**OO – BATTERY ENERGY STORAGE SYSTEM – LERWICK**

**SSE PGM Ref: 7063**

**OJEU Notice number: 19-038068-0001**

**Pre-Qualification Information Pack**

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# Introduction

* 1. Scottish Hydro Electric Power Distribution plc (SHEPD) are undertaking a competitive process with the aim of procuring an 8MW, 6MWh Lithium-ion battery energy storage system (BESS).
  2. This Pre-Qualification Questionnaire (“PQQ”) and associated documentation has been issued by SHEPD, an SSE Group company, in connection with a competitive procurement event conducted in accordance with the Negotiated Procedure with Prior Call for Competition under the Utilities Contracts (Scotland) Regulations 2016.
  3. The purpose of this Pre-Qualification stage is to:
     + - Invite expressions of interest from Potential Applicants;
       - Assess the capabilities of Potential Applicants and their proposed solutions;
       - Provide Potential Applicants with project information relevant to the upcoming Invitation to Tender (“ITT”) stage.

# Project Overview

* 1. SHEPD owns and operates the electricity network in the north of Scotland. This includes a discrete network for the Shetland Islands, which is currently not connected to the mainland electricity network, and as a result SSEN acts as System Operator for the Shetland Islands.

Scottish Hydro Electric Transmission (SHET) has been assessing the need for a cable link between Shetland and mainland Great Britain, which would mean that Shetland would become part of the GB electricity system.

* 1. It is envisaged this investment will include SHEPD contracting with a Supplier for the provision of an 8MW, 6MWh Lithium-ion BESS. This shall be used as an Uninterruptible Power Supply, displacing spinning reserve from synchronous diesel generation. The BESS must be frequency responsive, autonomously responding in the event of a fault and should be capable of operating islanded, to prevent a black out in response to a significant loss of generation. Outline requirements are detailed in Section 4.

# Codes and Standards

* 1. All works associated with the BESS should be carried out in accordance with the following codes and standards:

|  |  |
| --- | --- |
| **Reference** | **Name** |
| IEC 62933-1 | ESS Part 1: Terminology |
| EN 62933-2 | ESS Part 2-1: Unit parameters and testing methods – General specification |
| IEC 62933-3 | ESS: Planning and installation |
| EN 62933-4 | ESS: Environmental issues |
| IEC 62933-5-1 | ESS: safety considerations related to grid integrated ESS |
| IEC 62933-5-2 | ESS: safety considerations related to grid integrated ESS – Electrochemical |
| IEC 62485-5 | Lithium ion batteries in stationary applications |
| IEC 62619 | Safety requirements for secondary lithium cells and batteries |
| IEC 62477 | Safety requirements for power electronic converter systems and equipment |
| EN 61427-2 | General requirements and methods of test Part 2: On-grid applications |
| EN 62620 | Secondary lithium cells and batteries for use in industrial applications |
| UL 1642 | Standard for Lithium Batteries |
| UL 1973 | Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications |
| UL 9540 | Standard for Energy Storage Systems and Equipment |
| IEEE P2030.3 | Standard for Test Procedures for Electric Energy Equipment and Systems for Electric Power System applications |
| UN 38.3 | Recommendation of the Transportation of Dangerous Goods – Lithium Ion Batteries |
| EN 62281 | Safety of primary and secondary lithium ion batteries during transportation |
| IEC 60364-4-41 | Low-voltage electrical installations. Protection for safety. Protection against electric shock |
| IEC 60364-4-42 | Low-voltage electrical installations. Protection for safety. Protection against thermal effects |
| PNNL 22010 | Protocol for uniformly measuring performance of ESS |

# Outline Requirements

* 1. Site Location:

Lerwick Power Station, Gremista, Lerwick, Shetland, UK, ZE1 0PS

* 1. Supply:

Potential Provider’s shall supply a fully integrated solution comprising: batteries, power conversion, 11kV step-up transformer(s), enclosures, and all required auxiliary components – e.g. lighting, battery management system, HVAC, fire and gas detection and suppression.

