO) under the MFED. The CPMO has Environmental and Social Management Experts which are also supporting other World Bank Projects. The following are the key officers responsible for the implementation of the project's ESMP.

MoH CEO. As the head of the implementing agency, the MoH CEO shall be responsible for ensuring that the project is able to fulfill its commitments under the ESCP.

Project Manager. The Project Manager shall be responsible for implementation of all activities, measures and requirements specified in the ESCP, including the implementation of the ESMP, SEP and LMP.

PTU ES Safeguards Officer. The implementation of the ESMP necessitated an appointment of an ES Safeguards Officer who would serve as the focal point and technical backstop for ES matters at the PTU. The ES Safeguard Officer shall be recruited nationally and should be onboard within 60 days from the project's effectivity. He/she shall have the following specific functions:

(i) Participate in the discussion with the project development team on the final project design, including the final design features of the PMH extension building and the MWM, to ensure that the pertinent recommendations of this Preliminary ESMP are addressed;
(ii) Update or cause this Preliminary ESMP to be updated based on detailed engineering design;
(iii) Ensure that the agreed project design features to avoid or minimize ES impacts and risks, are adopted, and implemented or addressed satisfactorily, in the final project design, particularly in the design of the PMH new Wing;

(iv) Ensure that contractor's contract contains clauses that assign clear responsibilities to the contractor for the execution and/or compliance of certain requirements as specified in this ESMP;
(v) Ensure that the various operational plans and protocols are incorporated, or satisfactorily addressed in the PMH's Operations Management System;
(vi) Develop and continuously update a construction site Occupational Safety and Health (OHS) audit protocol and conducts periodic construction site OHS audits;
(vii) Continuously update the Stakeholder Engagement Plan (SEP) and coordinates with other units to ensure its implementation;
(viii) Set up the project's GRM at the start of the project implementation and acts the overall GRM coordinator;
(ix) Liaise and coordinate with other government agencies for the projects compliance with government's environmental and related regulations.
(x) Prepare a **Monthly Status Report** of the implementation of the ESMP Measures for the PTU Manager who will then clear the report for submission to the CPMO;

CPMO - ES Management Experts. The CPMO ES Management Experts shall provide technical support and oversight to the ESMP implementation. They shall review the monthly status reports of the PTU-ES Specialists and conduct site validations on the reports and random audits. They shall also provide technical advice to the PTU in case of compliance issues and constraints. The CPMO ES shall also be responsible for the preparation of the semi-annual report on project's compliance with the ESCP, ESMP, SEP, LMP and other requirements

8.3 Monitoring and Incident Reporting

Monthly Report. During the period starting from the inception of THSSP through construction of additional PMH Wing, up to the closure of the project, the PTU ES Officer shall prepare monthly status reports for the Project Manager and the CPMO. The monthly report should contain the following:

(a) Status of the ESCP Commitments to the World Bank
(b) Status of the implementation of the ESMP management measures, including status of the pending corrective action/measures from previous months.
(c) Delays, issues, and constraints encountered in the implementation and the proposed corrective actions/measures.
(e) Summary and status of ES-related incidents encountered, if any.

The Project Manager shall clear the monthly report for submission to the CPMO.

Incident Report. Field staff of the project responsible for the ground implementation of the project activities, especially those directly managing and supervising the contractors, should immediately inform (through telephone or other instant means of communication) the PTU ES Officer of any ES-related incident, including OSH incidents, that occur in the fields or in the construction sites. A written report following a standard format which shall be developed and adopted for the project, shall later be prepared by the staff in the field.

Semi-annual Report. Using information from the monthly reports and findings of its validation site visits and random audits, the CPMO ES Management Experts shall prepare a Semi-Annual Report on the status of project's compliance with the ESCP, including a sufficiently detailed account of the project's compliance of the ESMP management measures. The Semi-Annual Report shall be shared and discussed with the PTU and finalized before submitting to the World Bank in time for its semi-annual Implementation Support Missions.

8.4 Capacity Building

The PTU staff, the ES Safeguard Officer, and the field staff of the project in charge of administering the contracts or supervising the contractors at sites, shall, at the inception of the project, undertake familiarization trainings of this ESMP, including special sessions on its subsidiary instruments, especially SEP and LMP. The trainings will be conducted by the CMPO.

In addition, the ES officer shall undertake familiarization of the World Bank ESF through a one-on-one coaching by the CPMO ES Management Experts and through on-line seminar from the World Bank Website.

Trainings on operational systems such as HCWM Plan, NIPC Plan, Disaster Preparedness and Response, Hazardous Spill Containment and Clean Up Procedure, Fire Prevention and Evacuation Plan, etc. will be identified and conducted as part of the TA for these systems.

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ANNEXES

ANNEX 1. PROFILE OF FUNAFUTI ISLAND AND ASSESSMENT OF THE PRINCESS MARGARET HOSPITAL EXPANSION SITE

I. Princess Margaret Hospital Proposed New Wing (Building)

1. Map

Attach a close-up map of the site showing its location with respect to the structures and establishments, the shorelines, road, etc.

2. Describe the site (lot) where the proposed New Wing will be constructed.

2.1 Total lot area (sqm): **512.802m²**
2.2 Is there an existing structure (to be demolish)? Describe the state and make of the structure:
Two existing concrete building with single story that stored medical equipment.
2.3 Is the lot:
Rugged with mounds and troughs? **No.**
Level? **YES**
Level but low-lying, i.e., lower than the existing PMH main building ground? **YES**

2.4 Photo of the proposed site

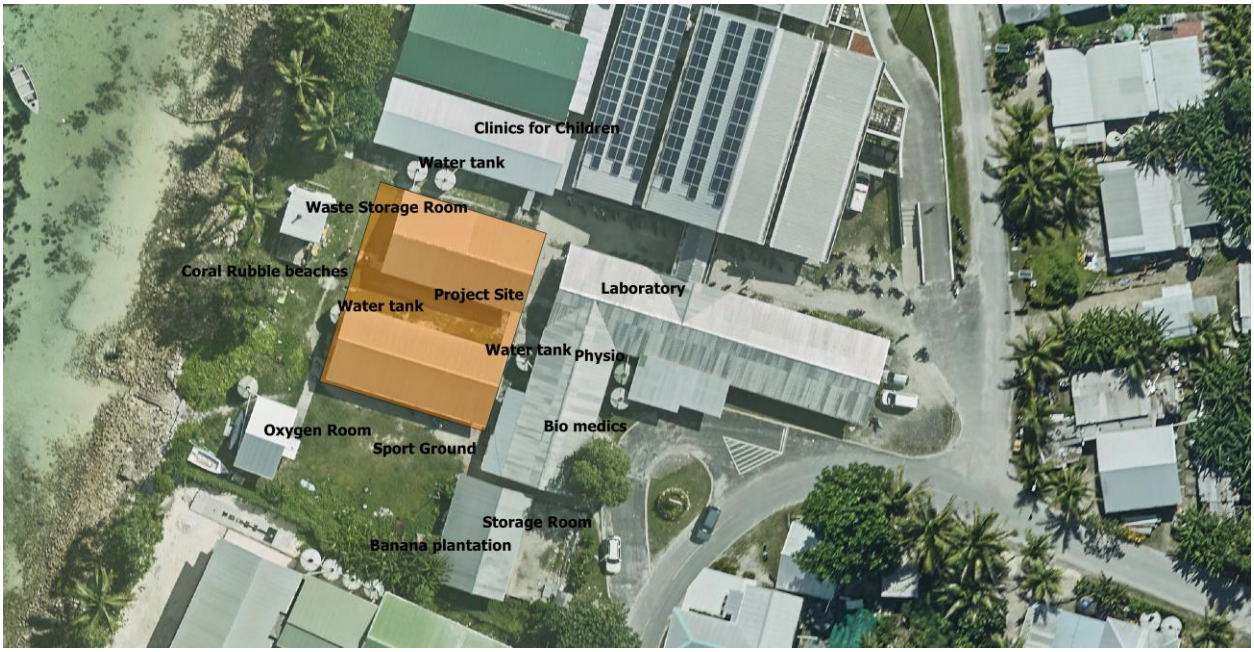

Figure 12: Identified project site

2.5 Who owns this lot (National Government, Village, Private)? National Government

2.6 Describe the existing land use/structures immediately adjacent to the lot?

East: Old hospital building currently used for Physio, Bio medics, Laboratory.
West: Waste storage and oxygen room
North: Clinics for Children
South: Sports ground

2.7 Ownership status of immediately adjacent lots/structures?

East: Government
West: Government
North: Government
South: Government

2.8 Panoramic Photos

[Insert a 360-degree photo of the area/structures surrounding the proposed site]

Figure 2: Clinics adjacent to Project site (North)

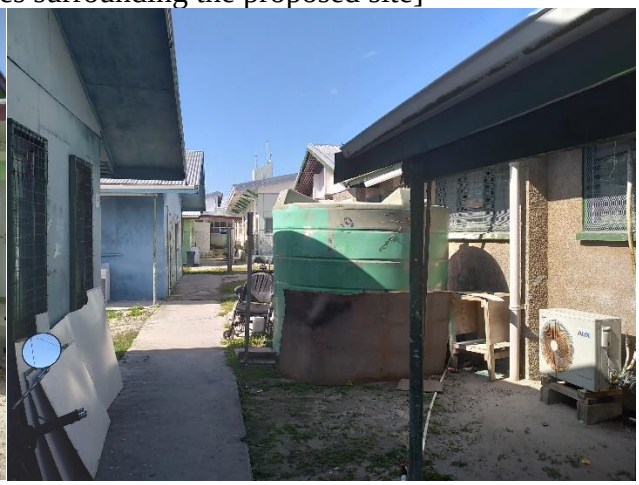

Figure 3: Old hospital building adjacent to project site (East)

Figure 4: Sport ground adjacent to project site (South)

Figure 5: Sport ground adjacent to project site (South)

Figure 6: Oxygen room adjacent to project site (West)

Figure 7: Waste storage room adjacent to project site (West)

2.9 Distance to the nearest residential house (m)? 66m
2.10 Distance to the nearest structure (m)? 1m

2.11 Distance from the seashore- lagoon side (m) 20m
2.12 Distance from the seashore - ocean side (m) 280m
2.13 Number of residents (approximate) within 100 m radius of the lot? 15 residents

3. Drainage and outfall

3.1 To where would run-off water drain (ocean side/lagoon side)? lagoon

3.2 Describe the prevailing land use/vegetation of the area downstream of the proposed site (i.e., presence of residential homes, business establishments, vegetations, etc.).
Hospital waste storage room, 25% of broadleaf vegetation along the coastal ridges, the remaining land use were just a clear flat surface.

3.3 Describe the current use of the outfall (i.e., the ocean side or lagoon side) of the drainage from the site (i.e., current use of the beach area, presence of mangrove, the conditions of the flora and fauna).
Lagoon side – coral rubbles beaches, few broadleaf trees along the coast with grassland dominated by beach morning glory plants. No sign of expose animals.
Ocean side – coral rubbles beaches, few broadleaf trees along the coastal.

4. Aggregates and Embankment Materials

4.1 Who is responsible for the supply of embankment materials (contractor or government)? Contractor
4.2 Source of embankment materials (i.e., borrow materials) Imported from overseas supplier

If sourced locally, describe the proposed site of borrow pit/quarry:
Location (water or land)? N/A (Prohibit extraction of local aggregates)
If on land, draining towards lagoon side or ocean side? N/A
If under water, lagoon side or ocean side? N/A
If land, ownership status (private, government, village communal)? N/A
Describe the flora present N/A
Describe the fauna present N/A
Current use of the area: N/A

4.3 Who is responsible for the supply of aggregates? Contractor

4.4. Source of aggregate materials (imported, local quarry site, dredging of lagoon)? Imported
If sourced locally, describe the proposed quarry site in terms of location, current land/waterbody use, ownership status (if on land), lagoon side or ocean side (if under water), ecological profile (flora and fauna)?
Location (underwater or on land)? N/A
If on land, draining towards lagoon side or ocean side? N/A
If under water, lagoon side or ocean side? N/A
If land, ownership status (private, government, village communal) N/A
Flora N/A
Fauna N/A
Current use of the area: N/A

5. Existing Waste Management System at PMH

5.1 Effluents
Where does domestic effluent go? Domestic effluent goes into septic tank, waste from overflowed septic tanks are pumped out and dispose of by PWD into the sea or into a designated pit.

Where does hospital effluent go? PMH effluent goes into septic tank, waste from overflowed septic tank are pumped out and dispose of by PWD into the sea or into a designated pit.

