

A. Project Title: *Pacific Resilience Programme*

Activity Title: PREPSamoa/CON10 – Consultancy for the Design and Supervision of the Seismic Operation Centre (SOC).

B. Project Description

The Ministry of Natural Resources and Environment (“MNRE”), through the Samoa Meteorology Division (SMD) has the responsibility for providing quality data and warning information for Earthquake, Tsunami, Volcano, tides and oceans, climate and weather in Samoa. Recipients of such data and information are the general public, the Disaster Management Office, Disaster Advisory Committee, Media, private and other government sectors.

The existing National Data Centre (NDC) located on premises in Mulinu’u is relatively small for operations and prone to flooding during extreme weather conditions. In efforts to ensure that the Seismic Operations Centre is better placed to remain operational during extreme events, MNRE aims to construct a new building to accommodate the Geoscience, Ozone and Weather Sections. This building will be used for routine day-to-day functions. The location of the new building will be at Mulinu’u as per attached Appendix A.

The Government of Samoa has obtained a grant from IDA-World Bank under the Pacific Resilience Programme (PREP) and this consultancy will be financed under this grant.

The SMD through the Pacific Resilience Program (PREP) seeks a technical and financial proposal from the top ranked shortlisted firm or joint venture to design and supervise the construction of the new building at Mulinu’u.

The selected firm(s) will:

- i) provide the required architectural and engineering designs and construction drawings for the new building SOC at Mulinu’u;
- ii) prepare the works bidding document including all relevant technical documents required to be included in the Bidding Documents package in conformity with World Bank Procurement Guidelines and the laws of Samoa;
- iii) Prepare an Environmental & Social Impact Assessment (ESIA) Report – Preliminary Environmental Assessment Report (PEAR) or as otherwise required the Planning Urban Management Agency (PUMA) – in conformity with World Bank Guidelines, the Environmental and Social Management Framework (ESMF) for PREP and laws of Samoa;
- iv) Prepare and submit the building permit application to MWTI for construction of new building(s).
- v) provide technical advice as needed to the Samoa Procurement Evaluation committee and PREP Project Management Unit on the evaluation of the Contract Works bids for the new building of the SOC;
- v) Supervise the construction of the new SOC building, including payments certification and quality assurance of all works.
- (vi) design of the SOC should maximise the current use of renewable sources mainly solar energy to support the stand-by power generator and ensure the facility is energy efficient;

- (vii) ensure the design of the new SOC factors in landscaping and features to reflect the historical nature of the site;
- (viii) The firm should also include provision in the site plan for a) a cyclone shelter for staff; b) two secured storage sheds, and c) on-site back up power soundproof shed, as well as approximate costing for these.

C. Requirements of the Seismic Operation Center (SOC)

The SOC works will comprise the construction of:

- a new SOC building with an elevated floor (up to 1.5 metres above ground level but not less than 800mm);
- a camping quarters for staff during the Tropical Cyclone operations, shortly after the activation of the Tropical Cyclone Warning Center (TCWC) to be part of the new building.
- two x 15m² small sheds for storage space (one for spares of geo-science equipment, weather & climate equipment and the other for ozone ODS cylinders),
- a housing of 15m² for back-up power facility (100 metres from the new building – separation distance, noise attenuation)

The new buildings will need to comply with the Samoa National Building Code and referenced standards to withstand the potential impacts of natural hazards such as cyclones, floods, fires earthquakes, and tsunamis. A cost benefit analysis should be undertaken to determine the configuration of the proposed structures. The SOC building must be energy efficient and as much as possible use natural light and ventilation, and should be nominally designed to remain functional during and after natural hazard events in accordance with “Importance level 4” in terms of AS/NZS 1170 0 2002.

The SOC building should be large enough to provide sufficient work space for Met. section staff and facilities, and should accommodate the current NDC, Ozone, Weather Operations, staff, and Media room – Studio for recording. The indicative internal floor area required is 400m² as set out below. The building should provide a safe working environment for both female and male staff members.