* 1. BESS Design:
* Battery technology shall be Lithium-Ion.
* The BESS shall provide a minimum of 8MW active power measured at the point of connection.
* Required nominal energy capacity is a minimum of 6MWh.
* The minimum warranty period shall be 10 years, or 360 cycles at full rated output.
* The BESS shall be frequency responsive, autonomously responding to a breach in trigger threshold, and capable of delivering full rated power within 150ms.
* Frequency response parameters – deadband, and gradient – shall be configurable.
* The BESS shall be capable of Islanded operation, i.e. without synchronous generation to avoid a black start scenario.
* Output Voltage is 11,000V.
* System Frequency is 50Hz.
  1. BESS Safety:
* Cells shall be provided with safety certification according to the standards listed in Section 3 and manufactured using a quality controlled process accredited with ISO 9001.
* Batteries shall have monitoring for cell level temperature, voltage, charge level and fuses.
* Battery cells shall have protection to detect and prevent thermal runaway.
* A battery management system (BMS) shall provide monitoring of all safety related indicators, ensuring safe operating limits are maintained and providing a safe shut down in the event limits are exceeded.
* Independent and redundant safety systems shall be provided where they are identified as a requirement under IEC 61511 and IEC 61508.
* The safe operation and maintenance of the entire BESS shall be reviewed using a recognised methodology such as FMECA in accordance with UL 9540, IEC 62933-5-1, IEC 62933-5-2 and IEC 62620.
* Potential Providers shall provide the values of all operating parameter limits for the works identifying the normal and safe operation of the works.
  1. Containers:

The containers shall be provided in accordance with the following standards;

|  |  |
| --- | --- |
| **Reference** | **Name** |
| ISO/TC 104 | Freight Containers |
| ISO 668 | Series 1 freight containers - Classification, dimensions and ratings |
| ISO 1496 | Series 1 freight containers - Specification and testing |
| ISO 1161 | Series 1 freight containers - Corner and intermediate fittings |

* Containers shall be provided with egress routes for personnel to evacuate from all areas of the container safely in an emergency.
* Containers shall be provided with permanent access that allows all maintenance to be undertaken without modification.
* Containers shall meet the requirements for the fire suppressant system and pass the required tests according to the requirements in Section 4.7.
* Containers shall be fire rated for 1 hour in accordance with BS 476-20 or UL263.
* Each container shall be provided with thermal monitoring of the battery units.
* Containers shall provide weatherproof protection against climatic conditions detailed in Section 7.2.
  1. HVAC:

Heating, Ventilation and Air Conditioning units shall:

* Prevent condensation formation within containers or enclosures.
* Provide heating/cooling to maintain systems within the manufacturers recommended operating temperature limits in all ambient conditions, including shutdown.
* Provide cooling to permit continuous operation at rated output for a full charge/discharge cycle without any cooling off time.
* Provide heating and cooling for operation of the battery as required.
  1. Fire and gas detection and suppression:
* Fire and smoke detection equipment shall be provided in accordance with BS EN 54.
* Gas detection shall be provided to detect toxic and flammable gas generated within the containers, and shall provide alarm and emergency shutdown functions when levels of gas achieve limits determined by risk assessment.
* Ventilation shall be provided to remove the maximum rate of gas generation for all cells within a container, to maintain gas concentrations below safe levels and in accordance with NFPA 69.
* Containers shall be fitted with a fire suppression system approved by demonstration on a large-scale test using the same cells as installed in the works, in accordance with UL 9540.
* The fire suppressant system shall conform to the guidance provided in NFPA 855, and shall be automatically operated when fire or smoke is detected.
* For gas suppression systems, an audible and visual warning shall be provided to operators within the container that a fire has been detected including a method of delaying the deployment of the suppressant whilst operators are present to allow evacuation.
  1. CE Marking

The Supplier shall provide CE Marking for the BESS confirming conformity to relevant directives including:

|  |  |
| --- | --- |
| **Reference** | **Name** |
| 2014/68/EU | Pressure Equipment Directive |
| 2006/42/EU | Machinery Directive |
| 2014/35/EU | Low Voltage Directive |
| 2014/30/EU | Electromagnetic Conformity Directive |
| 95/137 | ATEX Directive |

* 1. Civil Design:

Potential Providers are to provide a civil design and drawing package. It is expected the BESS will comprise several containers sited on concrete pads with suitable ducting for cabling.

* 1. Civil Works:

It is expected these works will take place following contract award and during BESS lead-time.

* 1. Electrical Connections:

Grid connection will be a spare 11kV circuit breaker at Gremista substation. Underground cable(s) will be laid to the BESS transformer(s) by SHEPD. A 415V supply can also be provided for essential supplies if required.

* 1. Delivery:

Delivery costs to site should be included.

SHEPD have specified a target commissioning date of October 2019 but will accept applications that stipulate a commissioning date up to end Q1 2020. Once a date has been agreed with the Supplier at contract award, the Supplier will be expected to guarantee this. Any resultant Contract will also contain delay damages.

* 1. Installation:

This will include lifting containers into position, cable pulls and terminations. If battery modules are required to be installed separately this will be assessed following review of Potential Provider’s procedures.

* 1. Testing & Commissioning:
* The Supplier will be responsible for all BESS testing and commissioning works. This will include witnessed factory acceptance testing (FAT) prior to shipping, and site acceptance testing (SAT).
* Test documents shall be provided for acceptance not less than 10 working days prior to the agreed testing date.
* Any defects identified during FAT shall be recorded and shall be included in the defects list for the Works. Any equipment with identified defects shall not be shipped until the defects have been corrected, retesting has occurred and approval has been given.