Describe any wastewater treatment being undertaken. Nil.

5.2 Solid Waste

Does the hospital segregate ordinary waste from medical waste (Y/N)? __YES____

How does the hospital dispose of ordinary solid waste (paper, cardboard, kitchen/food waste)? __PMH general waste are collected by municipal waste collectors and dispose of at landfill

5.3 Hazardous Medical Waste

How does the hospital currently dispose of medical waste?

Sharp waste items? _Incinerate_____

Hazardous chemical/substances? Return to Waste Management Department or supplier.

Biohazard waste? ___Incinerate_____

ANNEX 2. OUTER ISLAND PROFILES AND RAPID ASSESSMENT OF CLINIC SITES

1. Nanumaga Island

Table 11. Environmental and Social Profile of the Nanumaga Island

Parameter	Description
Physical Characteristics	The island has a total land area of 2.7 sq km. It is comprised of two villages, Tokelau (north) and Tonga (south). Settlements are concentrated in the western mid-section of the island. Nanumaga is located 408km northwest of Funafuti and 72km south of Nanumea. It is a single island of 301ha and is approximately 2.8km long and 1.5km wide surrounded by a fringing reef and with two small central brackish-water lagoons (**Error! Reference source not found.**1). The larger Vaiatoa Lagoon is in the north of the island while the smaller Ha'apai Lagoon is in the south. A causeway construction by the Kaupule to the south of Vaiatoa Lagoon provides access to the eastern side of the island.
Demographic Profile	It has a total population 464 (117 households) as of 2012 and declining with growth rate of -2.39 Nanumaga has a population of 444 across the two villages. The island's population increased by 39% between 1979 and 1991 but had subsequently dropped by 55% when records were collected in 2002. In 2012, there appears a decrease by 125 people with a negative annual growth rate of -2.39%. These figures are indicative of ongoing outward migration from Nanumaga, mainly to Funafuti by people seeking better employment, social and healthcare opportunities. The 2017 census also showed that the Nanumaga population on Funafuti was nearly double that of the actual island community, at 722 people.
Health Facility	Prior to TC Pam in 2015, there was a medical clinic on Nanumaga with 4 inpatient beds and two delivery beds spread over 4 wards (male, female, children and general). Up to 4 medical personnel providing health services for people at the clinic. TC Pam damage to the clinic has been irrecoverable and it has now fallen into an abandoned state. There are now only 2 nurses on the island who work out of a small clinic behind ocean-facing main mwaneaba. Non-communicable diseases (NCDs) are one of the leading causes of mortality, including diabetes, hypertension, arthritis/gout, obesity and heart disease) and injuries or accidents. NCD reported cases from Nanumaga is very high at 20.8% which is the highest in the country. Communicable diseases are also high on Nanumaga at 21.7% of all recorded medical cases with the majority being for septic skin sores, respiratory tract infections and diarrhea.
Socio Economic	Within a monetary-based economy people rely on employment, rent, land lease, pension, remittances, self-employment or ad-hoc businesses. Only about 66 people (22%) of the population aged 15 or above are employed, which is below the national average of 75 people per village. A total of 231 people of working age are not employed. Significantly, there are more females (53%) employed than males (47%). The main types of occupation on Nanumaga are classified as 'Professional and Technical' (22 people in 2012), 'Management and Administrative' (8 people), 'Clerical Support Workers' (20 workers), 'Production Workers' (14 people), and 'Agriculture and Fisheries' (2 people).

	The percentage of female workers under the professional and technical and clerical support categories is higher than males. Since 2002 there has been a decrease in the number of people employed as production workers, but an increase of workers in the professional and technical, management and administration and clericals support workers categories. The main source of employment on Nanumaga is the Island Kaupule which employs 26 people (39% of the employed population), followed by the central government at 17 people (26%), public corporations such as Tuvalu Electricity Company (TEC) and Tuvalu Telecommunications Corporation (TTC) with 8 people (12%), the private sector with 5 people (8%), NGOs with 4 people (6%) and the lowest is seafaring and the self-employed (canteen owners) with 3 people each. Pensions are paid to 17 people on Nanumaga under Tuvalu's Elderly Support Scheme which supports those in the population aged 70 and over with a monthly payment of AU$50 on the condition that they are resident in Tuvalu and are earning less than AU$4,000 per annum. The annual amount paid by the scheme in Nanumaga is AU$15,000. Household remittance amounts include all members of households who are sending and receiving money. On Nanumaga, 58 households receive remittances monthly and out of these 42 households receive less than AU$150 per month and 16 receive more than that. Remittances into Nanumaga during 2010 from Funafuti total an estimated AU$10,352 which is the second highest amount in the country. A total of 199 people (86%) over 15 years are not employed but are involved in subsistence activities while 32 people (14%) are not involved in any means of subsistence activity or employment (of these people 11 have a disability, 7 are elderly and 14 were visitors in 2012). There are more males involved in subsistence activities than females. The most common subsistence activity is feeding of livestock with a total of 174 people (75%) involved in it, the next most common activities are cutting toddy (80 people), farming (71 people), fishing (69 people) and handicrafts (69 people).
Household Waste Disposal	The main means of waste disposal by households is by burying, burning (30%), disposing through own back yard or at sea (26-31%) or using compost (20-17%). Significantly the Island Kaupule does not collect the rubbish thus households are liable for the disposal of their wastes unlike Funafuti whereby the Waste Management Department and the Island Kaupule provide this service to the public. Community consultations via the 2018 IVA highlighted that toilet and kitchen waste disposal were the top three health related problems that were separately identified by men, women, and youth on Nanumaga. The Nanumaga Kaupule does not arrange for the collection of households therefore a fenced waste landfill with an incinerator is largely underutilised. On Nanumea the Kaupule arranges for the collection of household waste in Nanumea and deposits the waste in a fenced waste landfill. Poko pits are the main means of waste disposal by households by burying, burning, disposing through own back yard, at sea or using compost. While the poko pits are used for composting organic waste, more non-biodegradable waste such as used diapers, plastics (bags and containers), glass and cans are also evident.

Ecological Profile	The lagoon portion of the island is small, only 0.6 sq km. Mangroves are found along the shores of the lagoon. On Nanumaga, there are 51 plant species recorded[1], although not surveyed, approximately the same is expected on Nanumea due to their similar geography, elevation, and history. The interior of Nanumaga has two tidally influenced salt water lagoons surrounded by mangrove trees comprised of the two recorded mangrove species in Tuvalu, the common Togo (*Rhizophora stylosa*) and the red-flowered mangrove Sagale (*Lumnitzera littorea*), which is only reported on Nanumaga, Niutoa, Nui and Vaitupu.[2] The mangrove forest of the northern Vaiatoa lagoon is by far the largest, covering an area approximately 20 hectares and reaching to the village settlements. Mangrove ecosystems are protected under Tuvaluan law. A causeway of crushed stone crosses the southern mangrove area of Vaiaota linking the village areas of Tonga and Matematefaga Nanumaga has an actively managed Locally Managed Marine Area (LMMA) which relates to the fisheries management of the coastal waters. The LMMA encompasses the entire island both on the eastern and the western site. Additionally, it states that no fishing is allowed on the reef on the western side of the island, except handlining.

Rapid Environmental and Social Audit of the Clinic Site in Namumaga Island

Outer Islands Clinics [*Nanumea (Lolua), Niutao (Kulia), Nanumaga (Tonga), Nui (Tanrake), Vaitupu (Asau), Nukufetau (Savave), Nukulaelae (Fangaua), Niulakita*]

1. Name of Island/Atoll: Nanumaga
2. Total land area of the Atoll/Island: 2.7 sqkm (2012 Island Profile)
3. Population: 410 (2021 kaupule data)
4. Name of Village where Med Clinic is located: Tokelau
5. Geographic Coordinates Long: 424,472.39 m Lat: 9,305,238.85 m
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

[1] Nanumaga Island Profile, Ministry of Home Affairs, 2012

[2] Tuvalu 5th National Biodiversity Strategy and Action Plan, Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour, 2016

7. Describe the Building and Amenities:

Floor Area (approximate sq m): 16.2m x 10m (162sqm) Area of Lot (sq m): 387.4 sqm
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? Private
Is there electricity connection (Y/N)? _____ Source: Solar/Generator
Is there running water (Y/N)?_____ Water supply source: Tanks
Is there a toilet facility (Y/N)?_____Has Septic Tank? YES

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: Private resident Distance (m): 32.2 m
West: Type of structure: Road Distance (m): 68.9 m
North: Type of structure: Private resident Distance (m): 52.8 m
South: Type of structure: Private resident Distance (m): 64.6m

Distance of Nearest Residential House (m): 32.2 m

Describe the land use or vegetation type
East: Coconut trees
West: Coconut woodland
North: Coconut trees
South: Coconut woodland

Distance from the shore- lagoon side (m) 159.4 m

Distance from the seashore - ocean side (m) 314.3 m

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 4
Presence of qualified personnel (check):

[ ] Medical Doctor
[2] Nurse
[1] Midwife
[1] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Oxygen concentrator, ECG machine, Refrigerator, Nebulizer

Services Provided by the Clinic (Describe)
Urgent medical care, Daily outpatient, Maternal child health clinic, NCD clinic

How many patients on the average comes to the Clinic to avail of the services per month? 40

What are the usual health complaints (list)?
Chronic disease management (NCD)
Wound dressing

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bins and bags (disposal)
Twice a week dispose using incinerator

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they dispose of medical waste? Incinerator

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Climate change

10. Prevailing social issues in the island (Describe, if any)

None

Photo of Clinic and Surrounding

Figure 1 Western side of the clinic

Figure 2 Eastern of the clinic

Figure 3 Southern side of the clinic

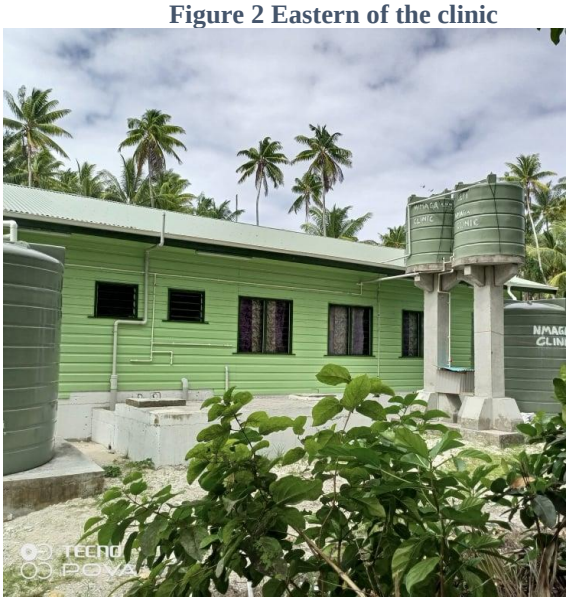

Figure 4 Northern side of the clinic

2. Nui Island

Table 212. Environmental and Social Profile of Nui

Parameter	Description

Physical Characteristics	Nui is an atoll composed of several disconnected islets, interspersed with swamps, and shallow sandy flats. The total land area of the island is 3.5 sq km. The open lagoon spans an area of approximately 0.15 sq km, enclosed by sand bar or tidal flats. The settlements are concentrated on the western section of the southernmost island, in the two villages of Manutalake and Alamoni.
Demographic Profile	The total population is 672 (128 households) in 2012 (5.2 households) growing at 2.04.
Household Waste Disposal	The main means of waste disposal by households is by burying (13%), burning (39%), disposing through own back yard or at sea (30%) or using composting (18%). The Island's Kaupule does not collect the rubbish thus households are liable for the disposal of their wastes unlike Funafuti whereby the Waste Management Department and the Island Kaupule provide this service to the public.
Water and Sanitation	The main source of water in the island is rainwater collected in large tanks from home gutters. Twenty-one percent (21%) of the household have flushed toilets while 51% have ordinary water sealed toilets. Still about 27% of the household reported to have no toilets.
Ecological Profile	The island has relatively a very high number of species (400-466) compared to the rest of the islands. The swamp areas are usually covered with Togo and Gle hardwood.
Health	Health clinic has 4 in-patient beds, 1-delivery bed, 1-weighing scale, 1-sterilizer, blood pressure, stethoscope, refrigerator, freezer, nebulizer, Senior nurse, nurse, assistant nurse, sanitation aide.