Staff Offices

- Geo-science staff, a separate room for 1 Principal Scientific Officer **20m²**; separate room for 24/7 shift workers, 2 persons per shift **20m²**; a separate room for normal working hours staff of 5 persons **40m²**;
- Ozone staff, a separate room for 1 Principal Scientific Officer **20m²**; separate room for 2 staff working normal hours **30m²**;
- Administration: 3 persons **30 m²**

Facilities Rooms;

- A Server room to be able to house 6 racks of servers; **25m²**
- A TV presentation video room capable of housing audio-visual equipment; space for presenters to record TV weather & sound proof **35m²**
- Emergency and TC operational staff of 6 persons (attached to the main building²; **50m²**
- Conference room to house 20 persons **60 m²**
- Toilets and bathrooms **males 20m², females 20m² disabled 10m²**
- **Kitchen : 10m²**

Further details for the floor plan are listed in Appendix B – Schedule of Accommodation

The new building will be constructed at the Meteorology Compound opposite the Samoa Maritime School at Mulinu'u.

D. Scope of Services

The Consultant shall provide the following services that consist of inter alia:

Stage 1: Preliminary Design including Environmental & Social Impact Assessment

The following main tasks are required for Stage 1:

Task 1a: Review of Building codes, Survey, Investigations and Tests: The consultant shall:

- The consultant shall review available data and reports and identify requirements of field surveys and other investigations for the identified site at Mulinu'u.
- Undertake initial geotechnical, topographical, hydrological fieldwork, testing, investigations and analysis as required to determine depth and type of foundations, and flood-free ground floor levels
- Carry out a review of Samoa's National Building Code and other available and relevant national/regional documents to ensure that the design is a seismic, fire, climate resilient and energy efficient design.
- Prepare a set of design criteria to meet the requirements of this brief and the Samoa National Building Code, including determination of appropriate design events and loading cases. If an alternative solution is used, it must be assessed for compliance with the performance requirements. This includes the nomination of any alternative International Design Standards (AS/NZ or similar).

Task1b: Preliminary Design: The preliminary designs for the proposed building should be based on a single-story elevated floor construction. The preliminary designs will provide technical rationale of the proposed design option recommended after a cost benefit analysis, describe design criteria & parameters, preliminary cost estimates, additional survey and investigation requirements for detailed design, identify statutory requirements and proposed implementation procedures.

Task 1c: Environmental & Social Impact Assessment: The consultant shall appoint a suitably qualified individual to carry out an Environmental & Social Impact Assessment (ESIA) in conformity with the laws of Samoa and in accordance with the Environmental and Social Management Framework (ESMF) carried out under the Pacific Resilience Program (PREP ESMF). The ESMF can be downloaded via the following link - <http://documents.worldbank.org/curated/en/2015/02/24096490/pacific-islands-pacific-resilience-program-prep-project-regional-environmental-social-management-framework>

The consultant shall ensure that the approved environmental & social management plan form part of the specifications of the bidding document.

Task 1d: Application for Development Consent and Building Permit

The consultant shall prepare all the documentation, submission and payment of all necessary documents and plans to the relevant Samoan authorities for the Development Consent and Building permit.

Stage 2: Detailed Architectural Plans and Engineering Designs, Detailed Project Cost estimates and Technical Specifications and other relevant sections (Bill of Quantities, etc) for the Bidding Documents

Task2a: Detailed Architectural and Engineering Drawings

Once the preliminary designs are approved by MNRE, the consultant will prepare the detailed architectural and engineering drawings taking into account the mitigation measures identified in the EIA report and the approved environmental management plan. Detailed design of the proposed building(s)

All the design should be in conformity with Samoan and/or applicable regional engineering standards. All necessary calculations will be prepared to determine and justify the engineering solution proposed for each component of the project, and will be incorporated into the design reports.