# Pre-Qualification Stage: Documentation

* 1. The table below provides an overview of the Pre-Qualification documentation and where these have been made available to Potential Applicants. A response to the Pre-Qualification Questionnaire is a mandatory requirement of this stage.

|  |  |
| --- | --- |
| **Document Name** | **Applicant Required Action** |
| “OO Battery Energy Storage System Lerwick Pre-Qual Information” | Review content and use as guidance for completion of PQQ response. |
| “OO Battery Energy Storage System Lerwick PQQ” | Complete responses to all relevant questions and submit to [PS.Procurement@sse.com](mailto:TS.Procurement@sse.com) by **1200 hours on Wednesday 27th February 2019**. |
| “OJEU Contract Notice” | This opportunity is advertised on the OJEU with Procurement documentation available on <http://sse.com/potential-suppliers/> |

# Pre-Qualification Stage: Questionnaire Guidance for Potential Applicants

* 1. The PQQ sets out the information which is required by SHEPD in order to assess the suitability of Potential Applicants in terms of their:
* Proposed design against outline requirements;
* Knowledge and experience on similar projects;
* Available resources and capabilities;
* Organisation, economic, legal and financial standing;
* Health, safety and environmental standards;
* Management and quality systems.
  1. **Potential Applicants should note that Item 0 within the questionnaire details the pre-requisites for qualification, therefore as a minimum Potential Applicants must achieve a pass to all questions 0.1 to 0.7. Failure to do so will result in exclusion from this Procurement process.**
  2. During the Pre-Qualification stage, the intention is to arrive at a short-list of qualified Potential Applicants who will then be invited to submit formal bids by way of completion of a Tender document. Following evaluation of Potential Applicants’ responses, the highest scoring Potential Applicants (up to a maximum number of 8 off) will be selected to be invited to tender. **Only Applicants who have qualified through the Pre-Qualification stage will be invited to tender. A successful response to the PQQ is a mandatory requirement for the ITT stage.**
  3. No information contained in this Pre-Qualification, or in any communication made between SHEPD and any potential Applicant in connection with this Pre-Qualification, shall be relied upon as constituting a contract, agreement or representation that any contract shall be offered in accordance with this Pre-Qualification. SHEPD reserves the right, subject to the appropriate procurement regulations, to change without notice the basis of, or the procedures for, the competitive tendering process or to terminate at any time. Under no circumstances shall SHEPD incur any liability in respect of this Pre-Qualification or any supporting documentation.
  4. All information provided in response to the PQQ will be treated as strictly confidential.
  5. Potential Applicants are required to submit the completed PQQ by email to [PS.Procurement@sse.com](mailto:ts.procurement@sse.com), FAO Mick Cooney, quoting “OO – Battery Energy Storage System – Lerwick”, **no later than 1200 hours on Wednesday 27th February 2018.**
  6. Please note that completed PQQs received after the closing date may be rejected.
  7. Potential Applicants who are proposing to submit responses as part of a joint venture or collaboration should do so under the entity that represents that joint venture or collaboration. If no joint venture or collaboration has been formed yet, please submit responses on behalf of the lead company on behalf of that joint venture or collaboration, unless specific questions indicate otherwise.
  8. Any Queries and/or requests for clarification in respect of the PQQ should be submitted in writing to SHEPD's named contact, Mick Cooney, by email to [PS.Procurement@sse.com](mailto:ts.procurement@sse.com), quoting ”OO – Battery Energy Storage System – Lerwick”, and **must be received at least 5 working days prior to the closing date for responses to the PQQ**. After such time, SHEPD cannot guarantee a response to the query/clarification. SHEPD will ensure that all relevant, non-confidential queries and responses or clarifications made during the pre-qualification process are made available to all Applicants during the process although the querying/clarifying party will not be disclosed.
  9. Potential Applicants should answer all questions as accurately and concisely as possible. Where a question is not relevant to the potential Applicant’s organisation, this should be indicated with an explanation.
  10. If supporting information is required then please respond in an Appendix to the PQQ document, including reference to the relevant question number within the Appendix file name, and advise in the space provided against each question of the relevant appendix. Potential Applicants are respectfully asked not to include company literature i.e. brochures with their response. This is due to the fact that an assessment model based on specific criteria will be used to evaluate responses which cannot be applied to any such company literature.
  11. Failure to provide the required information, make a satisfactory response to any question, supply documentation referred to in responses or comply with the requirements may mean that a Potential Provider is not invited to participate further. In the event that none of the responses are deemed satisfactory, SHEPD reserves the right to terminate the Procurement Event.
  12. Potential Applicants must be explicit and comprehensive in their responses to the PQQ as this will be the single source of information on which responses will be scored, and are requested to include a single point of contact in their organisation for all correspondence in relation to the PQQ.
  13. SHEPD may disqualify any Potential Applicant who fails to comply with the requirements detailed in Section 4 - Outline Requirements of this OO – Battery Energy Storage System – Lerwick - Pre-Qualification Information Pack.
  14. Questions should be answered in English.
  15. No approach of any kind in connection with this PQQ should be made to any other person within or associated with SHEPD.
  16. This PQQ is being provided on the same basis to all Potential Applicants.
  17. To assist with completion of the PQQ, SHEPD has included this information pack and other supporting information providing more details on the project.