Rapid Environmental and Social Audit of Outer Island Clinic Sites

1. Name of Island/Atoll: *Nui Island*
2. Total land area of the Atoll/Island: *3.31985 sq km/ 820.35 acre*
3. Population: 610 (2017 census)
4. Name of Village where Med Clinic is located: *Tabontebike Village*
5. Geographic Coordinates Long: *516,369.96m* Lat: *9,199,682.68m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *81.94884255 sq m* Area of Lot (sq m): *8903.08 sq m*
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? *Private*
Is there electricity connection (Y/N)? Y_____ Source: Generator/Solar
Is there running water (Y/N)? Y_____ Water supply source: Tanks
Is there a toilet facility (Y/N)? Y_____Has Septic Tank? YES

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: *Nurse House* Distance (m): *36.3 m*
West: Type of structure: *Nurse House* Distance (m): *27.7 m*
North: Type of structure: *Ward Building* Distance (m): *3.82 m*
South: Type of structure: *Clinic Sign Board* Distance (m): *12.6 m*

Distance of Nearest Residential House (m): *124.1 m*

Describe the land use or vegetation type
East: Coconut trees (natural forest)
West: Coconut trees (natural forest)
North: Coconut trees (natural forest)
South: Coconut trees

Distance from the shore- lagoon side (m) *144.8 m*
Distance from the seashore - ocean side (m) *88.1 m*

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 4
Presence of qualified personnel (check):

[ ] Medical Doctor
[2] Nurse
[1] Midwife
[1] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Bed clinic, basic equipment including oxygen concentrator, nebulizer machine, vaccine fridge

Services Provided by the Clinic (Describe)
General outpatient for simple/minor ailment
Chronic disease management
NCD clinic
Maternal Child Health Clinic

How many patients on the average comes to the Clinic to avail of the services per month? 55

What are the usual health complaints (list)?
Wound dressing minor and diabetic wound
Chronic disease management. E.g. NCDs

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bins and bags (disposal)
Disposal waste twice a week

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they disposed of medical waste? Incinerator

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Climate change – Impact on Health

10. Prevailing social issues in the island (Describe, if any)

None

Photo of Clinic and Surrounding

Figure 13: North side of Nui Clinic

Figure 14: Eastern side of Nui Clinic

Figure 15: Western Side of Nui Clinic

Figure 16: Southern side of Nui Clinic

3. Vaitupu Island

Table 313. Profile of Vaitupu Island

Parameter	Description

Physical Characteristics	The total land area is 5.3 sq km, lagoon is 0.28sq km, settlements in the southwestern portion, a mangrove swamp is located towards the east of the lagoon
Demographic Profile	Vaitupu is the second highest in terms of population among the nine islands and atolls of Tuvalu. As of 2012 it has 1104 (321 households).
Household Waste Disposal	Majority of the household (46%) reportedly burry their waste. A few (9%) burn their waste, while some 13% reportedly use them for composting. Still 32% through their garbage in the backyard or to the sea.
Water and Sanitation	95% have storage tanks.
Ecological Profile	Vaitupu has low number of species with a total of 233 which below the average of all islands. However Vaiputu has a high range of marine species with fish species the highest at 75% and invertebrates 13%. Terrestrial species 12%.
Health	The Community Health Centre on Vaitupu is staffed by a senior nurse, junior nurse, assistant nurse and a sanitation officer. There are two health clinics in Vaitupu. 2 in-patient beds, delivery bed 1, weighing scales, sterilizer autoclave machine -1, stethoscope -1, blood pressure - 1, refrigeration, freezer, electric fan, nebulizer machine Senior nurse, nurse, assistant nurse and sanitation aid

Rapid Environmental and Social Audit of Clinic Site

1. Name of Island/Atoll: *Vaitupu Island*
2. Total land area of the Atoll/Island: *5.047893 sq km/1247.36 acre*
3. Population: 1061(2017 census)
4. Name of Village where Med Clinic is located: *Asau Village*
5. Geographic Coordinates Long: *685,669.71m* Lat: *9,171,619.44m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *159.6 sq m* Area of Lot (sq m): *10149.516 sq m*
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? *Private*
Is there electricity connection (Y/N)? _____ Source: Generator/Solar
Is there running water (Y/N)?_____ Water supply source: Tanks
Is there a toilet facility (Y/N)?_____Has Septic Tank? Yes

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: *Building (private resident)* Distance (m): *37.0 m*
West: Type of structure: *Ward Building* Distance (m): *2.4 m*
North: Type of structure: *Road* Distance (m): *15.0m*
South: Type of structure: Ward building Distance (m): 11.2 m

Distance of Nearest Residential House (m): *37.4m*

Describe the land use or vegetation type
East: *Coconut trees*

West: *Grassland*
North: *Road*
South: *Forest*

Distance from the shore- lagoon side (m) *39.2 m*
Distance from the seashore - ocean side (m) 407.5 m

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 6
Presence of qualified personnel (check):

[1] Medical Doctor
[2] Nurse
[1] Midwife
[2] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Basic equipment available including: oxygen concentrator, Defibrillator, nebulizer, vaccine fridge.

Services Provided by the Clinic (Describe)
General outpatient services
Special outpatient clinics
General ailment conciliator
Dental clinic

How many patients on the average comes to the Clinic to avail of the services per month? 78

What are the usual health complaints (list)?
Wound dressing minor and diabetic wound
Chronic disease management. E.g. NCD diabetes, Hypertension

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bin and bags (disposal)
Dispose waste twice a week

Do they segregate medical waste from ordinary waste (Y/N)? Yes
How do they disposed of medical waste? Incinerator

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Climate change – Impacts on Health

10. Prevailing social issues in the island (Describe, if any)

Nil

Photo of Clinic and Surrounding

Figure 17: Eastern side of Vaitupu Clinic

Figure 18: Northern side of Vaitupu clinic

Figure 19: Southern side of Vaitupu clinic.

Figure 20: Western side of Vaitupu clinic

4. Nukufetau Island

Table 414. Profile of Nukufetau Island

Parameter	Description
Physical Characteristics	Nukufetau is a rectangular shaped atoll consisting of a few islets and shallow flats with a total dry land area of 3.4 sq km. The settlement is concentrated on the island in the southwestern corner of the atoll facing the lagoon side in the two villages Maneapa and Aulotu.
Demographic Profile	Population is 568 (177 households) as of 2011, which represents a 2.31 decline from the total in 2002.
Household Waste Disposal	There are no designated waste disposal site allocated on the island of Nukufetau and there are no rubbish collection services available for the public

	thus households disposed their wastes in their own backyard or at sea, and some bury or burn them. Most of the households (87%) reportedly throw their wastes in their backyard or the sea. A few says they burry them (2%), do compost with it (5%) and burned them (5%).
Water and Sanitation	Most households in Nukufetau have their own water tanks of up to 3000 gallons. There are about 10 public/community water storage in Tukufetau which the household can accessed during drought. About 57% of the households have flush toilets, 36% have simple water sealed toilets. About 2% reported they do compost while about 5% reported to have no toilets.
Ecological Profile	Nukufetau has 466 species which is the highest number of species among the islands of Tuvalu. The largest species are marine species (fish and invertebrates) representing 56% while terrestrial species is about 44% which is dominated by plants 27%, birds 7% and other fauna 10%.
Health	3 - beds, 1- delivery bed, 1- weighing scale, 1- sterilizer, 1- stethoscope 1- refrigerator, 1- freezer, 1- blood pressure, Senior Nurse Nurse, Nurse Aid, Sanitation Aid

Rapid Environmental and Social Audit of the Clinic Site in Nukufetau Island

1. Name of Island/Atoll: *Nukufetau Island*
2. Total land area of the Atoll/Island: *2.0205381 sq km/499.29 acre*
3. Population: 597 (2017 census)
4. Name of Village where Med Clinic is located: *Tematavaliki Village (Savave)*
5. Geographic Coordinates Long: *645,150.01m* Lat: *9,112,061.74m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *86.99 sq m* Area of Lot (sq m): *8457.93 sq m*
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? *Private*
Is there electricity connection (Y/N)? _____ Source: Generator/Solar
Is there running water (Y/N)?_____ Water supply source: Tanks
Is there a toilet facility (Y/N)?_____Has Septic Tank? Yes

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures

East: Type of structure: *Ward* Distance (m): *9.7 m*
West: Type of structure: Nurse house Distance (m): 14.8 m
North: Type of structure: *Road* Distance (m): *14.7 m*
South: Type of structure: *Ward* Distance (m): *10.7 m*

Distance of Nearest Residential House (m): *7.9 m*

Describe the land use or vegetation type
East: Coconut trees
West: Coconut trees
North: Road
South: Coconut trees

Distance from the shore- lagoon side (m) *56.4m*
Distance from the seashore - ocean side (m) 110.5 m

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 4
Presence of qualified personnel (check):

[ ] Medical Doctor
[2] Nurse
[1] Midwife
[1] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Basic equipment: Delivery bed, oxygen concentrator, thermometer, nebulizer. Vaccine fridge, BP machine, Glucometer.

Services Provided by the Clinic (Describe)
General outpatient services
Special outpatient services. e.g. NCDs
Maternal Child Health clinic

How many patients on the average comes to the Clinic to avail of the services per month? 52

What are the usual health complaints (list)?
Wound dressing and diabetic wounds
Clinic diseases management and NCD diabetes/Hypertension

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bins and bags (disposal)
Dispose waste 2 times a week

Do they segregate medical waste from ordinary waste (Y/N)? Yes
How do they disposed of medical waste? Incinerator

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Impact climate change on health

10. Prevailing social issues in the island (Describe, if any)

Nil

Photo of Clinic and Surrounding

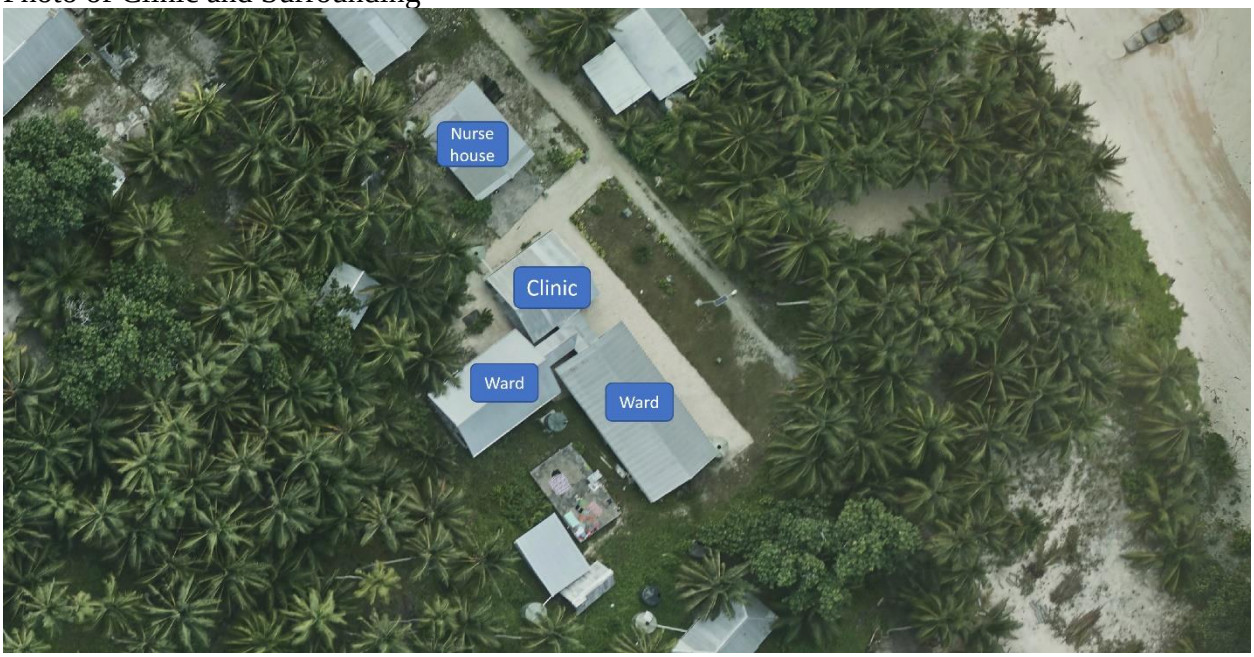

Figure 21: Western side of Nukufetau clinic

Figure 22: Northern side of Nukufetau clinic

Figure 23: Eastern side of Nukufetau clinic

Figure 24: Southern side of Nukufetau clinic

5. Nukulaelea Island

Table 515. Profile of Nukufetau Island

Parameter	Description
Physical Characteristics	Elevation of about 4-5 meters asl. There are 21 separate islets, with total dry land area of 1.82 sq km. Settlements are concentrated on the northern half of the main island. The main island is divided into two villages of Pepesala and Nukualofa.
Demographic Profile	334 dropped -15% from 2002
Household Waste Disposal	Most of the households (98%) disposed of their waste in their backyard or the sea.
Water and Sanitation	Almost all households have water tanks. As of 2012, there were only 3 households without water tanks. Aside from individual water tanks, there are 5 community water storage facilities in the settlement areas, which are tapped during drought. Eighty-five percent (85%) of the households have flush toilets and 5% have ordinary water sealed toilets. Still 15% reported to have no toilets.
Ecological Profile	Vegetation consists of coconut, broadleaf woodland, scrubs, pandanus, low ground cover and pulaka. Nukulaelae is one of the three islands in Tuvalu with the highest number of species. Marine species is the highest totaling 253 species (63%) followed by plant species (27%), and invertebrates (9%).

