

**Tillbridge Solar Project
EN010142**

**Volume 7
Framework Operational Environmental Management Plan
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1. Introduction

1.1 Background

- 1.1.1 Tillbridge Solar Ltd (hereafter referred to as ‘the Applicant’) is seeking consent for the construction, operation and decommissioning of the Tillbridge Solar Project (hereafter referred to as the ‘Scheme’). This will require an application for a Development Consent Order (DCO), which has been 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 (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) **[EN010142/APP/6.1]** and provides a framework for the management of environmental impacts during the operational phase of the Scheme.
- 1.1.3 If the Application is approved, a detailed OEMP will be produced for the Scheme prior to the date of final commissioning of the Scheme. The OEMP will be prepared in substantial accordance with this Framework OEMP, as a requirement of the DDCO and approved by the relevant planning authorities. 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 Order limits. 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) [EN010142/APP/7.8]** and **Framework Decommissioning Environmental Management Plan (DEMP) [EN010142/APP/7.10]** have been prepared to accompany the Application and will be secured as necessary through a requirement of the DCO.
- 1.1.5 An Environmental Impact Assessment (EIA) has been undertaken for the Scheme 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 Scheme 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 Scheme. 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. An overview of the Scheme and associated operational programme;
 - b. Prior assessment of environmental impacts (through the EIA);
 - c. Reduction of potential adverse impacts through design and other mitigation measures;
 - d. Monitoring of effectiveness of mitigation measures;
 - e. Corrective action procedure; and
 - f. Links to other complementary plans and procedures.
- 1.1.10 In summary, this Framework OEMP identifies how commitments made in the EIA will be translated into actions during Scheme operation 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 Scheme Description

- 1.2.1 The Scheme will comprise the construction, operation (including maintenance), and decommissioning of ground-mounted solar photovoltaic (PV) arrays. The Scheme will also include associated development to support the solar PV arrays.
- 1.2.2 The Scheme is made up of the Principal Site, the Cable Route Corridor and works to the existing National Grid Cottam Substation. The Principal Site comprises the solar PV arrays, electrical substations, grid balancing infrastructure, cabling and areas for landscaping and ecological enhancement.
- 1.2.3 The associated development element of the Scheme includes but is not limited to access provision; a Battery Energy Storage System (BESS), to support the operation of the ground mounted solar PV arrays; the development of on-site substations; underground cabling between the different areas of solar PV arrays; and areas of landscaping and biodiversity enhancement.

- 1.2.4 The Scheme also includes a 400kV underground Cable Route Corridor of approximately 18.5km in length connecting the Principal Site to the National Electricity Transmission System (NETS) at the existing National Grid Cottam Substation. The Scheme will export and import electricity to the NETS.
- 1.2.5 A full description of the Scheme is included in **Chapter 3: Scheme Description** of the ES [EN010142/APP/6.1]. An overview of the Scheme and its environmental impacts is provided in the ES **Non-Technical Summary** [EN010142/APP/6.4].

2. Operational Environmental Management

2.1 Introduction

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

2.2 Operational Activities

2.2.1 During the operational phase, activity within the Scheme 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 Scheme and improve its efficiency. There will 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 Solar Farm Control Centre is not feasible.

2.2.3 The water supply for the operations and maintenance hub at Solar Farm Control Centre will come from the mains supply and disposal will be to cesspit emptied by specialist licenced contractor.

2.2.4 Operational access will be taken from the A631 Harpswell Lane Principal Site accesses via the existing T-Junctions (Principal Site Access 2 and 3), via Principal Site Access 1 on the A631 Harpswell Lane and Principal Site Access 4 on B1398 Middle Street. In addition, there will be four secondary accesses, two off School Lane and two off Common Lane, and two further accesses provided for emergency use only, both off Common Lane. Access to the Cottam Power Station will be required, and at this stage it is anticipated that this will be from Torksey Ferry Road or an alternative access provided by EDF Energy. The operational accesses are summarised in **Table 2-1**.

2.2.5 The majority of routine visits during the operational phase will be via vans and four-wheel drive vehicles. If larger vehicles are required, they are expected to utilise the existing site accesses from the A631.