Detailed engineering drawings shall include geo technical advice, architectural drawings, structural drawings, building services (electrical, mechanical, fire protection, telecommunication and ICT networks, HVAC), utility services (potable water storage and distribution, sewage reticulation system, wastewater treatment and disposal system, standby power), site storm water collection and disposal and external works (such as landscaping, internal access, car parks, fencing etc)

Architectural drawings shall include all dimensioned elevations, plans, sections and details, as well as door and window schedules, sanitary ware, fixtures and fittings, schedules of finishes etc. The design of the SOC should maximise the current use of renewable sources of energy to generate power and ensure the proposed facility is energy efficient. Provision of on-site back up power soundproof containment for a diesel generator at least 100meters from the building along with on-site secured storage space for Meteorology division equipment, and fuel as needed for the generator plus hardstand should be included in design and bidding document.

Once all the detailed architectural and engineering designs are approved by MNRE, the consultant will prepare all necessary works bidding document including Invitation to Bid (ITB), bid drawings, Specifications, Bill of Quantities (BOQ), implementation schedule, and quality control programs in conformity with the laws of Samoa and World Bank Procurement Guidelines and using standardised bidding documents. The specifications will be detailed and should comply with the Samoa National Building Code and regional standards as applicable. The consultant will prepare a priced BOQ based on the market prices and prepare construction drawings with sufficient details to permit contractors to construct the work.

Task 2b: Design Completion Report including Confidential Cost Report: The consultant shall prepare a detailed design completion report setting out the design parameters, design standards used, design decisions made, engineering design calculations etc, and including a confidential cost report / priced BoQ based on the market prices for the entire project.

Task 2c: Works Bidding Document: The consultant shall prepare the bidding document for the construction of the building, services and site infrastructure in accordance with the Laws of Samoa and the WB Procurement Guidelines and standard bid document for works. The bidding documents will include instruction to bidders, employer's

requirements, general and special conditions of contract, technical specifications, costed bill of quantities, drawings, forms of contract agreement, etc. and technical assistance for the Evaluation Committee and generally any information required for successful bidding and contract implementation.

The WB Procurement Guidelines and standard bidding documents can be downloaded from: <http://go.worldbank.org/H4GIQ9EGW0>

Task 2d: Evaluation of the Bids: The consultant will assist the Technical Evaluation Committee to analyse and evaluate the bids received and provide technical inputs as well as write the draft bid evaluation report.

Stage 3: Construction Supervision and Contract Administration

The consultant will be fully responsible to MNRE for supervision of construction works and administration of the Works Contract. The consultant will be required to monitor, audit and perform independent testing of materials and systems put in place by the works contractor to verify their compliance with the required standards in accordance with the specifications. The consultant, will carry out the supervision of the construction of the SOC and associated services as well as site infrastructure, and administer the works contract as the Project Manager / PM's representative. The main supervision of the construction works on a day to day basis tasks shall include *inter alia*:

- Approval of materials for construction, approval of material tests and assessment of results of material testing, approval and monitoring of contractors work plan and progress of works, generally ensuring that all works are carried out as per drawing and specifications.
- Monitor construction methods and quality control;
- Certify the quality of works conformance with the specifications and drawings;
- Regular assessment of adequacy of the contractor's input materials, labour, equipment, and construction methods;
- Scrutinize construction methods proposed by contractor including environmental, safety, personnel and public issues;
- Ensure that the works are carried out in accordance with the approved Environmental and monitoring plans as recommended in the EIA report, as well as the PREP ESMF;
- **Record the work measurement and quantities and provide certification;**
- Provision of a suitably-qualified and experienced building professional who is capable of carrying out the duties of "Project Manager" as defined in the World Bank Standard Bidding Document (WB SBD) for Procurement of Small Works Contracts;
- Ensuring that the contractor is at all times in possession of all data required for it to meet the contractual works program, through the timely issuing of contract documents, initial, updated and revised construction drawings as required;
- Regular site visits and overview of progress, with particular attention to ensuring contractors' adherence to the design and construction drawings and specifications. Maintain daily records of the activities on the site, site conditions and contractor's resources;
- Regular reviews of the contractor's works program;
- Regular consultations with SMD in regards to impacts and safety requirements of construction to daily work, operation, flow of data, equipment, effects and so on so that proper advice can be given to contractor for the smooth flow of SMD work.
- Random (but at least fortnightly), review of the contractors' daily records, material-testing results, batch records, set-out survey records etc. and report to the MNRE;

