

Lead Local Flood Authority
Staffordshire County Council
Staffordshire Place
Tipping Street
Stafford
ST16 2DH

Date: 13/02/2026

Dear Sir/Madam

Cellarhead Battery Energy Storage System (BESS) – Surface Water Responses to LLFA Queries

We write in response to comments received from the LLFA (dated 30th December 2025) in regards to planning application ref. DOC/2025/0103 for the discharge of Condition 20 (Drainage) in relation to SMD/2022/0548.

The LLFA requested additional information on mitigation measures for dealing with emergencies, such as serious spillages and / or the containment and removal of firefighting water following the suppression of a fire.

Surface water from the facility is proposed to be disposed of via infiltration which is the highest discharge location in the hierarchy providing the most sustainable option for surface water drainage.

Fire Water

The National Fire Chiefs Council (NFCC) draft guidance acknowledges that modern BESS fire protocol comprises letting the combusting unit burn out.

Leading BESS manufacturers are adopting this defensive strategy for dealing with a potential fire with the conclusion that attempting to extinguish a burning unit will have minimal effect and will only prolong / slow down the event. The approach is acknowledged as being the safest and most controlled strategy whilst ensuring fire does not spread to neighbouring units.

Firewater at Cellarhead BESS would only be used for perimeter cooling of adjacent BESS units if necessary. Therefore, no firewater will be applied to burning units and as a result spent firewater will not be contaminated by the burnt battery matter. Given this, runoff does not require additional treatment before passing through the infiltration system.

Contaminated Water

To prevent any contamination from any proposed generators that maybe used during the lifetime of the development, both during operation and refueling, generators will all be bunded and provided with drip trays to collect any spills or leaks. This has now been included within the management and maintenance plan.

The areas of graveled surfacing around the battery containers will be subjected to very limited maintenance vehicle movements during the lifetime of the development which will limit the potential for contamination to occur as a result of traffic movements. These graveled areas will act like a permeable pavement where any contaminants will be collected within the open graded aggregate. A biofilm will then likely form within the open graded aggregate that will begin to break down and treat any contamination. The presence of the permeable pavement will ensure that the groundwater is protected from major contamination. Research over the years has shown that SuDS features can positively treat runoff and ensuring that clean water is created as a result.

Looking at the groundwater level, there will be 1.5m of unsaturated material between the perched groundwater encountered at the site. The regional groundwater is much deeper and will not be connected to the shallower perched level. There will be a further unsaturated zone between the shallow perch groundwater level and the regional groundwater. The unsaturated zone will also provide attenuation for any contaminants that do get through the permeable pavement to ensure that the groundwater is protected.

By utilising a permeable surface within the development, the Applicant is designing the development to mimic the natural pre-development drainage patterns while utilising SuDS to provide the treatment of any runoff.

The BESS area would be classified as a low pollution hazard level in accordance with the SuDS manual due to the majority of the area having commercial roofs from the battery units and the site being low trafficked and not being subject to frequent changes <300 traffic movements a day. The permeable paving will provide sufficient mitigation indices for a low risk site infiltrating into the ground due to the presence of the unsaturated zone in accordance with the SuDS manual.

A penstock valve has been added into the chamber prior to the infiltration basin to allow for shut off if required. The bunging of pipework within chambers has been left in the maintenance plan as an additional mitigation measure if this was deemed necessary during the lifetime of the development. The incorporation of the penstock valve will ensure that in an unlikely contamination event within the development area, any contaminated water drained to the infiltration basin and can be isolated before it reaches the basin as in this area the water would not pass through the open graded stone layer to benefit from that treatment layer.

Given the above, it is considered that there will be sufficient mitigation against any contaminants that maybe present in any runoff water with the open graded aggregate providing treatment and a shut off valve included for the infiltration basin.

Yours Faithfully

J. Davies

Jack Davies
Principal Engineer
For and on behalf of Sirius Environmental Ltd

Enc :
Maintenance Plan Rev 1 (Ref : SRE1165/MS/01 R1)
Drawing SRE1165/02/01 R2
Drawing SRE1165/02/04 R2