

BATTERY ENERGY STORAGE SYSTEMS (BESS) PLANNING CHECKLIST

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Prem Id		
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Agent		
Developer: Enso Green Holdings X Limited		
Owner: As above		
NFCC GUIDANCE	PROPOSAL (Developer)	OUTSTANDING ISSUES (Fire and Rescue Service)
INFORMATION REQUIREMENTS		
Robust Emergency Response Plan	The emergency plan will be produced to accompany the detailed Battery Safety Management Plan (BSMP). The BSMP cannot be provided at the planning stage as it is impacted by battery chemistry and other specific design details which can not be pre-determined. One of the reasons for this is the pace of developments within the sector and the time period between planning consent and commissioning.	Suggested subject to planning condition
SYSTEM DESIGN AND CONSTRUCTION		
Battery chemistries being provided i.e. Lithium-Ion Phosphate LFP or Nickel Manganese Cobalt Oxide NMC.	The BSMP cannot be provided at the planning stage as it is impacted by battery chemistry and other specific design details which can not be pre-determined. One of the reasons for this is the pace of developments within the sector	Suggested subject to planning condition

	and the time period between planning consent and commissioning.	
The Battery form factor i.e. cylindrical, pouch, prismatic	The BSMP cannot be provided at the planning stage as it is impacted by battery chemistry and other specific design details which can not be pre-determined. One of the reasons for this is the pace of developments within the sector and the time period between planning consent and commissioning.	Noted
Type of BESS i.e. container or cabinet	Container	Noted
Number of BESS containers/cabinets	80	Noted
Size/capacity of each BESS unit (in MWh)	5MWh is a working assumption but not confirmed at this time	Noted
BESS site layout	See SSRED supplied	Site layout shows groups of 4 battery containers well within 3m of each other. This does not comply with NFCC guidance. Practically, this could prevent effective boundary cooling of neighbouring containers in the event of a fire.
Evidence that site geography has been taken into account i.e. prevailing wind conditions	See SSRED supplied	Access to South compound does not appear to consider prevailing wind conditions.
Access to and within the site for FRS assets	See SSRED supplied	Noted
Fire-resisting design features	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Fire suppression systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
On site water supplies	See SSRED supplied	
Smoke or fire detection systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Gas or specific vapour detection systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Temperature management systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Ventilation systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.

Exhaust systems and deflagration venting systems	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Identification of any surrounding communities, sites and infrastructure that may be impacted because of an incident	See SSRED supplied	Noted
TESTING		
Details of any evidence based testing of the system design should be requested; i.e. results of UL 9540A testing.	The final design will be tested to UL 9540A standards	Suggested subject to planning condition
DESIGN		
Rack layout	To be included in detailed BSMP	Suggested subject to planning condition
Thermal barriers and insulation	To be included in detailed BSMP	Suggested subject to planning condition
Container layout and access arrangements	To be included in detailed BSMP	Suggested subject to planning condition
DETECTION AND MONITORING		
Is there early detection of a fault within the batteries with immediate disconnection of the affected battery/batteries; i.e. Provision of an effective Battery Management system and/or a specific electrolyte vapour detection system.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Should thermal runaway conditions be detected is there a facility in place for the early alerting of emergency services.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Are detection systems in place for other fires which do not involve thermal runaway i.e. fires involving electrical wiring.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.

Is continuous combustible gas monitoring within units provided. Gas detectors should alarm at the presence of flammable gas, shut down the ESS, and cause the switchover to full exhaust of the ventilation system.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Are external audible and visual warning devices such as cabinet level strobe lights linked to the Battery Management System when a thermal runaway event is identified and the detection and suppression system activation	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
SUPPRESSION SYSTEMS		
Are suitable fixed suppression systems installed in units in order to prevent or limit propagation between modules	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Where a suppression system is not required then this decision should be supported by an evidence based justification and Emergency Response Plan that is designed with this approach in mind	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
The choice of suppression system should be informed by liaison with a competent system designer who can relate the system choice to the risk identified and duration of its required activation; such a choice must be evidence based	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Any calculations for sufficient water supply for an appropriate suppression system will need to be completed by a competent person considering the appropriate risk and duration of any fire	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.

Has water run-off and potential impact on the environment, along with mitigation measures been considered and detailed in the Emergency Response Plan	To be included in the Flood risk assessment submitted with the planning application	Insufficient information to ascertain whether NFCC guidance will be met.
Lack of sufficient water supplies at a particular site location should not be considered as the basis for a suppression system choice		
DEFLAGRATION PREVENTION AND VENTING		
Are BESS containers fitted with deflagration venting and explosion protection appropriate to the hazard	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Will flames and materials discharged because of any venting directed outside to a safe location and should not contribute to any further fire propagation beyond the unit involved. Exhaust systems designed to prevent deflagration should keep the environment below 25% of Lower Explosive Limit.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
ACCESS		
Have at least 2 separate access points to the site to account for opposite wind conditions/direction.	Two access points are provided, see the SSRED supplied	Only one access point to the south compound, splitting well within 25m of the nearest battery container. This would not allow clean air approach in the event of a Westerly to Southerly wind.
Are roads/hard standing capable of accommodating fire service vehicles in all weather conditions.	Yes	Noted
Have perimeter road or roads with passing places suitable for fire service vehicles been provided.	Yes	Noted
Road networks on site must enable unobstructed access to all areas of the facility.	Yes	Noted
Turning circles, passing places etc. size to be advised by FRS depending on fleet.	Yes	Noted

