Terms of Reference

REQUEST FOR PROPOSAL

A. TITLE

SUPPLYING A FOURIER TRANSFORM INFRARED (FT-IR) SPECTROMETER EQUIPMENT AND A LABORATORY WATER PURIFICATION SYSTEM FOR THE NATIONAL LABORATORY.

B. PURPOSE

1. The purpose of these Terms of Reference (ToR) is to procure a precise molecular analysis **Fourier Transform Infrared (FT-IR) Spectrometer Equipment** and a **Laboratory Water Purification System** for the Solomon Islands National Laboratory to enhance its capability to conduct qualitative and quantitative analysis of samples relevant to marine pollution response.

C. BACKGROUND

2. SIMA is the maritime authority responsible for implementing applicable maritime laws and agreements and administration of the maritime sector in Solomon Islands.
3. SIMA is mandated to coordinate response to maritime emergencies including marine pollution under the SIMA Act 2018 and the Shipping Act 1998 as amended.
4. SIMA coordinates the Marine Pollution Advisory Committee (MPAC) responsible for overseeing marine pollution prevention and response and implementation of the National Oil Spill Contingency Plan (NATPLAN) and the National Pollution Fund (POLFUND).
5. The MPAC has identified the need to improve national laboratory capability to analyse oil, hazardous substances and water-quality samples to support marine pollution response, including pollution identification, evidence-based decision-making, monitoring of contamination during and after an incident and prosecution.

D. SCOPE OF SERVICE

6. The successful provider is expected to supply, deliver and install a complete **Fourier Transform Infrared (FT-IR) Spectrometer Equipment** and **Laboratory Water Purification Systems** suitable for strengthening laboratory capability to conduct qualitative and quantitative analysis of oil, hazardous substances and water-quality samples relevant to marine pollution response.

E. EXPECTED SERVICE

7. The successful provider will deliver the three main expected outputs, as follows:
   a. **Output 1 – Supply, delivery and installation of the FT-IR Spectrometer and Laboratory Water Purification System:** supply, deliver and install a complete and fully operational FT-IR Spectrometer and Laboratory Water Purification System, as specified in Appendices 3 and 4.

This shall include all essential components, accessories, software, documentation, consumables and technical specifications required for the National Laboratory to conduct qualitative and quantitative analysis of oil, hazardous substances and water-quality samples.

b. **Output 2 – Commissioning, calibration and performance verification:** commission the equipment after installation and conduct calibration, validation and performance verification to confirm that the FT-IR Spectrometer and Laboratory Water Purification System meet the required specifications and are ready for operational use by the National Laboratory.

c. **Output 3 – Familiarisation, training and post-installation support:** provide practical training and hands-on familiarisation for National Laboratory technicians on safe operation, sample preparation, data acquisition and interpretation, quantitative analysis methods, routine maintenance and basic troubleshooting of the FT-IR Spectrometer and Laboratory Water Purification System, together with reasonable post-installation technical support.

F. INSTITUTIONAL ARRANGEMENT

8. The successful provider will be responsible to Manager, Environment Protection and Safety.

G. DURATION OF THE WORK

9. The delivery of outputs is expected to be completed within six (6) months from the date of contract signing.

H. DUTY STATION

10. The equipment and service will be delivered at the National Laboratory in Honiara.

I. QUALIFICATIONS AND EXPERIENCE OF THE SUCCESSFUL BIDDER

11. The successful bidder must meet the following requirements in terms of qualification, experience, and relevance of the technical proposal (80 points total):

    a. **Technical compliance, methodology and suitability of the proposed equipment (60 points):** demonstrated compliance with the specifications in Appendices 3 and 4 , including the suitability of the FT-IR Spectrometer and Laboratory Water Purification System for qualitative and quantitative analysis of oil, hazardous substances and water-quality samples; completeness of the proposed configuration, accessories, software, consumables, delivery, installation, commissioning, calibration, verification and training arrangements.

    b. **Relevant experience and past performance (15 points):** proven experience supplying, installing and supporting comparable laboratory analytical instruments and water purification systems, preferably for public laboratories, environmental testing, marine pollution response or similar technical applications, supported by examples of previous contracts or client references.

    c. **Technical expertise, authorisation and after-sales support (5 points):** demonstrated availability of qualified technical personnel, manufacturer authorisation or certification where applicable, warranty arrangements, availability of spare parts and consumables, and capacity to provide timely technical support, maintenance advice and troubleshooting after installation.