Rapid Environmental and Social Audit of the Clinic Site in Nukulaelae Island

1. Name of Island/Atoll: *Nukulaelae Island*
2. Total land area of the Atoll/Island: *2.0205381 sq km/499.29 acre*
3. Population: 300 (2017 census)
4. Name of Village where Med Clinic is located: *Betio Village*
5. Geographic Coordinates Long: *808,633.66m* Lat: *8,963,083.78m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

Sources: Lidar survey 2019

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *155.6 sq m* Area of Lot (sq m): *11452.6 sq m*
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? *Private*
Is there electricity connection (Y/N)? _____Source: Generator and Solar
Is there running water (Y/N)?_____ Water supply source: Water tank
Is there a toilet facility (Y/N)?_____Has Septic Tank? Yes

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: *Building* Distance (m): *10.9 m*
West: Type of structure: *TCC Hub Building* Distance (m): *9.2 m*
North: Type of structure: *Garage Building* Distance (m): *4.1 m*
South: Type of structure: *Residential Building* Distance (m): *11.0 m*

Distance of Nearest Residential House (m): *9.2 m*

Describe the land use or vegetation type
East: *Residential*

West: *Commercial*
North: *Grassland*
South: *Trees*

Distance from the shore- lagoon side (m) *36.5 m*
Distance from the seashore - ocean side (m) *135.3 m*

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 3
Presence of qualified personnel (check):

- [ ] Medical Doctor
- [ ] Nurse
- [ ] Midwife
- [ ] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Oxygen concentrator, Delivery bed, BP machine, Thermometer, nebulizer machine, vaccine fridge, Glucometer.

Services Provided by the Clinic (Describe)
General outpatient clinic
Special outpatient clinic (NCD)
Maternal Child health clinic

How many patients on the average comes to the Clinic to avail of the services per month? 20

What are the usual health complaints (list)?
Wound dress & diabetic dressing
Clinic dispense management
NCD, Hypertension

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bin and bag (disposal)
Disposal waste 2 times a week

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they disposed of medical waste? INCINERATOR

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Impact Climate change on health

10. Prevailing social issues in the island (Describe, if any)

None

Photo of the Clinic & Surrounding

Figure 25: Western side of Nukulaelae Clinic.

Figure 26: Southern side of Nukulaelae clinic.

Figure 27: Northern side of Nukulaelae clinic.

Figure 28: Eastern side of Nukulaelae clinic.

6. Namumea

Parameter	Description
Physical Characteristics	Nanumea is the northwestern most atoll in Tuvalu. It lies 460km northwest of Funafuti and just south of the Gilbert Islands. It is a classic atoll, a series of low-lying islets sitting on a coral reef shelf surrounding a lagoon. Nanumea is about 12km long by 2.5km wide in overall size, the dry land area is about 3.9km^2. The two largest islets comprising 90% of the dry land area of the atoll are Nanumea and Lakena.
Demographic Profile	In 2017 Nanumea's population was 475, spread across its seven villages. Records since 1979 shows that Nanumea's population decreased by 2.4% in 1991 to 19.4% in 2002 and a further 20.6% in 2012. The constant decline in population is a result of migration in search of education, health and work opportunities in Funafuti and other islands of Tuvalu as well as outside of Tuvalu. Records show that there were 894 Nanumea people residing on Funafuti in 2012 which increased to 1,069 in 2017. The sex ratio of 51% as in the 2012 survey shows that there are slightly more males than females. Population structure indicated the presence of very young and old generations with broad base (0-14years cohort), narrow mid-section (15-44 years' cohort) and a broad top section (45-59 years cohort). At age of 15-19 students attended secondary education on Vaitupu or Funafuti, and people leave at the age of 20-44 for further education and in search of employment. As they near the retirement age, the 49-59 years cohort start making their journey back to Nanumea. The structure becomes much narrower from the 60+ cohort which indicate low life expectancy due to mortality. It also indicates more women live longer than then their male counterparts pass the age of 65.
Health Facility	Nanumea has three inpatients' beds and one delivery bed in one ward. Two nurses are supported by two other health workers on Nanumea. Non-communicable diseases (NCDs) are one of the leading causes of mortality, including diabetes, hypertension, arthritis/gout, obesity and heart disease) and injuries or accidents. In Nanumea, communicable diseases account for 11.4% where the highest incidence of skin diseases is septic sores (210 cases in 2010) and where diarrhea and influenza were the most reported at 116 and 101 cases respectively.
Socioeconomic	On Nanumea people participate predominantly in subsistence activities such as farming and fishing as their primary economic activity[3] as well as some monetary based activities such employment both self and by government. They also receive rent, land leases and pension. Only about 26% of the Nanumea population is engaged in paid employment. A third (33%) of the employed population work for the Kaupule, 25% work for the government, 19 percent are seafarers, 11% are self-employed, 7 work for public corporations while the remaining 6% works for private businesses and NGOs. Nine of the 10 self-employed persons are women, and their income is sourced mainly from canteens, baking, and local tobacco, oil and ice-block production. The main source of other income is from pensions and land

	leases. Pensions are paid to 26 people on Nanumea under the Elderly Support Scheme which supports those in the population aged 70 and over with a monthly payment of AU$50, as in Nanumaga. Up to 18 people receive payments for land leases of which 17 earn AU$50 and 1 earns AU$51-100 monthly. On Nanumea there are 223 people involved in subsistence farming and from the data it can be inferred that apart from the 11 disable and 7 elderly people all those participants in the monetary economy also practice subsistence living. It can also be inferred that most are involved in more than one type of subsistence activity. As it is common in all the Islands, Nanumea men are expected to do one or all of the following feeding livestock such as pigs ducks and chicken (236 or 91%). One hundred and forty or 54% are involved in handicraft; 138 people or 53% undertake fishing and 110 people or 43% *Sali kaleve* or cut toddy and 81 people 31% are involved in farming. One hundred and forty or 54% are involved in handicraft; 138 people or 53% undertake fishing and 110 people or 43% *Sali kaleve or* cut toddy and 81 people or 31% are involved in farming.
Household Waste Disposal	No information
Water and Sanitation	Nanumea as the most northern island in the group is more susceptible to long periods of drought compared to others. As a national priority, the Government of Tuvalu invested significantly in water security projects[4] which aim to improve and increase water storage facilities. Nanumea, according to the 2012 survey has a total of 117 households across Haumaefa (37), Lolua (36), Hauma (21), Matagi (12), Vao (6) and Mataluafata (5). About 40% of the households are built from modern materials and 17.9% are thatched or made from local materials. The materials of the building particularly the roof influence the capacity of a household to collect water effectively. From the survey, all households in Nanumea have storage capacity of more than 3000+ gallons (11,350L). Of the 117 households two have a water tank and a cistern, the remaining 114 households have water tanks while one household has neither.
Ecological Profile	In terms of LCC Nanumea has between 20-30%, but the study sites did vary significantly in some aspects of the benthic communities: the lagoon in particular had distinctive benthic assemblages. The results of the 2012 survey seem to indicate that Nanumea may have a higher percentage of live coral cover than Nanumaga. The survey did confirm that Nanumea has the highest and richest coral community of the three islands covered. The Nanumea CCA did not stand out as having a particularly high fish diversity, density or biomass. This is probably due to the sampling methodology not being designed to compare inside and outside CCA areas and also because, at the time of the survey the Nanumea CCA was relatively new and there is often a long time lag between cessation of fishing and a measurable ecological change

[4] International Water Resource Management, NAPA I

Rapid Environmental and Social Audit of the Clinic Site in Nanumea Island

1. Name of Island/Atoll: *Nanumea Island*
2. Total land area of the Atoll/Island: *3.316299 sq km/ 819.48 acre*
3. Population: 512 (2017 census)
4. Name of Village where Med Clinic is located: *Lolua Village*
5. Geographic Coordinates Long: *401,615.82m* Lat: *9,373,209.88m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

Yellow dot on main clinic building denotes location of geographic coordinates in part 5 (Geographic Coordinates)

7. Describe the Building and Amenities:

Floor Area (approximate sq m): 94.65597172 sqm Area of Lot (sq m): 15261.9096 sqm
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? Private
Is there electricity connection (Y/N)? _____ Source: Generator and Solar
Is there running water (Y/N)?_____ Water supply source: Tank
Is there a toilet facility (Y/N)?_____Has Septic Tank? YES

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: *Private Resident* Distance (m): *15.1 m*
West: Type of structure: No building Distance (m):
North: Type of structure: *Ward* Distance (m): *28.1 m*
South: Type of structure: No building Distance (m):

Distance of Nearest Residential House (m): *15.3 m*

Describe the land use or vegetation type
East: Coconut woodland
West: Grassland
North: Grassland
South: Coconut woodland

Distance from the shore- lagoon side (m) *47.1 m*
Distance from the seashore - ocean side (m) *105.0 m*

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 4
Presence of qualified personnel (check):
[ ] Medical Doctor
[2] Nurse
[1] Midwife
[1] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Bed clinic, basic equipment including oxygen concentrator, nebulizer machine, vaccine fridge

Services Provided by the Clinic (Describe)
Maternal Child Health clinic, urgent medical care, dental care, paediatric care, NCD care, Primary and preventive care

How many patients on the average comes to the Clinic to avail of the services per month? 65

What are the usual health complaints (list)?
Chronic disease management e.g. Hypertension, diabetes
Wound dressing and general ailments

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated bins and bags (disposal)
Twice or three times during the week

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they disposed of medical waste? Medical Incinerator

9. Prevailing environmental issues in the site (Describe, if any)
Close to sea – sea level rise
Climate change -natural disaster frequently increase

10. Prevailing social issues in the island (Describe, if any)

None

Photo of Clinic and Surrounding

Figure 29: Western side of Nanumea clinic

Figure 30: Southern side of Nanumea clinic

Figure 31: Eastern side of Nanumea clinic

Figure 32: Northern side of Nanumea clinic

7. Niutao

Parameter	Description
Physical Characteristics	Niutao is a reef island situated on the northern part of Tuvalu. The island has an area of 2.35 sq km (approximately 2.5 km long and 1.1 km wide) with its long axis-oriented east to west. The settlements are concentrated on the western side of island forming two villages: Kulia and Teava. There is a large inland lagoon east of the village which is traversed by a causeway and has 3 islets in it. There is a small brackish-water lagoon in the central western half of the island that is connected by subterranean passages to the sea. In March 2015 Niutao suffered damage to houses, crops and infrastructure as the result of storm surges caused by Cyclone Pam.
Demographic Profile	As of 2017, the island has a resident population of 582 which represents a decline of 16% from 2012.
Health Facility	Niutao has one health clinic staffed by a midwife with diploma-level training, a nursing assistant, and a sanitation officer. The health clinic was damaged during the 2015 TC Pam.
Socioeconomic	Around 52% of the population are unemployed or engaged solely on subsistence livelihood.
Household Waste Disposal	
Water and Sanitation	There are three wells from which fresher water sits in a "lens" above the salt water that leeches in through the coral.
Ecological Profile	Vegetation is abundant but of very limited variety. Main food staples are pulaka (Cyrtosperma merkusii) or swamp taro that is grown in the pits; breadfruit, coconut and pandanus is also cultivated. A fringing reef surrounds the whole island, which makes local fishing and transport into and out of the island difficult.