- Random independent sampling and testing of contractor's materials to ensure compliance with the specifications;
- Review and monitor contractor's adherence to the Environmental & Social Management Plan (ESMP);
- Advise the MNRE of any matters of concern and proposals for their resolution;
- Prepare monthly supervision reports with support photos for the MNRE;
- Review and make recommendations on any claims submitted by the contractor for additional payments and extensions of time;
- Conduct formal site meetings with the contractor and keep minutes of matters of concern;
- Measure the actual quantities of work carried out and agree these with the contractor; keep appropriate records of measured work;
- Receipt and checking of contractor's monthly statements, preparation of Interim payment certificates and forwarding to the MNRE in a timely manner for due payment etc.;
- Confirm that works completion has been reached, and advise the MNRE in writing accordingly;
- To assess any Variation request (with Cost estimate) and seek MNRE's clearance before proceeding.

The main works contract administration tasks shall include inter alia:

- Act as Project Manager's Representative
- Process the contractor's claim and validation of payment, issue interim payment certificates;
- Resolve all contractual issues;
- Carry out all revisions and detailed drawings as necessary during the contract implementation;
- Attend to third party inspections as necessary;
- Assess any contractor's claims for variations/extension, additional compensation, etc., and prepare recommendation for approval by MNRE;
- Prepare monthly progress reports;
- Prepare and certify as-built drawings for new building and sheds and services and the site infrastructure;
- Oversight if contractor's site management, safety and security plans to ensure that SMD staff members and SMD equipment and including the general public around the area of work are safe, protected and secure from effects of dust, noise, ground vibrations, fumes etc during their working time.
- The consultant will be fully responsible to MNRE for supervision of construction works and administration of the Works Contract. The consultant will be required to monitor, audit and perform independent testing of materials and systems put in place by the works contractor to verify their compliance with the required standards in accordance with the specifications. The consultant's roles and responsibilities will include the following:
- The consultant has a specific responsibility to ensure that the works are designed in accordance with Samoan certification from Institute of Professional Engineers of Samoa chartered structural engineer, and are constructed to the prescribed quality in accordance with the specifications, bidding document and quality assurance systems. If an alternative solution is used, it must be assessed for compliance with the performance requirements of the Samoa Building Code. This includes the nomination of any alternative International Design Standards (AS/NZ, Eurocode or similar).

Stage 4: Defects Liability Period

Inspect the works at appropriate intervals during the Defects Liability Period (DLP) and issue confirmation of completed defects when the DLP ends;

E. Expected Outputs

The consultant shall deliver the following outputs:

Output	Content	Timing
STAGE 1 OUTPUTS		
Inception Report	<p>Review of National Building codes, Survey, Investigations and Tests:</p> <p>The consultant shall:</p> <ul style="list-style-type: none"> • Carry out a review of Samoa’s National Building Code and other available and relevant national/regional documents to ensure that the design is a seismic, fire, climate resilient and energy efficient design. • Prepare a set of design criteria to meet the requirements of this brief and the Samoa National Building Code, International Design Standards (AS/NZ or similar) for MNRE endorsement. <p>Detail any proposed changes to methodology, personnel, issues arising etc.</p>	1 week after commencement
Preliminary Design Report with cost benefit analysis	<p>The preliminary designs will provide technical rationale of the proposed design option recommended after a cost benefit analysis, describe design criteria & parameters, preliminary cost estimates, and identify statutory requirements and proposed implementation procedures.</p> <p>The report shall include a review of all activities in Stage 1, setting out possible design options, recommendations for preferred option based on a cost benefit analysis</p>	5 weeks after commencement
Environmental & Social Impact Assessment	<p>Carry out an Environmental & Social Impact Assessment (ESIA) as per the laws of Samoa and in accordance with the Environmental and Social Management Framework (ESMF) carried out under the Pacific Resilience Program. The ESMF can be downloaded via the following link - http://documents.worldbank.org/curated/en/2015/02/24096490/pacific-islands-pacific-resilience-program-prep-project-regional-environmental-social-management-framework</p> <p>The ESIA shall include an Environmental & Social</p>	6 weeks after commencement

