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Environment Agency

West Midlands Area – Guidance Note for Developers and Local Planning Authorities

Battery Energy Storage Systems (BESS)

Battery energy storage systems (BESS) enable energy to be stored and then released when the power is needed most. This is particularly important for renewable energy sources, such as solar and wind, which are generated dependent on weather conditions, so energy can be stored and help electricity grids ensure a reliable supply of energy.

Lithium-ion batteries are currently the dominant storage technology for large scale BESS. Even within Lithium-ion batteries the chemistry varies, and potentially any associated risks will also change with the chemistry, or the technology being deployed. Whilst they are often located close to solar farms and wind turbines, they can also be standalone.

Electric battery storage is likely to play an important role in achieving the UK's Net Zero ambitions and it is expected that there will be high demand for the recycling and recovery of critical minerals held within batteries at end of life.

- This general advice applies to all BESS pre-planning and planning applications where we are not providing a bespoke response.
- BESS sites are not currently regulated under the Environmental Permitting Regulations (EPR). BESS also do not fall within Hazardous Substances Consent or COMAH regimes.
- In line with our consultation filter, we would not expect to be consulted upon BESS applications that do not meet a 'Reason for Consultation'. Additionally, we are a statutory consultee on applications with a formal Environmental Impact Assessment (Schedule 1 & 2). Larger BESS schemes may fall within this category.
- There may also be instances where we will provide comment, either bespoke or via Standing Advice/standard comments, based on environmental constraints on the site (flood risk, contaminated land or within a SPZ1 for example).
- For those applications that are not EIA, or where we are not making bespoke comment, the following information may assist when the Local Planning Authority (LPA) are considering the proposed development.
- This advice sits alongside our associated general pollution prevention guidance note.

Risks to the environment from BESS developments: BESS developments could present the following risks in our interest:

- They could be at risk of flooding.
- Pollution risks (including fire-related risk) to surface water and groundwater.
- The links between flood risk and pollution risk.
- Management of end-of-life batteries.

Flooding risks: Where a development is within an area of Flood Risk our Flood Risk Assessment (FRA) Guidance note and our Climate Change Guidance should be adhered to. Whilst there are instances where we may provide a bespoke comment our Flood Risk Standing Advice may be applicable when we are not consulted by the LPA.

Flood risk vulnerability classification: There is currently a lack of clarity, within National Planning Policy, regarding the vulnerability classification of BESS development. Whilst this would be a matter for the LPA to ultimately decide, it is important to note that NPPF Annex 3 is clear that wind turbines and solar farms should be treated as '**essential infrastructure'**, irrespective of whether there's an operational reason for them to be located within a flood risk area. As such, it is reasonable to expect associated BESS development to be co-located with these uses and therefore to be treated as 'essential infrastructure' in such circumstances.

For standalone BESS development, until the vulnerability classification is updated, or other guidance is provided by DLUHC (or DESNZ), we would advise that such facilities should be treated as '**essential infrastructure'** if providing 'grid and primary substations storage' (e.g. if the BESS is connected to the national grid).

In the absence of a clear steer in Annex 3, we are also inclined to accept that 'non-grid BESS' proposals (i.e. those not connected to the national grid) should be treated as **'essential infrastructure'**, especially within Flood Zone 3b (functional floodplain), unless a justified case is made otherwise. For example, a non-grid BESS serving a 'less vulnerable' development operation may follow that vulnerability classification.

Lifetime of development: Following the position in Planning Practice Guidance for non-residential/commercial development, a development lifetime of 75 years should be the starting point. While the initial batteries will be replaced in a much shorter timescale, once the use is established, there is a strong possibility the batteries in the system will be replaced with the latest battery technology. We know that once a site is used for energy generation with associated infrastructure such as connection to the national grid and for transport (road and rail connections), the site continues to have such use, albeit with different energy generation method. A conservative approach to development lifetime should be adopted and thus the impact of climate change on the development. If applicants are suggesting that a significantly shorter lifetime is to be considered (e.g. 30 years) we would recommend that a time-limited planning permission or controls that require flood risks to be re-assessed and addressed in future are confirmed.