Rapid Environmental and Social Audit of the Clinic Site In Niutao Island

1. Name of Island/Atoll: *Niutao Island*
2. Total land area of the Atoll/Island: *2.309221 sq km/ 570.62 acre*
3. Population: 582 (2017 census)
4. Name of Village where Med Clinic is located: *Kulia Village*
5. Geographic Coordinates Long: *536,712.59m* Lat: *9,325,147.19m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *184.3 sq m* Area of Lot (sq m): *0.007203404 sq m*
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? *Private*
Is there electricity connection (Y/N)? _____ Source: Generator/Solar
Is there running water (Y/N)?_____ Water supply source: Tanks
Is there a toilet facility (Y/N)?_____Has Septic Tank? YES

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures

East: Type of structure: *Road*	Distance (m): *23.9 m*
West: Type of structure: *Clinic ward*	Distance (m): *4.9 m*
North: Type of structure: *Red cross Shelter*	Distance (m): *13.3 m*
South: Type of structure: *Nurse House*	Distance (m): *32.1 m*

Distance of Nearest Residential House (m): *32.1 m*

Describe the land use or vegetation type
East: Coconut trees
West: Wards
North: Grassland
South: Grassland

Distance from the shore- lagoon side (m) far *away from the internal lagoon*
Distance from the seashore - ocean side (m) 46.2 *m*

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 5
Presence of qualified personnel (check):

[ ] Medical Doctor
[2] Nurse
[1] Midwife
[2] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)
Delivery beds, oxygen concentrator, Nebulizer, basic equipment the clinic have and currently used.

Services Provided by the Clinic (Describe)
General outpatient services for minor ailments and far major ailments. e.g NCD, Special clinic once a week together with maternal child clinic.

How many patients on the average comes to the Clinic to avail of the services per month? 48

What are the usual health complaints (list)?
Wound dressing and minor ailments
Chronic disease management e.g. NCD

What percentage are women? 60%
What percentage are children? 20%

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in allocated Bins and bags (disposal)
Disposal twice a week using incinerator

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they disposed of medical waste? INCINERATOR

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Climate change impact on health

10. Prevailing social issues in the island (Describe, if any)

None

Photo of Clinic and Surrounding

Figure 33 North side of the clinic

Figure 34 South side of the clinic

Figure 35 West side of the clinic

Figure 36 East side of the clinic

8. Niulakita

Parameter	Description
Physical Characteristics	Niulakita is the southernmost island of Tuvalu consisting of one village of the same name as the island. There are four ponds or lakes inside the island. The isle has an oval outline, with the longer axis running east–west (about 1 km long). This island features the highest point of Tuvalu (4.6 metres (15 ft) above sea level). A fringing reef surrounds the whole island, which makes local fishing and transport into and out of the island difficult.
Demographic Profile	The residents of Niulakita have moved to the island from Niutao. Niulakita is represented in the Parliament of Tuvalu by the members of the constituency of Niutao. As of 2017, the island has a population of only 34.
Health Facility	No information
Socioeconomic	Same with Niutao
Household Waste Disposal	No information
Water and Sanitation	No information
Ecological Profile	The island thickly wooded and has coconut plantations.

Rapid Environmental and Social Audit of the Clinic Site in Niulakita Island

1. Name of Island/Atoll: *Niulakita Island*
2. Total land area of the Atoll/Island: *0.413 sq km/102.05 acre*
3. Population: 34 (2017 census)
4. Name of Village where Med Clinic is located: *Niulakita*
5. Geographic Coordinates Long: *770,165.67m* Lat: *8,806,151.83m*
6. Attach a close-up google map, showing the location of the establishment relative to structures and establishments and shoreline of the island.

Lidar survey 2019

7. Describe the Building and Amenities:

Floor Area (approximate sq m): *50.49 sq m* Area of Lot (sq m): 52.8 sqm
Who owns the land where the Clinic is constructed (Gov't/Village/Private)? Village
Is there electricity connection (Y/N)? _____ Source: Generator
Is there running water (Y/N)?_____ Water supply source: Water Tank
Is there a toilet facility (Y/N)?_____Has Septic Tank? YES

Attach a photo of the Clinic Facility
[Attach photo here]

6. Describe the surroundings:

Adjacent Structures
East: Type of structure: *Storage Building* Distance (m): *9.1 m*
West: Type of structure: *Residential* Distance (m): *10.6 m*
North: Type of structure: *Residential* Distance (m): *20.7 m*
South: Type of structure: *Hat House* Distance (m): *22.1 m*

Distance of Nearest Residential House (m): *10.6 m*

Describe the land use or vegetation type
East: *Storage Building*
West: *Residential*
North: *Grassland*
South: Vegetation

Distance from the shore- lagoon side (m) 419 m (Eastern shoreline)
Distance from the seashore - ocean side (m) *43.3 m (Western shoreline)*

Attach a 360-degree panoramic photo of the site.

7. Describe the facilities and services offered by the Clinic

Number of regular and parttime med personnel: 1
Presence of qualified personnel (check):
[ ] Medical Doctor
[1] Nurse
[ ] Midwife
[ ] Trained Rural Health Worker

Med Facilities (Describe, e.g. beds, equipment, etc.)

Examination bed, Nebulizer machine, Glucometer, BP machine, Thermometer.

Services Provided by the Clinic (Describe)
General outpatient
Special Outpatient + NCD
Maternal Child Health

How many patients on the average comes to the Clinic to avail of the services per month? 7

What are the usual health complaints (list)?
Wound dressing
NCD

What percentage are women? 50
What percentage are children? 10

8. Describe the existing waste management system. How do they handle and dispose of medical waste?
Collect waste in bins and bags (allocated)
Dispose waste 2 times per week

Do they segregate medical waste from ordinary waste (Y/N)? YES
How do they dispose of medical waste? INCINERATOR

9. Prevailing environmental issues in the site (Describe, if any)
Sea level rise
Impact of climate change on Health

10. Prevailing social issues in the island (Describe, if any)
The clinic building was no longer use by the public due to poor conditions. However, the community occupy the nurse resident as a safe clinic for the island.

Current Clinic (Nurse Resident)
East

North

South

West

Old Clinic Building
West

East

South

North

ANNEX 3. CODE OF ENVIRONMENTAL AND SOCIAL PRACTICE FOR CONTRACTORS

The contractors of any activity or Project of THSSP shall be guided by the following Environmental and Social Code of Practice (ESCOP).

1. Designation of Site EHS Officer

The Contractor shall designate an Environment, Health and Safety Officer (EHSO) among its management team on site. For small contracting works, contractors may designate their Site Engineer as the EHSO.

2. Formulation of Contractor's ESMP (CESMP)

The Contractor shall prepare its own Contractors Environmental and Social Management Plan (CESMP) based on the ESIA/ESMP or ESMP matrix prepared for the Project and this ESCOP. The CESMP will be submitted to the PTU Safeguards Coordinator who together with the CPMO ES Safeguard Specialists will review and approve the document. The table below will guide the contractor in the formulation of CESMP.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
Impacts from the transport of equipment into the site	The contractor shall be responsible for transporting their equipment to the island and to construction site. • Any temporary beach landing site should be cleared with the local authorities and must not contribute to beach erosion or damage a coral reef • The contractor shall ensure that the heavy equipment route from port to the construction site is properly planned and capacities of the roads, bridges or causeways are carefully assessed	
Impacts of the establishment of construction camp site and equipment yard	It will be the contractor's responsibility to establish a worker's camp or field office. And if the Project cannot provide enough space at the construction site and the contract so specifies, it will be the contractor's responsibility to negotiate for a land within the vicinity of the site. Note that if rights on the land are secured with the help of the government, then the acquisition of (or the rights to establish camp on the) said lot shall be subject to the RPF. The following criteria should be adopted: • Worker's camp shall preferably on a built-up area • It must not be part of a wildlife reserve or any protected area • It must not contribute to beach erosion or any alteration of a beach area • It must be equipped with water and sanitation and must treat wastewater through adequate sewerage (i.e., septic) system; it must not directly discharge wastewater into the sea or lagoon.	

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	• The camp should be covered by appropriate permit.	
Impacts of the disposal of construction spoils	Spoils, unusable soil materials, and non-hazardous debris such as demolished concrete blocks from construction site, shall be disposed of properly. The contractor may negotiate with landowners to use spoils for embankments on low lying private lands or use existing landfills. The contractor shall identify a suitable spoil disposal area using the following criteria. • It must not be in the wildlife reserve area • It must not block drainage or natural waterways	
Air quality, noise, and vibration generated from civil works	The contractor(s) is responsible for compliance with all relevant national legislation and international standards with respect to noise and vibration and ambient air quality during construction. <u>Noise and vibration:</u> The contractor(s) undertaking works shall implement the following at a minimum: • Plan activities in consultation with communities so that noisiest activities are restricted to being undertaken during periods that will result in least disturbance. • Noise levels should be maintained within the national permissible limits/standards. • If necessary, use temporary noise-control methods such as fences, barriers, or deflectors (such as muffling devices for combustion engines) and select equipment with lower sound power levels where possible. • Minimize transport of demolition and construction materials through community areas during regular working time. • Maintain a buffer zone (such as open spaces, row of trees or vegetated areas) between the project site and surrounding areas, if possible, to lessen the impact of noise; and • Noise impacts should not exceed 55 dB(A) for residential; institutional, or educational receptors during the daytime (07:00 – 22:00) and 45 dB(A) during the Night-time (22:00 – 07:00) and for industrial or commercial receptors should not exceed 70 dB(A) at anytime or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site. <u>Air Quality:</u> The contractor(s) undertaking works shall implement dust suppression measures (e.g., covering of material stockpiles, etc.) as required. At a minimum the following is required: • Materials used shall be covered and secured properly during transportation to prevent scattering of soil, sand, materials, or generating dust. • Keep stockpiles of aggregate materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals. • Minimize dust from exposed work sites and stockpiles by applying water on the ground regularly.	Designated stockpile areas approved; dust plumes; complaints register; vehicle and plant maintenance records.

<table>
<tr><th>Risks and Impacts</th><th>Mitigation Measures</th><th>Focus of Verification /Monitoring</th></tr>
<tr><td></td><td>

No burning of site clearance debris (trees, undergrowth) or construction waste materials
Hydrocarbons shall not be used as a method of dust control.
Immediately re-vegetate and/or stabilize exposed areas; and
Ambient air quality should not exceed relevant national air quality guidelines/standards or the current WHO Ambient Air Quality Guidelines:

<table>
<tr><th colspan="3">WHO Ambient Air Quality Guidelines</th></tr>
<tr><th></th><th>Averaging Period</th><th>Guideline value in ug/m^3</th></tr>
<tr><td>Particulate Matter PM_{10}</td><td>1-year
24-hour</td><td>20
50</td></tr>
<tr><td>Particulate Matter $PM_{2.5}$</td><td>1-year
24-hour</td><td>10
25</td></tr>
</table>
</td><td></td></tr>
<tr><td>Soil erosion and uncontrolled sediment causing negative impacts to surface or groundwater.</td><td>The contractor(s) undertaking works shall implement the following at a minimum:
Implement suitable construction method and establish appropriate erosion and sediment control measures to minimize soil erosion and identify and protect receiving water courses and bodies
Scheduling earthmoving activities, avoiding heavy rainfall periods; and
Use mulch, grasses, or compacted soil to stabilize exposed areas promptly.</td><td>On-site sediment control measures; records of water quality monitoring (visual); revegetation.</td></tr>
<tr><td>Resource efficiency issues, including materials supply and extraction of raw materials.</td><td>The contractor(s) undertaking works shall at a minimum:
Estimate the quantities of raw materials needed for the construction and/or refurbishments.
Source raw materials and construction materials locally and from licenced/permitted facilities only; and,
Use recycled or renewable building materials (e.g., timber) for temporary facilities and scaffoldings provided they are safe.</td><td>Contract for local materials.</td></tr>
<tr><td>Impacts on local communities from traffic obstruction, congestion, and traffic and road safety.</td><td>The contractor(s) undertaking works shall implement the following at a minimum:
Construction and establishment of haul roads shall be kept to a minimum.
Communicate traffic management plans – including traffic volumes, schedules, road closures and community safety measures – to project stakeholders and local communities.
Minimise the extent of traffic and construction impacts on adjacent villages and other residential areas where possible; and
All traffic signs used for the warning or direction of traffic at road works sites shall comply with appropriate traffic regulations. Homemade signs shall not be used.
Implement dust suppression measures</td><td>Traffic management plan included in the Contractor(s) H&S Management Plan; traffic control measures implemented; signage and barriers installed as required; complaints register.</td></tr>
</table>

