TMGEH

THORPE MARSH GREEN ENERGY HUB

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

DOCUMENT HISTORY

Rev.1

Executive Summary

This Construction Environmental Management Plan ("CEMP") document advises how potential risks associated with the development and construction at the Thorpe Marsh Green Energy Hub ("TMGEH") will be managed, thus avoiding impacts.

The CEMP sets the standards of environmental performance for the site and the criteria contained in this document forms the basis against which the site will be audited during construction.

The primary purpose of this document is to outline the various working practices that will be involved throughout the construction and operational life of the site. The CEMP is site-specific enabling factors unique to the TMGEH operation to be addressed.

The document describes how the site will be developed in an environmentally suitable manner through managing the site's environmental aspects. The scope of this CEMP covers all activities, whether conducted directly by TMGEH or indirectly by contractors and suppliers.

The CEMP is a live document and shall be reviewed and updated regularly during the project to record and manage any changes as they develop.

The TMGEH Environmental Management System (EMS) will be subject to regular audits to ensure that the management system process is implemented correctly and effectively.

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1.0 Introduction

1.1 Planning Reference Number

1.1.1 The planning application for this project was submitted to the City of Doncaster Council in March 2023. The planning reference for this project is 23/00537/FULM.

1.2 Development Site Address

1.2.1 Thorpe Marsh Green Energy Hub (TMGEH) project is located at Ash Fields Road, Thorpe-in-Balne, Doncaster, South Yorkshire. DN6 0EA. The Grid reference is SE 59479 09658.

1.2.2 The access to the TMGEH site is via: Fordstead Lane transiting adjacent to the National Grid substation on to West Circuit and then to Ashfield Road.

1.3 Project Description

1.3.1 TMGEH is a 1.45GWe Battery Energy Storage System (BESS) project.

1.3.2 The proposed project shall be constructed on brownfield land which was used to stockpile Pulverised Fuel Ash (PFA) produced from the former Thorpe Marsh Power Station, which was de-commissioned in 1994. Demolition of the power plant site commenced in 1995 and was completed in 2012.

1.3.3 The main project shall consist of 5 x 280MWe BESS arrays. Each array will connect into a 400kV banking station before connecting via an underground 400kV cable, which connects into National Grid's Thorpe Marsh sub-station.

In addition to the main project, it is proposed to construct a 50MWe BESS plant located within the fence line of the main facility.

2.0 Construction Site Management

2.1. General Management

2.1.1 It is the joint responsibility of the TMGEH site management team and their contractors to ensure the requirements of this CEMP are implemented and always maintained.

The environmental standards set out in the CEMP are key to the success of the TMGEH project and site management.

2.2 Site Management Responsibilities

2.2.1 The TMGEH site management team shall be responsible for ensuring compliance with the CEMP.

2.2.2 The TMGEH site management team will carry out inspections of working areas and surrounding areas to ensure that the requirements of the CEMP are endorsed. All anomalies shall be recorded and immediately rectified where practicable.

2.3 Environmental Documentation

2.3.1 All site related documents will be available on site and will be kept up-to date by the site management team.

2.3.2 Site environmental audits shall be undertaken to assess the site's environmental performance against the CEMP. All observations and actions shall be recorded and close out actions will be implemented.

2.4 Welfare Facilities

2.4.1 Site Offices

2.4.1.1 The site offices shall be located within a fenced area. The site office compound will be locked and patrolled by the security team during out of business hours.

2.4.1.2 There will be information signage for muster points in the eventuality of an emergency. The signage will include management contact information providing instructions on how the Site manager may be contacted if the office is unattended. The signage boards shall be located on the site access road, site office compound entrance and at strategic points around the construction site perimeter fence.

