



# Fosse Green Energy

EN010154

## 7.8 Framework Operational Environmental Management Plan (Tracked)

Planning Act 2008 (as amended)

Regulation 5(2)(q)

Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009 (as  
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## Planning Act 2008

### The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulation 2009 (as amended)

Fosse Green Energy  
Development Consent Order 202[ ]

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#### 7.8 Framework Operational Environmental Management Plan

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# 1. Introduction

## 1.1 Background

- 1.1.1 Fosse Green Energy Limited (hereafter referred to as ‘the Applicant’) is seeking consent for the construction, operation, and decommissioning of Fosse Green Energy (hereafter referred to as the ‘Proposed Development’). This requires an application for a Development Consent Order (DCO), to be submitted to the Planning Inspectorate, with the decision of whether to grant a DCO being made by the Secretary of State for Energy Security and Net Zero (hereafter referred to as ‘the Secretary of State’) pursuant to the Planning Act 2008 (Ref 1) (hereafter referred to as the ‘Application’).
- 1.1.2 This Framework Operational Environmental Management Plan (OEMP) has been prepared to accompany the Environmental Statement (ES) **[EN010154/APP/6.1]** and provides a framework for environmental management during the operational phase of the Proposed Development.
- 1.1.3 If the Application is approved, a detailed OEMP will be produced for the Proposed Development prior to the date of final commissioning of the Proposed Development. The OEMP will be prepared in substantial accordance with this Framework OEMP, as a requirement of the draft DCO and approved by the relevant planning authorities.
- 1.1.4 The aim of this Framework OEMP is to provide a clear and consistent approach to the control of operational and maintenance activities within the DCO Site (also known as the DCO Site Boundary). This document does not address construction or decommissioning activities, which are subject to separate environmental management plans and procedures. A **Framework Construction Environmental Management Plan (CEMP) [EN010154/APP/7.7]** and **Framework Decommissioning Environmental Management Plan (DEMP) [EN010154/APP/7.9]** have been prepared to accompany the Application and a detailed CEMP and DEMP will be secured through a requirement of the DCO.
- 1.1.5 An Environmental Impact Assessment (EIA) has been undertaken for the Proposed Development and an ES has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref 2). In accordance with the requirements of the EIA Regulations, the ES contains the assessment of the likely significant effects on the environment that may be caused during the operational phase of the Proposed Development and describes a range of ‘industry standard’ or best practice mitigation and operational management measures.
- 1.1.6 This Framework OEMP outlines how the operational mitigation measures included within the ES will be implemented and sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective.

- 1.1.7 It is envisaged that a detailed OEMP may be prepared, approved and implemented for individual parts of the Proposed Development. As a result, there could be multiple OEMPs prepared in accordance with the relevant parts of this Framework OEMP.
- 1.1.8 This document provides the likely structure of the OEMP(s) as well as outline information relevant to the OEMP(s). It indicates what additional information might be included under each sub-section within the OEMP(s). This Framework OEMP is designed with the objective of ensuring compliance with the relevant environmental mitigation measures set out within the ES.
- 1.1.9 The key elements of this Framework OEMP include:
- a. Introduction and an overview of the Proposed Development and associated operational programme;
  - b. Overview of the general arrangements for the operational phase of the Proposed Development;
  - c. Mitigation and management measures during operation which are to be included as a minimum in the detailed OEMP(s) or other relevant DCO control documents;
  - d. Links to other complementary plans and procedures;
  - e. Implementation details including roles and responsibilities; and
  - f. Monitoring and reporting of effectiveness of mitigation measures;
- 1.1.10 In summary, this Framework OEMP identifies how commitments made in the EIA will be translated into actions during operation of the Proposed Development and includes a process from implementing the actions through allocation of key roles and responsibilities.
- 1.1.11 The Applicant and any appointed contractor(s) will be responsible for working in accordance with the environmental controls documented in the OEMP, which is required to be substantially in accordance with this Framework OEMP, pursuant to the DCO.
- 1.1.12 This Framework OEMP has been designed with the objective of compliance with the relevant environmental legislation and the mitigation measures set out within the ES. Any additional licences, permits or approvals that are required will be listed in the OEMP(s), including any environmental information submitted in respect of them.

## 1.2 The Proposed Development

- 1.2.1 The Proposed Development will comprise the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating facility, with on-site Battery Energy Storage System (BESS) and other associated infrastructure, with a total capacity exceeding 50 megawatts (MW), along with an import and export connection to the national electricity transmission network at the proposed National Grid substation near Navenby.

- 1.2.2 The DCO Site within which the Proposed Development will be delivered is located approximately 9km to the south and south west of Lincoln City Centre, in proximity to the villages of Thorpe on the Hill, Witham St Hughs, Haddington, Thurlby, Navenby, and Bassingham.
- 1.2.3 The DCO Site is a total area of 1,368 hectares (ha) and comprises the following distinct elements:
- a. 'the Principal Site', which comprises Solar PV Array Areas and Interconnecting Cable Corridors, and contains ground-mounted solar PV panels, Solar Stations, Battery Energy Storage System (BESS), Onsite Substation, associated infrastructure, and planting and mitigation areas. The total area of the Principal Site is approximately 1,070ha; and
  - b. 'the Cable Corridor', which comprises the area of the DCO Site in which the underground electrical infrastructure, including the 400 kilovolt (kV) Grid Connection Cables will be installed between the Onsite Substation and the proposed National Grid substation near Navenby. The proposed National Grid substation near Navenby is subject to a separate application and does not form part of the Proposed Development. The Cable Corridor partly overlaps with the Principal Site, whereby the Cable Corridor covers approximately 351ha in total, overlapping approximately 53ha of the Principal Site (which covers a total approximately 1,070ha) at its south eastern extent, resulting in a total DCO Site area of approximately 1,369ha.
- 1.2.4 A full description of the Proposed Development is included in **Chapter 3: The Proposed Development** of the ES [EN010154/APP/6.1]. An overview of the Proposed Development and its environmental impacts is provided in the ES **Non-Technical Summary** [EN010154/APP/6.4].

# 2. Operational Management Environmental

## 2.1 Introduction

2.1.1 This section sets out the general arrangements for the operational phase of the Proposed Development.

## 2.2 Operational Activities

2.2.1 During the operational phase, activity within the Proposed Development will be minimal and will be restricted principally to vegetation management, equipment maintenance and servicing, replacement and renewal of any components that fail, and monitoring. It is anticipated that maintenance and servicing would include the inspection, removal, reconstruction, refurbishment or replacement of faulty or broken equipment to ensure the continued effective operation of the Proposed Development and improve its efficiency. There may also be a requirement once a year for the washing of the solar panels. This will use clean water with no added chemicals, sourced from local potable water suppliers.

2.2.2 During operation self-contained portable welfare units which store foul/wastewater for collection/emptying by specialist licenced contractors will be deployed on an ad hoc basis (e.g., if required by maintenance crews) at the further reaching sites where the use of the facilities at the Onsite Substation compound is not feasible.

2.2.3 The water supply for the operations and maintenance hub at the Onsite Substation will come from the mains supply and disposal will be to a cesspit tank emptied by specialist licensed contractor.

2.2.4 During operation, some of the construction access points will continue to be used in addition to the dedicated operational accesses. Furthermore, there will be three separate accesses for emergency services. Access proposals are shown in **Figure 3-1**, **Figure 3-2A** and **Figure 3-2B** of the ES [EN010154/APP/6.2], the **Streets, Rights of Way and Access Plans** [EN010154/APP/2.3], and further described in **Appendix 13-E: Access Appraisal Report** of the ES [EN010154/APP/6.3].

2.2.5 The operational accesses are summarised in [Table 1](#)~~Table 4~~. The majority of routine visits during the operational phase will be via vans and four-wheel drive vehicles.

**Table 1: Operational Accesses**

Access Number	Access Name	Access Purpose
O-001	Clay Lane	Operational access only
O-002	Fosse Lane	Operational access only

O-003	Haddington Lane	Operational access only
O-004	Moor Lane	Operational access only
O-005	Fen Lane (East)	Operational access only
O-006	Fen Lane (West)	Operational access only
O-007	Clay Lane (Norton Disney)	Operational access only
E-001	Morton Lane	Emergency access only
E-002	Bassingham Road (West)	Emergency access only
E-003	Aubourn Moor	Emergency access only

2.2.6 Along the Cable Corridor, operational activity will consist of routine inspections (with a schedule for these to be determined post-consent) and any reactive maintenance such as where a cable has been damaged.

2.2.7 During general operation and maintenance, the Proposed Development is expected to generate a low level of vehicle trips. As a reasonable worst-case scenario, the Proposed Development will be serviced by a nominal number of staff (up to four permanent staff per day), predominantly undertaking day-to-day maintenance tasks. In addition, there are expected to be around two visitors per week. Staff vehicles and those used for maintenance will primarily be four wheeled drive vehicles and vans, with HGVs rarely accessing the DCO site during the majority of the operational phase.

## 2.3 Replacement Schedule

2.3.1 During the operational phase of the Proposed Development, various solar infrastructure components will likely require replacement as shown in [Table 2-Table-2](#), based on replacement rates for similar schemes and based on the design life of the components. As components approach their design life, there will be an evaluation to determine if the components require maintenance and/or replacing. It is not anticipated that wholesale maintenance or replacement would be required but rather it would be programmed in stages to maintain the electrical export to the National Grid.

2.3.2 As above, site-wide equipment replacement will be infrequent and of shorter duration than the construction period. Site-wide equipment replacement activities are expected to generate a peak in the order of 20 HGVs (or 40 two-way HGV movements) per day and in the order of 20 staff car trips (40 two-way movements) per day, although these activities would be over a longer period (e.g. a number of months) and therefore are likely to be less. It is not anticipated that any AILs will be required. This is much lower than the vehicle trips generated during the peak construction phase, representing approximately 40% of the HGV activity and approximately 10% of car/LGV movements generated during the peak construction of the Principal Site and Cable Corridor.

2.3.3 Every 12 months from the date of final commissioning and before undertaking the maintenance for the year ahead, the Applicant will submit a planned

maintenance schedule for the year ahead to the relevant planning authorities, excluding unforeseen emergencies that require maintenance throughout the year. Unforeseen emergencies that require maintenance throughout the year are considered to include maintenance activities that are needed to be undertaken urgently for health, safety or environmental reasons in response to an event or circumstance which happens unexpectedly. As part of the maintenance schedule, the Applicant will also inform the relevant planning authority when a component is no longer operational and requires final decommissioning.