Table 2-1: Operational Accesses

Access Number	Streets, Rights of Way and Access Plan [EN010142/APP/2.4] Reference	Location and Description
Principal Site Access 1	1/13	A631 Harpswell Lane/ School Lane T-junction
Principal Site Access 2	2/03	A631 Harpswell Lane/ Unnamed road leading to Harpswell Low Farm (T- Junction)
Principal Site Access 3	2/09	A631 Harpswell Lane/ Unnamed road leading to Harpswell Grange (T- junction)
Principal Site Access 4	4/01	B1398 Middle Street / Unnamed road T-Junction (located between Coachroad Hill and Harpswell).
Internal Access 1	1/14	Access off School Lane
Internal Access 2	1/15	Access off School Lane
Internal Access 3	5/23	Access off Common Lane
Internal Access 4	6/01	Access off Common Lane
Emergency Access 1	6/04	Access off Common Lane
Emergency Access 2	6/15	Access off Common Lane
CRC Access 1	24/03	Existing private means of access to be improved.

2.2.6 Along the Cable Route 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 It is anticipated that there will be 10-12 permanent Full Time Equivalent (FTE) staff on-site during the operational phase working on a site and flexible office basis. As a worst-case scenario, this would generate up to 12 vehicles (24 movements) per day. In addition, there is forecast to be an average of five visits per week (one trip per day) from four-wheel drive vehicles, Heavy Goods Vehicles (HGVs) or transit vans for maintenance.

2.3 Replacement Schedule

2.3.1 During the operational phase of the Scheme, various solar infrastructure components will likely require replacement as shown in **Table 2-2**, 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 Every 12 months from the date of final commissioning, 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. The annual planned maintenance schedule shall 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 the 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.

2.3.3 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.

Table 2-2: Indicative Design Life of Scheme Components

Scheme Component	Indicative Design Life
Solar Panels (PV Modules)	25-40 years
Inverters	10-20 years
Racking and Mounting Systems	15-25 years
Electrical Wiring and Cabling	25-30 years
Transformers	25-30 years
Monitoring and Control Systems	10-20 years
Batteries	5-15 years
DC/DC Converters	10-20 years
Meteorological Sensors	5-15 years
Substation Equipment	25-30 years
Communication Equipment	10-20 years

2.4 Operational Programme

- 2.4.1 Subject to obtaining the necessary consents, the earliest construction could be undertaken is between late 2025 and late 2027, with planned operation from 2028. The Scheme 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 Scheme 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 [EN010142/APP/7.17].
- 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 Scheme. 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 Scheme design.
- 2.6.3 The Framework LEMP sets out the measures proposed:
- To mitigate the effects of the Scheme on landscape, biodiversity, arboriculture and heritage features;
 - To enhance the biodiversity, landscape, and green infrastructure value of the Order limits; and
 - To secure compliance with relevant national and local planning policies.

2.7 Recovery, Recycling and Disposing of Waste

- 2.7.1 The operator will separate the main waste streams on-site, prior to transport to an approved, licensed third party waste 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 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 3) and the Waste (England and Wales) Regulations (2011) (Ref 4). The Scheme 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 Scheme 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 5). In addition, companies like 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 6).

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 Scheme will receive several security risk management threat assessments during its development, construction, operation, and ultimately 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 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 in the Security Risk Management Threat Assessment.
- 2.9.3 A security fence will enclose the operational areas of the Principal Site. The fence will be a 'deer fence' type, up to 2.5m in height measured from the ground. Pole mounted CCTV systems will also be deployed around the perimeter of the operational areas of the Scheme. These would be a maximum of 3m in height. CCTV cameras would have fixed views and will be aligned to face along the fence.

3. Management and Mitigation Plan

3.1.1 This section of the Framework OEMP sets out the mitigation measures to be included as a minimum in the OEMP(s). It also sets out monitoring requirements and the responsible party identified for each mitigation measure or monitoring requirement. This section will be updated and expanded upon as part of the preparation of the OEMP(s).

