



BATTERY REPLACEMENT STRATEGY

AW1 Energy Storage Limited

AW1 BESS PROJECT

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Contents

1	Purpose.....	2
2	Estimated Equipment Lifecycles	2
3	Replacement Methodology	2
1.	Condition Assessment.	2
2.	Optioneering Assessment.....	2
3.	HAZID / HAZOP.....	3
4.	Replacement Execution Plan	3
5.	Monitoring	3
6.	Verification	3
4	Environmental Considerations	3
4.1	Traffic	3
4.2	Waste	3

1 Purpose

This Battery Replacement Scheme document has been prepared by AW1 Energy Storage Ltd. relating to the Afon Wysg 1 Battery Energy Storage Site (BESS) located at the Uskmouth Sustainable Energy Park. The purpose of this document is to outline the anticipated replacement methodology of battery modules and other key infrastructure over the lifetime of the site. It discharges Requirement No. 6 of the approved planning permission in relation to the site, application number 25/0213.

This information is prepared on a best endeavours basis and may vary at the time of battery units being required to be replaced. It does not account for any situation regarding the replacement of any defective battery unit or module which may occur from time to time due to fault or failure or any requirements of replacement due to a change in regulation, law or statutory policy.

2 Estimated Equipment Lifecycles

Subject to operational use (i.e. how many times the batteries are cycled) the expected replacement timings for the key equipment are as follows:

➤ Battery Modules	15 Years
➤ Inverters	20 Years
➤ Medium Voltage Twin Skids	20 Years
➤ 33kV Transformers	≥25 Years
➤ 33kV Switchgear	≥25 Years
➤ 132kV Transformer	≥25 Years

3 Replacement Methodology

The replacement of key site components will follow the steps outlined below:

1. Condition Assessment.

Key components will be inspected and maintained as per the manufacturer's recommendations. During routine inspection or inspection/investigation following a fault, the equipment will be assessed and a condition assessment produced.

2. Optioneering Assessment.

Following the result of the condition assessment an optioneering exercise will be conducted to determine the scope of the replacement / partial replacement / refurbishment required. It will also assess any future project requirements or advances in technology which would be of benefit to the project at this stage.

3. HAZID / HAZOP.

With the preferred course of action determined in Step 2 a Hazard Identification and Operability exercise will be conducted to determine the Hazards involved in the replacement / refurbishment action and identify any mitigation measures required. During this process the latest revisions of the equipment installation, operation, and commissioning manuals should be consulted along with the Battery Safety Management Plan and any previous HAZID / HAZOP..

4. Replacement Execution Plan

The HAZID / HAZOP study will inform the execution plan that will also define the required works, objectives and deliverables of the replacement. Risk Assessment and Methodology documents will be produced, reviewed and agreed at this stage.

5. Monitoring

During the replacement works regular inspections will take place to ensure the correct control measures are in place and the agreed methodology is being followed.

6. Verification

Recommissioning of the equipment will determine the success of the replacement / refurbishment and ensure the site operating correctly.

4 Environmental Considerations

4.1 Traffic

During the development of the Replacement Execution Plan consideration will be given to the impact of traffic generation to the local area during replacement operations. This will include exploring:

- Rail deliveries where feasible.
- Phased replacement of equipment.
- Refurbishment rather than whole replacement where feasible.

As per during construction the site will not exceed 18 HGV movements per day Monday to Friday and 9 on Saturday (or 100 per week which ever is greater) as per the planning transport assessment.

4.2 Waste

Waste generation will be kept to a minimum and dealt with in a responsible manner with the focus on reusing or recycling equipment. In the case of battery module replacements, waste will be dealt with as set out in accordance with the Battery Safety Management Plan.