PELHAM SPRING SOLAR FARM

ENVIRONMENTAL STATEMENT

MAIN STATEMENT

CHAPTER 8 – MISCELLANEOUS MATTERS

On behalf of Low Carbon Solar Park 6 Limited

Date: December 2022

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision

8 MISCELLANEOUS MATTERS

8.1 INTRODUCTION

8.1.1 This chapter of the Environmental Statement describes and assesses the likely significant effects of the development in term of:

- Major Accidents and Disasters
- Climate Change
- Waste Arisings

8.2 MAJOR ACCIDENTS OR DISASTERS

8.2.1 The development is not likely to cause a significant accident or risk of disaster during either the construction, operation or decommissioning phases. In the context of this section, as set out in the IEMA's guide Major Accidents and Disasters in EIA: A Primer, dated September 2020 (copy provided at Appendix 8.1), typical methods employed within EIA to define significance are not applicable. By definition, a major accident or disaster would have a significant effect on the environment. Accordingly, any risks that could result in a major accident or disaster without suitable mitigation, management or regulatory controls in place will be assessed as significant.

8.2.2 The significance criteria for major accidents and disasters has therefore been based on professional judgement of the Applicant and their consultant team. This is an accepted approach as set out in the IEMA's guide Major Accidents and Disasters in EIA: A Primer, dated September 2020. The IEMA defines major accidents as *"Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events"* (Source - Major Accidents and Disasters in EIA: A Primer dated September 2020). The IEMA continues to define significant environmental effect (in relation to a major accidents and/or disasters assessment as *"Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration".*

8.2.3 For the purpose of this assessment, major accident or disaster has been defined as an event that threatens immediate or delayed loss of life or permanent injury/or serious long lasting or permanent damage to the environment and requires the use of resources beyond those of the Applicant to manage. These could be internal to the development or an external event, not in the applicant's control, that could affect the proposed scheme. Disaster has been defined as a naturally occurring phenomenon such as an extreme weather event (e.g. storm or flood) or ground related hazard events (e.g. subsistence or landslides). Major events therefore includes both man-made and naturally occurring events.

8.2.4 The assessment of the reasonably foreseeable worst-case environmental consequence is the likelihood for significant effects.

8.2.5 With regards to vulnerability, low consequence events do not meet the definition of major accidents or disasters. For example, minor spills which may occur during construction, but would be limited and temporary in nature would not meet the definition of a major accident. These low consequence / or low risk events would not threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment that require the use of resources beyond those of the client or its appointed representatives to manage. These have therefore been scoped out of the assessment and would be dealt with at the appropriate time, such as through the Construction Environmental Management Plan during construction.

8.2.6 The risks and potential effects that are knowingly caused by the Proposed Development which can be quantified and assessed, such as noise and potential for traffic accidents are also taken into account within other documents supporting the application and as such haven't been replicated in the Major Accidents and Disasters assessment. Such events would also be dealt with under the Applicant's compliance with environmental working practices and legislative requirements, including: -

- Construction (Design and Management) Regulations 2015. The Construction (Design and Management) Regulations 2015 (CDM Regulations) place legal duties on almost all parties involved in construction work. The regulations place specific duties on clients, designers and contractors, so that health and safety is taken into account throughout the life of a construction project from its inception to its subsequent final demolition and removal. Under the CDM Regulations, designers have to avoid foreseeable risks so far as is reasonably practicable by eliminating hazards during the three phases of development namely, the construction phase, its proposed use / operational phase; and, subsequent demolition / site restoration.

- Management of Health and Safety at Work Regulations 1999 - The Management of Health and Safety at Work Regulations 1999 reinforce employer's duties to manage health and safety and apply to all work activities. The principal of risk based assessment provides the cornerstone for management of health and safety and all employers are required to undertake risk assessments.

- Health and Safety at Work etc. Act 1974 - The Health and Safety at Work etc. Act 1974 provides the framework for the regulation of workplace health and safety in the UK. It places general duties on employers, people in control of premises, manufacturers and employees. The overriding principle is that foreseeable risks to persons will be reduced so far as is reasonably practicable.

Construction and Decommissioning

8.2.7 The risk both to construction workers and the general public is low and not significant during the construction and decommissioning phases. This would be regulated by the Health and Safety Regulations and the construction (Design and Management) Regulations 2015. The construction phase would be managed in accordance with the Health and Safety at Work Act 1974 and would comply with all other relevant Health and Safety Regulations, including the Construction (Health, Safety and Welfare) Regulations 1996 and Electricity Safety, Quality and Continuity Regulations 2002.

Operational Phase

8.2.8 When operational the majority of the development comprises solar PV modules which are inert. Electrical infrastructure will be located across the development , in the form of inverters, transformers and cabling, all of which will be subject to routine maintenance to avoid risk of accident or disaster.