Table 3-1: Air Quality

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
Dust emissions off-site	Dust emissions during operation will be managed through the following:	Site inspections and road surface cleaning to be provided if necessary	The overall responsibility will be with the Operator of the Scheme.
Operational activities including traffic movements associated with on-site staff, servicing and maintenance activities.	<ul style="list-style-type: none"> • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Ensure vehicles are inspected and cleaned as required, prior to accessing the public highway. • 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. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water from temporary water tanks where practicable and appropriate. 		

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<ul style="list-style-type: none">• 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.• Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period where operations are within 100 m of receptors.		

Table 3-2: Climate Change

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Greenhouse gas emissions from the operational energy use, fuel used for transportation of workers to the Order limits and maintenance activities required during operation of Scheme.</p>	<ul style="list-style-type: none"> • Increasing recyclability by segregating waste (solar PV components and materials) to be reused and recycled where reasonably practicable. • Reusing suitable solar infrastructure and resources where practicable to minimise the use of natural resources and unnecessary materials. • Conducting regular planning maintenance of the Scheme to optimise efficiency of the Scheme infrastructure. • Operating the Scheme 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. • Liaising with operational personnel for potential to implement staff minibuses and car sharing options. • Switching off vehicles and plant when not in use and ensuring vehicles conform to current EU emissions standards. • To embed resilience to projected increases in temperature, inverters will have a cooling system installed to control the temperature and continue to operate efficiently in warmer conditions. 	<p>To be included in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Scheme.</p>

Table 3-3: Cultural Heritage

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Impacts on the historical setting of built heritage assets associated with increased visual and noise intrusion.</p>	<p>With regard to built heritage and historic landscape assets, appropriate and sensitive screening has been developed and will be implemented to minimise the visual intrusion of the Scheme, while avoiding obscuring or intruding upon views and relationships between heritage assets. Mitigation planting has taken into consideration the surrounding landscape character and focuses on the enhancement of existing vegetation. Where new planting is proposed, hedge planting has been favoured over tree planting where appropriate. Planting as mitigation to screen views is limited to avoid the creation of new impacts; however, it has been used to enhance existing screening and/ or futureproof against the loss of existing planting as appropriate.</p> <p>Details of planting management and management of existing and new habitats during operation of the Scheme are provided in the Framework LEMP submitted alongside this DCO application [EN010142/APP/7.17]. This will be updated prior to operation to produce the detailed LEMP, which will be followed and referred to during operation of the Scheme 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 on built heritage, and ecological habitat improvements).</p>	<p>Specific responsibilities will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator of the Scheme.</p>

Table 3-4: Ecology and Nature Conservation

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Disturbance of sensitive species during operational maintenance activities.</p>	<p>The Scheme 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 not, through the retention of existing habitat and the creation of replacement habitat. The design of the Scheme 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>The creation and subsequent management of habitats has been determined by the characterisation of the existing 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 Framework LEMP submitted alongside this Application [EN010142/APP/7.17].</p> <p>Any required management of vegetation within the Scheme 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 Framework LEMP [EN010142/APP/7.17] prior to operation to ensure that committed biodiversity measures are implemented with necessary remediation.</p>	<p>As set out in the Framework LEMP [EN010142/APP/7.17].</p>	<p>Specific responsibilities will be confirmed in the Framework LEMP [EN010142/APP/7.17].</p>
<p>Disturbance to wildlife through operational lighting.</p>	<p>No part of the Scheme will be continuously lit. Manually operated and motion-detection lighting will be utilised for operational and security purposes around electrical infrastructure such as inverters,</p>	<p>To be confirmed in the detailed OEMP.</p>	<p>The overall responsibility</p>

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	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 site perimeter fence, aside from the site entrance points.		will be with the Operator.