Access between BESS units and unit spacing: Suitable access for firefighters to operate unimpeded between units will be required. This should allow for the laying and movement of hose lines and such access should be free of restrictions and obstacles.	Yes	Site plan appears to show adequate layout.
A standard minimum of 6m between units is suggested.	A minimum of 6m will be provided	Site layout shows groups of 4 battery containers well within 3m of each other. This does not comply with NFCC guidance. Practically, this could prevent effective boundary cooling of neighbouring containers in the event of a fire.
It is recommended to not stack containers/units on the basis of the level of risk in relation to fire loading, potential fire spread and restrictions on access.	No stacking will occur.	Noted
Is the distance from BESS units to occupied buildings and site boundaries a minimum of 25 m is proposed prior to any mitigation such as blast walls	The nearest buildings are 100m away	Noted
Reduction of distances may be possible in areas of lower risk e.g. rural setting		Insufficient info to justify any spacing reduction to comply with NFCC guidance.
WATER SUPPLIES		
As a minimum hydrant, supplies for boundary cooling purposed should be located close to BESS containers and should be capable of delivering no less than 1900 litres per minute for at least 2 hours	A minimum of 1900 litres per minute for at least 2 hours will be achieved through the provision of water tanks	More detail required
Water supply for any automatic suppression system will be covered by relevant British Standard or equivalent	Yes	Insufficient information to ascertain whether NFCC guidance will be met.
Any static water storage tanks designed to be used for firefighting must be located at least 10m away from any BESS container/cabinet and should be clearly marked	Yes	More detail required.

Outlets and connections should be agreed with the local FRS	Yes	Noted
SIGNAGE		
Does signage include details of relevant hazards posed; the type of technology associated with the BESS; any suppression system fitted; 24/7 emergency contact information	Yes	Noted
Has at least one sign legible at night at a distance of 30m or from the site boundary, whichever is closer been provided	Yes	Noted
Has adherence to the Dangerous Substances Regulations 1990 been considered where the total quantity of dangerous substances exceeds 25 tonnes	Yes	More detail required
EMERGENCY PLANS		
Have site operators developed emergency plans and share these with the Fire and Rescue Service	To be included in detailed BSMP	Suggested subject to planning condition
Has a risk management plan been developed that includes the various hazards and risks at and to the facility and their proposed management. Any safety issues for firefighters responding to emergencies at the facility	To be included in detailed BSMP	Suggested subject to planning condition
Is there safe access to and within the facility for emergency vehicles and responders, including to key site infrastructure and fire protection systems	To be included in detailed BSMP	Suggested subject to planning condition
Is the proposed fire detection and suppression systems (e.g. water supply on site) adequate	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Are there natural and built infrastructure and on-site processes that may impact or delay effective emergency response	No	Noted
Does the Emergency Plan contain how the fire service will be alerted	To be included in detailed BSMP	Suggested subject to planning condition

Is there a facility description, including infrastructure details, operations, number of personnel and operating hours	To be included in detailed BSMP	Noted
Is there a site plan depicting key infrastructure: site access points and internal roads; firefighting facilities; drainage; and neighbouring properties	To be included in detailed BSMP	Noted
Are there details of emergency resources, including fire detection and suppression systems and equipment; gas detection; emergency eye-wash and shower facilities; spill containment systems and equipment; emergency warning systems; communication systems; personal protective equipment; first aid	To be included in detailed BSMP	Noted
Are there up-to-date contact details for facility personnel and any relevant off-site personnel that could provide technical support during an emergency	To be included in detailed BSMP	Noted
Is there a list of dangerous goods stored on site	To be included in detailed BSMP	Noted
Are there site evacuation procedures	To be included in detailed BSMP	Noted
Are there emergency procedures for all credible hazards and risks; including building infrastructure and vehicle fire, grassfire and bushfire	To be included in detailed BSMP	Suggested subject to planning condition
ENVIRONMENTAL IMPACTS		
Have suitable environmental protection measures been provided; this includes systems for containing and managing water runoff.	To be included in detailed BSMP	Insufficient information to ascertain whether NFCC guidance will be met.
Have sites located in flood zones developed details of flood protection or mitigation measures.	Will be covered in the Flood Risk Assessment submitted with the planning application.	Noted
RECOVERY		
Is there a post-incident recovery plan that addresses the potential for reigniting of ESS and	To be included in detailed BSMP	Noted

de-energizing the system, as well as removal and disposal of damaged equipment		
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