8.2.9 The substation compound will have a concentration of electrical infrastructure which will include the substation and transformers all of which will be subject to their routine maintenance regime. Accordingly, it is not considered to pose a significant risk of creating an accident or disaster.

8.2.10 The battery technology proposed is Lithium based which is the basis for all manufacturers. The cells themselves are to contain materials in the event of a failure and sit within a wider containerised package providing added protection in the event a cell was to fail. All battery manufacturers have inherent electrical and fire suppression systems that prevent failure from leak, overheating and 'trips' which are automatically activated under circumstances which put the equipment outside of parameters. As well as electrical and fire control systems each cell module has a HVAC system that actively cools the batteries reducing the chances of issue under operation. The UK Government has widely recognised the use of this technology across its energy strategy which speaks about the practicality and safety of its widespread implementation in the UK. Health and safety of these sites are of paramount importance which is why there are numerous procedures and design features put in place to combat hazards.

8.2.11 There are many mitigation measures in place both in the form of legislation and the Battery Energy Storage System ('BESS') design itself to mitigate against chemical leakage from the BESS. In terms of legislation all Lithium-Ion batteries must be transported in accordance with UN 38.3 to which the UK is a signatory. Safe transportation ensures no damage to the batteries prior to use. The BESS will be constructed in accordance with the International Electrotechnical Commissions standards for Electrical Energy Storage Systems. Details of these standards are listed below.

- Allianz Risk Consulting (ARC), Tech Talk Volume 26 (2019). Battery Energy Storage Systems (BESS) using Li-ion batteries
- Institute of Engineering and Technology - Code of Practice for Electrical Energy Storage Systems (August 2017)
- The Energy Institute: Battery Storage Guidance Note 1 - Battery Storage Planning (August 2019)
- Safety requirements for grid-integrated EES systems — Electrochemical based systems. IEC 62933-5-2:20204 National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, 2020 edition5
- UN 'Recommendations on the Transport of Dangerous Goods' – Section 38.3 covers Lithium-Ion Batteries

8.2.12 During the operation of the BESS each of the lithium-ion cells are constantly monitored to ensure optimal performance and temperature. The battery racks which contain the lithium-ion cells within the BESS will be designed and tested to conform with the requirements of UL9450(A) which is the strictest fire regulation

in place today for BESS. The battery management system within the BESS can detect temperature rises also known as thermal runaway, which allows the cells to be remotely shut down to avoid cell failure. As a further layer of mitigating features the BESS and HVAC units will have an internal fire suppression system within each rack which is activated when the smoke and heat detectors within each rack are triggered. The Government, through its publication 'Proposals regarding the planning system for electrical storage' also acknowledge that battery storage has relatively low planning impacts when compared to other forms of generation and 'it therefore tends not to have significant local impacts that would make it difficult for local authorities to balance against national benefits'[1].

8.2.13 Overall, no potential has been identified for the development to lead to increased risk of a major accident or disaster in isolation or in combination with other developments.

8.3 CLIMATE CHANGE

8.3.1 The Environmental statement should also include description of the likely significant effects the Proposed Development has on climate and the vulnerability of the project to climate change.

8.3.2 With regards to vulnerability to climate change, the solar modules are designed to capture the sun's energy and therefore built to withstand extreme climatic conditions and are purposefully located in open locations. The site is not located within a coastal location and as such is not at risk to sea level changes. The framework holding the modules are driven into the ground at an appropriate depth which responds to site specific ground conditions and are designed to accommodate the predicted relatively small change in wind speed during the lifespan of the development.

8.3.3 The absence of intensive farming activity will provide the following benefits which serve to reduce soil compaction and runoff rates from the site:

- the field will not be left without vegetation coverage in the winter (if in arable production);
- the field will not be intensively trodden or over grazed; and
- the field will not be regularly traversed by heavy machinery[2].

8.3.4 The UK Government has set ambitious targets for reducing greenhouse gas emissions by 2050. The Proposed Development, in conjunction with other renewable energy developments, will contribute to the UK's aims to reduce carbon emissions and achieve its ambitious greenhouse gas emissions reduction targets. When operational, the Proposed Development will generate electricity from a renewable source and export this to the National Grid. In the case of the development, the proposed 49.9 Megawatt (MW) array would offset the annual electricity usage of approximately 16,500 homes. The Proposed Development would provide a clean, renewable and sustainable form of electricity. It would make a valuable contribution to the generation of electricity at a local level. The scheme would add to the Council's progress in meeting its renewable energy

[1] Follow up consultation on proposals regarding the planning system for electricity storage: includes government response to original consultation (publishing.service.gov.uk)

[2] Source: Pelham Solar Farm Flood Risk Assessment.

targets as well as national and international targets.The generation of electricity from the Proposed Development will displace the generation of electricity from other conventional power sources, typically coal, oil or gas-fired electricity production as these are significantly damaging to the environment.