- 2.3.4 The annual planned maintenance schedule must include the following details as a minimum:
- a. The extent and nature of the scheduled maintenance;
  - b. Details of any trees that require removal and if they are proposed to be replaced;
  - c. Details of transport requirements;
  - d. The proposed timing of such maintenance; and
  - e. Confirmation that any environmental effects that are likely to arise as a result of such maintenance and the environmental controls to be implemented are not materially worse than those reported in the ES.
- 2.3.5 The Applicant will further notify the relevant planning authorities of any maintenance that has been undertaken as a result of unforeseen emergencies. Such notification shall be given as soon as practically possible but no later than 14 days from the emergency maintenance being carried out. Such notification shall include details of the extent and nature of the maintenance.
- 2.3.6 Excluding unforeseen emergencies and unless otherwise agreed with the relevant planning authorities, the Applicant will not undertake maintenance activities outside of the planned maintenance schedule.

**Table 2: Indicative Design Life of Key Equipment of the Proposed Development**

<b>Equipment</b>	<b>Indicative design life</b>
Solar PV panels	25-40 years
Inverters	15-20 years
Transformers	30-40 years
Batteries	10-15 years
Onsite Substation Equipment	30-40 years

## 2.4 Operational Programme

- 2.4.1 The construction phase is anticipated to take 24 months if multiple construction teams are mobilised simultaneously, or up to 30 months if it is built out sequentially. Subject to being granted development consent,

construction is anticipated to start in 2031 to enable completion for the agreed connection date of 2033. As discussed in **Chapter 5: EIA Methodology** of the ES [EN010154/APP/6.1], the assumed 2031 construction start date for the purposes of assessment within the ES is based upon information currently available, including the construction of the proposed National Grid substation near Navenby, which allows for the connection of the Proposed Development to the national electricity transmission network. If construction of the proposed National Grid substation near Navenby is progressed quicker than anticipated, the Proposed Development construction may commence sooner. The potential for an earlier start date would be discussed with National Grid following receipt of development consent, in the event National Grid can facilitate connection earlier than the currently offered date.

2.4.2 The Proposed Development will be operational for 60 years.

## 2.5 Control of Light

2.5.1 During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Proposed Development, and potentially at other pieces of critical infrastructure. No areas are proposed to be permanently lit. During overnight maintenance personnel will use portable lighting sources.

## 2.6 Management of Vegetation Planting

2.6.1 A **Framework Landscape and Ecological Management Plan (LEMP)** has been prepared and submitted as part of the Application [EN010154/APP/7.15].

2.6.2 The Framework LEMP provides a framework for delivering the landscape strategy and the successful establishment and future management of proposed landscape works associated with the Proposed Development. It sets out the short and long-term measures and practices that will be implemented to establish, monitor, and manage landscape and ecology mitigation and enhancement (biodiversity net gain (BNG)) measures embedded in the Proposed Development design.

2.6.3 The Framework LEMP sets out the measures proposed:

- a. To mitigate the effects of the Proposed Development on landscape, biodiversity, arboriculture and heritage features;
- b. To enhance the biodiversity, landscape, and green infrastructure value of the DCO Site; and
- c. To secure compliance with relevant national and local planning policies.

2.6.4 If the Application is approved, a detailed LEMP will be produced for the Proposed Development prior to the date of commencement of construction of the Proposed Development. The detailed LEMP will be prepared in substantial accordance with the Framework LEMP, as a requirement of the draft DCO, and be approved by the relevant planning authorities.

## 2.7 Recovery, Recycling and Disposing of Waste

- 2.7.1 The main waste streams will be separated on-site, prior to transport to an approved, licensed third party waste management facility for recovery, recycling or disposal.
- 2.7.2 Waste Duty of Care will be followed for all waste generated on site. All waste to be removed from the DCO site will be undertaken by fully licensed waste carriers and taken to suitably licensed waste facilities and managed in line with the requirements of the Hazardous Waste (England and Wales) Regulations (2005) (Ref 6) and the Waste (England and Wales) Regulations (2011) (Ref 7). The Proposed Development will apply the waste hierarchy, in priority order; prevention, preparation for reuse, recycled, other recovery and disposal.
- 2.7.3 The Applicant is committed to maximise recycling and reuse of the Proposed Development components at the end of their life. There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations (Ref 8). In addition, companies such as SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and the manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance (Ref 9).

## 2.8 Responding to Environmental Incidents and Emergencies

- 2.8.1 An Emergency Response Plan (ERP) will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events.
- 2.8.2 The ERP will detail the procedures for responding to incidents and emergencies on site, and any reporting

## 2.9 Security

- 2.9.1 The Proposed Development will receive several security risk management threat assessments during its development, construction, operation, and decommissioning phases. These security risk management threat assessments are conducted by suitable qualified and experienced persons (SQEP) and will determine security risks.
- 2.9.2 The Applicant recognises, and embraces, the symbiotic relationship between safety and security. The security arrangements to be present at the Principal

Site will therefore contribute to the overall safety of all who will, or may, enter the DCO site. The security arrangements will be carried out by a suitably qualified person and reviewed at identified epochs commensurate to the Security Risk rating and will further assess any changes to the security risk.

- 2.9.3 A security fence will enclose the operational areas of the Principal Site. The fence will likely be a stock proof mesh-type security fence with wooden posts and approximately 2m in height measured from the ground. Pole mounted CCTV systems will also be deployed around the perimeter of the operational areas of the Proposed Development. These would be a maximum of 3.5m in height. CCTV cameras would have fixed views and will be aligned to face along the fence line and into the Principal Site.
- 2.9.4 All new access tracks will be secured by gates, which will be set back from the public highway. Where existing access tracks are used that also provide access to residential properties, appropriate security measures will be put in place in consultation with the relevant property owner(s).

## 3. Mitigation and Monitoring

### 3.1 Purpose

- 3.1.1 This section of the Framework OEMP sets out the mitigation and management measures during operation which are to be included as a minimum in the detailed OEMP(s) or other relevant DCO control documents (see **section 4** Complementary Plans and Procedures). It also sets out monitoring requirements and the responsible party identified for each mitigation/enhancement measure or monitoring requirement. This section will be reviewed and updated following consent when the Framework OEMP is updated to the detailed version.

## 3.2 Climate Change

**Table 3: Climate Change**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
CC-O1	Greenhouse Gas (GHG) emissions from the operational energy use, fuel used for transportation of workers to the DCO Site and maintenance activities required during of the Proposed Development	<ul style="list-style-type: none"> <li>a. Increasing recyclability by segregating waste (solar PV components and materials) to be reused and recycled where reasonably practicable.</li> <li>b. Reusing suitable solar infrastructure and resources where practicable to minimise the use of natural resources and unnecessary materials.</li> <li>c. Conducting regular planning maintenance of the Proposed Development to optimise efficiency of the Proposed Development infrastructure.</li> <li>d. Operating the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible.</li> <li>e. Liaising with operational personnel for potential to implement staff minibuses and car sharing options.</li> <li>f. Switching off vehicles and plant when not in use and ensuring vehicles conform to current EU emissions standards.</li> <li>g. Embedding resilience to projected increases in temperature by selecting inverters and BESS with an adequate cooling system installed to control the temperature and continue to operate efficiently in warmer conditions.</li> </ul>	To be included in the detailed OEMP(s)	The overall responsibility will be with the Operator of the Proposed Development
CC-O2	Increase in flood risk during operation as a	<p>Appropriate standard and best practice control measures will be included in the detailed OEMP(s) which may include, but not be limited to:</p> <ul style="list-style-type: none"> <li>a. Conducting regular planned maintenance of the plant and machinery;</li> </ul>	To be included in the details OEMP(s)	The overall responsibility will be with the Operator of the



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	result of climate change	<p>b. Developing health and safety plans for operational activities to account for potential Climate Change impacts on workers, such as flooding and heatwaves. To include measures such as toolbox talks on training on dangers of extreme weather conditions;</p> <p>c. Appointing named person(s) to monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly; and</p> <p>d. Storing materials outside of the 1 in 100-year floodplain extent where feasible. If areas located within Flood Zone 2 (or 3) are to be utilised for the storage of materials, this would be done in accordance with the applicable flood risk activity regulations, if required.</p> <p>To manage flood risk during operation, the <b>Framework Surface Water Drainage Strategy</b> (presented in <b>Appendix 9-D</b> of the ES [EN010154/APP/6.3]) provides for the attenuation of surface water runoff from the Proposed Development. The following measures have been developed to further minimise flood risk to the DCO Site and surrounding areas:</p> <ul style="list-style-type: none"> <li>- Additional attenuation in the form of Sustainable Drainage Systems (SuDS) will be incorporated to control any increase in the rate of flow towards receiving watercourses including allowances for climate change.</li> </ul>		Proposed Development
CC-O3	Changes to average weather conditions and extreme weather events as a result of climate change	<p>Operators will be required to monitor weather forecasts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions. For example, works in the channel of any watercourse will be avoided or halted were there to be a significant risk of high flows or flooding.</p> <p>Operators will be required to sign up to receive the Environment Agency's flood alerts and plan works accordingly to manage extreme weather conditions such as storms and flooding, ceasing work where necessary.</p>	To be included in the details OEMP(s)	The overall responsibility will be with the Operator of the Proposed Development



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>Drainage arrangements are implemented to attenuate surface water runoff and ensure no increase in flood risk to the Proposed Development location and surrounding areas.</p> <p>Rainwater harvesting is to be implemented on site to capture potential run off.</p> <p>Suitable storage for loose materials, such as soil, to protect from high rainfall events during operation.</p> <p>Raising of critical infrastructure to be above high flood risk areas.</p> <p>During periods of maintenance works, contractors will monitor weather forecasts and sign up to receive the Environment Agency's flood alerts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions such as storms, flooding.</p> <p>The Proposed Development is designed with components that can withstand dry periods, and the landscape will be managed by controls within the Framework LEMP.</p> <p>Regular maintenance activities carried out by a contractor will provide the opportunity to monitor asset performance and condition. Key sections of electrical equipment will be monitored for signs of damage from exposure to extreme heat.</p> <p>BESS Units with adequate cooling systems installed to control the temperature and continue to operate efficiently in warmer conditions selection.</p> <p>Ensure all outdoor workers have access to indoor facilities, air conditioning, breaks in shaded areas and water breaks. Outdoor workers will have access to adequate PPE.</p> <p>Cease outdoor and non essential work if working conditions are too dangerous, and could result in injury to workers.</p> <p>Materials with superior properties for withstanding periods of less rain will be selected.</p>		



