Planning Inspectorate

[via PINS portal]

Our ref: XA/2025/100338/05-L01
Your ref: EN010157

Date: 31 October 2025

ENVIRONMENT AGENCY RESPONSE TO DOCUMENTS SUBMITTED AT DEADLINE 3.

PEARTREE HILL SOLAR FARM, EAST YORKSHIRE.

This response constitutes the Environment Agency's (EA) Deadline 4 response. We have reviewed the Deadline 3 submissions, and particular, the:

- Updated draft Development Consent Order (Revision 7) [REP3-005 & REP3-006]
- Updated Commitments Register (Revision 5) [REP3-022 & REP3-023]
- Updated Construction Environmental Management Plan (Revision 5) [REP3-026 & REP3-027]
- Updated Decommissioning Environment Management Plan (Revision 4) [REP3-028 & REP3-029]
- Environmental Statement Addendum (Revision 5) [REP3-037 & REP3-038]
- Applicant's Response to Deadline Submissions [REP3-039]

Following our review, we have the following comments in relation to the remaining issues that were previously raised within our Relevant Representation [RR-005].

A summary of our position is provided within Appendix A to this letter.

Outstanding Issues

EA16 – Surface Water Drainage Strategy

This issue is listed as EA18 in the Applicant's Statement of Common Ground with the EA.

In the Applicant's Development Consent Order documentation and at Issue Specific Hearing 2 (ISH2), the Applicant set out their approach to the Battery Energy Storage

System (BESS) units on site and the reasons why they consider that no sealed drainage is provided for the BESS units. They have referred to their source-pathway-receptor approach to assessment, which includes:

- Dispersal of BESS units across the site

The Applicant's view is that the risk of a fire occurring is very low because the units are well dispersed across the site, reducing the risk of thermal runaway. In addition, in the event of a fire, the Applicant proposes to use a non-water-based fire suppression system.

- Watertight Containers and Gravel Bases

The Applicant claims that the escape of pollutants from the battery units is also very low, because they are designed to be watertight. In theory, this means that water cannot enter the unit and any contaminants within cannot spill out.
The Applicant also notes that they have included additional mitigation in the form of gravel bases, geotextile membranes and sand layers to absorb any pollutants that might spill out and therefore concludes that the pathway from source to receptor is very limited.

- Sensitivity of Receptor

The Applicant concludes within their Water Framework Directive Screening and Scoping Report [REP1-030] that the principal aquifer beneath the site is not sensitive.

Environment Agency Position

A significant number of BESS units are proposed within the Source Protection Zone (SPZ) 3 area, some of which are close to the SPZ2. Although the risk of a fire may be low, the consequences of pollutants reaching the groundwater could cause large-scale pollution of a protected drinking water area.

The Planning Practice Guidance on Renewable and Low Carbon Energy (paragraph 034; Reference ID: 5-034-20230814) refers Applicants to guidance produced by the National Fire Chiefs Council (NFCC)[1] when preparing their applications. In the submitted Outline Battery Safety Management Plan (oBSMP) [REP1-058], the Applicant references this guidance, and we note that Table 1 of Appendix A to the oBSMP demonstrates how the recommendations in the NFCC guidance have been complied with. The final page of the referenced NFCC guidance states that "suitable environmental protection measures should be provided. This should include systems for containing and managing water runoff." This recommendation has not been included in Table 1 of the oBSMP.

As the only guidance currently available on this matter indicates that firewater should be contained and managed and given the significant gaps in the Applicant's

[1] "Grid Scale Battery Energy Storage System Planning – Guidance for FRS"

justification for such an approach, which fails to demonstrate how contaminated firewater would be effectively managed, we consider it appropriate to require a sealed drainage system in line with the best available guidance. We have summarised our concerns around the assumptions that have been made below:

Risk of fire

While we appreciate that the approach of dispersing units across the site lowers the risk of a fire, particularly one that spreads across multiple units, it does not remove the risk of fire entirely. This means that there remains a potential source of pollution.

Loss of integrity of the containers and rainwater

According to the Applicant's oBSMP [REP1-058], the BESS containers will be equipped with deflagration panels that are designed to direct the force of an explosion upwards if gases build up inside the container. If it is raining during a fire, it is not clear how rainwater would be prevented from entering the container. If rainwater enters a damaged BESS container, it could interact with residual chemicals, potentially mobilising contaminants, such as hydrofluoric acid. We have concerns that in the event of a fire, the integrity of the container may not be maintained, and rainwater could enter exposed containers during the period of time it takes to remove or cover burnt out containers.

