

Stage 1 Feasibility

F1 Report

Provider Name [Complete]

Site/Asset/Project Name [Complete]

Submission Date [Complete]

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Black Start Service

1.1 Technical Requirements

1. Time to Connect

Requirement	<i>≤ 2h. Time taken to start-up the BS Plant from shutdown without the use of external power supplies, and to energise part of the Network, within two hours of receiving an instruction from the Electricity System Operator (ESO).</i>
Response Format	Text (no more than 100 words). If applicable, consider effect of warmth – Hot, Warm, Cold. Detail key stages of the Black Start and timings.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

2. Service Availability

Requirement	<i>≥ 90%. The ability to deliver the contracted BS Service over 90% of a year. Note: It is the responsibility of the Provider to demonstrate its service availability. By submitting a tender, the provider commits to ensuring availability at least 90% of each year of the service. We note that planned major maintenance outages may impact the availability for an individual year. Please detail how these have been allowed for.</i>
Response Format	Text (no more than 300 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

3. Voltage Control

Requirement	<i>Existent. Ability to control voltage level within acceptable limits during energisation/block loading (±10%).</i>
Response Format	Text (no more than 300 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

4. Frequency Control

Requirement	<i>Existent. Ability to manage frequency level when block loading (47.5Hz – 52Hz), at 20MW block load and the maximum block load capability.</i>
Response Format	Text (no more than 300 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>

Response	
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5. Resilience of Supply – BS Service

Requirement	≥ 10h. When instructed to BS, the minimum time the Provider will deliver the contracted service.
Response Format	Text (no more than 300 words). Explain how will the Provider ensure the BS Auxiliary Unit will have the expected resilience.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

6. Resilience of Supply – BS Auxiliary Unit(s)

Requirement	≥ 72h. Run continuously at the output required to support / deliver the contracted BS Service for a minimum of 3 days.
Response Format	Text (no more than 300 words). Explain how will the Provider ensure the BS Auxiliary Unit will have the expected resilience.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

7. Block Loading Capability

Requirement	≥ 20MW. Capability to accept instantaneous loading of demand blocks.
Response Format	Text (no more than 300 words) + Table + Graphic. If applicable, explain the impact of temperature (Hot, Warm, Cold) on the block loading capability. Share the expected block loading profile up to the contracted output, including maximum sizes of each block, time between blocks and any hold/critical load points.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

8. Reactive Capability

Requirement	≥ 100MVar Leading. Ability to energise part of the network (MVar>0, MW=0).
Response Format	Text (no more than 300 words) + Table + Generator Capability Curve.

Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

9. Sequential Start-Ups

Requirement	≥ 3. <i>Ability to perform at least three sequential start-ups.</i>
Response Format	Text (no more than 500 words). Explain how will you be able to deliver a minimum of 3 sequential start-ups at any stage of restoration (to allow for possible tripping of the Transmission or Distribution Networks during the re-instatement period, or trips during the BS Service Provider's own starting sequence). Demonstrate how all generating units (if applicable) can be safely shutdown without the need for external supplies, and can be maintained in a state of readiness for subsequent start-ups.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

10. Short-circuit Level (following the start of a system disturbance)

Requirement	$t \leq 80\text{ms}: I \geq \frac{240 [MVA]}{\sqrt{3} \cdot U} [\text{kA}]; t > 80\text{ms}: I \geq \frac{100 [MVA]}{\sqrt{3} \cdot U} [\text{kA}], U \equiv \text{connection voltage [kV]}$ <i>Injection of reactive current during a disturbance.</i>
Response Format	Text (no more than 500 words). Explain/demonstrate how can you meet the requirement. This can be done from Fault Ride Through test evidence, or in the case of a synchronous generator, Grid code DRC schedule1 modelling data being provided as an alternative.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

11. Inertia Value

Requirement	≥800 MVA.s. <i>Stored rotating energy in the system (real or virtual).</i>
Response Format	Text (no more than 500 words). Explain/demonstrate how can you meet the requirement.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

1.2 Black Start Operation

1. General Description of the Service

Requirement	<ul style="list-style-type: none">- The proposed project, including description of assets and their current / expected capability to provide a BS Service;- Share the relevant Single Line Diagram of the Plant;- Number of power generating modules expected to be included in the BS Service (if applicable);- High-level start-up sequence from black start up to the Minimum Stable Operating Level and, from that point, up to the contracted output.
Response Format	Text (no more than 500 words). For the start-up sequence, share a Table & Graphic highlighting key stages (milestones, hold points, etc.) and expected times.
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

2. Organisation / Site Arrangements

Requirement	<p>Please share how are you as an expecting to deliver the BS Service (logistics). Examples:</p> <ul style="list-style-type: none">- How will you guarantee a 24h availability of the BS Service?- Number of Control Room shift teams?- Staff response arrangements (if required);- BS expected to be included in the annual Staff's mandatory training.- Site locations and logistics (telephone calls on site, distance to site)
Response Format	Text (no more than 500 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

1.3 Black Start Auxiliary Unit(s)

Requirement	<p>Please share:</p> <ul style="list-style-type: none">- Information around any existing assets (if applicable);- Potential new needs:<ul style="list-style-type: none">i. Expected House Load / size for the BS Auxiliary Unit(s)ii. Assessment/comparison of advantages/disadvantages for potential options (different technologies, costs, risks for reliability, environment, site constraints);iii. Preferred option including evidence of initial discussions on relevant environmental permits and planning permissions required.;- Demonstrate that the final preferred solution involving existing and/or new assets is compliant with the minimum resilience requirement ($\geq 72\text{h}$).
Response Format	Text (no more than 500 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

1.4 Communication Systems

Requirement	Please share details of any existing telecommunications and systems (telephony, SCADA, text messages, Satellite Phones, etc.) ; particularly related resilience under Black Start conditions.
Response Format	Text (no more than 500 words).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

1.5 Project Timescales

Requirement	<p>A programme for all provider activities required to achieve the BS capability.</p> <p>Please attach a project programme including all provider activities that are necessary between contract award and service commencement date, including for example:</p> <ul style="list-style-type: none">- Construction works (where applicable)- Long lead time procurement (where applicable)- Communication system upgrades (where applicable)- Control System upgrades (where applicable) <p>A statement confirming ability to deliver the BS Service earlier than / by April 2022.</p>
Response Format	Text (no more than 500 words) + Gantt Chart (or equivalent).
Attachments	<i>Please include the titles of any attachments associated to this section.</i>
Response	

1.6 List of Appendices / Attachments

Appendix Num.	Document	File name as submitted
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Appendices

Appendix 1

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