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
Accidental damage archaeological artefacts during excavation	The contractor(s) shall have a Chance-Finds Procedure in place prior to any physical works beginning.	Chance-Finds Procedure posted in construction field office
Risk of UXO	Site should be certified cleared of UXO. If OXU or indication of OXU is discovered, the contractor shall immediately take safety precautions and contact the authorities. The contractor should adopt a simple procedure to be posted at construction site offices. 1. If a suspect UXO item is found - Stop all construction activities in the area. Inform the MOH. DO NOT TOUCH, disturb, or tamper with the item in any way. This includes making any attempt to move the item to a 'safe' location. 2. Carefully note the appearance of the item and the location. Take a photograph if it is possible to do so without further approaching or disturbing the item. 3. If possible, mark the location with bright colored material so that it can be found later. Secure the premises. 4. Inform the Police.	UXO Procedure posted in construction field office
Land and/or water pollution from waste generated by demolition debris, construction materials, and/or workers (solid, hazardous, and wastewater)	The contractor(s) undertaking works shall implement the following at a minimum: • Develop and follow a site-specific a waste management plan as part (a section) of the CESMP (i.e., separation of waste streams, storage, provision of bins, site clean-up, bin clean-out schedule, etc.). • Use litter bins, containers, and waste collection facilities at all places during works • Store solid waste temporarily on site in a designated place prior to off-site transportation and disposal through a licenced waste collector • On-site and off-site transportation of waste should be conducted to prevent or minimize spills, releases, and exposures to employees and the public • Dispose of waste only at designated place identified and approved by local authority. Open burning or burial of solid waste on the construction site shall not be allowed. It is prohibited for the contractor(s) to dispose of any debris or construction material/paint in environmentally sensitive areas (including watercourses) • Recyclable materials such as packaging material etc., shall be segregated and collected on-site from other waste sources for reuse or recycle (sale) • Provide adequate portable sanitation facilities serving all workers at all construction sites • Ensure onsite worker sanitation facilities be properly operated and maintained to collect and dispose of wastewater • Minimize hazardous waste generation by ensuring hazardous waste is not co-mingled with non-hazardous waste. Collect, transport and disposal of hazardous waste to licenced/permitted hazardous waste sites only following	Contractor's CWMP; sanitation facilities maintained onsite; waste and recycling records; worker training records.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	good international industry practice (GIIP) for the waste being handled • Design training for staff in the segregation of wastes.	
Land and/or water pollution from use and storage of hazardous substances e.g., minor spills from fuel, oils, lubricants.	The contractor(s) undertaking works shall implement the following at a minimum in accordance with relevant Tuvalu laws and GIIP such as the WBG EHS Gidelines: Hazardous Materials Managemen • Using impervious surfaces for refuelling areas and other fluid transfer areas • Ensure that refuelling and maintenance facilities are not located, or that activities do not take place, within 30 m of a watercourse, or in ecologically sensitive areas. If a 30m limit is impracticable then a lesser limit may be adopted provided approval is obtained. On no account shall the limit be less than 10 m • Providing adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. If the secondary containment used is bunding, then the area should also be lined and covered • Ensure that vehicles and plant are not stored within 30 m of a watercourse, or in ecologically sensitive areas, overnight or when not in use • Regular checks for leaking oil or fuel from machinery undertaken. Any leaks are promptly repaired and/or parts replaced within two days as part of maintenance of vehicles and equipment • Training workers on the correct transfer and handling of fuels and chemicals and the response to spills; and • Spill kit, appropriate to the hazardous materials being used, to be kept on-site and workers to be trained in its deployment.	Secured storage areas and secondary containment; spill kit and worker training records; records of safety briefings; vehicle and plant maintenance records.
Land and/or water pollution from hazardous wastes such as asbestos, lead paints, SMF, ozone depleting substances (from old air conditioning units) and PCBs that may be present in warehouse demolition or refurbishment debris.	The contractor(s) undertaking works shall be required to do the following at a minimum: • Hazardous material management procedure detailed in the waste management plan (part of the CESMP) to be developed during project by the contractor in accordance with GIIP and Tuvalu regulations • Asbestos containing materials managed in accordance with GIIP such as WBG guidelines on asbestos management. GIIP for asbestos includes: i) Requirements for contractors and stipulations of clauses in the tendering documents; ii) Risk assessment – determining the content of asbestos and risks of exposure incurred by workers, to assess them and to take the necessary precautions; iii) Notification to the occupational health and safety authority responsible for the work site; iv) Work plan with working instructions - lay down the technical and personal protective measures to be taken in the work plan; v) Training of project stakeholders and training of contractor and workers; vi) Transport, Storage and Disposal of Asbestos (agreements with component bodies for transportation and disposal);	Hazardous material management procedure as part of Contractor's CWMP; record of building inspection; hazardous waste records; worker training records.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	• Safe removal of any asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained workers in line with the WBG guidelines on asbestos management • Removal personnel will have proper training prior to removal or repair of asbestos containing materials • All asbestos waste and products containing asbestos is to be buried at an appropriate landfill and not to be tampered or broken down to ensure no fibres are airborne. Disposal of waste containing asbestos should be agreed with MOH; and • No asbestos containing materials used for construction or refurbishment works.	
Occupational Health and Safety (OHS) risks for workers from demolition and/or construction activities.	The contractor(s) undertaking works shall comply with all national and good practice regulations and GIIP regarding workers' safety, such as OHS section of the WBG EHS Guidelines on Construction and Decommissioning , and implement the following at a minimum: • Develop and follow a site-specific health and safety (H&S) management plan that is compliant with the ESMF and World Bank Environment and Health and Safety Guidelines (EHSGs). Construction H&S management plan(s) shall be included as a section of the CESMP. • Appoint an EHS officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site. • Prepare and implement a simple action plan to cope with risk and emergency (e.g., fire, storm surge, cyclone, COVID-19 outbreak) • Have or receive minimum required training on occupational safety regulations and use of PPE • Undertake training of staff to meet standards for the proper operation and use of equipment • Training of workers in lifting and materials handling techniques in construction and refurbishing projects, including the placement of weight limits above which mechanical assists or two-person lifts are necessary • Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters (e.g., on scaffolding) • Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labelling covers for openings in floors, roofs, or walking surfaces • Take protective measures to prevent accidents such as: o implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. o Locating electrical cords and ropes in common areas and marked corridors.	Contractors Health and Safety plan(s); Emergency Action Plan; workers allocated and wearing PPE; first aid kits in vehicles and at work sites; worker training records; complaints record; accident/ incidents register.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	○ Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic using one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. ○ Ensuring moving equipment is outfitted with audible back-up alarms. ○ Use of temporary fall protection measures in scaffolds and out edges of elevated work surfaces, such as handrails and toe boards to prevent materials from being dislodged. • Provide PPE and other safety measures as appropriate during works such as safety glasses with side shields, face shields, hard hats, hi-vis vests, and safety shoes with non-slip soles, first aid kits, restricted access zones, warning signs, overhead protection against falling debris • Refer any grievances received by the community or local businesses to the Social Specialist who will coordinate the GM; and • Provide project workers with accessible means to raise workplace concerns.	
Issues related to inappropriate worker accommodations such as close working and poor living conditions which may create conditions for the easy transmission of COVID-19 and the infection of large numbers of people should COVID-19 enter Tuvalu.	The contractor(s) undertaking works shall comply with all national and good practice regulations regarding workers' safety, the IPCP and the LMP for the Project and implement the following at a minimum: • Appoint a senior person, e.g., the health and safety officer, as the focal point to deal with COVID-19 issues • Prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations. This should include a breakdown of workers who reside at home (i.e., workers from the community), workers who lodge within the local community and workers in on-site accommodation. • All construction facilities should establish hand hygiene programmes. Frequent and proper hand washing is one of the most important measures that can be used to prevent infection by the COVID-19 virus. • Wash stations should be provided regularly throughout site, with a supply of clean water, liquid soap and paper towels (for hand drying), with a closed waste bin (for used paper towels) that is regularly emptied. Wash stations should be provided wherever there is a toilet, canteen/food and drinking water, sleeping accommodations, at waste stations, at the entry/exit of the site, and other communal facilities. Where wash stations	Hand hygiene stations; cleaning records; COVID-19 plan; worker training records; complaints records; accidents/incidents register.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	cannot be provided, alcohol-based hand rub should be provided. • Undertake regular cleaning of the construction site and accommodation with neutral detergent and water. • Worker accommodation that meets or exceeds IFC/EBRD worker accommodation requirements (e.g. in terms of floor type, proximity/no of workers, no 'hot bedding', drinking water, washing, bathroom facilities etc.). • Accommodation maintained in clean and hygienic condition to minimize spread of infection • If a worker is diagnosed with COVID-19, follow the National COVID-19 Preparedness and Response Plan; and • Undertaking health awareness and education initiatives with construction workers e.g., providing information on COVID-19 symptoms, transition paths, good hand hygiene, physical distancing etc.	
Workers do not receive the care needed if infected with COVID-19.	Contractors should ensure that contracted workers have medical insurance, covering treatment of COVID-19.	Medical Insurance Records.
Health and safety risks for community from demolition and/or construction activities.	The contractor(s) undertaking works shall implement the following at a minimum: • Develop and follow a site-specific community health and safety management plan as part of the CESMP that is compliant with the ESMF and World Bank Environment and Health and Safety Guidelines (EHSGs) and which includes health and safety measures for the community. • A Traffic Management Plan must be included in the H&S Management Plan • Comply with all national and good practice regulations regarding workers' safety and the Project's LMP • Take protective measures to prevent accidents such as: o Barriers to prevent unauthorised access to worksites. o Implementing good house-keeping practices to eliminate the hazard where possible, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. o Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic using one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. o Ensuring moving equipment is outfitted with audible back-up alarms.	Contractor's Health and Safety plan which includes a Traffic Management Plan; signage and traffic control measures; site barriers such as fencing; records of consultations; complaints records; accident/ incidents register.

Risks and Impacts	Mitigation Measures	Focus of Verification /Monitoring
	• Provide safe access routes and other safety measures as appropriate during works such first aid kits, restricted access zones, warning signs, covering openings to small, confined spaces, overhead protection against falling debris and barricaded exclusion areas for drop zones (e.g., when working at heights), lighting system to protect community against construction risks; and • Communicate risks and community safety mitigation measures to project stakeholders and communities. • Grievance mechanism (GM) developed and operational in accordance with the Project SEP.	
Increase in sexual exploitation and abuse/ harassment (SEA/H) related to project workforce	The Contractor(s) should at a minimum: • Comply with all relevant national laws and legislations. • Include SEA/H requirements in the site-specific construction Health and Safety management plan including aspects relating to preventing GBV and SEA/H and zero tolerance for these behaviours. • Ensure that workers are well briefed on the GBV and SEA/H requirements in the Health and Safety Plan. • Provide separate facilities for female and male workers. • Refer to the Project LMP for further mitigation measures.	Contractor's Health and Safety plan which includes SEA/H requirements; Agreed Code of Ethics and Professional Conduct; worker training records; complaints record.
Risk of exploitation of minors in construction works	• Forced or bonded labour are absolutely prohibited in the project • Minors, if involved, should not be less than 14 years of age and work assignments should not interfere with child schooling. • Minors should not be assigned to work in heavy and hazardous tasks or in the actual construction area	Records of workers by age; complaints record.
Damage and increased wear and tear of public facilities used by contractors such as roads, bridges, and ports.	The contractor shall conduct regular maintenance and repair works on roads and public facilities that it frequently used during construction. Any damage of these facilities caused by construction activities such as hauling of materials, etc., shall be repaired or restored to original conditions by the contractor.	Roads to the project site, to and from the port, to and from quarry site/borrow pits. Ports.
Impacts of improper demobilization after completion	• Before withdrawing from the site, the contractor must remove all wastes, debris and unused materials from the site and workers camp, and disposed of them properly • Contractors must restore camp, borrow/quarry site in accordance with approved plan/permit requirements or as agreed with landowners in case of private lands.	Worker's camp/Equipment yard, Borrow pit/Quarry, Construction site

3. Format of the CESMP

The CESMP shall at the very least contain a matrix of activities, environmental or social impacts and mitigation measures, in the following format:

Activity	**Environmental or Social Impacts**	**Mitigation Measure**

4. Reporting

During the construction phase, monthly reports shall be prepared by the contractor(s) and submitted to the Project Safeguards Focal Person who will conduct a quick review and forward the report to the PTU Safeguards Coordinator with his notes and comments. The Safeguards Coordinator will review the report and contact the Focal Person for clarifications. Significant and urgent issues will be referred to the CPMO Safeguards Specialist for advice. The reports will include information on (i) the implementation of approved CESMP; and (ii) any health and safety or environmental incidents.