8.3.5 Battery storage systems will typically operate in two modes to address two areas of the electricity system by providing response services. The first mode is to provide frequency response where the battery will act quickly to respond to signals from the system operator to charge or discharge power to the grid in order to respond to imbalances in generation and load. The second mode is energy trading, where the battery will charge or discharge in response to price signals in the electricity market. This typically means that when there is an abundance of energy in the market from renewable generators (i.e. wind and solar) then the price will be low and when there is a shortage of power then the price will be high. Battery storage systems respond to this by charging up with abundant, cheaper renewable energy during the day when demand is lowest and then discharging it later in the day (usually during the late afternoon and early evening peak period) when demand is at its highest and thus the price higher. Battery storage positively compensates for the intermittency of renewable generation and contributes towards providing a secure, diverse and affordable energy supply mix.

8.3.6 The Government acknowledges that new technologies such as energy storage can open up many possibilities, helping to integrate low carbon generation, reduce the costs of operating the system and avoid or defer costly reinforcements to the network (Upgrading Our Energy System: Smart Systems and Flexibility Plan, July 2017)[3].

8.4 WASTE ARISINGS

8.4.1 This assessment identifies the environmental impacts associated with construction waste. There are no accepted criteria for determining the value (sensitivity) of construction waste arisings (including waste infrastructure). In the absence of such guidance, the materials assessment has been undertaken using professional judgement of material resources and waste specialists. Professional judgement has been applied to determine the likely significance of effects. Overall, the fundamental purpose of a waste management assessment is to characterise waste types and arisings and to identify the existing and potential methods employed for their management.

8.4.2 The significance of the effect (whether beneficial or adverse) is largely conditioned by the type, location and capacity of local and regional waste management facilities and their ability to manage waste in an environmentally responsible way.

8.4.3 Given the nature of the Proposed Development and the construction process, no significant quantities of waste are anticipated. The majority of construction equipment will be delivered to site for assembly and installation (mounting structures) and connection (solar panels).

8.4.4 The predicted quantities are set out below and are based on the construction waste management records of a 25MW solar scheme. This is presented at Table

[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633442/upgrading-our-energy-system-july-2017.pdf

8.1. The management of construction waste is discussed at Section 14 of the Outline Construction Environmental Management Plan (Appendix 4.1).

Table 8.1 predicted waste arising from construction.

Category	Type	Waste arising recorded from a 25MW solar scheme.	Predicted estimates for Pelham Solar Farm (c. 49.9MW scheme)
General Waste Exchange	12 yard skip	12	24
General Waste Exchange	RoRo – 20 yard skip	23	46
Timber Exchange	RoRo- - 20 yard skip	33	66
Card / Paper exchange	RoRo – 20 yard skip	12	24
Metal waste exchange	RoRo – 20 yard	6	12
Recyclable plastics	12 yard skip	2	4
Total skips		**88**	**176**

8.5 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

Construction Phase

8.5.1 All waste transported offsite will be delivered to the appropriately licenced receivers of such materials. Given that operators receiving any waste materials resulting from the Proposed Development will be subject to their own consenting procedures, there is no requirement for further consideration of waste to be undertaken. The proposed mitigation measures focus on promoting sustainable waste management in line with the waste hierarchy. The Outline Construction Environmental Management Plan (Appendix 4.1) sets out the waste management principles and the requirement for a Construction Waste Plan.

Operational Phase

8.5.2 During the operational phase,waste is expected to be substantially less than during the construction phase, as such effects are considered minimal and are not assessed here.

Decommissioning Phase

8.5.3 At the end of the generation period, the development would then enter a decommissioning stage. This is anticipated to take up to 6 months. Following construction and commissioning, the substation compound will be adopted and become the property of the District Network Operator, who will maintain the compound throughout the lifetime of the development. The position with regard to the 'on site' substation will therefore be reviewed at the time of

decommissioning. If there are no new or planned connections to the substation then it is expected that it will be decommissioned at the same time as the wider scheme. The decommissioning strategy would detail how the equipment and access track located within the substation compound would be removed.

8.5.4 The direct effects of the waste arising from the construction on the environment are judged to be negligible. This is because the expected type of waste arising is expected to be re-used or recycled in most cases. Any hazardous waste arisings, including waste oils, epoxy packaging, will be handled and disposed of in an appropriate manner.

8.6 ASSUMPTIONS, UNCERTAINTIES AND LIMITATIONS

8.6.1 The EIA was undertaken, and the resulting ES has been compiled, using the material made available to the EIA team by the Applicant and members of their project team, together with other readily available and publicly accessible material including existing literature and studies, as well as personal communication with consultees. All efforts have been made to ensure that the information used as a basis for the assessment is accurate and up to date. Assumptions adopted in the evaluation of impacts are reported in each of the relevant sections. However, these assumptions are often implicit and rely on expert judgement. Where technical deficiencies are known, or it has been necessary to make assumptions, these are documented.

Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

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