At ISH2, the Applicant stated that if the fire was so significant that it damaged the sides of the unit then it is likely that the fire would be so hot that any water would vaporise, but this would not necessarily be the case if rain fell in the immediate aftermath of the fire.

Paragraph 3.5.36 states that "in the event of a fire, it is highly likely that contaminants discharged would settle locally within the battery unit and not be released externally." However, the Applicant has not explained how the likelihood of the container retaining the contaminants has been determined. We require further information about how rainwater will be prevented from coming into contact with contaminants if a BESS unit catches fire and burns out.

It is not clear how, following a BESS fire, the burnt container and any contaminated gravel/drainage material will be handled to prevent the contamination being remobilised into the groundwater environment. Similarly, at the end of the battery operating life or in the event of battery fault / failure how batteries will be isolated from the BESS containers and stored in such as a way so that they do not pose another fire/drainage water contamination risk. The oBSMP [REP1-058] does not currently provide any information about management of end-of-life or otherwise damaged batteries.

Drainage from cooling adjacent BESS units

Section 3.5.17 of the Environmental Statement, Chapter 3 Proposed Development Description [REP2-075], states that four BESS containers will be sited together in each 'hybrid pack' compound, with a spacing of 3m between containers. The inter-container space is a very small area in which to attempt to control the spread of water used for boundary cooling. Rainwater and water used for plume suppression or boundary cooling could enter fire damaged BESS units, particularly if deflagration venting has been used, as shown in Plate 1-4 of the oBSMP [REP1-058], and could mobilise contamination.

The Applicant has not demonstrated how drainage of water from the cooling of adjacent units will be managed to prevent the migration of contaminants into the underlying aquifers.

Applicability of the existing conceptual site model

The Applicant has repeatedly pointed to their conceptual site model and Preliminary Risk Assessment. However, these relate to potential risks from existing contamination on the site, not from the introduction of new pollutants.

Effectiveness of gravel and sand to retard all contaminants

The Applicant is relying on guidance from Edinburgh University to demonstrate that the gravel and sand bases of the BESS units would effectively neutralise any hydrofluoric acid. The guidance presented relates to the neutralisation of hydrofluoric acid in laboratory conditions using pure calcium carbonate, presumably in the presence of laboratory grade HVAC systems. The Applicant has not demonstrated how this laboratory technique is applicable at scale in the natural environment. Paragraph 3.4.12 of the Water Framework Directive (WFD) Screening and Scoping Report [REP1-030] mentions potential contaminants other than hydrofluoric acid that could be released, but no explanation has been provided for how they will be retarded in the gravel-based infiltration drainage arrangement.

Conceptual understanding of the site

Paragraph 3.4.26 of the WFD Screening and Scoping Report [REP1-030] states that "The soils on Site are understood to be relatively deep and of low permeability across much of the Site. In addition, superficial deposits are present between the WFD groundwater body and the surface. The geology would therefore naturally restrict the pathway for the entry of contaminants from a battery fire to the groundwater body."

The Applicant has not demonstrated this conceptually or provided an explanation for how the superficial deposits will restrict the flow of contaminants to the groundwater in the Principal aquifer and Source Protection Zone 3 that underlie most the site. The site is primarily underlain by superficial Alluvium and Glaciofluvial deposits overlying the Principal aquifer, which may incorporate laterally or vertically connected granular soils.

Paragraph 3.4.25 of the WFD Screening and Scoping Report [REP1-030] concludes that it is possible that pollutants could reach surface water bodies.

Composition of the suppressant

The Applicant has been unable to provide specific details of the non-water-based suppression system, including Material Safety Data Sheets, for the proposed aerosol or gas-based suppressants (referenced in Section 5.7.1 of the oBSMP [REP1-058]), so the risks posed by these are unknown.

Efficacy of the suppressant

Paragraph 5.4.2 of the WFD Screening and Scoping Report [REP1-030] appears to infer that the application of a gaseous suppression system would suppress a thermal runaway fire effectively compared with a water suppression system, which is contradicted by the National Fire Chiefs Council (NFCC) new draft guidance document[2] which was consulted on in 2024. Section 13 of the draft NFCC guidance states:

"The suppression system, regardless of type, will have little effect on a thermal event within the battery cell. Any effectiveness they have will be in preventing cell to cell propagation, rather than fully extinguishing a fire in the cell."