Risk to groundwater and surface water: Under normal operation BESS developments do not present significant risks to groundwater or surface water. There is, however, potential for pollution of the water environment due to abnormal and emergency situations at BESS developments, in particular: fires. There is a risk that highly polluting chemicals in batteries could enter groundwater in firewater or rainfall. Applicants should assess risks to groundwater and the water environment, and

ensure robust mitigation is in place for containment of this water. Where possible the applicant should ensure that there are multiple 'layers of protection' to prevent the source-pathway-receptor pollution route occurring.

While in the event of a fire at a BESS, it is accepted best practice to let the containers on fire burn out, it is likely water will be used to cool neighbouring containers. This water could enter burning containers through surface run off or directly from spray cooling neighbouring containers. Furthermore, during or following a fire at a BESS development, water could enter exposed containers through rainfall during the period of time it takes to remove, or cover burnt out containers. The site must be able to accommodate an appropriately sized water storage for these events.

We would encourage the council and developer to ensure that appropriate space is available on site for firefighting water storage and containment. We would suggest that the surface water drainage system incorporates suitable measures to prevent pollution of the water environment from firefighting run-off, in the event of a fire. For example, 'containment' through tanks or appropriately sealed containment drainage (lagoons tanks or storage) systems, on impermeable surfaces to hold firewater. Use of shut off valves. Spill kits and drainage covers.

Whilst the proposed development is not currently an operation we regulate under Environmental Permitting Regulations, the following advice may be of use: Fire prevention plans: environmental permits - GOV.UK (www.gov.uk)

In line with planning practice guidance:

- Applicants are encouraged to engage with Local Fire & Rescue Services issues of siting and location of BESS are dealt with before applications are made. Ideally this should be done before submitting a planning application.
- Local planning authorities to refer to guidance produced by the National Fire Chiefs Council for consideration when determining applications and consult with local Fire & Rescue Services before issuing decisions. Matters relating to the siting and location of such facilities in the event of an incident, prevention of thermal runway and emergency services access should be considered.
- Applicants will also need to comply with relevant Building Regulations in Part B. They require applicants to provide suitable access for the fire service.

To help mitigate the risks arising from accidents or spillages, applicants should propose appropriate measures to manage activities and consider whether certain riskier activities should only be carried out within specific areas on site to reduce associated environmental risks.

It may also be important to consider the risk of failure of mitigation measures to manage identified risks. For example, the risk that a containment system to contain surface water in the event of a fire failing because of the fire. The extent of the measures taken to assess and manage this risk may depend on the sensitivity of the groundwater or surface water bodies affected.

Management of risks from land contamination: If the site for the proposed BESS development is contaminated land which has been designated as a special site or its previous use presents a risk of contamination that could be mobilised during construction to pollute controlled waters, we would expect a preliminary risk assessment to be undertaken and appropriate mitigation measures to be put in place. Please see our Guidance for Developers / Guidance for LPAs - Sites Affected by Land Contamination for further information.

Management of end-of-life industrial batteries: BESS falls within the scope of the UK's producer responsibility regime for batteries and other waste legislation. Operators of battery storage facilities should be aware of the Producer Responsibility Regulations. When a battery within a battery storage unit ceases to operate, it will need to be removed from the site and dealt with in compliance with waste legislation. The party discarding the battery will have a waste duty of care under the Environmental Protection Act 1990 to ensure that this takes place. The Waste Batteries and Accumulators Regulations 2009 also apply.

Batteries must be recycled or recovered by approved battery treatment operators or exported for treatment by approved battery exporters only. Many types of batteries are classed as hazardous waste which creates additional requirements for storage and transport.

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