Solomon Islands Electricity Authority
trading as SOLOMON POWER

Terms of Reference (TOR)

Consultancy Services for Pneumatic (Air) Systems Assessment and Concept Design for Upgrade for Lungga Power Station

1. Background

The Solomon Islands Electricity Authority (SIEA) now trading as Solomon Power (SP) is a vertically integrated state-owned enterprise that owns, maintains, and operates the national electricity grid in the Solomon Islands.

Solomon Power has two main power stations at Lungga, located along Betikama road, at Eastern End of Honiara city, which responsible for generation of more than 90 % power supply to the Honiara Residents with a peak demand of 18 MW.

To achieve a high system reliability for both old and new power stations at Lungga, it is important to have a well maintain and functional auxiliary systems which includes the Start Air Systems. This subsystem mainly uses for starting up of the generators and currently, based on the site experiences and observations, systems no longer reliable and appeared to be suffered number of defects in the past and present.

It is crucial to conduct a complete detailed assessment of the current air systems designs, configurations, and arrangements of both systems in the old and new stations. This will help to identify any limitations in the systems that need to be fixed or redesigned if require for safe and improve performance of the systems.

This analysis will help to determine whether the current air systems for the new and old power plants can be set up to function as a single system or if they are to continue to operate separately as present, a sufficient detail to be provided to show which option is the most one to undertake in improving the systems.

This TOR is purposely to engage a suitable consultant to carry out a detail assessment and inspections on the two air systems present in the old and new power stations and provide a complete recommendation and complete concept design and costing for upgraded system to Solomon Power. The consultant may also be required to provide procurement and construction supervision support.

2. Objectives

The consultant engage is to deliver the following key objectives:

2.1 To carry out a full assessment of old and new power stations' Compressed Air Systems and make recommendations for how the anomalies identified should be addressed in order to enhance the system performance up to required standards.

2.2 To determine clearly all necessary works require and ensure system designs in compliance to approved Australia and New Zealand standards or relevant international industrial practices.

2.3 To provide a complete concept design report showing key recommendation including estimated budget and schedules to address the abnormalities identified on the existing air systems.

3. Scope of Works

The Consultant will be responsible for undertaking the following works:

3.1 To carry out a full conditional assessment of the two existing Compressed Air Systems, situated in both the old and new stations, along with associated equipment, to ascertain their current condition and identify any necessary repairs, upgrades, or replacements works required to ensure the systems operate efficiently and reliably.

3.2 Review existing documentation, including equipment manuals, and maintenance logs. Conduct interviews with system operators and maintenance personnel to gather insights into historical performance and observed issues.

3.3 Perform physical inspection of all components of the compressed air system, including compressors, dryers, filters, receivers, piping and associated components

3.4 Identification of any leaks, pressure drops, or inefficiencies, wear and tear, corrosion and potential structural weaknesses within the system

3.5 Measurement of air quality parameters, such as moisture content, oil content, and system pressure levels and consistency throughout the distribution system.

3.6 Testing of compressor efficiency under various operating conditions, including load variations.

3.7 Utilize appropriate methods (e.g., ultrasonic detection, pressure drop analysis) to locate and quantify air leaks within the system to pinpoint air leaks within pipes, fittings, valves, and other components.

3.8 Provide recommendations for preventive maintenance practices to minimize future leaks.

3.9 Perform sampling and analysis of compressed air to verify compliance with required quality standards (e.g., ISO 8573)

3.10 Recommendations for improvements to air treatment processes to achieve desired air quality levels.

3.11 Develop a prioritized list of recommendations for improving system efficiency, reliability, and performance.

3.12 Propose upgrades or modifications of equipment and systems to achieve operational efficiency and improvements.

3.13 Provide full estimates budget with cost breakdown for addressing the issues identified through refurbishment works or for any proposed upgrade system enhancements of the existing systems.

3.14 Compile a detailed report summarizing findings from the assessment, including observations, issues identified and areas of concern and recommendations.

3.15 Present findings to relevant stakeholders and provide guidance on implementation of recommended actions.

3.16 **O**ffer support in implementing recommended actions, including procurement of parts or equipment, training to personnel on best practices for maintaining and operating the compressed air system efficiently.

All reports created shall be provided to SP in original editable format.

4. Work Safety

All works carry out under this TOR shall be done according to Solomon Power Safe and work practices. It is strongly advisable that Contractor ensures its team members who assigned to carry out the work are always in their proper PPEs for entry access to site and for their own safety whilst carrying the work on site.

5. Schedule of Deliverables

The table below sets out the main deliverables.

Major Deliverable	**No. of Days**
1. Carry out the full assessment and prepare and present a report on the initial findings and the recommendations to Solomon Power for review and approval.	20 days after signing of the contract.
2. Present a concept design report on the repairs and replacement or upgrades and other associated works performed on the Compressed Air Systems.	15 days after the system have been tested and recommissioned.

6. Schedule of Payments

Description		Percentage (%) of Contract Value.	Amount in Foreign Currency (AUD$)
1. First payment within 20 days after the signing of the Contract.		10	
2. Payment within 20 days after presenting and acceptance of Draft Concept Design report by Solomon Power Management.		40	
3. Payment within 20 days after presenting and acceptance of Final Concept Design report by Solomon Power Management.		40	
4. Payment 20 days after delivery of all related data relating to this consultancy in editable format to Solomon Power.		10	
	Total	100	

7. Estimated level of effort

The period of engagement will be up to 4 months. The consultant is to provide a schedule on the deliverables. It is anticipated that travel will be required to Honiara during the contract period.

8. Consultant's Qualifications and Experience

The consultant should possess the follow qualifications, skills and relevant experience:

- Must have at least 10 years' overall experience on Compressed Air System
- To provide list of experiences of similar engagements during the recent three (3) years.
- Have demonstrated experiences in monitoring, assessing and inspection of Compressed Air System.
- The ability to produce reports on technical assessments and the cost of any work to be carried out for improving or a new install Compressed Air System.
- It would be an advantage to comprehensive knowledge on Air Compressed System installation and operation
- Good communication skills and ability to produce and present reports.

9. Reporting.

The consultant will be reporting directly to the **Manager Generation, Mr. Dickson Alamania, Email: Dickson.Alamania@solomonpower.com.sb, phone: (677) 7495166.**

Consultant can also be liaised with Lungga engineers for information if require.