2.4.1.3 The internal and external condition of site offices will be maintained in good repair.

2.4.2 Site Welfare

2.4.2.1 The welfare facility shall be compliant with Construction and Design Management (CDM) Regulations 2015 i.e.

a) **Sanitary Conveniences** - Suitable and sufficient sanitary conveniences will be provided. Separate conveniences will be provided for both Male & Female personnel and the facilities will be made available at readily accessible places.
b) **Washing Facilities** - Washing facilities will be equipped with soap or other suitable means of cleaning, and towels or other suitable means of drying. The facility will have a supply of clean hot and cold, or warm water and will be located local to the sanitary facilities.
c) **Drinking Water** - An adequate supply of drinking water must be provided or made available at readily accessible and suitable places. Where necessary for reasons of health or safety, every supply of drinking water must be conspicuously marked by an appropriate sign.
d) **Changing Rooms and lockers** - Suitable and sufficient changing rooms will be provided or made available at readily accessible. Where necessary for reasons of propriety, there will be separate changing rooms for, or separate use of rooms, for men and women. Changing rooms will be provided with seating and adequate means of drying any special clothing and any personal clothing or effects. The facility shall, where necessary, make available a place for persons to lock away any special clothing which is not taken home, their own clothing which is not worn during working hours and their personal effects.
e) **Facilities for rest** - Suitable and sufficient rest rooms or rest areas will be provided or made available at readily accessible places. The facility be equipped with an adequate number of tables and adequate seating with backs for the number of persons at work likely to use them at any one time. The facility will

include suitable arrangements to ensure that meals can be prepared and eaten, including the means for boiling water.

2.4.2.2 Lavatories, washing, shower and messing facilities will be maintained in a clean and hygienic condition. A cleaning resource shall be engaged throughout the project to service and maintain this requirement.

2.4.3 Visitor Parking

2.4.3.1The TMGEH site car park will be physically separated from areas where mobile plant or lorries are operated or parked by installing demarcation barriers.

2.4.3.2The car park will be surfaced with either crushed stone, hard core or similar material that is fit for purpose.

2.4.3.3 Suitable visitor car parking will be provided.

2.4.3.4 All site plant will be prohibited from entering the site car park. A separate area will be provided for parking plant and site vehicles.

2.4.3.5 Bicycle racks and a number of electrical vehicles charging facilities will be provided within the car parking area.

2.4.4 Welfare Services

2.4.3.1 All drainage from sinks, showers and lavatories will be connected to a septic tank. Drainage effluent will be removed on a periodical basis via a licenced environmental waste removal company.

2.4.5 Site Lighting

2.4.5.1 All lighting rigs used on the TMGEH project site will be LED downward facing to minimise light pollution.

2.4.5.2 All floodlights on the TMGEH project site will be switched off during daylight hours. The exception to this will be any lighting required for security or safety purposes.

2.4.6 Site Security

2.4.6.1 During the construction phase Security staff will monitor the site 24/7, 365 days per year.

2.4.6.2 Security staff shall be provided with emergency and out of hours contact details.

2.4.6.3 The welfare compound will be surrounded by a security fence and warning signs; regular patrols shall be conducted.

2.5 Site Operations

2.5.1 Working Hours

2.5.1.1The working hours for the development and construction site (including equipment and material deliveries) are forecast to be 07.00 to 18.00 hours Monday to Friday and 07.00 to 13.00 hours Saturdays. The project working hours will be subject to LPA approval.

2.5.2 Traffic Management

2.5.2.1During construction, a traffic management plan will be agreed with the Local Planning Authority minimising the potential impact of construction traffic. Vehicle traffic routes and vehicle HGV numbers will be subject to LPA approval.

2.5.2.2 Abnormal Indivisible Loads (AIL)s may need to be brought into the proposed development site during the construction phase.

These types of movements can usually be planned, and the contractor will liaise with the Local Highway Authority to ensure that all required procedures and agreements are complied with.

Details of the routing strategy and procedures for the notification and conveyance of AIL, including agreed routes, and the number of abnormal loads to be delivered by road and measures to mitigate traffic impact will be agreed with City of Doncaster Council (CDC) and where relevant, National Highways (NH) abnormal loads officers.