# Pre-Qualification Stage: Additional Information

* 1. Shetland Electricity Generation

Shetland’s energy is primarily generated by Lerwick Power Station (67MW) and Sullom Voe Terminal Power Station (15MW). Additional energy is provided by distributed wind and tidal sources. The amount of renewable generation which can connect to the Shetland network is currently restricted due to the effect that intermittent renewable generation can have on the stability of the system during low demand periods.

* 1. Climate

The meteorological data for Lerwick has been provided by the Meteorological Office.

Average temperature and rainfall 2002 – 2011

| **Month** | **Daily minimum °C** | **Daily maximum °C** | **Daily average °C** | **Rainfall mm** |
| --- | --- | --- | --- | --- |
| January | 2.2 | 6.2 | 4.4 | 154.8 |
| February | 1.9 | 5.7 | 4.0 | 121.5 |
| March | 2.6 | 6.9 | 4.7 | 99.7 |
| April | 4.6 | 9.0 | 6.6 | 60.3 |
| May | 5.9 | 10.8 | 8.1 | 64.3 |
| June | 8.5 | 13.1 | 10.5 | 62.4 |
| July | 10.6 | 14.8 | 12.4 | 73.7 |
| August | 10.8 | 15.0 | 12.6 | 91.1 |
| September | 9.4 | 13.4 | 11.2 | 93.5 |
| October | 6.7 | 10.4 | 8.5 | 129.5 |
| November | 4.4 | 8.3 | 6.5 | 148.8 |
| December | 2.5 | 6.5 | 4.7 | 132.3 |

The average daily temperature over the period 2002 to 2011 was 7.8 °C (the lowest recorded monthly average minimum daily temperature was -1.2 °C and the highest maximum was 16.6 °C).

Shetland is the windiest area in the UK with the highest number of 'degree' days where heating is required due to the wind chill. The Potential Provider’s design should accommodate the full range of ambient conditions experienced including the coastal environment with high saline content.

* 1. Proposed Contracting Strategy

The requirement is for the design, supply, associated civil works, installation and commissioning of a Battery Energy Storage System (BESS) at Lerwick Power Station.

* 1. Procurement Timetable

The anticipated Procurement timetable for this event is set out below. This is intended as a guide only and SHEPD reserves the right to amend this at any time.

|  |  |
| --- | --- |
| **Target Date** | **Activity** |
| 23/01/2019 | PQQ Issue date |
| 27/02/2019 | PQQ Return date |
| 11/03/2019 | Evaluation of PQQs completed |
| Mar 2019 | ITT issued to Qualified Applicants |
| Apr 2019 | Tender Return Date |
| Apr/May 2019 | Evaluation of Tenders completed |
| May 2019 | Contract Awarded |
| Dec 2019 | Installation and Commissioning |

# Invitation to Tender Stage: Guidance for Applicants

* 1. After completion of the PQQ process, short-listed Potential Providers will progress to the ITT stage. SHEPD will issue an ITT document to the short-listed Potential Providers to complete, price and return. The Potential Provider’s submission must comply with the ITT submission requirements. Offers that do not comply with the ITT submission requirements or technical or financial robustness criteria will be rejected and discounted from any further participation in the Procurement Event.
  2. It is envisaged that the assessment criteria against which Tenderers will be assessed during ITT stage, will be as follows:
* Health Safety & Environment 25%
* Quality of Solution 15%
* Project Management 10%
* Technical submission 40%
* Procurement 10%
* Finance & Data Protection (information only) 0%

SHEPD reserve the right to add to or amend the above list following further development of the requirements prior to the ITT stage.

* 1. The Contract will be in accordance with the NEC3 Engineering and Construction Short Contract (ECSC) Conditions. Any resultant Contract entered into shall be governed under Scots law.
  2. The intention of the Authority is to make a Contract between the Authority and the successful Supplier(s). The following are Parties to the Contract/Agreement- Scottish Hydro Electric Power Distribution plc.
  3. This opportunity is advertised on the OJEU under Notice number 19-038068-001 with Procurement documentation available on <http://sse.com/potential-suppliers/>