J. SCOPE OF BID PRICE AND SCHEDULE OF PAYMENTS

12. The bidder will provide:
    a. **A technical proposal** (Appendix 1) outlining the organization's qualifications and the service and technical specifications of the equipment offered.
    b. **A financial proposal** (Appendix 2) detailing the costs for each item listed in Appendixes 3 and 4 including the service provided.
13. The bidder must be a reputable firm that will comply with all laws in the Solomon Islands.
14. The **technical proposal** will count for **80 points**.
15. The **financial proposal** will count for **20 points**, allocated to the lowest-priced proposal.
16. The financial proposal must be in Solomon Islands dollars (SBD) inclusive of all taxes including import taxes.
17. SIMA's decision on the preferred tenderer is final.

Appendix 1 – Technical Proposal

SUBMISSION FORM

Bidder's organisation or person	
Contact person. Address E-mail Telephone Mobile	
Date of submission	

Bidder's Experience

[*Please describe the experience of your firm relevant to this project, including your organisation's knowledge, skills and experience with similar projects/activities/tasks (please provide examples.)*]

Description of Proposed Arrangements

[*Please describe in detail your proposed arrangements, including suggestions or alternative solution to achieve the same objective and including the detailed list of materials and equipment, and work to be executed with number of working days.*]

Team Composition and Task Assignments

[*Please provide the details of the personnel proposed for the service, qualification and experience.*]

Appendix 2 – Financial Proposal

SUBMISSION FORM

Bidder's organisation or person	
Contact person. Address E-mail Telephone Mobile	
Date of submission	

Summary of Costs

[*Please provide a summary of costs using the table below. All prices in Solomon Islands dollars.*]

ITEM	**COST (SBD)**
Costs of personnel	
Costs of materials and equipment	
Other costs	
Taxes	
TOTAL*	

* The total costs are inclusive of all taxes.

Breakdown of Costs

[*Please provide a breakdown of costs using the table below. All prices in Solomon Islands dollars.*]

ITEM	**Number of days or Quantity**	**Daily Fees or Unit Price**	**Total**
Output 1 – Supply, delivery and installation of the FT-IR Spectrometer and Laboratory Water Purification System			
Costs of personnel			
Costs of material and equipment			
Other costs			

Output 2 – Commissioning, calibration and performance verification			
Costs of personnel			
Costs of material and equipment			
Other costs			
Output 3 – Familiarisation, training and post-installation support			
Costs of personnel			
Costs of material and equipment			
Other costs			

Appendix 3 – FT-IR spectrometer

The bidder must respond in the "Offer" column providing detailed specification of the equipment to fulfil the requirements.

No.	ITEMS (CATEGORY)	DESCRIPTION	QUANTITY	OFFER (Detailed Specs)
1	Optical & Performance	**Spectral Range:** 7,800-350 cm^{-1} (expandable with accessories to mid-IR, near-IR, and far-IR)	1	
		Resolution: ≤ 0.5 cm^{-1} (research grade); 2-4 cm^{-1} (routine QC)		
		Signal-to-Noise Ratio: ≥ 40,000:1 (peak-to-peak, 1 min scan)		
		Beam Splitter: KBr standard, optional CaF_2 or ZnSe for specialized ranges		
		Laser Source: HeNe or diode laser for interferometer alignment		
2	Sampling Modules	**ATR (Attenuated Total Reflectance):** Diamond/ZnSe crystal, pressure clamp for solids/liquids	1	
		Transmission Cell: Gas cells (variable path length), liquid cells with demountable windows		
		Diffuse Reflectance (DRIFT): For powders and rough surfaces		
		Microscope Integration: FTIR microscope with 10–100 µm spatial resolution		
		Portable Module: Detachable handheld probe for field analysis		
3	Detector Options	**DTGS (Deuterated Triglycine Sulfate):** Standard detector for general use	1	
		MCT (Mercury CadmiumTelluride): High sensitivity, cryogenically cooled, for trace analysis		
		InGaAs: For near-IR applications		
4	Software & Compliance	**Data Processing**: Baseline correction, ATR correction, spectral library search	1	
		Libraries: >100,000 reference spectra (polymers, pharmaceuticals, environmental samples)		
		Compliance: 21 CFR Part 11, GMP/GLP-ready audit trails		