2.5.3 Wheel Wash Facilities

2.5.3.1 A wheel wash facility will be supplied. The TMGEH site management team or their contractor will facilitate and manage this requirement.

2.5.4 Oil, Fuels, and Chemicals

2.5.4.1 Any oils, fuels and chemicals will where possible not be stored on site. If necessary, they will only be in relatively small amounts and for short time periods. These materials will be used on site within the construction machinery and any generators and stored and used in accordance with relevant (COSHH) Regulations 2002.

2.5.4.2 All oils, fuels and chemicals shall be stored in twin bunded tanks, bowsers, or acceptable containers. Specifically, ensuring that any tanks storing more than 200 litres of oil on-site, would have secondary bunding. Bunding would be specified as having a minimum capacity of “not less than 110 % of the container's storage capacity or, if there is more than one container within the system, of not less than 110 % of the largest container's storage capacity or 25 % of their aggregate storage capacity, whichever is the greater. Spill kits will be located local to each storage area and drip trays will be implemented during refuelling operations. The TMGEH site management team and their contractors will ensure competent suitably trained personnel undertake refuelling operations. Personnel will be adequately trained to deal with any potential environmental spills incurred during the filling and usage requirements.

2.5.4.3 All materials will be stored according to the Control of Substances Hazardous to Health (COSHH) Regulations 2002.

2.5.5 Deliveries

2.5.5.1 All deliveries of materials, plant, machinery, equipment, and apparatus shall be pre planned prior to arrival at site. Designated laydown and storage areas will be assigned for all deliveries.

2.5.6 Noise and Vibration

A noise impact assessment for the proposed Thorpe Marsh Green Energy Hub has been undertaken by Miller Goodall Ltd to accompany a planning application to the Local Planning Authority

The proposed Development involves reclamation through earthworks of existing material (the excavation, relocation and re-profiling of Pulverised Fuel Ash 'PFA') to facilitate the installation of battery storage units with associated infrastructure including inverters, transformers, access tracks and substation compound as well as ancillary infrastructure including fencing, security cameras, lighting and cabling.

The assessment includes estimation of site noise from the temporary earthworks that will involve the excavation, relocation and re-profiling of PFA and BESS groundworks and enabling infrastructure using the limits recommended in BS5228:2009+A1:2014 that have been adopted and the impact judged against National Planning Policy Framework (NPPF), Noise Policy Statement for England (NPSE) and Noise Exposure Hierarchy. For the operational noise from the BESS infrastructure the impact assessment has been undertaken using the methodology in BS4142:2014+A1:2019 and judged against NPPF, NPSE and Noise Exposure Hierarchy.

During the temporary earthworks phase it is estimated that the noise level will not exceed the 55dB LAeq,T upper limit during daytime working hours, which has been set only if the works are to occur in excess of six months. It will also not exceed the 65dB LAeq,T upper limit if the works can be completed in less than six months. Therefore, this complies with BS5228, and the impact is not considered to be adverse.

During the construction for the ground works for the BESS, The construction noise levels are not expected to exceed 65dB LAeq,T during the daytime (7am-7pm) at the nearest noise sensitive premises. When compliance with this limit is judged against NPSE and the Noise Exposure Hierarchy the impact is at the No Observed Adverse Effect Level (NOAEL) and complies with policy position in Paragraph 185 in the NPPF which states significant adverse impacts should be avoided and adverse impacts should be mitigated and minimised.

For the operational BESS the predicted sound levels from the battery container and inverter Heating, Ventilation and Air Conditioning (HVAC) plant as well as the 132kv and 400kv transformers has been undertaken. The predicted sound levels, using the embedded mitigation in the scheme which includes blast walls up to 9m high for the transformers. As the proposed transformer details are not yet finalised the guaranteed sound power level of the all the transformers should not exceed 87dB LwA which will be secured by design at the procurement stage by the appointed supplier. Self-screening from battery containers and assumptions as to the location of the HVAC inlet/exhaust openings1 demonstrates that the impact using the BS4142:2014+A1:2019 methodology is adverse at the nearest noise sensitive premises without the implementation of further acoustic mitigation measures.