5. Site Inspection

The contractor shall allow MOE, PTU and CPMO personnel to enter the construction site facilities and premises and conduct Environmental, Health and Safety Audits and validation of contractor's monthly reports. ESH audits conducted by PTU and CPMO will be based on the contractor's approved CESMP

ANNEX 4. PROJECT'S INFECTION PREVENTION AND CONTROL PLAN

I. GENERAL

This IPC addresses threats of infection from COVID-19, the vector-borne diseases which are prevalent in the pacific islands (i.e., Dengue, Zika and Chikungunya) and STDs, noting that the preventive measures for COVID are also effective in preventing transmission of other infectious respiratory diseases such as TB.

A. COVID-19

The main routes of transmission of COVID-19 are respiratory droplets and direct contact with the virus. Any person in close contact with an infected individual is at risk of being exposed to potentially infective respiratory droplets. Precautions to prevent transmission of COVID-19 relevant in the context of the Project include hand hygiene, physical distancing, and the use of appropriate equipment to minimize the chance of infection (gloves and masks).

1. Hand hygiene

Hand hygiene is extremely important to prevent the spread of the COVID-19 virus. If hands are not visibly dirty, the preferred method is frequent cleaning using an alcohol-based hand rub for 20−30 seconds using the appropriate technique. When hands are visibly dirty, as they often are during construction work, they should be washed with soap and water for at least 20 seconds using the appropriate technique. If soap or alcohol-based hand rub is not available using chlorinated water (0.05%) for handwashing is an option but requires care to avoid causing dermatitis (See Annex 1 for WHO hand washing posters).

In addition, hand hygiene should be performed in the following situations:

- After coughing or sneezing
- When caring for someone who feels sick
- Before, during or after you prepare food
- Before eating
- After toilet use
- When hands are visibly dirty, and
- After touching eyes, nose, or mouth.

Hand hygiene materials. All construction sites and areas used for stakeholder engagement activities should provide hand hygiene stations. Functional hand hygiene stations should be present in areas where waste is handled, within 5m of toilets, food preparation areas, at the entry/exit of the site/building, and other public areas. Hand hygiene stations can consist of either water, such as sinks attached to a piped-water supply, refillable water reservoir or clean, covered buckets with taps equipped with plain soap or alcohol-based hand rub dispensers where running water is not available. Where alcohol-based hand rub or bar soap is not feasible, a liquid soap solution, mixing

detergent with water can be used. The ratio of detergent to water will depend on types and strengths of locally available product. Soap does not need to be antibacterial, and evidence indicates that normal soap is effective in inactivating enveloped viruses, such as coronaviruses. Alcohol-based hand rub should contain at least 60% alcohol. Such products should be certified and, where supplies are limited or prohibitively expensive, can be produced locally according to WHO-recommended formulations.

When soap or alcohol-based hand rub are not available, the use of ash or soil can be considered and has shown to be effective in some cases. Ash may inactivate pathogens by raising the pH. However, in communities with limited sanitation services, soil may be faecally contaminated, and thus it is important to weigh the benefits against the risk of contaminating hands. Finally, washing with water alone, although not as effective as using soap or alcohol-based rub can result in reductions in faecal contamination on hands and in diarrhea[5]

When washing hands with soap and water, it is preferable to use disposable paper towels to dry hands. If these are not available, use clean towels and replace them frequently or allow hands to air-dry.

2. Physical Distancing

Physical distancing helps limit the spread of COVID-19. This means keeping a distance of at least 1m from each other and avoiding spending time in crowded places or in groups. Construction sites should follow national health advice and consider implementing the following to assist with physical distancing:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable physical distancing, and training workers on these processes.
- Consider changing canteen layouts and phasing mealtimes to allow for physical distancing.

PTU and CPMO Staff should follow national health advice and limit group sizes. Adequate space should be sought for community meetings to ensure that people can stay at least 1 m away from others.

3. Equipment to Prevent Infection

In the context of COVID-19, this includes masks and gloves to protect workers from infected droplets. Gloves must be appropriate for construction work. Workers should at a minimum wear a face mask if they are sick, if they have been in contact with someone who is sick, in accommodations, and in break rooms.

[5] Water, sanitation, hygiene, and waste management for the COVID-19 virus Interim guidance 23 April 2020 https://apps.who.int/iris/bitstream/handle/10665/331846/WHO-2019-nCoV-IPC_WASH-2020.3-eng.pdf (accessed 23 April 2020)

B. Dengue, Zika and Chikungunya

There is a significant presence of Dengue, Zika and Chikungunya in Tuvalu and Pacific Islands in General. These diseases are transmitted by Aedes mosquitoes. Infection prevention control would involve disease surveillance, prevention of mosquito breeding around the workplaces and communities, applying community personal protection and community engagement.

1. Prevention of mosquito breeding around the area

- Preventing mosquitoes from accessing egg-laying habitats by environmental management and modification.
- Disposing of solid waste properly and removing artificial man-made habitats that can hold water.
- Covering, emptying, and cleaning of domestic water storage containers on a weekly basis.
- Applying appropriate insecticides to water storage outdoor containers.

2. Personal protection from mosquito bites (during the day and early evening)

- Using of personal household protection measures, such as window screens, insecticide treated materials, coils, and vaporizers
- Using window screens, door screens and air-conditioning in offices/buildings to discourage day-time entry, biting, and resting of Aedes.
- Using WHOPES-recommended long-lasting insecticidal mosquito nets when sleeping or resting during the day (e.g., for pregnant women, infants, elderly, or sick individuals).
- Applying insect repellent to skin or clothing that contains DEET, IR3535 or icaridin according to the product label instructions
- Wearing clothing that minimises skin exposure to mosquitoes is advised.

3. Community engagement

- Educating the community on the risks of mosquito-borne diseases.
- Engaging with the community to improve participation and mobilization for sustained vector control.

4. Reactive vector control

- ***Targeted residual spraying*** -Targeted residual spraying is the primary vector control intervention for immediate response. It is performed using appropriate insecticides applied on *Aegis aegypti* resting sites such as exposed lower sections of walls (<1.5m), under furniture, inside closets, in dark and moist surface where mosquitoes may rest in and to a lesser extent, around houses. Targeted residual spraying is applied selectively to areas known to be resting sites for the Aedes mosquito – it does not require the spraying of all exposed surfaces in houses. Care must be taken not to treat containers used to store water intended for drinking or cooking.

- ***Space spraying*** **-** In case of vector-borne disease outbreak, emergency vector control measures such as applying WHO Pesticide Evaluation Scheme (WHOPES)-recommended insecticides through space-praying may be resorted in coordination with health authorities. Indoor space spraying is more effective than outdoor treatment if deployed properly inside buildings where Aedes mosquitoes rest and bite. Recommended application techniques include ultra-low volume space spraying (cold fog or thermal fog) and using portable backpack sprayers or thermal floggers, which vaporize liquid insecticide into droplets to form an aerosol or fog with a rapid "knockdown effect" on mosquitoes.

Vulnerable Population

Special attention should be given to prevention of mosquito bites among pregnant women, women of reproductive age, and young children.

Sexual Transmission

Zika virus can be transmitted through sexual intercourse. This is of concern due to an association between Zika virus infection and adverse pregnancy and foetal outcomes. People with Zika virus infection and their sexual partners (particularly pregnant women) should receive information about the risks of sexual transmission of Zika virus. Sexually active men and women should be correctly counselled and offered a full range of contraceptive methods to be able to make an informed choice about whether and when to become pregnant to prevent possible adverse pregnancy and fatal outcomes.

Women who have had unprotected sex and do not wish to become pregnant due to concerns about Zika virus infection should have ready access to emergency contraceptive services and counselling. Pregnant women should practice safer sex (including correct and consistent use of condoms) or abstain from sexual activity for at least the entire duration of pregnancy.

C. STDs

1. Counselling and Behavioural Approaches

Counselling and behavioural interventions offer primary prevention against STIs (including HIV), as well as against unintended pregnancies. These include:

- Comprehensive sexuality education, STI and HIV pre- and post-test counselling
- Safer sex/risk-reduction counselling, condom promotion
- STI interventions targeted to key populations, such as sex workers, men who have sex with men and people who inject drugs; and

2. Barrier Methods

When used correctly and consistently, condoms offer one of the most effective methods of protection against STIs, including HIV. Female condoms are effective and safe but are not used as widely by national programmes as male condoms.

II. IPC FOR CONSTRUCTION WORKERS

A. COVID 19

The contractor(s) undertaking the civil works shall implement the following at a minimum to minimize the spread of COVID-19:

- All construction facilities should establish hand hygiene programmes. Frequent and proper hand hygiene is one of the most important measures that can be used to prevent infection by the COVID-19 virus.
- Wash stations should be provided regularly throughout site, with a supply of clean water, liquid soap, and paper towels (for hand drying), with a closed waste bin (for used paper towels) that is regularly emptied. Wash stations should be provided wherever there is a toilet, canteen/food and drinking water, sleeping accommodations, at waste stations, at the entry/exit of the site, and other communal facilities. Where wash stations cannot be provided, alcohol-based hand rub should be provided.
- Regular cleaning of the construction site and accommodation with neutral detergent and water.
- Worker accommodation that meets or exceeds IFC/EBRD worker accommodation requirements (e.g. in terms of floor type, proximity/no of workers, no 'hot bedding', drinking water, washing, bathroom facilities etc.). Accommodation will be maintained in a clean and hygienic condition to minimize spread of infection.
- Other measures (such as working water sprinkling systems at crushers and stockpiles, covered wagons, water suppression or surfacing of haul roads etc.) should be used for dust suppression on site before relying upon the use of dust masks (which could unnecessarily reduce the availability of N95/FFP2 masks for use by medical staff performing some duties).
- Undertake health awareness and education initiatives with construction workers e.g., providing information on COVID-19 symptoms, transition paths, hand hygiene, and physical distancing etc. Placing posters and signs on hand hygiene and physical distancing around the site, with images and text in local languages.
- Ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are always available at the site and at any accommodation.
- If a worker is diagnosed with COVID-19, follow the National COVID-19 Preparedness and Response Plan.
- The project will ensure that such workers are provided equipment such as masks and gloves in sufficient numbers and quality to ensure they can carry out tasks in a way which minimizes the risks of infection.

B. Dengue, Zika and Chikungunya

- MOH should have an effective surveillance for outbreak of vector-borne diseases in the construction sites communities.
- In case of outbreak, the project shall engage the community surrounding the construction sites to undertake clearing operations of the surroundings, getting rid of empty containers that collect waters.
- Contractors should undertake regular cleaning of the vicinities of the construction sites, removing water collecting containers.
- If the any of the diseases is active in the area, the contractors should require workers to apply mosquito repellent lotion that contains effective active ingredient such as DEET.
- If any of the disease is active in the area, workers should be provided by the contractor with mosquito nets

C. STDs

- MOH should conduct awareness campaigns on STDs among construction workers and local communities.
- Worker's camps/Contractor's field offices should be supplied with Condoms as part of the medical/first aid kits supplies.

III. IPC FOR PTU AND CPMO STAFF

A. COVID 19

PTU and CPMO staff may be required to conduct stakeholder consultations or engagement activities or travel for supervision/monitoring of Project activities. Stakeholder consultations and other group meetings have the potential to contribute to virus transmission should COVID-19 enter Tuvalu. When planning consultations and supervision/monitoring activities, the PTU / CPMO staff should do the following to minimise the potential to spread the virus:

- Review current health travel advisories and restrictions put in place by the Government of Tuvalu to contain virus spread.
- Review the Stakeholder Engagement Plan (SEP), particularly the approach, methods and forms of engagement proposed, and assess the associated potential risks of virus transmission in conducting various engagement activities.
- Avoid large group gatherings. Social gatherings should be limited to 20 people or fewer and conducted, where possible, in large or open spaces.
- If small group meetings are permitted in the location, conduct consultations in small-group sessions, such as focus group meetings. If small group meetings are not permitted in the area, make all reasonable efforts to conduct meetings through online channels if practicable, including WebEx, Zoom and/or Skype.
- Physical distancing shall be adhered to during the meetings with at least 1 metre of separation between participants.
- Avoid shaking hands. Greet people with a wave, nod, or a bow instead.

- All physical attendees must follow standard precautions such as hand hygiene, physical distancing, and wearing masks and gloves as given in Section 2.3.
- CPMO and PTU staff must ensure that all physical attendees articulate and express their understandings on physical distancing behaviour and good hand hygiene practices, and that any stakeholder engagement or consultation events be preceded with the procedure of articulating such hygienic practices.
- All physical attendees must register their name and contact details for contact tracing purposes.
- PTU and CPMO staff who are feeling sick must not physically attend any planned events or travel.