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>Infrastructure is designed to tolerate hot conditions. Equipment fitted with cooling systems where necessary, such as air conditioning units. BESS units with cooling properties to be selected.</p> <p>Weather forecasts will be monitored so any expected extreme temperatures are prepared for in advance and contingency measures can be in place to minimise disruption to operations.</p> <p>Keep stored materials away from areas of the Proposed Development with potential flood risk.</p>		

### 3.3 Cultural Heritage

Table 4: Cultural Heritage

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
CH-O1	Impacts on the setting of heritage assets associated with increased visual, light and noise intrusion.	<p>For heritage assets in the surroundings of the Principal Site, appropriate screening through new and enhanced planting has been developed and will be implemented to minimise the visual intrusion of the Proposed Development. Additionally, the chosen colour palette for above-ground components of the Proposed Development will reflect the prevailing landscape, minimising the visual impact.</p> <p>Details of planting management and management of existing and new habitats during operation of the Proposed Development are provided in the <b>Framework LEMP</b> submitted alongside this DCO application <b>[EN010154/APP/7.15]</b>. This will be updated prior to operation to produce the detailed LEMP, which will be followed and referred to during operation of the Proposed Development to ensure suitable management of the vegetation planting to achieve the objectives for which the planting design is intended (i.e. screening of views, landscape enhancement, mitigation for impacts</p>	To be included in the detailed LEMP and OEMP	The overall responsibility will be with the Operator of the Proposed Development



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
CH-O2	Potential for impact upon archaeological remains buried from replacement of components	<p>on built heritage, and ecological habitat improvements).</p> <p>It is anticipated that replacement equipment (BESS, substation, Solar Stations) would not necessitate additional below ground impacts (as existing concrete base foundations would be reused) and no impacts are anticipated. Replacement piles (if not placed in the exact same location) could potentially result in localised additional impacts to archaeological remains.</p> <p>The detailed OEMP will include an action plan detailing the required mitigation in the event that unforeseen activities associated with maintenance and replacement of components, including potential for replacement piles in different location, threaten the preservation of known buried archaeological remains. If potential for archaeological impacts is identified, appropriate mitigation measures would be agreed with the local authority.</p>	To be included in the detailed LEMP and OEMP and agreed with the local authority	The overall responsibility will be with the Operator of the Proposed Development

## 3.4 Ecology and Nature Conservation

**Table 5: Ecology and Nature Conservation**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
ECO-O1	Reduction in biodiversity across the DCO Site	<p>A <b>Biodiversity Net Gain Report [EN010154/APP/7.12]</b> (secured through Requirement 8 of Schedule 2 of the draft DCO) has been undertaken in line with the requirements of the Environment Act (Ref 3), the NPPF (Ref 4) and local planning policy, including the Central Lincolnshire Local Plan (Ref 5). The assessment includes the anticipated percentage of biodiversity net gain that is proposed for the Proposed Development alongside indicative habitat management and delivery mechanisms. The Applicant has committed to deliver a minimum of 30% biodiversity net gain in habitat units, 50% biodiversity net gain in hedgerow units and 10% biodiversity net gain in watercourse units using DEFRA's Statutory Biodiversity Metric (SBM) (Version 1.0.4) for the Proposed Development. Prescriptions for the establishment, long term management and monitoring of habitat creation measures that would deliver BNG are also included within the <b>Framework LEMP [EN010154/APP/7.15]</b>.</p> <p>A band of grassland (Other Neutral Grassland) up to 10m wide will be planted adjacent to watercourses within the retained arable land within the Principal Site (as secured by the <b>Framework LEMP [EN010154/APP/7.15]</b>).</p>	The <b>Biodiversity Net Gain Report [EN010154/APP/7.12]</b> and <b>Framework LEMP [EN010154/APP/7.15]</b> specify the proposed landscaping and monitoring to achieve overall targets for BNG.	Specific responsibilities will be confirmed in the <b>Framework LEMP [EN010154/APP/7.15]</b>
ECO-O2	Disturbance of sensitive species during operational	The Proposed Development has been designed so that impacts upon important habitats (comprising woodland, grassland, hedgerow and ponds) are avoided or reduced, where reasonably practicable, and compensated for where	As set out in the <b>Framework LEMP [EN010154/APP/7.15]</b>	Specific responsibilities will be confirmed in the

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	maintenance activities	<p>not, through the retention of existing habitat and the creation of replacement habitat. The design of the Proposed Development complies with industry good practice and environmental protection legislation during both construction and operation e.g. prevention of surface and ground water pollution, fugitive dust management, noise prevention or amelioration.</p> <p><b>Replacement Habitat</b></p> <ul style="list-style-type: none"> <li>• Permanent grassland areas: 64ha of permanent grassland to be provided within the DCO Site to mitigate the impact of the loss of nesting habitat for ground-nesting birds. The details of grassland management will be provided in the <b>Framework LEMP [EN010154/APP/7.15]</b>. For ground nesting birds the sward will contain a mix of short and longer grass, creating a variety of nesting and foraging opportunities. It will remain uncut between 1<sup>st</sup> March and 31<sup>st</sup> August.</li> <li>• Retained managed arable areas: 181ha of managed arable rotated within the areas of the DCO Site where there is no solar PV infrastructure to mitigate the impact of the loss of nesting habitat for ground-nesting birds. These fields will continue as currently used for maize, barley or wheat. Annually, within these fields, skylark plots will be created at a rate of 2 per ha and lapwing attractive ground will be provided by maintaining fallow ground from March to 31<sup>st</sup> July. Further detail will be provided in the <b>Framework LEMP [EN010154/APP/7.15]</b>.</li> </ul> <p>The creation and subsequent management of habitats has been determined by the characterisation of the existing</p>		<p><b>Framework LEMP [EN010154/APP/7.15]</b></p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>baseline. Management seeks to maximise floristic diversity, which will require low density and short frequency, sheep grazing (conservation grazing) or an appropriate, sensitive mowing regime. Further details are provided and secured in the <b>Framework LEMP</b> submitted alongside this Application <b>[EN010154/APP/7.15]</b>.</p> <p>Any required management of vegetation within the Proposed Development will be undertaken in accordance with legislative requirements associated with breeding birds, reptiles and amphibians (including Great Crested Newts) e.g. undertaken outside of the bird nesting season (typically March to August inclusive). A programme of monitoring will be established in accordance with the <b>Framework LEMP [EN010154/APP/7.15]</b> prior to operation to ensure that committed biodiversity measures are implemented with necessary remediation</p>		
ECO-O3	Disturbance to wildlife through operational lighting	No part of the Proposed Development will be continuously lit. Manually operated, and motion-detection lighting will be utilised for operational and security purposes around electrical infrastructure such as inverters, transformers and switchgear across the Principal Site, and within the compounds and substations. Lighting will be directed downward and away from boundaries. No visible lighting will be utilised at the DCO site perimeter fence, aside from the DCO site entrance points. All lighting would seek to limit any impact on sensitive receptors following guidance from the Bat Conservation Trust among others.	To be included in the detailed OEMP(s)	The overall responsibility will be with the Operator of the Proposed Development
ECO-O4	Impacts to running water habitat	Where possible, surface water will drain from the Proposed Development's SuDS based drainage system to local receiving watercourses via a new ditch, as this avoids the	To be included in the detailed OEMP(s)	The overall responsibility will be with the Operator of

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>need to construct an engineered outfall. However, if engineered outfalls are required, the location, position and orientation of them will be carefully designed to minimise any adverse impacts on aquatic habitats.</p>		<p>the Proposed Development</p>
ECO-O5		<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> and <b>Chapter 8: Ecology and Nature Conservation [EN010154/APP/6.1]</b> include a number of relevant ecological landscaping and monitoring measures, including the following:</p> <ul style="list-style-type: none"> <li>- Vegetation would be established through natural regeneration or in the case of grasslands from seed collection from the grasslands identified within the DCO Site and through a suitable long-term habitat management regime. Consideration will be paid to microclimatic conditions when identifying appropriate species. Management will be undertaken in a variety of ways to ensure maximum biodiversity gains, with grassland managed by either low intensity grazing or infrequent mowing or hay cutting to allow plant species to flower and seed.</li> <li>- Woodland planting (also referred to as buffers) and native tree belts will be established to reinforce the retained existing woodland and tree belts. These are proposed in areas too narrow to be planted as woodland but at 10m to 15m width will provide a more substantial block of planting than a hedgerow with specimen trees. Woodland buffers and native tree belts are characteristic of the existing landscape and provide ecological value, forming important wildlife corridors between existing woodlands.</li> <li>- New hedgerows with trees will be established to supplement the existing, retained hedgerows with trees.</li> </ul>	To be included in the detailed OEMP(s)	The overall responsibility will be with the Operator of the Proposed Development