The proposed mitigation includes reductions in sound emissions from the battery container and inverter HVAC plant which will be secured by at the procurement stage. The minimum reductions required are specified as being 5dB in each octave band from 125Hz to 2kHz.

The mitigated sound levels have been further assessed according to BS4142:2014+A1:2019 and the impact is concluded to be between low impact and less likely for adverse impact in the evening and night-time and low impact in the daytime. When the absolute predicted sound level (36dB LAeq,T) is taken into account and the assuming for an open window with people being within the dwelling during the evening and night-time period the expected internal level will be between 21-26dB LAeq,T. This is a very quiet level and would result in a final impact of Low.

2.5.6.1 Best Practicable Means (BPM) will be applied, as far as reasonably practicable, during construction works to minimise noise (including vibration) at neighbouring residential properties, active badger sets and other sensitive receptors arising from construction activities:

As noted, working hours will be limited to the times set out in section 2.5.1

2.5.6.2 All equipment will be maintained in good working order. Noise control measures will be fitted where appropriate for example, broadband reversing alarms, silencers, mufflers, and acoustic hoods to reduce noise where possible and limit the spread of noise to off-site receptors. Machines in intermittent use to be shut down in the intervening periods between work or throttled down to a minimum noise and vibration.

In addition, the following standard best practice will be implemented regarding noise emissions for the consented development:

• Planning deliveries and removals out of peak hours;

• Parking construction traffic off the public highway;

• Controlling the discharge of trucks from site to avoid congestion;

• Implementing traffic management systems at the entrances to the site at all times to control the traffic into the site;

• Maintaining the 2.4 m site hoarding around the site boundary to screen noise from low level sources and/or street level receptors;

• Agreeing working hours with the LPA;

• Using ‘silenced’ plant and equipment wherever possible and maintaining plant on a regular basis;

• Selecting electrically driven equipment where possible in preference to internal combustion powered; hydraulic power in preference to pneumatic; and wheeled in lieu of tracked plant;

• Regularly maintaining plant;

• Operating plant at low speeds where possible and incorporating automatic low speed idling;

• Siting noisy activities away from sensitive receptors, where possible;

• Temporarily screening or enclosing static noisy plant to reduce noise emissions and certifying plant to meet relevant standards;

• Implementing noise monitoring to accord with maximum levels set out in the ES;

• Minimising disturbance from reversing bleepers through measures such as site layout, provision of screening or use of broadband sound emitting reversing alarms;

• Switching off vehicle engines where vehicles are standing for an extended period of time;

• Lowering materials whenever practicable rather than dropping; and

• Making all contractors familiar with the guidance in BS 52288 which would form a pre-requisite of their appointment.

2.5.6.3 Pumps, generators and lighting sets will be located to ensure that they are inaudible at the nearest noise sensitive premises.

2.5.6.4 The quietest working equipment available will be utilised, e.g., electric/battery powered equipment where possible.

2.5.6.5 All construction activities will be undertaken in accordance with good practice as set out in BS 5228:2009 (amended 2014).

3.0 Prevention of Dust and Air Emissions.

3.1 Cut and Fill of Earthworks Phase.

3.1.1 The cut and fill earthworks phase (including the excavation, relocation, and compaction of the existing PFA on site) has a potential for fugitive dust emissions , due to the mechanical action of separating the material using plant, machinery, and equipment.

3.1.2 Dust monitoring shall be reviewed by the TMGEH site management team and their assigned contractors throughout the duration of the project. Dust suppression measures will be employed via water dampening down systems if and as required.

3.1.3 All potential complaints on dust /air quality shall be recorded with the root cause being identified and appropriate measures taken to reduce emissions in a timely manner.