Output	Content	Timing
	Management Plan (ESMP).	
Application for Development Consent and Building Permit	The consultant shall prepare all the required documentation and submit applications to the relevant authorities for the Development Consent and Building permit	6 weeks after commencement
STAGE 2 OUTPUTS		
Detailed Architectural and Engineering Drawings	Once the preliminary designs are approved by the MNRE, the consultant will prepare detailed architectural and engineering drawings taking into account the mitigation measures identified in the ESIA report and the approved Environmental & Social Management Plan.	3 months after commencement
Design Completion Report	On completion of detailed design, the consultant shall submit a detailed architectural and engineering design report setting out the design rationale, design parameters, design standards used, engineering design calculations, and a confidential cost report for the entire project.	Draft: 3 months after commencement Final: 1 month after draft
Technical Specifications for all Works for the Bidding Document	The consultant shall prepare the Technical Specifications required for the bidding documents for the construction of the new building and sheds, services and site infrastructure. The documents to be submitted will include technical specifications for all works employer's requirements, detailed bill of quantities, drawings, etc. and generally any information required to complete Bidding Documents as per World Bank requirements and the laws of Samoa. The Consultant shall prepare the Works Bidding document including all the above information.	1 month after MNRE approval is given for the detailed architectural and engineering drawings and design report.
Draft Bid Evaluation Report	The consultant shall prepare the report to include clarifications and addendum/addenda issue to Bidders. Also document all activities leading up to the Final Bid Evaluation Report recommending the preferred Bidder [The consultant is also expected to provide technical assistance and advice to the Evaluation Committee when needed during evaluation of received bids]	2 weeks after Bid Evaluation Report is finalised
STAGE 3 OUTPUTS		
Monthly progress reports	Concise review of construction progress and program, review of quality compliance, testing etc. Any physical, environmental, social, contractual issues arising and solutions proposed during the month.	7 days after month end

Output	Content	Timing
	Should include minutes of all meetings, site instructions, photos etc	
Payment Certificates	All payment certificates in accordance with the conditions of works contract	Monthly
Certificate of Completion	In accordance with the conditions of works contract	When completed works are ready for taking over
Contract Completion Report	A Contract Completion Report will be submitted at the end of the assignment to serve as the final deliverable and trigger balance of payment. This report should include: i) photos ii) a full set of ‘as built’ plans including layout diagrams and text describing the finished products, iii) commissioning and checks of all systems including water & sanitation, electrical, environmental, telecommunication etc a detailed building maintenance schedule	At latest one (1) month after completion of all works.
STAGE 4 OUTPUTS		
Defects Liability Certificate	In accordance with the conditions of works contract	On completion of all defects
Final Payment Certificate	In accordance with the conditions of works contract	On agreement of Final Account

F. Institutional Arrangement

The consultant to undertake this work would work under the overall supervision of the ACEO of the SMD and, as directed by him, report to the MNRE as required.

G. Level of Effort and Duration of the Work

It is estimated that the level of effort required to complete this assignment will be 10 person-months of key experts. The selected consultant must ensure all tasks under Stages 1 and 2 of these terms of reference are completed within 4 months from the effective date of the contract. Stage 3 activities will continue until the SOC and sheds construction are completed. The schedule of tasks is presented in Section D of this Terms of Reference.

Also note that this assignment is in 4 stages whereby Stage 1 & 2 will be administered under a Lump Sum Contract and Stage 3 & 4 will be administered under a Time-based Contract.

H. Duty Station

The consultant will be based at the current SMD, located at Mulinuu, Samoa during Stage 1. The majority of Stage 2 work may be completed at the consultant's home base but a short visit to Samoa if it is an overseas firm, and will be required to submit designs to MNRE, obtain necessary approvals and prepare final documentation towards the end of Stage 2. Stage 3 will require the consultant to appoint an onsite supervision team to oversee day-to-day operation and for key members of the consultant team to make visits to Samoa if the firm is from overseas as and when necessary in order to satisfy the remit of this Terms of Reference. Stage 4 will require occasional visits to site.