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>These will provide a valuable habitat, forming important wildlife corridors and re-enforcing existing ones. Hedgerows will be maintained at a minimum of 3m high and 'infilled' where there are gaps in existing hedgerows, although in reality the hedges may be higher than this by Year 15.</p> <ul style="list-style-type: none"> <li>- Gaps in currently defunct hedges will be planted with suitable native species to improve the connectivity of habitats (such as between ancient and other broad-leaved woodland) within and adjacent to the DCO Site. New areas of tree planting around infrastructure will be provided to provide both screening from infrastructure and to improve habitat connectivity as well to increase the area of hedge / woodland habitat within the DCO Site. New scrub habitat and wider hedgerows (up to 8m wide) will be created in selected areas to provide suitable habitat for declining farmland birds such as Yellowhammer and Tree Sparrow. Hedgerows and trees will be allowed to grow tall and wide to provide maximum benefits for biodiversity and this natural regeneration will encourage a mosaic of successional habitats, forming broad habitat corridors throughout the Proposed Development.</li> <li>- Scrub composed of native shrubs is proposed adjacent to hedgerows to increase the shrub habitat and enhance biodiversity. This will create and maintain a diverse mosaic of scrub and grassland habitat, which includes providing shelter and food resources for birds and other wildlife.</li> <li>- An area 15m to 25m wide adjacent to existing ponds and woodland will be encouraged to naturally regenerate.</li> </ul>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>There will be no routine management of these areas. Natural regeneration will further increase biodiversity and provide an opportunity to observe the gradual structural transition from grassland to canopy woodland habitats.</p> <ul style="list-style-type: none"> <li>- Species-rich grassland will be established across the DCO Site, under the PV panels and in set aside areas. Conservation margins sown with a wild bird seed mix will also be established as well as arable margins created through locally sourced seed/the existing seed bank and annual cultivation. By establishing a diverse sward of grasses and herbs biodiversity will increase, enhancing value for wildlife. The wild bird seed mix in the conservation margins will provide a cover crop habitat for game birds and food source for over-wintering farmland birds such as Skylark, Linnet and Yellowhammer. The exact location and proportion of margin types within the conservation margins will be tailored to the needs of the DCO site's biodiversity. Following best practice, the conservation margins will be 12m in width, and at least 50m in length.</li> <li>- Existing ponds in poor condition will be restored with the aim of maximising their wildlife value. This will partly be achieved by de-silting to ensure that they remain at least partly wet during normal conditions, allowing amphibians and invertebrates to complete their life cycles. Where existing ponds are overshadowed by mature trees, these trees will be prioritised for pollarding, to increase light and decrease leaf fall onto the ponds.</li> <li>- Scrub clearance and de-silting around ponds will be phased over five years, to prevent the DCO site-wide loss of existing shaded pond habitats and to provide ponds in</li> </ul>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>various stages of natural succession to provide a wider range of niches for wildlife. Water features tend to be colonised naturally; therefore, no planting is considered necessary or desirable in these areas.</p> <ul style="list-style-type: none"> <li>- A range of artificial bird and bat boxes will be installed in existing woodland areas, on retained individual trees and existing trees in hedgerows to increase the availability of nesting and roosting features and enhance the value of these habitats for these species groups.</li> <li>- Bat roost boxes of varying types to suit different species of birds and bats will be installed in locations to be determined by an ecologist at the time of installation.</li> <li>- The bird and bat boxes will be made from long lasting materials (such as Woodcrete) and would be expected to have a life expectancy of 20-25 years. Given the Proposed Development's 60-year lifespan the bird and bat boxes will be replaced every 20 years, secured within the LEMP.</li> <li>- Habitat piles and hibernacula will be constructed throughout the Proposed Development in suitable areas, such as close to ponds or watercourses, using natural materials generated during clearance of the DCO site, such as logs, turf, and grass strimming. These will provide refuge and hibernation opportunities for amphibians and reptiles, as well as dead wood habitat for invertebrates, which will in turn benefit fauna such as bats and birds.</li> </ul>		

## 3.5 Water Environment

**Table 6: Water Environment**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
WAT-O1	Impacts on surface and groundwater quality from site run-off and the potential for accidental spillages (e.g. substations, car parking) from supporting infrastructure and maintenance activities	<p><b>Appendix 9-D: Framework Surface Water Drainage Strategy</b> of the ES [EN010154/APP/6.3] outlines the management of surface water runoff from the Proposed Development. In accordance with planning policy guidance (as outlined in <b>Appendix 9-A: Water Environment Policy and Legislation</b> of the ES [EN010154/APP/6.3]), runoff from the Proposed Development will be attenuated to ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. The Framework Surface Water Drainage Strategy will be updated following consent based on the detailed design.</p> <p>Individual solar PV panels will be held above the ground surface on mounting structures (a minimum of 800mm above ground level). This prevents sealing the ground with an impermeable surface beneath the solar panels, allowing rainfall/runoff to infiltrate to ground</p>	Monitoring requirement will be included in the detailed OEMP(s). The detailed OEMP(s) will also include measures to regulate the environmental effects of the operational phase of the Proposed Development, and to ensure any maintenance activities take place in a way to avoid and minimise any potential environmental impacts.	The overall responsibility will be with the Operator of the Proposed Development

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>throughout the Principal Site. As a result, it is considered that the impermeable area within solar PV panel areas will remain substantively consistent to its pre-development state.</p> <p>Despite not contributing towards the impermeable areas, in order to limit the potential for channelisation from rainfall dripping off the end of the panels, the areas between, under, and surrounding the solar PV panels will be planted with native grassland and wildflower mix (noting that planting types are described within the <b>Framework LEMP [EN010154/APP/7.15]</b>). This planting will intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground.</p> <p>New access roads will be permeable, in line with paragraph 2.10.85 from NPS EN-3 (Ref 14). Therefore, the Principal Site's access roads will not lead to an increase in impermeable area. The drainage regime of the access roads is therefore assumed to remain consistent with its pre-developed state.</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
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The Indicative Site Layout Plans (included in **Figure 3-2A and 3-2B [EN010154/APP/6.2]**) show options for distributed and centralised BESS areas, with the distributed BESS arrangement comprising BESS to be co-located with Solar Station Compounds spread across the Principal Site, and a single location BESS Compound under the centralised BESS arrangement and, like the Onsite Substation compound, are assumed to be 100% impermeable.

In order to drain surface water from these proposed impermeable areas, it is proposed to construct a swale around the Solar Station Compounds, the single BESS compound, and Onsite Substation. The swales will collect and treat surface water before discharge. Paragraph 056 of the Planning Practice Guidance for Flood Risk and Coastal Change (Ref 15) states that the surface water should be discharged in the following hierarchy:

- Into the ground (infiltration);
- To a surface water body; and

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<ul style="list-style-type: none"> <li>To a surface water sewer, highway drain, or another drainage system; to a combined sewer.</li> </ul> <p>Due to the current understanding of the ground conditions within the Principal Site, it is preferred to utilise surface water bodies to discharge runoff from the Solar Station Compounds / single BESS compound and Onsite Substation where possible. Therefore, surface water runoff from the Onsite Substation swales and the majority of the Solar Station Compound swales (where possible within the DCO Site) is proposed to be prioritised to local watercourses. The discharge to these watercourses will be maintained at existing greenfield runoff rates by restricting rates using a flow control (see <b>Appendix 9-D: Framework Surface Water Drainage Strategy [EN010154/APP/6.3]</b> for details of the greenfield runoff rates). The flow control will use a restriction on the outlet of the swale which will hold water back within the swale and release it at a controlled rate.</p> <p>Swales around the BESS areas (for both distributed and centralised BESS</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>arrangement options) and Onsite Substation area will be lined with an impermeable membrane or similar impermeable barrier to prevent any pollution from entering the ground.</p> <p>In the north of the Principal Site, there are seven Solar PV fields (fields 14, 18, 19, 25, 29, 32 and 34 as shown in <b>Appendix 9-D Framework Surface Water Drainage Strategy [EN010154/APP/6.3]</b> Annex C) where surface water bodies are not available in suitable locations to discharge runoff from the lined Solar Station Compound swales; it is, therefore, proposed to discharge flows from the lined swales to infiltration swales lining the boundaries of these seven fields. The swales are to be designed to attenuate flows for the 1 in 100 year + 40% climate change event and fire water runoff (if deemed to be clean) and slowly infiltrate to ground whilst also making use of evapotranspiration. Discharge of runoff will be controlled from the Solar Station Compounds by penstocks at each location which can isolate the runoff from the BESS prior to entering the infiltration swales.</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>As part of the non-statutory consultation for the Proposed Development, properties along The Avenue in Morton, adjacent to solar PV fields 25, 30 and 34, are known to experience surface water flooding from natural overland runoff from these fields. The online flood map for surface water (Ref 13) indicates a medium flood risk to these properties. As a voluntary enhancement measure by the Applicant, edge swales will be provided to capture excess runoff from these PV fields to reduce existing surface water risk. Edge swales within Fields 25, 30, and 34 will be sized and located accordingly to capture as much excess overland surface water runoff that can be reasonably accommodated, providing betterment in this area by reducing the existing surface water flood risk to properties along The Avenue, in Morton. This is secured within the <b>Design Approach Document (Appendix A: Design Commitments) [EN010154/APP/7.3]</b>. Also refer to <b>Appendix 9-D: Framework Surface Water Drainage Strategy [EN010154/APP/6.3]</b> for further detail on the proposed swales to reduce flood risk to The Avenue.</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>The detailed OEMP(s) will include measures to manage the risk of pollution from any spillages and maintenance activities, such as correct storage in appropriately bunded areas of any hazardous materials, and appropriate, regular inspection and maintenance of all equipment on-site.</p> <p><u>Rainwater harvesting is to be implemented on site to capture potential run off for the use of grey water across the Proposed Development.</u></p> <p><u>Water efficiency measures will be implemented into all welfare facilities located on the constructed site, this includes low flow toilets and other washing conveniences.</u></p>		
WAT-O2	Impacts on the rate and volumes of surface water run-off entering local watercourses and subsequent increase in flood risk and potential hydromorphological impact.	Where practicable, surface water will drain from the Proposed Development's swale-based drainage system to local receiving watercourses (field ditches) via a new ditch, as this avoids the need to construct an engineered outfall. Alternatively, where piped sections are required, these would be shortened and the last 10m section of the outfall route will be open green ditch other than where this affects maintenance of the channel	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>by the IDB. This will be secured as part of the <b>Framework Surface Water Drainage Strategy (Appendix 9-D</b> of the ES [EN010154/APP/6.3]).</p> <p>Any engineered outfalls that may be required would be appropriately micro-sited to minimise loss of bank habitat, the need for bed scour or hard bank protection, and localised flow disturbance or disruption to sediment transport processes. It will also avoid the creation of 'dead' spaces with sedimentation and vegetation blockage risks and to that effect it is not proposed that outfalls are recessed into the bank. Further site survey and micro-siting of outfalls would occur post consent.</p>		
WAT-O3	<p>Impacts on surface and groundwater quality as a result of the use of firewater in the event of a fire in the BESS.</p> <p>Impacts on groundwater resources (flows and level).</p> <p>Impacts on hydrology including subsequent impacts on aquatic habitats and water-dependent</p>	<p>The <b>Framework Battery Safety Management Plan (FBSMP)</b> submitted alongside this DCO application [EN010154/APP/7.17] outlines how firewater runoff will be managed. It also includes detail on operation and management of the drainage infrastructure in order to ensure that they continue to function effectively throughout the lifetime of the Proposed Development.</p>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>nature conservation sites due to maintenance.</p> <p>Potential for permanent hydro-morphological impacts to watercourses, especially where crossings are required.</p> <p>Impacts on the rate and volumes of surface water runoff entering local watercourses and subsequent increase in flood risk.</p>	<p>The BESS drainage design allows for fire water containment by providing a penstock arrangement on the lined swales surrounding each BESS. It is not anticipated that active firefighting will be undertaken as this can spread chemicals used in the process and which are potentially harmful to the water environment. Instead, any apparatus or containers that catch fire will be allowed to burn out. Water will be sprayed onto adjacent containers to keep them cool and reduce the risk of the fire spreading. The water used will therefore be less likely to be contaminated but will still be directed to the fire water storage areas from where decisions about suitable disposal can be made post incident. In the unlikely event of fire water being discharged, the runoff will be contained and tested/treated before being allowed to discharge to the local watercourses. The BESS containers will possess an internal fire suppression system. No fluids from the internal fire suppression system will be directed to swales; these will be contained separately.</p> <p>If water for the water storage tanks for firefighting is to be obtained from the</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>mains supply, a water supply request would be made to Anglian Water, accompanied by a Water Resource Assessment. The need for the mains supply connection will be confirmed at detailed design stage.</p> <p>Further details will be established through the detailed Battery Safety Management Plan and Emergency Response Plans to be prepared in accordance with the FBSMP post-DCO consent.</p> <p>The proposed BESS within the Solar Station Compounds (distributed BESS arrangement) and single BESS Compound (centralised BESS arrangement) areas require fire water tanks to suppress a fire, should one break out. The BESS containers will contain an internal fire suppression system, with a sump to contain any water used in the event of an internal fire. This water will not be directed to the surrounding swales.</p> <p>It is proposed to contain the external fire water runoff within the swale surrounding the Solar Station Compounds, where it can be held and tested before either</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>being released into the environment (if found to have no contaminants present, or contaminants that are within acceptable legal limits) or taken off site by a tanker for treatment elsewhere. The swale will then be cleaned of all contaminants. A <b>Framework Battery Safety Management Plan (BSMP) [EN010154/APP/7.17]</b> is included within the DCO application and outlines the fire management plan in more detail.</p> <p>Each swale will be underlain with an impermeable liner to prevent any contaminants entering the ground. The swale will be controlled by a penstock valve that can be closed before a fire is put out. The penstock valves will be located to the west of the Solar Station Compounds and Onsite Substation wherever practicable to reduce the potential of their operation being affected by the prevailing wind conditions directing a potential fire towards the penstock.</p> <p>National Fire Chiefs Council (NFCC) guidance (“Grid Scale Battery Energy Storage System planning – Guidance for Fire and Rescue Services”, 2022, (Ref 14) has been used to determine the</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>volume storage of fire water runoff. The NFCC guidance states firefighting supplies '<i>should be capable of delivering no less than 1,900 litres per minute for at least 2 hours</i>'. On top of this supply requirement, a 30% additional capacity has been applied for storage in the swale. This equates to approximately 300m<sup>3</sup>. The 300m<sup>3</sup> storage is required for each group of BESS (i.e. 300m<sup>3</sup> will be required if there is one BESS container on its own or several BESS grouped together). This is based on the likely scenario that, in the unlikely event of a fire, only one BESS would be on fire at the any given time.</p> <p>By using the swale for fire water storage as well as surface water storage, there is the potential that, in the event of a fire, the swale may already contain surface water and reduce the capacity for fire water storage. Therefore, the swale should be sized to serve both purposes. It is considered overly conservative to provide the required fire water storage on top of the 1 in 100 year + 40% storage already provided, as it is extremely unlikely a fire will occur at the same time as the 1 in 100 year event. Therefore, taking a pragmatic</p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>approach, an allowance has been made that a 1 in 2 year event could occur at the same time as a fire. Therefore, the swale will need to contain the 1 in 2 year event plus the fire water storage runoff or the 1 in 100 year + 40% event on its own, whichever is greater (thereby providing for the worst case scenario).</p> <p>In order to determine the attenuation volume required, a storage estimate calculation was made for a single Solar Station Compound based on the 1 in 2 year event (see Annex A of <b>Appendix 9-D: Framework Surface Water Drainage Strategy [EN010154/APP/6.3]</b>), which gave a value of 15m<sup>3</sup>. A comparison was then made between the 1 in 2 year plus fire water storage and the 1 in 100 year + 40% event. See <b>Table 13</b> within <b>Appendix 9-D: Framework Surface Water Drainage Strategy [EN010154/APP/6.3]</b>, which highlights the worst-case storage required in the design for each Solar Station Compound configuration and the single BESS Compound.</p> <p>Further detail on storage volumes are provided in the <b>Framework Surface</b></p>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p><b>Water Drainage Strategy (Appendix 9-D [EN010154/APP/6.3]).</b> The volume requirements for containment of fire water runoff within the swale and its configuration are subject to agreement with the Local Fire and Rescue Service.</p>		
WAT-O4	<p>Impacts on surface and groundwater quality as a result of the use of firewater in the event of a fire in the BESS.</p> <p>Impacts on groundwater resources (flows and level).</p> <p>Impacts on hydrology including subsequent impacts on aquatic habitats and water-dependent nature conservation sites due to maintenance.</p> <p>Potential for permanent hydro-morphological impacts to watercourses, especially where crossings are required.</p>	<p>The design of the Proposed Development includes measures to avoid and minimise the risk of water pollution during its operation.</p> <p>These include:</p> <ol style="list-style-type: none"> <li><b>Appendix 9-D: Framework Surface Water Drainage Strategy</b> of the ES [EN010154/APP/6.3] will be designed so as to mimic the natural drainage conditions within the Order limits;</li> <li>As set out above, the <b>FBSMP [EN010154/APP/7.17]</b> includes measures to manage firewater runoff.</li> <li>Individual solar PV panels will be held above the ground surface on mounting structures. This prevents sealing the ground with an impermeable surface beneath the solar panels, allowing</li> </ol>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>Impacts on the rate and volumes of surface water runoff entering local watercourses and subsequent increase in flood risk.</p>	<p>rainfall/runoff to infiltrate to ground throughout the Principal Site;</p> <ul style="list-style-type: none"> <li>d. In order to limit the potential for channelisation from rainfall dripping off the end of the panels, the areas between, under and surrounding the solar PV panels will be planted with native grassland and wildflower mix to intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground;</li> <li>e. To prevent ponding occurring around the panels, a series of boundary (and some routing) swales will be constructed to mimic natural drainage conditions.</li> <li>f. Solar PV panels to be constructed and installed to accepted industry standards and appropriately maintained to mitigate the risk of escape of liquid substances into the water environment;</li> <li>g. Any areas of the Proposed Development containing oils, such as transformers, are to be</li> </ul>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>bunded or have self-contained drainage systems. This would ensure that any leaks are contained and do not enter the surface water drainage system; and</p> <p>h. New access roads will be permeable.</p>		
WAT-O5	Impacts on water quality from leaks or damage.	<p>Inspections</p> <p>Regular inspections and maintenance of all equipment will be undertaken in order to identify any leaks or damage early. This will ensure that the structural integrity of the panels will be regularly observed. Any panels which require maintenance / replacement will be removed before there is any leakage of chemicals from the sealed units. Any leaks will be dealt with in a way that is compliant with the prevailing environmental legislation. The detailed OEMP(s) will include a regular schedule for visual inspection of the panels and all other solar infrastructure.</p> <p>There will also be regular inspection and maintenance of the drainage systems, proposed Sustainable Drainage Systems (SuDS), drainage outfalls, and</p>	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development.

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>watercourse crossings. This will be carried out in accordance with good practice guidance. If there is any evidence of excessive erosion or sedimentation associated with new structures further actions will be considered to remedy that impact as sustainably as possible.</p>		
WAT-O6	<p>Potential impact of flooding to/from the Proposed Development</p>	<p>Resilience to Flooding Regular inspection and maintenance of the drainage systems, SuDS and culverts will take place throughout the operational phase. This will be undertaken in accordance with good practice guidance. Details are included in <b>Appendix 9-D: Framework Surface Water Drainage Strategy</b> of the ES [EN010154/APP/6.3]. Regular inspection and maintenance of fencing will be undertaken throughout the operational phase. During these inspection and maintenance visits, debris build up would be identified and removed when necessary. Any fencing will be designed to prevent minor obstructions occurring allowing the continuation of flow routes (if present) unimpeded through the Principal Site.</p>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
WAT-O7	Impact on local water supplies from water usage in a 'water stressed' area.	The solar PV panels may be cleaned around once per year, using clean water with no added chemicals. This water will be sourced from local potable water suppliers and will not lead to any significant pollution risk. If any soiling remains on the panels they will be further cleaned with a soft cloth or brush. The water for cleaning will be imported from local suppliers and will not be supplied by the mains water supply to the office area. Rainwater harvesting will be considered for fire suppression tanks, if used, albeit it is noted that rainwater cannot be relied upon to be the only source of firewater.	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development.
WAT-O8	Impact from over-growth of weeds.	<p>With regard to weed management, the Applicant has identified options for the management of the grassland created within the solar farm. This includes management by grazing and/or by mowing/strimming.</p> <p>Where mowing/strimming is required, as a worst case there may be localised use of herbicide or other spray chemical in small volumes. Should this be required, a method statement, operating procedure or similar will be prepared prior to the work commencing, this will include</p>	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development.