This shall include the following measures:

• Display name and contact details of responsible person for dust issues on site boundary in addition to head / regional office contact information;

• Display the head or regional office contact information;

• Record all complaints and incidents in a site log;

• Take appropriate measures to reduce emissions in a timely manner, and record the measures taken within the log;

• Make the complaints log available to the Local Authority if requested;

• Record any exceptional dust incidents on or off site;

• Hold regular liaison meeting with other high-risk construction sites within 500 m;

• Undertake daily on and off-site visual inspections where there are nearby receptors;

• Carry out regular inspections to ensure compliance with the contractors dust management plan and record results in the site log book;

• Increase the frequency of inspections during activities with a high potential to create dust or in prolonged dry weather;

• Avoid run off water and mud

• Enforce an on-site speed limit of 15 mph on surfaced roads and 10 mph on unsurfaced areas;

• Ensure adequate water supply for effective dust and particulate matter suppression;

• Ensure vehicles entering and leaving the site are appropriately covered;

• Inspections of haul roads to be recorded in site log, including any remedial action taken;

• Implement a wheel washing system;

• Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit;

• Access gates to be located at least 10 m from the receptors where possible;

• Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos; • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust;

The Developer's nominated representative will ensure that all necessary precautions are taken to prevent the occurrence of smoke emissions or fumes from site plant or stored fuel oils for safety reasons and to prevent such emissions or fumes drifting into sensitive receptor areas. Plant will be well maintained, and measures taken to ensure that it is not left running for long periods when not directly in use.

The Developer's representative will ensure that any process and or equipment that require an environmental permit under The Pollution Prevention and Control Act 1999 and The Environmental Permitting (England and Wales) Regulations 2016 are operated in accordance with the conditions of that permit.

4.0 PFA Management

4.1 PFA Handling

4.1.1 PFA material handling activities at TMGEH will occur at the active PFA relocation areas, associated with excavating and tipping of material into the dump trucks, and handling at the loading areas. Material will be deposited from the dump trucks and then handled by wheeled loading shovel.

4.1.2 Material handling can be suitably controlled using common dust control techniques and mitigation, such as: reduced drop heights, dampening of surfaces and material, covered lorries, avoidance of double handling and the number of plant and machinery required.

4.2 PFA Storage

4.2.1 There will be temporary stockpiles of PFA on the site prior to it being relocated to a permanent fill area. No PFA shall be removed from the site boundary.

4.2.2 The process of stockpiling PFA is prone to generate dust. To mitigate this water bowers fitted with a rain gun will be used to spray the active working area to prevent dust arising.

In general terms PFA is pozzolanic and the formation of a cementitious crust on PFA from damping down is known to be effective at preventing dust-blow. The main

considerations in the prevention of dust-blow are that the surface must be wetted through a controlled application using artificial sprays as necessary i.e. typically during prolonged dry weather. However, it will be necessary to not excessively water the PFA and create a slurry. Detailed controls on the working methods and mitigation controls should be documented in the Earthworks Contractors Method Statements.

5.0 Concrete Washout

5.1 Cement, and concrete washout water can have a detrimental effect on watercourses. The following management will prevent washout water from entering watercourses.

a) Lorries will deliver pre-mixed concrete to the site and pour the concrete directly into the prepared excavations.
b) For concrete washout purposes a pit or skip lined with an impermeable sheet and granular fill to assist in the settling process for concrete washout will be located near the construction compound, away from water courses.
c) Wastewater from this process shall be reused as much as possible to wash out additional loads and removed for offsite licenced disposal.

6.0 Waste Management

6.1 TMGEH may produce relatively small amounts of both municipal / general waste from the site offices and hazardous wastes from the items of machinery on site. Hazardous wastes that may be produced because of the construction phase include engine, hydraulic and transmission oils along with oil filters and absorbents.

6.2 The TMGEH site will be registered with the Environmental Agency as a producer of hazardous waste.

6.3 A labelled, double-skinned waste oil tank will be provided for the collection of any waste engine, hydraulic and transmission oils. The waste materials will be removed from site by registered waste carriers to a waste management facility licensed to receive such waste and hazardous waste consignment notes will be completed and retained.

