

Rebecca Jenman
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Herefordshire Council
Plough Ln,
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Date: 19th December 2023

Dear Rebecca

P231390/F: INSTALLATION OF AN ENERGY STORAGE SYSTEM, SUBSTATION AND ASSOCIATED WORKS. LAND TO THE SOUTH OF PETERSTOW GAS COMPRESSOR STATION HENTLAND HEREFORDSHIRE

This letter sets out additional information relating to the response from Hereford and Worcester Fire and Rescue Service (HWFRS).

HWFRS responded to the above planning application on 7th June 2023 with a no objection. Upon publication of guidance from National Fire Chiefs Council, HWFRS later responded on the 31st July with general comments based on the new guidance.

HWFRS have not objected to the application but have listed technical comments which can be addressed in the design and construction of the development.

This letter is supported by an 'Outline Battery Safety Management Plan – St Owen Cross Energy Storage System' produced by Abbot Risk Consulting Limited, dated December 2023, which addresses HWFRS comments in more detail.

Layout Plan

A revised Layout Plan (SO/415/07 rev G) has been prepared. This includes an update showing proposed water containers within the site, full details of which are addressed later in the letter and accompanying report.

The proposed arrangement of the energy storage system (ESS) is two containers positioned alongside one another with cabling to a single MV Skid. The spacing between each of the two container blocks is 5m. For our purposes each pair of containers comprises one 'energy storage unit'.

The suggested 6m separation, as set out within the National Fire Chiefs Council (NFCC) guidance is based on a January 2017 Issue of the FM Global Loss and Prevention Datasheet 5-33 (footnote 9 in the NFCC Guidance refers). This datasheet was revised in July 2023¹ and now details the following (at paragraph 2.3.2.2):

“For containerized LIB-ESS comprised of lithium iron phosphate (LFP) cells, provide aisle separation of at least 5 ft (1.5 m) on sides that contain access panels, doors, or deflagration vents.”

Outline Operational Safety Measures

The following details the embedded safety mitigation measures. This is outlined to provide further details to the Council and HWFRS.

The proposed development will utilise Lithium Iron Phosphate (LFP) energy storage which have a higher thermal stability (when compared to Nickel Manganese Cobalt storage) and are therefore less likely to experience thermal runaway.

At this point in time, the selection of the specific manufacturer of the ESS for this site is yet to be decided. The design, development and manufacture of the ESS requires the development and maintenance of high standards in respect of safety and operational sustainability. The site operator will be responsible for adhering to these and protecting personnel on-site.

24/7 monitoring, integrated fire detection and suppression

The proposed development will be monitored remotely on a 24/7 basis. This will include monitoring of the internal temperatures of the energy storage containers. Should a container reach a defined temperature (around 50 - 55°C) the container will be shut down to prevent the escalation to a safety incident.

Gaseous suppression is proposed within each energy storage container. This system will be activated automatically where an abnormal operational activity is registered. This will act quickly to suppress a fire. During the procurement phase, additional alternative suppression systems will also be investigated.

Cooling systems with automated fail-safe operation

Each ESS container is likely to be equipped with a liquid cooled system. This will use liquid coolant such as water, a refrigerant, or ethylene glycol to cool the cells within the container.

¹ FM Global (2023) Property Loss Prevention Data Sets ‘Lithium-Ion Battery Energy Storage Systems’ Interim Revision July 2023 para 2.3.2.2

Very Early Smoke Detection by Aspiration (VESDA) system

VESDA will be located within each of the energy storage containers and will comprise of a smoke detection warning system. Details of the emergency response plan are outlined below in this letter. The monitoring team will have access to CCTV on site throughout operation to see any smoke emitting from the site and commence the emergency response plan.

Reducing the risk of fire spread

Our Layout Plan incorporates two energy storage containers in a block which together form one energy storage unit, which connects to a single MV Skid.

During the procurement phase for the equipment, market insights will highlight the most up-to-date fire-resistant design measures. These could, for example, include incorporating thinner roofs to allow for pressure release upwards rather than outwards. and several other measures. An emergency response plan will be produced and will include details of all embedded safety measures.

Access to and within the site

The site has a primary access gate at the west of the site.

From the public road distance to the nearest ESS installation is approx. 100m. The predominant wind direction in the Ross-on-Wye area is Southwest and as such the position of the access to the site is likely to be downwind of any potential plume emanating from an ESS unit.

The access tracks will comprise of tarmac, concrete, or crushed stone. This is key for construction and operation of the site.

Water supply

The updated Layout Plan proposes water storage which will enable access to the 1,900 litres per minute for a two hour period (total capacity 57,000 litres). These have been located to allow suitable access during an incident. The use of main water systems will be investigated once planning permission is obtained and prior to construction.

It is proposed to include a hydrant system around the site, this will include a number of hydrants at suitable locations and piping to connect these to a water supply. Details of this measure can be provided to HWFRS during the final construction design phase, to ensure correct details are provided.

Containment of Contaminated Water

It has been highlighted the potential environmental risk in terms of flooding and drainage during and following a fire incident utilising water. Fire runoff water will, therefore, need to be retained on site and treated and/or removed. This procedure will be detailed and confirmed as part of future work. At this planning stage, it is considered that a viable option would be to retain fire water within the site area with no discharge off-site to watercourses.

There is scope to line the ground underlying the developed areas of the site with impermeable geomembrane to prevent direct infiltration to ground water and run off. Fire water runoff could then be directed to a sump area where it would be remediated or removed from site.

The volume of runoff generated whilst extinguishing a fire has not been confirmed and the amount of storage provided would not be known at this stage. This would be assessed to address the requirements of the below condition relating to an emergency response plan.

Safety signage to reflect the above points will be positioned at the entrance to the site and this will be confirmed within the emergency response plan as set out below.

Proposed Conditions

Based on comments from the Council and HWFRS, it is proposed to include the following condition to ensure suitable details relating to fire safety are provided to both parties, prior to the full construction of the proposal.

"Prior to the installation of any energy storage containers an emergency response plan shall be submitted to and agreed in writing by the Local Planning Authority. The emergency response plan should include details of the hazards associated with energy storage containers, embedded safety mitigation measures, isolation of electrical sources to enable firefighting activities, measures to extinguish or cool batteries involved in fire, management of toxic or flammable gases, minimise the environmental impact of a loss of control incident, containment of fire water run-off, handling and responsibility for disposal of damaged batteries, and establishment of regular onsite training exercises. The development shall be completed and operated in all respects in accordance with the emergency response plan as may be approved."

I hope the above and contents of the accompanying battery safety management plan satisfies comments made, however, we would welcome a meeting with all parties to discuss the contents of this letter and if any further amendments or details are required.

Should you have any questions on the above details, please do not hesitate to contact me on the details provided below.

Yours faithfully,



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