We note that the draft guidance also states the following regarding the design of suppression systems and the use of inert gaseous suppression systems specifically:

"The type of suppression system should be dictated by the battery technology used within the BESS. For example, gas should not be used to compensate for the lack of availability and accessibility of water supplies at a particular site.

Gaseous suppression systems have no cooling capability ***and given that thermal runaway will continue in the absence of oxygen, they will not suppress thermal runaway****. Their use, however, has been effective in dealing with flaming combustion within enclosed spaces, which may be more appropriate for some ancillary electrical systems.*

The design and selection of a gaseous suppression system should be specific to the use of the BESS in question and designed by a competent person. Whilst a suppression system may extinguish the flaming combustion within a BESS, it could create a further complexity for firefighters in the form of a developing vapour cloud, as occurred in the McMicken incident[1]."

[1] Surprise, Arizona 2019

The oBSMP [REP1-058] should ensure that the rationale for suppression system selection is suitably justified. It should be confirmed that the design and selection of

[2] Draft Guidance on Grid Scale Battery Energy Storage Systems (BESS) - NFCC

the proposed gaseous suppression system would be designed by a competent person specific to each individual BESS compound.

Effectiveness of the drainage system in preventing contamination
The description of the gravel bases in paragraphs 3.5.41 – 3.5.44, and in paragraph 3.5.48, are inconsistent with Table 1 of the oBSMP [REP1-058] which references concrete plinths (presumably impermeable) and the area between BESS units being both impermeable and gravel covered (bottom of page 21).

The Applicant should provide further clarity on the proposed surfacing and drainage arrangements at the BESS, and provide evidence to demonstrate how the proposed gravel, sand and permeable geotextile drainage arrangement will retard the transportation of contaminants to groundwater. This should account for the potential for water to be applied for boundary cooling purposes, flooding events, and rainwater management during and following a BESS fire.

Understanding of BESS contaminants
Paragraph 3.5.47 WFD Screening and Scoping Report [REP1-030] states that "Evidence from previous BESS fires demonstrates that no contaminants were recorded, or that they were within safe or background limits." However, this has not been suitably evidenced. This section refers to a report by the US Environmental Protection Agency [Ref WFD-13], which is a news article about air monitoring following a BESS fire in the United States. It does not contain information about contaminants that are leachable to the groundwater environment. This conclusion notably differs from that in a 2024 paper[3], which concluded that runoff water from large-scale lithium-ion battery fire incidents could be potentially hazardous to the environment.

Assessment of receptor sensitivity
Paragraph 3.5.49 of the WFD Screening and Scoping Report [REP1-030] concludes that "The pathway to the receptors is limited by low permeability or deep soils as well as embedded mitigation. Finally, the receptors are not assessed as being sensitive." We are not clear how the Applicant has arrived at the conclusion that the Flamborough Chalk Principal aquifer and Source Protection Zone 3 are not sensitive receptors. Table 10.6 of the Environmental Statement, Chapter 10 Land Soil and Groundwater [REP2-077] details the receptor importance for groundwater. Principal aquifers are highly important, and SPZ3s are of medium importance. This is at odds with the sensitivity attributed in the WFD report.

EA06 – Use of culverts

[3] 'Assessment of Run-Off Waters Resulting from Lithium-Ion Battery Fire-Fighting Operations', March 2024

This issue is listed as EA23 on the Applicant's SoCG with the EA. We raised the matter of cumulative impacts of multiple culverts as a concern within our response at Deadline 2 [REP2-153].

The Applicant and EA held a meeting on 30 October to discuss this matter. Within the meeting the Applicant clarified that the crossings presented in Figure 3.6 'Indicative Culvert Crossing Points' are not all above ground new culverts and that in some locations there are existing crossing that may be able to be used. The EA has requested the Applicant makes clearer within the figure, by colour coding, where the proposed crossings and existing crossings are located.

Additionally, the Applicant signposted the EA to the hydraulic modelling that the Applicant has undertaken and confirmed that they have updated the model to include missing existing crossings. However, the Applicant has not undertaken a model run that includes the maximum possible number of new culvert crossings in order to assess the possible worst-case scenario, which was requested by the EA. The Applicant has committed to reviewing how many crossings may need to be assessed. This was suggested to be only around two new culverts which would have minimal impact.