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>measures to protect ground and surface water, including working in dry weather and not in high winds, and maintaining appropriate buffers from watercourses. Application of chemicals would only be carried out by suitably competent personnel using products approved for UK use with adherence to manufacturer's instructions.</p>		
WAT-O9	Obtaining relevant permissions	<p>Various water-related permissions may be required where it is not agreed with the relevant regulating authority to disapply them through the DCO. These permissions may include:</p> <ul style="list-style-type: none"> <li>Land drainage consent(s) under section 23 of the Land Drainage Act 1991 (Ref 15) for works affecting the flow in Ordinary Watercourses;</li> <li>Flood risk activity permit(s) from the Environment Agency under the Environmental Permitting Regulations (England and Wales) 2016 (Ref 10) in connection with watercourse crossings and drainage outfall installation. Note that the Applicant is seeking to disapply the need for Flood risk activity permit(s) under the draft DCO, with matters relating to flood risk to be agreed by</li> </ul>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>way of protective permissions for the benefit of the Environment Agency;</p> <ul style="list-style-type: none"> <li>• Water activity permit(s) from the Environment Agency under the Environmental Permitting Regulations (England and Wales) 2016 (Ref 10) for temporary construction and permanent operational discharges;</li> <li>• Trade effluent consent under the Water Industry Act 1991 (Ref 16) for the purposes of discharging trade effluent from welfare facilities during construction;</li> <li>• Full or temporary water abstraction licence(s) under section 24 of the Water Resources Act 1991 (Ref 9) (if more than 20m<sup>3</sup>/d is to be dewatered/over-pumped and exemptions do not apply) – see further detail below;</li> <li>• Temporary water impoundment licence under section 25 of the Water Resources Act 1991 (Ref 9) in connection with the laying of cables; and</li> <li>• Under IDB byelaws, prior written consent (outside of the planning process) is needed for certain works</li> </ul>		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>that may affect IDB watercourses such as any works within the channel or any drainage into an IDB watercourse.</p> <p>There is the potential for the need for either full or temporary water abstraction licence(s) from the Environment Agency for the abstraction of water from the entry and exit pits associated with the underground watercourse crossings or other excavations where groundwater may be encountered, other than where exemptions apply. A full licence is required when more than 20m<sup>3</sup> per day of water may need to be abstracted for more than 28 days. A temporary licence is applicable where the abstraction is less than 28 days. Where less than 20m<sup>3</sup> per day of water needs to be abstracted, no licence is required. However, in all circumstances it may be necessary to obtain a water activity permit(s) from the Environment Agency to discharge the water to ground or a watercourse if the water is considered to be 'unclean'.</p>		

## 3.6 Landscape and Visual

**Table 7: Landscape and Visual**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
LV-O1	<p>Loss of existing landscape features and alteration of overall character due to change in land use from solar infrastructure</p> <p>Visibility of the Proposed Development and the potential to impact on nearby residential and road receptors</p>	<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> sets out the measures proposed to mitigate the potential impacts and effects on landscape (and biodiversity) features, and to enhance the landscape and biodiversity value of the DCO sites (i.e. the green infrastructure). Details of monitoring and maintenance required are set out in the Framework LEMP.</p>	<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> sets out monitoring requirements.</p>	<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> sets out roles and responsibilities for implementation.</p>
LV-O2	<p>Loss of existing trees due to change in land use from solar infrastructure</p>	<p>At the detailed design stage, all Solar PV panels will be positioned outside the RPAs of retained trees.</p> <p>Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner.</p> <p>Further detail can be found in the <b>Arboricultural Impact Assessment (Appendix 10-H of the ES [EN01054/APP/6.3])</b>.</p>	<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> sets out monitoring requirements.</p>	<p>The <b>Framework LEMP [EN010154/APP/7.15]</b> sets out roles and responsibilities for implementation</p>
LV-O3	<p>Adverse impacts of operational lighting.</p>	<p>The proposed lighting has been designed to avoid and minimise the potential for adverse landscape and visual effects. The following mitigation has been embedded:</p>	<p>Specific requirements and frequency of</p>	<p>The overall responsibility will be with the</p>



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<ul style="list-style-type: none"> <li>• No areas of the Proposed Development will be continuously lit.</li> <li>• Operational lighting will be triggered by Passive Infra-red Detector (PID) systems, which will be installed around the perimeter of the Proposed Development.</li> <li>• Lighting will be directional with care to minimise potential for light spillage beyond the DCO Site particularly towards neighbouring properties, habitats, highways or waterways.</li> <li>• Lights installed will be of the minimum brightness and/or power rating capable of performing the desired function.</li> <li>• Light fittings will be used to reduce the amount of light emitted above the horizontal (reduce upward lighting).</li> <li>• The lighting of the primary substation will be motion sensor triggered, that would operate from dusk.</li> <li>• Low level lighting on specific operational units will be triggered by motion sensors, from dusk.</li> <li>• The inward facing CCTV cameras will typically use night-vision technology and will not require additional lighting.</li> </ul> <p>During maintenance (as relevant) the cleaning of the solar PV panels will require tractor mounted lighting, which is similar to that used during night-time arable harvesting operations currently undertaken within the Principal Site.</p>	<p>the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>Operator of the Proposed Development.</p>

## 3.7 Noise and Vibration

**Table 8: Noise and Vibration**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
NV-O1	Impact of noise and vibration associated with operational equipment on nearby sensitive receptors.	<p>Embedded mitigation measures that will be applied for the operational phase of the Proposed Development are summarised as follows:</p> <ul style="list-style-type: none"> <li>a. Plant selection (noise emissions will be one of the criteria evaluated when procuring equipment for use on the DCO site); and</li> <li>b. Design, location and orientation of Solar Stations, BESS and the Onsite Substation to minimise noise at receptors.</li> </ul> <p>Plant that will be used in the Proposed Development has not yet been finalised. Consequently, a conservative approach has been taken when defining sound data for noise sources and it may be possible that quieter plant can be incorporated into the final design. Quieter plant</p>	<p>Site staff will carry out noise monitoring of the substation transformers, inverters and BESS as part of the annual maintenance regime described in paragraph 2.3.3. This will include identifying any changes in sound pitches or volume early and carrying out the relevant maintenance. This is to ensure that plant noise at source, and therefore also at sensitive receptors, throughout the operational lifetime of the Proposed Development is not higher than the levels presented in the ES. The results of such monitoring will be submitted to the relevant planning authority for review. Where this review indicates plant noise levels generated by the Proposed Development have increased beyond those presented in the ES, the undertaker and relevant planning authority will</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>would be the most effective way of controlling noise emissions.</p> <p>The Proposed Development layout has been optimised to locate inverters and BESS, as far as practically possible from sensitive receptors where the highest levels of noise were predicted. The illustrative site layout (<b>Figure 3-2A: Indicative Fixed South Facing Site Layout Plan [EN010154/APP/6.2]</b>, and <b>Figure 3-2B: Indicative Single Axis Tracker Site Layout Plan [EN010154/APP/6.2]</b> of the ES) has been designed to locate Solar Stations at least 200m from residential properties.</p> <p>Although the indicative Proposed Development layout has been optimised to minimise noise levels at sensitive receptors, there is a requirement to retain some flexibility on where infrastructure will be located on-site. Consequently, if there is a decision in the future to move noise generating infrastructure closer to sensitive receptors than shown in <b>Figure 11-1: Receptor and Noise Monitoring Positions</b> of the ES [EN010154/APP/6.2]), the Applicant</p>	<p>liaise in respect of the appropriate further maintenance or mitigation required to reduce levels at receptors back to those presented in the ES. Measures could include repair and maintenance of the plant, sourcing quieter plant, barriers or enclosures. The nature of the appropriate course of action will depend on the local circumstances such as the level of exceedance, distance to the receptor and cause of the noise. The operator would then be responsible for implementing the agreed mitigation measures and issuing a revised set of results, demonstrating that the noise levels from the Proposed Development are at or below the levels presented in the ES.</p> <p>Separate to the annual monitoring programme, in the event of a complaint concerning noise from the Proposed Development from</p>	

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility																												
		<p>commits that noise at sensitive receptors will be no higher than the levels established. Operational noise limits are defined in the table below, with reference to the receptors defined in <b>Chapter 11: Noise and Vibration</b> of the ES [EN010154/APP/6.1]:</p> <table border="1" data-bbox="741 584 1240 1351"> <thead> <tr> <th data-bbox="741 584 987 667">Receptor Reference</th> <th data-bbox="987 584 1240 667">Noise Limit LAr,Tr dB</th> </tr> </thead> <tbody> <tr><td>R1</td><td>30</td></tr> <tr><td>R2</td><td>29</td></tr> <tr><td>R3</td><td>31</td></tr> <tr><td>R4</td><td>28</td></tr> <tr><td>R5</td><td>37</td></tr> <tr><td>R6</td><td>33</td></tr> <tr><td>R7</td><td>29</td></tr> <tr><td>R8</td><td>26</td></tr> <tr><td>R9</td><td>28</td></tr> <tr><td>R10</td><td>34</td></tr> <tr><td>R11</td><td>33</td></tr> <tr><td>R12</td><td>30</td></tr> <tr><td>R13</td><td>34</td></tr> </tbody> </table>	Receptor Reference	Noise Limit LAr,Tr dB	R1	30	R2	29	R3	31	R4	28	R5	37	R6	33	R7	29	R8	26	R9	28	R10	34	R11	33	R12	30	R13	34	<p>a neighbouring receptor, the operator would liaise with the relevant planning authority over the need for further monitoring and, if required, take updated sound measurements of relevant plant at locations and timings agreed with the relevant planning authority. If these measurements of relevant plant demonstrated that agreed levels coming from the Proposed Development are likely being exceeded at the receptor in question, the operator would then be responsible for implementing mitigation agreed with the relevant planning authority. Further details are to be confirmed in the detailed OEMP.</p>	
Receptor Reference	Noise Limit LAr,Tr dB																															
R1	30																															
R2	29																															
R3	31																															
R4	28																															
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R9	28																															
R10	34																															
R11	33																															
R12	30																															
R13	34																															

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
R14		23		
R15		28		
R16		33		
R17		26		
R18		31		
R19		32		
R20		30		
R21		33		
R22		28		
R23		33		
R24		29		
R25		24		
R26		42		
R27		37		
R28		38		
R29		32		
R30		27		
R31		23		
R32		24		
R33		28		

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		R34	35	
		R35	38	
		R36	36	
		R37	29	
		R38	32	
		R39	31	
		R40	29	
		R41	34	
		R42	36	
		R43	37	
		R44	32	
		R45	36	
		R46	34	
		R50	31	
		R51	31	

Modelling will be undertaken at the detailed design phase to confirm the noise levels at sensitive receptors will



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>be no higher than the levels presented in the table above.</p> <p>Low frequency noise can be very difficult to predict with a high level of certainty and similarly hard to identify and resolve if present. This is because it can be generated by the unexpected interactions between system components and can be amplified by the geometry of the DCO site and receptor buildings. The issue of low frequency noise will be considered during the detailed design post consent for the Onsite Substation and eliminated through design or appropriately mitigated through isolation and/ or attenuation measures, where appropriate. This requirement is secured through a requirement in the <b>draft DCO [EN010154/APP/3.1]</b>.</p>		