I. Qualifications of the Successful Consultant

Key staff should have a minimum level of qualifications and experience as follows:

KEY STAFF MEMBER	EXPECTED INPUT (STAGE 1 & 2)	MINIMUM QUALIFICATIONS & EXPERIENCE
Project Director	0.5 month	Graduate architect or civil / structural engineer with ten years' experience in design and construction supervision of large commercial, industrial or institutional buildings
Design / Supervision Team Leader / Architect	3 months	Graduate architect with ten years' post-graduate experience, minimum 5 years design and construction supervision of institutional building works
Civil / Structural Engineer	1.5 months	Graduate civil / structural engineer, with five years' experience of construction supervision including concrete, steelwork, timberwork, earthworks, paving, stormwater drainage, water supply & waste pipework
Electrical / Mechanical Engineer	0.5 month	Diploma in building / engineering related studies, with five years' experience of supervision of electrical and mechanical services installations
Environmental / Social Safeguards Specialist	1 month	First Degree in environmental engineering or similar discipline + 10 years' with experience in drafting EIA Report and Development Consent applications; Ten (10) years' of relevant work experiences, within the Pacific Region and abroad, also within the last 5 years directly related recent experiences;
Clerk of Works / Site Inspector 3 (architectural)	3 months	Diploma in building / engineering related studies, with five years' experience of supervision of building trades and architectural finishes

J. Schedule of Payments Stages 1& 2

The schedule of payments against key milestones is indicated in the table below:

Milestones/Outputs	Deadline (Date)	% Payment
Inception Report	1 week after commencement	10%
Design criteria and Preliminary Design Report with cost benefit	5 weeks after commencement	15%

Milestones/Outputs	Deadline (Date)	% Payment
analysis		
ESIA including Environmental & Social Management Plan; Detailed Architectural Plans and Engineering Drawings; Cost Estimate Report;	3 months after commencement	25%
Technical Specifications for all Works for the Bidding Document and prepare Bidding Document for the all works	1 month after MNRE approval of detailed architectural plans, engineering drawings & cost report.	5%
Final Bid Evaluation Report completed and approved by Client	2 weeks after Bid Evaluation	5%
Construction Supervision and Contract Monitoring	Quarterly instalment;	40%

The payments will be made upon submission of the Reports and approval of the output (deliverable) by the Client.

Appendix A. Location of Proposed SOC



Appendix B – Schedule of Accommodation

	Offices & Services	Staff	Function	Requirements	Area m ²	Furniture & Equipment
1.	GEOSCIENCE				80	
1.1	Principal Officer	1	Executive Office		20	Executive desk & chair, 1 executive lounge set, filing cabinets
1.2	24/7 Shift workers	2	General Office		20	Desk & chairs, work stations
1.3	General Office Comprising:	5	General Office		40	Desk & chairs, work stations, filing cabinets
	- Work Stations					1 lounge set
	- Filing & Sorting space					Storage cabinets
2.	OZONE				50	
2.1	Principal Officer	1	Executive Office		20	Executive desk & chair, 1 executive lounge set, filing cabinets
2.2	General Office Comprising:	2	General Office		30	Desk & chairs, work stations, filing cabinets
	- Work Stations					Storage cabinets
	- Filing & Sorting space					
3.	ADMINISTRATION				40	
3.1	General Office Comprising:	3	General Office		40	Desk & chairs, work stations, filing cabinets
	- Work Stations					1 lounge set
	- Filing & Sorting space					Storage cabinets
4.	FACILITIES				230	
4.1	Server Room (Visual / Audio recording storage)				25	6 server cabinets, visual and recording storage equipment
4.2	TV presentation video room		Audio-visual	Space for presenters to record TV; to house AV equipment; weather & sound proof	35	audio-visual equipment
4.3	Emergency and TC operational staff room	6		To be attached to main building	50	Desk & chairs, work stations, filing cabinets
4.4	Conference Room		conference	Meeting space for 20 people	60	Desk & chairs

4.5	Toilets:	Males			20	
		Females		wc, vanity and shower	20	
		Disabled			10	
4.4	Kitchenette				10	sink, cupboard, fridge, microwave/boiler
				TOTAL	400m²	