5	Physical & Environmental	**Form Factor**: Benchtop (compact footprint), optional portable handheld unit	1	
		Weight: 10–25 kg (benchtop)		
		Power: 100–240 V AC (benchtop), rechargeable battery (portable)		
		Operating Environment: 15–30 °C, humidity <70%		
6	Accessories	Automated sample changers	1	
		Temperature-controlled ATR stage		
		Gas purge system for moisture/CO_2 reduction		
		Fiber optic probes for in situ monitoring		

Appendix 4 – Laboratory Water Purification System

The bidder must respond in the "Offer" column providing detailed specification of the equipment to fulfil the requirements.

No.	ITEMS (CATEGORY)	DESCRIPTION	QUANTITY	OFFER (Detailed Specs)
1	Ultrapure Water Purification Kit	Reverse osmosis (RO) for salts and dissolved solids, electrodeionization (EDI) or ion exchange for continuous deionization. Ultraviolet (UV 185/254 nm) treatment for TOC reduction and microbial control. Final 0.2 µm or ultrafilter for endotoxin and particle removal. Water quality output: Resistivity – 18.2 MΩ.cm at 25^{o}C, Conductivity ≤ 0.055µS/cm, TOC < 5-10 ppb, bacteria < 1 CF/mL, endotoxins < 0.001 EU/mL, flow rate: 0.05-2 L/min, ergonomic dispensing arm with precision control.	1	
2	Filter	0.2µm membrane filter, < 1CFU/mL, < 0.001 EU/mL, retention of particles ≥ 0.2µm. High-quality polymer housing with chemically resistant membranes.	2	
3	Total Organic Carbon (TOC) lamp	Dual-wavelength UV lamp (185 nm and 254 nm wavelengths).	1	
4	Bactericidal lamp	Ultraviolet light (UV) 253-254 nm wavelength.	1	
5	Automatic Sanitization Module (ASM) lamp	Ultraviolet lamp optimized for TOC reduction and microbial sterilization. Dual emission at 185 nm (oxidation or organic compounds) and 254 nm (microbial control). TOC reduction to <5-10 ppb, bacterial count maintained at < 1 CFU/mL. High-quality quartz housing for maximum UV transmission and durability.	1	
6	Oxidation lamp	UV oxidation lamp for TOC reduction. Wavelengths: 185 nm (Oxidation of organic compounds). 254 nm (Microbial sterilization). TOC reduction to < 5–10 ppb. Bacterial count maintained at < 1 CFU/mL. High-purity quartz housing for maximum UV transmission and durability.	1	
7	Electrodeionisation (EDI) Module	Continuous electrochemical deionization (membrane + resin system). Resistivity > 15-18.2 MΩ.cm at 25^{o}C, Conductivity ≤ 0.055µS/cm, TOC: maintains < 10 ppb when paired with UV oxidation. 5-20 liters per hour,	1	

		30-100 psi, optimized for RO feed water. Chemically resistant polymer housing with long-life ion-exchange resins.		
8	Reverse Osmosis (RO) pump assembly	High-pressure diaphragm pump, optimized for laboratory RO systems. 80-150 psi, adjustable to maintain stable membrane performance. 5-20 liters per hour, suitable for laboratory-scale water purification. Quiet, energy-efficient motor with thermal overload protection for continuous duty. Stainless steel wetted parts and chemically resistant polymer housing. Low noise operation, ideal for laboratory environment. Standard laboratory-grade fittings for easy integration with RO modules.	1	