### 3.8 Socio-Economics and Land Use

**Table 9: Socio-Economics and Land Use**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
SOC- O1	<p>Disruption or severance to communities and Public Rights of Way (PRoW) resulting from operational activity.</p> <p>Additional permissive pathways and PRoW introduced as a result of the Proposed Development.</p> <p>Land take, disruption or severance to local amenities, businesses or development land.</p> <p>Disruption to local residents, businesses and community facilities.</p>	<p>Primary mitigation measures are embedded within the Proposed Development to reduce operational effects with regards to noise, air quality, transport, and landscape and visual effects, which in turn will mitigate the effects on the local community and existing facilities from a socio-economic and land use perspective.</p> <p>Management measures for existing PRoW during operation are included in the <b>Framework PRoW Management Plan</b> submitted alongside this DCO application <b>[EN010154/APP/7.14]</b>.</p> <p>Mitigation, management and monitoring requirements during operation are covered in the following tables: Air Quality (<del>Table 11</del>), Noise and Vibration (<del>Table 8</del>), Transport and Access (Error! Reference source not found.) and Landscape and Visual Amenity (<del>Table 7</del>)</p>	n/a	n/a
SOC- O2	<p>Risk of damage to soil structure associated with operational activities.</p>	<p>The <b>Framework Soil Management Plan</b> submitted alongside the DCO application <b>[EN010154/APP/7.10]</b></p>	<p>The <b>Framework Management</b></p>	<p><b>Soil Plan</b> The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>details the threats to the soil resource during the operational phase and required management measures. In summary, all vehicle movements should be confined to access tracks unless there is a specific need to take a vehicle onto the grassed surface. All use of plant and transport vehicles within the DCO site for maintenance during the operational phase should comply with good practice guidance for handling soils (Ref 11). Vehicle movements for mowing and/or supervision of livestock will be confined to periods of higher grass growth and naturally dryer soil conditions. Where the DCO site does have wet conditions and plastic soils during the growing season, mowing operations and/or livestock grazing should be postponed until field tests demonstrate that topsoil within the DCO site has dried to a friable consistence.</p>	<p><b>[EN010154/APP/7.10]</b> sets out the monitoring requirements.</p>	

## 3.10 Traffic and Transport

**Table 10: Traffic and Transport**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
TT-O1	Vehicular movements during operation.	<p>c. The Proposed Development will minimise operational impacts by:</p> <p>a. Providing suitable points of access for operational vehicles (<b>Figure 3-2A and Figure 3-2B</b> of the ES [EN010154/APP/6.2]) including on Haddington Lane, Bassingham Road, Moor Lane, Clay Lane (located near Thorpe on the Hill, not to be confused with the Clay lane near Bassingham), The Avenue, Fosse Lane, Morton Lane and Fen Lane;</p> <p>b. Converting the internal construction routes to maintenance routes, to allow operational vehicles to access all areas of the Principal Site via the proposed access points during the operational phase;</p> <p>c. Maintaining access to all existing PRow within the Proposed Development, with suitable alternative routes provided for the three PRow sections that will be permanently diverted; and</p> <p>d. Controlling areas where the internal maintenance route crosses any existing PRow or local access roads (such as providing gates), permitting only operational traffic to utilise these internal routes within the Principal Site. Operational traffic will give-way to other users (including pedestrians and road users) when utilising the crossing points. Visibility will be maximised between operational vehicles and other users, with warning signage provided if required.</p>	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development.

## 3.11 Air Quality

**Table 11: Air Quality**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
AQ-01	<p>Dust emissions off-site</p> <p>Operational activities including traffic movements associated with on-site staff, servicing and maintenance activities.</p>	<p>Dust emissions during operation will be managed through the following:</p> <ul style="list-style-type: none"> <li>e. Avoid dry sweeping of large areas.</li> <li>f. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.</li> <li>g. Ensure vehicles are inspected and cleaned as required, prior to accessing the public highway.</li> <li>h. Install hard surfaced or matt covered haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.</li> <li>i. Ensure an adequate water supply on the DCO site for effective dust/particulate matter suppression/mitigation, using non-potable water from temporary water tanks where practicable and appropriate.</li> <li>j. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.</li> <li>k. Fully enclose site or specific operations where there is a high potential for dust production and the DCO site is active for an extensive period where operations are within 100m of receptors.</li> </ul>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s). Site inspections and road surface cleaning to be provided if necessary</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

## 3.12 Ground Conditions

**Table 12: Ground Conditions**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
GC-O1	<p>Hazards to human health associated with inhalation, ingestion, dermal uptake or contact with made ground or groundwater contaminated by metal, inorganic and organic chemicals.</p> <p>Hazards to controlled waters associated with leaching of contaminants from soils, lateral groundwater migration, or contaminated discharge to watercourses or made ground or groundwater.</p> <p>Hazards to ecological receptors associated with chemical contaminants in made ground and groundwater, discharge to watercourses,</p>	<p>Prior to maintenance and replacement work commencing, a health and safety risk assessment will be carried out in accordance with current health and safety regulations and based on ground investigation findings.</p> <p>For any maintenance and replacement activities that require ground disturbance, the following measures will apply:</p> <ol style="list-style-type: none"> <li>All workers would be required to wear Personal Protective Equipment (PPE) including gloves and, where appropriate, dust masks, use of ground gas monitoring equipment and hygiene facilities;</li> <li>Containment measures would be implemented, including drip trays, bunding or double-skinned tanks of fuels and oils; all chemicals would be stored in accordance with their Control of Substances Hazardous to Health (COSHH) guidelines, whilst spill kits would be provided in areas of fuel/oil storage;</li> <li>Use of appropriate site control measures to minimise the migration of contaminated dusts and soils from the DCO site to adjacent areas;</li> <li>All plant and machinery would be kept away from surface water bodies wherever practicable, checked regularly and, where necessary, the use of drip trays would be employed. Refuelling and delivery areas would be located away from surface water drains;</li> <li>An emergency spillage action plan will be produced, which staff will be required to have read and understood prior to</li> </ol>	<p>Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Proposed Development.</p>

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>sedimentation / dust deposition, physical damage to habitat, and increased human disturbance during maintenance.</p> <p>Contamination of ground gas to any on-site buildings.</p> <p>Creation of preferential pathways and mobilisation of contamination.</p>	<p>commencement of work, and provisions made to contain any leak/spill;</p> <p>f. Should any potentially contaminated ground, including isolated 'hotspots' of contamination and/or potential deposits of asbestos containing materials (ACM), be encountered, <u>works will be stopped in the affected area and</u> the maintenance and replacement works contractors would be required to investigate the areas and assess the need for containment or disposal of the material. They would also be required to assess whether any additional health and safety measures, such as the use of suitable respiratory protective equipment, is required;</p> <p>g. To further minimise the risks of contaminants being transferred and contaminating other soils or water, maintenance workers would be briefed prior to works starting as to the possibility of the presence of such materials;</p> <p>h. In the event that contamination is identified, <u>works will be stopped in the affected area and</u> appropriate remediation measures would be taken to protect maintenance workers, future site users, water resources, structures and services;</p> <p>i. The maintenance and replacement works contractors would be required to place arisings and temporary stockpiles away from watercourses and drainage systems, whilst surface water would be directed away from stockpiles to prevent erosion;</p> <p>j. The risk to surface water and groundwater from run-off from any contaminated stockpiles during maintenance works will be reduced by implementing suitable measures to minimise</p>		



ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
		<p>rainwater infiltration and/or capture runoff and leachates, through use of bunding and/or temporary drainage systems. These mitigation measures will be designed in line with current good practice, follow appropriate guidelines and all relevant licences/permits;</p> <ul style="list-style-type: none"> <li>k. The maintenance and replacement works contractors will ensure that all material is suitable for its proposed use and would not result in an increase in contamination-related risks on identified receptors, including any landscaped areas and underlying groundwater; and</li> <li>l. The maintenance and replacement works contractors will implement a dust suppression/management system in order to control the potential risk from airborne contamination migrating off-site to adjacent sites.</li> </ul>		

### 3.13 Materials and Waste

**Table 13: Materials and Waste**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
MW-01	<p>Operational waste arisings associated with Solar Farm Control Centre waste and general waste.</p> <p>Production of waste and consumption of materials associated with the periodic replacement of solar infrastructure elements.</p> <p>Potential for waste to impact on sensitive receptors if not stored and managed appropriately.</p>	<p>During operation, the Proposed Development will prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.</p> <p>All management of waste will be in accordance with the relevant regulations and waste will be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.</p> <p>It is not proposed to store waste batteries on site. They will be removed from the containers and taken away straight away, following waste duty of care. <u>If removal of waste batteries straight away is not possible, waste and/or damaged batteries will be stored in a bunded area with fire detection prior to removal.</u></p> <p>⌘-</p>	<p>A register of waste loads leaving the DCO Site Boundary would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.</p>	<p>Overall responsibility lies with the Operator of the Proposed Development. Specific responsibilities will be confirmed in the detailed OEMP.</p>

### 3.14 Glint and Glare

**Table 14: Glint and Glare**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
GG-01	Potential to impact on residential, road and rail, and aviation receptors.	Where mitigation has been identified as required in the Glint and Glare assessment, this has been incorporated within the <b>Framework Landscape and Ecological Management Plan (LEMP) [EN010154/APP/7.15]</b> submitted with the DCO application.	As set out in the <b>Framework LEMP [EN010154/APP/7.15]</b>	Specific responsibilities will be confirmed in the <b>Framework LEMP [EN010154/AP P/7.15]</b>

## 3.15 Major Accidents and Disasters

**Table 15: Major Accidents and Disasters**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
MAD-O1	Potential for fire associated with certain types of batteries.	<p>All works will be undertaken in accordance with relevant health and safety legislation and guidance. Details of fire, police, emergency services and hospitals will be publicised and included in the DCO site office.</p> <p>A Biosecurity Management Plan (to be prepared prior to construction – see <b>Framework Construction Environmental Management Plan [EN010154/APP/7.7]</b>, will be revised for the operational phase, this will include measures such as appropriate cleaning of equipment in areas considered to be at high risk.</p> <p>A <b>Framework Battery Safety Management Plan (FBSMP)</b> has been produced for the Proposed Development alongside the Application <b>[EN010154/APP/7.17]</b> and will be referred to during operation to safely reduce and manage the risk of fire or explosion during operation. This will be updated as a detailed BSMP and maintained as a ‘live document’ throughout the</p>	Specific requirements and frequency of the monitoring will be confirmed in the detailed BSMP.	The overall responsibility will be with the Operator of the Proposed Development.

operational phase of the Proposed Development.