6.4 All waste shall be stored more than 10 metres away from any ditch, water lagoon, watercourse, or pond.

6.5 Different types of hazardous waste shall be stored separately in labelled containers for example drained engine oil filters and oil absorbents.

6.6 All hazardous waste produced on site shall be removed from site by registered waste carriers to a waste management facility licensed to receive such waste and hazardous waste consignment notes will be completed and retained.

6.7 All controlled non-hazardous waste produced on site shall be stored in designated lidded skips, separate from the hazardous waste.

6.8 All controlled non-hazardous waste shall be removed from site by registered waste carriers to a suitable licensed waste management facility and duty of care waste transfer notes will be completed and retained.

6.9 Bonfires and the burning of waste in the open will be prohibited.

7.0 Drainage and Water Treatment

7.1 It is proposed that surface water would be managed via a below ground perforated pipe collection system (French Drain). The pipe work shall run into attenuation storage ponds with discharge volumes to surface waters into Thorpe Marsh Drain. The water volumes in the ponds shall be controlled via means of a Hyrdabrake system The works will comply with applicable construction guidance and the Environment Agency's Guidance on Pollution Prevention (GPP).

7.2 Runoff during the construction period will be managed appropriately in line with the Environment Agency's Guidance on Pollution Prevention (GPP) and good practice.

The Contractor will comply with BS6031: 2009 Code of Practice for Earthworks, regarding the general control of site drainage during the construction activities and develop a method statement for control of surface waters during construction.

The Developer's nominated representative will work with the Lead Contractor and others involved in the site to ensure, that flood risk is managed safely throughout the construction period including use of the Environment Agency flood warning system and alerts, managing access and egress points and controls regarding excessive surface water generation on-site, to be defined further in the contractor's method statements.

The Contractor will ensure that any water that has come into contact with contaminated materials will be disposed of in accordance with either the appropriate waste regulations (if locally contaminated and requiring segregation), or the Water Industries Act 1991 (if discharged to sewer) and the Water Resources Act (if discharged to controlled waters, including being subject to controls and testing to confirm suitability prior to discharge) and all other related regulations and to the satisfaction of the EA and local water company.

PFA will be placed and compacted in layers to form a development platform with sloped sections and perimeters. This may involve the construction of profiled earthwork gradients in conjunction with temporary grips (channels) to control run-off. PFA is pozzolanic; so that when moistened PFA is exposed to the air its surface hardens to form a cemented skin that helps stabilise and retain PFA particles within the earthworks structure.

The formation of the cementitious skin on deposits of PFA prevents a large percentage of surface water from infiltrating through the mass of PFA and leaching contaminants. The earthworks contractor should always take precautions to allow settlement and filtration of the surface water run-off from the site. In this regard earthworks contractors will be responsible for putting together approved Method Statement(s) including measures to manage the environmental impacts of surface water run-off.

8.0 Ecology

8.1 Ecological surveys for various species have been undertaken and completed prior to the submittal of the planning application. Any mitigation measures suggested by the ecology survey team for each species will be employed during the construction phase to avoid any potential impacts.

8.2 A pre-construction Site walkover will be undertaken in advance of mobilisation/any potential advance works to re-confirm the ecological baseline conditions and to identify any new ecological risks.

9.0 Complaints and Incidents

9.1 Any complaint received will be logged at the TMGEH site offices. Complaints and incidents will be investigated and any necessary corrective and/or preventative action will be taken and recorded.

Actions:

a) A contact email address will be distributed to occupants of neighbouring premises before site operations commence. This detail will be posted on the signage boards located at the site offices and at strategic locations around the perimeter fence of the construction site. The contact details are TBC and subject to final permit details.

b) All complaints and incidents shall be investigated, resolved, and closed out by the TMGEH site management team.

c) All complaint closed out actions shall be fed back to the originator of the complaint.