This issue remains outstanding. However, discussions are ongoing, and we expect to be able to resolve this prior to the close of examination.

EA012 – Impacts on flood defences

This issue is listed as EA10 on the Applicant's SoCG with the EA. Within the aforementioned meeting on 30 October, the EA clarified the kind of commitments we would like to see from the Applicant in regard to mitigating any impacts on flood defences. The Applicant has confirmed they intend to update the flood risk assessment (FRA) in that regard. This issue will remain outstanding until it has been satisfactorily addressed within the FRA, but we expect it will resolved prior to the close of examination.

Issues resolved

EA07 – Culverts – post-decommissioning

This issue is listed as EA24 in the Applicant's SoCG with the EA, and this issue will be updated to 'Agreed' within the next version submitted into the examination.

The provision of new commitment 678 within the Applicant's updated Commitments Register [REP3-022 & REP3-023] and the inclusion of this measure into Table 4-1 of the Applicant's updated Decommissioning Environmental Management Plan [REP3-028 & REP3-029] (page 28) allows us to confirm that we now consider this issue to

be resolved. This commitment will ensure that the decision of whether to remove crossings or leave them in situ at decommissioning is based on an environmental risk assessment, which will use the best available information at that time.

EA20 – Abstraction / Dewatering

This issue is listed as EA06 in the Applicant's SoCG with the EA, and this issue will be updated to 'Agreed' within the next version submitted into the examination.

A Water Resources Assessment technical note was provided at Deadline 1 as Appendix 1 to the Applicant's Response to Relevant Representations [REP1-071]. This confirmed the volumes of water that would be required during construction and decommissioning.

The report indicated that rainwater harvesting and water imported to site via tanker would be potential sources of supply. Both a third party specialist provider and Yorkshire Water are named providers, but the volumes and supply to which activities from which source remains unclear. Paragraph 2.2.3 states that specific details would be agreed with Yorkshire Water ahead of construction and outside of the planning process.

The EA is satisfied that construction water demands and different water supply options have been considered, all be it minimally, and considers that sufficient information has been provided for this issue to be considered resolved. It is ultimately at the Applicant's risk if underestimation of supply options and quantities require a more detailed options appraisal outside of the planning process.

The submitted technical note did not contain any quantities required for undertaking Horizontal Directional Drilling (HDD) and this was noted by the EA in our response at Deadline 2 [REP2-153]. The Applicant has since addressed this at Deadline 3 in their Response to Deadline 2 submissions [REP3-039]. From that submission, we are satisfied that HDD demand has now been confirmed to be from mains water supply.

EA25 – Decommissioning of below ground cables

This issue is listed as EA20 in the Applicant's SoCG with the EA, this issue will be updated to 'Agreed' within the next version submitted into the examination.

We note the applicant has included a new commitment no. 678 within the Commitments Register [REP3-023] at Deadline 3 to assess the risk and determine options for leaving watercourse crossings in situ or removing them at the decommissioning stage. This commitment is secured within Table 4-1 of the updated oDEMP [REP3-029].

We trust this advice useful.

Yours faithfully

[redacted]
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APPENDIX A – SUMMARY OF EA POSITION

Subject	Work package	Scope	Method and Assumptions	Results of Assessment (i.e Impact)	Mitigation / Enhancements Agreed	Requirement	RR ID
Ecology	Biodiversity Net Gain Strategy						
	Landscape Ecological Management Plan (LEMP)					9	EA08, EA18, EA19, EA21
	Water Environment Report/ WFD						EA06, EA07
Water Resources	Water Supply Assessment						EA20, EA23
Flood Risk	Flood Modelling						
	Flood Risk Assessment						EA06, EA11, EA12, EA13, EA14, EA15, EA17
Water Quality	Outline Construction Environmental Management Plan					4	EA01, EA02
	Outline Operational Environmental Management Plan					14	
	Decommissioning Environmental Management Plan					15	
	Outline Battery Safety Management Plan					8	EA04, EA16
	Foul Water Disposal						
	Water Environment Regulations Compliance/WFD						EA06, EA10, EA24
Groundwater Protection	Outline Construction Environmental Management Plan					4	EA21, EA22, EA23
	Decommissioning Environmental Management Plan					15	EA25
	Groundwater Protection						EA09, EA16
	Contaminated Land Assessment					6	EA03, EA26
Waste	Waste Management Strategy						
Geomorphology	Water Environment Regulations Compliance/ WFD						EA06, EA07