A summary of the anticipated safety provisions to comply with National Fire Chiefs Council (NFCC) provided in the FBSMP includes:

- a. There shall be suitable access roads for emergency services vehicles with safe routes to BESS sites and appropriate fire service infrastructure.
- b. The BESS fire and gas detection system will comply with NFPA 855 (2023) and NFPA 69, this means that smoke, fire and gas detection equipment will be installed. New BESS multisensor equipment in development which measures combinations of air temperature, hydrogen, VOCs, overpressure, shock and vibration, and moisture ingress will also be considered if fully tested with the BESS design. The gas detection systems will have external BESS beacon and audible alert facility. All fire detection systems shall all be

- installed and commissioned to BS EN 54, BS EN 9999, NFPA 855, NFPA 850 (Ref 12)(Ref 13).
- c. At area level, in each BESS cluster area hydrants shall be located with adequate suppression pressure and flow for extinguishing operations. Hydrant supplies for boundary cooling purposes should be located close to BESS containers (but considering safe access in the event of a fire) and will be capable of delivering no less than 1,900 litres per minute for at least 2 hours.
  - d. All process water used in the system shall be prevented from contaminating potable water sources in accordance with local regulations through the use of check valves or other means as part of the system design.
  - e. An extra layer of protection will be provided for containment of firewater external of the BESS enclosure in case of rupture or overflow of contaminants.

- f. Each BESS enclosure will be provided with a sump and drain valve to allow extraction of contaminated fire water and / or electrolyte spill without having to open the door of the enclosure and will prevent contamination of surrounding environment with the extracted liquid being taken off-site for treatment.
- g. An appropriate risk assessment will be produced to minimise the risk of major accidents during operation.

MAD-O2	Potential for criminal damage.	As described in <b>Chapter 3: The Proposed Development</b> of the ES [EN010154/APP/6.1] a security fence will enclose the operational areas of the Principal Site. The fence will likely be a stock proof mesh-type security fence with wooden posts and approximately 2m in height measured from the ground. Pole mounted CCTV systems will also be deployed around the perimeter of the operational areas of the Proposed Development. These would be a maximum of 3.5m in height. CCTV cameras would have fixed views and will be aligned to face along the fence line and into the Principal Site.	Specific requirements and frequency of the monitoring will be confirmed in the detailed OEMP(s).	The overall responsibility will be with the Operator of the Proposed Development.
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During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Proposed Development and potentially at other sites of critical infrastructure. No areas are proposed to be permanently lit. During overnight maintenance personnel will use portable lighting sources.

### 3.16 Telecommunications, Television Reception and Utilities

**Table 16: Telecommunications, Television Reception and Utilities**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
TEL- O1	Interference with telecommunications infrastructure.  Interference with low-lying television reception infrastructure.  Damage to utilities through maintenance and replacement activities.	The Proposed Development consists of low-lying infrastructure so will not interfere with telecommunication infrastructure during the operational phase. Telecommunications and utilities infrastructure that crosses the Proposed Development has been mapped and strategically avoided through the detailed design of the Proposed Development. Any maintenance and replacement activities will be undertaken with due regard to the existing telecommunications and utilities records to avoid impacting on these.	Not required.	Not required.

### 3.17 Electric and Electro-Magnetic Fields

**Table 17: Electric and Electro-Magnetic Fields**

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
EM F-O1	Impact of electromagnetic field on residential receptors.	No cables will be installed within 10m of any residential property due to the need for vehicles to manoeuvre both sides of the trench within the working width. As such, no significant effects have been identified, and no operational mitigation measures are required.	Not required.	Not required.

### 3.18 Arboriculture

Table 18: Arboriculture

ID	Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
ARB-O1	Impact of trees on the Proposed Development	<p>Sycamore/maple/lime trees are often associated with aphids which secrete a sticky liquid called 'honeydew'. This can be a nuisance for parked cars and potentially areas of hard surfacing and structures as the deposits can lead to the development of sooty moulds and staining. This can be easily cleaned with warm soapy water or equivalent and is likely to be less visible on darker surfaces.</p> <p>Deciduous trees will drop leaves each autumn; evergreen trees will deposit leaves/needles, seeds and other detritus throughout the year. This is likely to result in a maintenance requirement to manage leaves on hard surfaced footways and to clear gutters where tree canopies extend over or immediately adjacent to roofs. Leaf fall can be easily cleared as required from hard surfacing. Non-slip surfacing can reduce the frequency that this is required. Measures such as gutter guards or equivalent can be used to reduce the potential for leaves to block guttering and these should be employed where trees overhang or grow in close proximity to structures.</p> <p>Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner.</p> <p>All tree works recommended in the Tree Survey Schedule (<b>Appendix B of Appendix 10-H: Arboricultural Impact Assessment</b> of the ES [EN010154/APP/6.3]) as a result of the preliminary tree surveys considered trees in the context of the present use of the DCO Site (i.e., prior to the Proposed Development being in place). Where these works are not</p>	Periodic inspection of trees	Operator of the Proposed Development / tree owner.

superseded by proposed tree removal, they are recommended to be actioned by the tree owner.

Tree management is not considered to be a significant constraint to developing the DCO Site; however, the tree survey identified many large trees of varying condition and where the land use is subject to change, tree condition and the requirement for remedial works or exclusion zones must be reviewed with further advice from an arboriculturist obtained as appropriate.

Trees will be monitored during operation where they pose a risk to infrastructure constructed as part of the Proposed Development.

## 4. Complementary Plans and Procedures

- 4.1.1 A suite of complementary environmental plans and procedures are included as part of the DCO application. These plans and procedures build on the principles and procedures set out in this Framework OEMP and described in the ES. These set out proposed mitigation for the operation phase, and include the following:
- a. **Framework Landscape and Ecological Management Plan (LEMP) [EN010154/APP/7.15];**
  - b. **Framework Battery Safety Management Plan [EN010154/APP/7.17];**
  - c. **Framework Public Right of Way Management Plan (PRoWMP) [EN010154/APP/7.14];**
  - d. **Framework Soil Management Plan [EN010154/APP/7.10]; and**
  - e. **Appendix 9-D: Framework Surface Water Drainage Strategy of the ES [EN010154/APP/6.3].**

## 5. Implementation and Operation

- 5.1.1 The OEMP(s) will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this Framework OEMP, including:
- a. An organogram showing team roles, names and responsibilities;
  - b. Training requirements for relevant personnel on environmental topics;
  - c. Information on-site briefings and toolbox talks that will be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures;
  - d. Measures to advise employees of changing circumstances as work progresses;
  - e. Communication methods;
  - f. Document control;
  - g. Monitoring, inspections and audits of site operations; and
  - h. Environmental emergency procedures.

## 5.2 Management Review

- 5.2.1 The OEMP(s) will be reviewed on a six-monthly basis or more regularly if there is a significant change in operational procedure. The review will be signed off by competent person(s). The responsibilities for this role will be set out within the OEMP(s).

# 6. Monitoring and Reporting

## 6.1 Monitoring

- 6.1.1 Monitoring and reporting will be undertaken for the duration of the operational phase to demonstrate the effectiveness of the measures set out in the OEMP(s) and related maintenance controls and allow for corrective action to be taken where necessary.
- 6.1.2 As part of the monitoring process a designated Environmental Manager will observe site activities and report any deviations from the OEMP(s) in a logbook, along with the action taken and general conditions at the time. In addition, the Environmental Manager will conduct regular walkover surveys which will be documented and arrange regular formal inspections to ensure the requirements of the OEMP(s) are being met.
- 6.1.3 The Environmental Manager would also act as day-to-day contact with relevant local authorities and other regulatory agencies, such as the Environment Agency

## 6.2 Reporting

- 6.2.1 The Environmental Manager will retain records of environmental monitoring and implementation of the OEMP(s). This will allow provision of evidence that the OEMP(s) are being implemented effectively. These records will include:
- Results of routine site inspections by Environmental Manager/Project Manager;
  - Environmental surveys and investigations;
  - Environmental Action Schedule;
  - Environmental equipment test records;
  - Licences and approvals; and
  - Corrective actions taken in response to incidents, breaches of the approved OEMP(s) or complaints received from a third party.
- 6.2.2 The OEMP(s) will be updated if it is necessary to add additional control measures, with a full review as required. Substantial changes to the OEMP will be shared with the relevant planning authority; the mechanism for this will be agreed as part of preparing the OEMP.

## 6.3 Management Review

- 6.3.1 The detailed OEMP(s) will be signed off on completion of the construction works and will form the basis of the Operational Environmental Management Plan, which will be used to manage the environmental performance of the Proposed Development through operation.

## 7. References

- Ref 1 The Planning Act 2008, Available at: [https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga\\_20080029\\_en.pdf](https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf)
- Ref 2 The Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2017. Available at: <https://www.legislation.gov.uk/uksi/2017/571/schedule/4/made>.
- Ref 3 HMSO (2021). Environment Act 2021. [online] Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>.
- Ref 4 Ministry of Housing, Communities and Local Government. (2024). National Planning Policy Framework [online]. Available at: <https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf>.
- Ref 5 North Kesteven District Council. (2023). Central Lincolnshire Local Plan - Adopted April 2023. [online] Available at: <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf>.
- Ref 6 HMSO (2005). The Hazardous Waste (England and Wales) Regulations 2005. Available at: <https://www.legislation.gov.uk/uksi/2005/894/contents/made>
- Ref 7 HMSO (2011). The Waste (England and Wales) Regulations 2011. Available at: <https://www.legislation.gov.uk/uksi/2011/988/contents/made>
- Ref 8 HMSO (2013) Waste Electrical and Electronic Equipment (WEEE) Regulations 2013. Available at: <https://www.legislation.gov.uk/uksi/2013/3113/contents/made>
- Ref 9 Solar Power Europe (2021) Lifecycle Quality Best Practice Guidance.
- Ref 10 BSI (2019). BS4124:2014+A1:2019 Code of Practice for Earth Works. Methods for rating and assessing industrial and commercial sound
- Ref 11 The Institute of Quarrying (2021). Good Practice Guide for Handling Soils in Mineral Workings
- Ref 12 BSI (2006). BS 7273-1:2006 Code of practice for the operation of fire protection measures - Electrical actuation of gaseous total flooding extinguishing systems
- Ref 13 NFPA (2020).NFPA 855, Standard for the Installation of Stationary Energy Storage Systems.
- Ref 14 Department for Energy Security & Net Zero (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3), November 2023.

Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>

- Ref 15 Department of Communities and Local Government (2022). National Planning Practice Guidance: Flood Risk and Coastal Change.