B. Dengue, Zika and chikungunya

- MOH shall have a surveillance/alert systems in place for any incidence/outbreak of vector-borne diseases.
- The vicinity of the Project Offices, including field offices shall regularly be cleaned or rid of containers which collect waters.
- In case of outbreak of vector-borne disease, MOH should engage the communities of the outbreak areas to clean up the surroundings, getting rid of possible mosquito breeding places.
- In areas with active cases of the mosquito-borne diseases, all project staff should be required to apply mosquito-repellent lotion with DEET active ingredient, when going outside to visit construction sites or conduct outdoor activities.
- Spraying shall be undertaken as the last resort during severe infestation.

C. STDs

- All project staff and field workers should be given awareness and information materials about STDs in the country and how to avoid getting infected
- All project offices shall be supplied with Condoms, along with the OSH first aid kits.

ANNEX 5. WASTE MANAGEMENT GUIDELINES

1. Waste Management Considerations in the Project Design

In finalizing the design of the Project, the development team should consider the management of waste that might be generated by individual HCF facilities and the entire health system during their operations and maintenance phase. The development/design team should refer to Section 3 (Operations Phase) of this Guidelines to incorporate any waste management design features into the Project design. Any design feature that will be adopted that deals with waste management should be described concisely in the ESMP or ESIA. In case the Project has only a simple ESMP Matrix, a brief one-paragraph description of the design feature should suffice. Example of Project design features, modifications enhancements to accommodate wastes:

a) Flood-proof/resilient Water and Sanitation System
b) Waste sterilizer/autoclave facility/room
c) Medical sharp-waste shredder
d) In-house incinerator
e) Waste chutes/corridors
f) Waste collector/transporter docking facility
g) Draft waste management policy for Activities that involve development/installation of systems

Note that the Project waste management system shall be integrated into the National HCWM system which will be developed under THSSP. Hence, in designing the waste management system of the Activities' the team should consult any concept or draft plan of the National HCWM.

2. Management of Waste from Construction Activities

The management (i.e., minimization, reuse, recycling, collection, treatment, transport, and disposal) of waste generated from construction activities (including demolition) shall be, by contractual obligation, the responsibility of the contractor, under supervision and oversight of the PTU and CPMO and MOE. The contractors ESMP (CESMP) shall include waste management measures. It will also be the responsibility of the contractor to secure any permits or license needed for the waste handling and disposal. The ESMP of Activities will highlight some key wastes and aspects of the waste management measures to be applied during construction, but it is the contractor's responsibility to address them in its CESMP.

2.1 Waste Generated from Demolition Works

Some Activities may require the demolition of existing structures or facilities which, depending on the previous use and make of the structure, may generate several types of wastes. Demolition waste may comprise of concrete blocks, soil, and vegetation from site clearance, roofing materials, metal, plasterboard, bricks, windows, and timber wastes. It may also include hazardous materials such as asbestos, lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs).

Minimization Measures for Demolition Wastes

- Any existing structures that can be reused should be left intact subject to the design integrity of the new facility/structure to be built.
- Minimize the footprint of the works to that of the essentials for the works.
- Avoid tree and vegetation removal as much as is practicable.
- Mark out waste storage areas before dismantling begins to make the process smoother and help reduce damage to salvaged materials.
- Dismantle buildings into components in the reverse order to construction. Initially remove materials by hand e.g., wooden floorboards, to avoid damage and excess waste.
- Separate materials (metal, timber etc.) and store them in neat piles to avoid cross contamination.
- Ensure safe and dry storage of salvaged items.
- Place clear signage on all waste separation and collection areas.
- Minimize hazardous waste generation by ensuring that hazardous waste is not co-mingled with non-hazardous waste.
- Any hazardous materials shall be removed, handled, and segregated from other wastes in accordance with GIIP.

Reuse and Recycling of Demolished Materials

- Crush and reuse uncontaminated concrete onsite for new foundations, roading, embankment fills, parking areas.
- Reuse inert demolition waste such as concrete and bricks, offsite as clean fill material for roads and/or other construction sites.
- Mulch and/or chip tree and vegetation waste for reuse onsite as garden product.
- Cleared foliage, shrubs, and/or grasses can be given to local farmers for animal fodder and/or fuel, or they can be collected for composting and sent to the centralized composting facility at the municipal/island landfill, if there is any.
- Soil removed during site preparation can be reused back on-site for landscaping.
- Remove scrap metal, such as roofing materials and iron rebar from concrete, for reuse off-site or metal recycling where practicable.
- Plasterboard can be crushed and used as a soil conditioner in gardens.
- Collect undamaged windows for reuse or resale.
- Timber can be resold for utilisation as fuel (if non-treated) or for repairing houses in villages or outer island communities (if treated).

Disposal of Demolition Waste

Once all reduction, reuse and recycling options have been exhausted, disposal of any remaining demolition waste shall be carried out in accordance with Tuvalu requirements and to an approved and licensed landfill.

- Waste transported off site for disposal must be undertaken by a licensed waste contractor.
- Collection, transport, and disposal of hazardous waste to licensed/permitted hazardous waste sites only following GIIP for the waste being handled.
- All asbestos waste and products containing asbestos are to be buried at an approved and licensed landfill and must not be tampered with or broken down to ensure that no fibres

become airborne. Asbestos containing material will be disposed of in accordance with the WBG EHS Good Practice Note on Asbestos: Occupational and Community Health issues, WBG General EHS Guidelines April 2007 P34 & P37 and local legislation. Consultation with MOE will determine whether asbestos assessments are required prior to the commencement of works.

- All other hazardous waste materials shall be disposed of in accordance with GIIP, including possibly (when risk is high) the hiring of professional and licensed handler.

2.2 Waste Generated from Construction Works

Construction wastes may comprise of offcuts of steel, timber (treated and untreated), plasterboard, plywood flooring, and insulation. It may also include excavation waste from site preparation, concrete waste from over pours and packaging wastes e.g., plastic and cardboard. Some hazardous wastes such as small amounts of fuel, oil and paints may also be generated. General wastes generated by the construction workers are also included.

Minimization Measures for Construction Wastes

- Preference should be given to materials that can be used to construct Project activities that reduce the direct and indirect waste generated.
- Avoid tree and vegetation removal as much as is practicable.
- The use of construction materials shall be optimized as much as is practicable e.g., by careful measurement and cutting which avoids excess offcuts.
- Specific areas on site shall be designated for the temporary management of the various waste streams prior to construction works beginning.
- Separate waste materials and store them in neat piles to avoid cross contamination.
- Place clear signage on all waste separation and collection areas to encourage workers to correctly separate waste.
- Minimize hazardous waste generation by ensuring that hazardous waste is not co-mingled with non-hazardous waste.

Reuse and Recycling Options of Construction Waste Materials

- Hardfill materials such as bricks, tiles, glass, and concrete over pours can be crushed as used as clean fill for roads and/or other construction sites.
- Steel off-cuts can be recovered and sold as scrap metal.
- Put treated timber and flooring off-cuts aside to encourage reuse. Reuse timber off-cuts on-site e.g., for roof over hangs. Untreated timber can be saved and sold as a fuel.
- Plasterboard offcuts can be saved and crushed and used for soil conditioner in gardens.
- Insulation off-cuts can be saved and sold for use by households.
- Recyclable materials such as packaging material (cardboard, paper, plastic, glass bottles etc.), should be segregated on-site from other waste sources and sent for recycling.

Disposal of Construction Wastes

- Once all reduction, reuse and recycling options have been exhausted, disposal of any remaining construction waste shall be carried out in accordance with government requirements and to an approved and licensed landfill.
- Collection, transport, and disposal of hazardous waste shall be undertaken by licensed/permitted hazardous waste disposal sites following GIIP for the waste being handled.

2.3 Domestic Wastes Generated from Workers Camp/Temporary Facilities

Grey wastewater and sewer generated from workers' camp and temporary facilities, shall be contained in a water-tight two-chamber septic tank system and the septage channelled into a soak pit/bed or discharged into the municipal sewer system, if available. Raw sewage and septage should not be discharged directly to the sea.

3. Waste Management during Operations and Maintenance of Phase

3.1 Ordinary, Non-Hazard Waste

For ordinary grey (domestic and sewer) wastewater:

a) If municipality sewerage system is available, the facility may be connected to municipal sewerage system. If municipal system is not reliable and the volume of waste is small, install a septic system/wastewater treatment system for the facility. If the municipal system is unreliable, the facility may opt to construct a redundant system consisting of a septic tank or small wastewater treatment system, which could be designed to be flood resilient.
b) In remote islands where municipal sewage service is not available, a flood-resilient septic tank system should be designed.

For ordinary solid waste (i.e., paper, cardboard, food waste, etc.), the facility should collect and dispose of the waste in accordance with the regulations, e.g., segregation of organic or degradable waste and disposal of residuals into the municipal landfill.

3.2 Health Care Waste

The management of the medical/health care waste generated by the country's strengthened health care system will be developed through Technical Assistance (TA) as part of the Project. A TOR for the TA will be prepared during the Planning and Design stage of the Project.

For the preparation of the TOR, , the Project preparation team should refer to, among others, the WHO Guidance Manual on Health Care Waste. Please visit the link below:

(https://www.who.int/water_sanitation_health/medicalwaste/en/guidancemanual1.pdf)

3.3 E-Waste

The procurement of new ICT hardware for the health facilities may necessitate some e-waste disposal should old hardware be replaced e.g., laptop computers. E-waste is categorized as a hazardous waste, as it contains hazardous substances like lead, cadmium, and mercury. Incorrect disposal of e-waste can cause serious damage to the environment (air, water, soil) and to public health. The following are the minimization and disposal measures for E-wastes:

Minimization Measures for E-Wastes

- Consider upgrading/repairing existing hardware as opposed to replacing the entire unit
- Reuse opportunities, such as donation to schools or community groups, should be considered next.
- Consider purchasing equipment that can be upgraded and/or repaired
- Consider the length of product life, warranty and availability of repair services when purchasing equipment
- Consider opportunities for others to reuse the unwanted equipment e.g., schools or community groups
- Return equipment to suppliers for reuse or recycling if this is practicable
- Investigate recycling opportunities available

Disposal of E-wastes

- E-waste from outer islands should be collected and transported to Funafuti for collection and safe disposal.
- Disposal residual (non-recyclable/recoverable) e-waste should be disposed of only into a licensed designated hazardous waste site, following GIIP
- E-waste transported out of country for recycling or disposal at a licensed and engineered landfill, only with appropriate permits and approvals under international treaties such as Basel and Waigani Conventions.

Collection, removal, and disposal to an approved and licensed landfill should only be considered as a final option, once all other reduction, reuse and recycling options are exhausted. E-waste from outer islands should be collected and transported to Funafuti for collection and safe disposal. The disposal of all Government purchased assets is required to be verified prior to being disposed, as is specified by the Stores Regulation.

MOH should develop a simple waste tracking system for e-waste to measure the amount and type of e-waste produced and disposed of to ensure that the amounts and types are correctly tracked and recorded. The e-waste tracking system should be developed during the planning/procurement period, so that the MOH have defined options for e-waste disposal prior to installing the new hardware.

4. Monitoring, Reporting and Auditing

As the waste management guidelines are integrated into the ESMP or CESMP (in the case of contractors), the monitoring and reporting on the waste management should be part of the Monitoring and Reporting of the ESMP and CESMP implementation. Waste management shall also be included in the random audits to be conducted by MOE, CPMO ES specialists, or PTU ES Risk and Impact Management Team during the construction period or during the start of operation of the facility.

ANNEX 6. UXO PROCEDURE

1. The of the Project Management Unit, in consultation with the local authorities will determine the requirement for a UXO survey prior to the commencement of works, depending on whether the selected land has previously been surveyed/disturbed.

2. The contractor should familiarize their workers on types and appearances of UXO.

3. In case of any discovery of suspected UXO during the construction, the highest-ranking personnel on site will stop all works and will not touch the suspected UXO object.

4. The highest-ranking personnel will immediately cordon off and secure the area and arrange an evacuation of workers and residents away from the suspected UXO.

5. The highest-ranking personnel will then immediately inform the site Engineer and/or the highest-ranking PTU personnel at site or field office.

6. The highest-ranking personnel and/or the PTU personnel and/or the Site Engineer shall inform the local police regarding the find.

7. The contractor shall wait for instructions from the police before resuming work on the site.