Table 3-5: Water Environment

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>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>	<p>An Outline Drainage Strategy has been prepared and is included within Appendix 10-4 of the ES [EN010142/APP/6.2]. This Outline Drainage Strategy outlines the management of surface water runoff from the Scheme. In accordance with planning policy guidance (as outlined in Appendix 10-1 of the ES [EN010142/APP/6.2]), runoff from the Scheme will be attenuated to ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. This is secured through compliance with the Outline Drainage Strategy within the draft DCO. [EN010142/APP/3.1].</p> <p>Spillages from maintenance activities</p> <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>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 Scheme, and to ensure any maintenance activities take place in a way to avoid and minimise any potential environmental impacts.</p>	<p>The overall responsibility will be with the Operator.</p>
<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>The Framework Battery Safety Management Plan (FBSMP) submitted alongside this DCO application [EN010142/APP/7.13] 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 Scheme.</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 fire-fighting will be undertaken as this can spread chemicals used in the process and</p>		
<p>Impacts on groundwater</p>			

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
resources (flows and level).	<p>which are potentially harmful to the water environment. Instead, any apparatus or containers that catch fire will be allowed to burn out.</p>		
<p>Impacts on hydrology including subsequent impacts on aquatic habitats and water-dependent nature conservation sites due to maintenance.</p>	<p>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>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>Potential for permanent hydro-morphological impacts to watercourses, especially where crossings are required.</p>	<p>The design of the Scheme includes measures to avoid and minimise the risk of water pollution during its operation. These include:</p> <p>Appendix 10-4: Outline Drainage Strategy of the ES [EN010142/APP/6.2] will be designed so as to mimic the natural drainage conditions within the Order limits;</p> <ul style="list-style-type: none"> • As set out above, the FBSMP [EN010142/APP/7.13] includes measures to manage firewater runoff. • 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 rainfall/runoff to infiltrate to ground throughout the Principal Site; • In order to limit the potential for channelisation from rainfall dripping off the end of the panels, the areas between, under and surrounding 		
<p>Impacts on the rate and volumes of surface water run-off entering local watercourses and subsequent</p>			

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
increase in flood risk.	<p>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;</p> <ul style="list-style-type: none"> • To prevent ponding occurring around the panels, a series of boundary (and some routing) swales will be constructed to mimic natural drainage conditions. • 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; • Any areas of the Scheme containing oils, such as transformers, are to be 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 • New access roads will be permeable. <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 watercourse crossings. This will be carried out in</p>		

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>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> <p>Resilience to Flooding</p> <p>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 Outline Drainage Strategy in Appendix 10-4: Outline Drainage Strategy of the ES [EN010142/APP/6.2].</p> <p>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>Operational Cleaning</p> <p>The solar PV panels will 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.</p>		
<p>Impact on local water supplies from water usage in a 'water stressed' area.</p>	<p>The water for cleaning will be imported from local suppliers and will not be supplied by the mains water supply to the office area.</p>	<p>Monitoring requirement will be included in the detailed OEMP(s).</p>	

Table 3-6: Human Health

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
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Further details of specific embedded mitigation measures relevant to human health during the operational phase are set out in the following tables: Air Quality (**Table 3-1**), Climate Change (**Table 3-2**), Landscape and Visual Amenity (**Table 3-7**), Noise and Vibration (**Table 3-8**), Socio-economics and Land Use (**Table 3-9**) and Transport and Access (**Table 3-11**).

Table 3-7: Landscape and Visual Amenity

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Loss of existing landscape features and alteration of overall character due to change in land use from solar infrastructure</p>	<p>The Framework LEMP [EN010142/APP/7.17] 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 sites (i.e. the green infrastructure). Details of monitoring and maintenance required are set out in the Framework LEMP.</p>	<p>The Framework LEMP [EN010142/APP/7.17] sets out monitoring requirements.</p>	<p>The Framework LEMP [EN010142/APP/7.17] sets out roles and responsibilities for implementation.</p>
<p>Visibility of the Scheme and the potential to impact on nearby residential and road receptors</p>			

Table 3-8: Noise and Vibration

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Impact of noise and vibration associated with operational equipment on nearby sensitive receptors.</p>	<p>The specification of plant machinery with low noise emission and properly attenuated supply and extract terminations will help to minimise noise emissions during the operational phase. The use of enclosures, local screening, mufflers, and silencers will also be used as appropriate. If required, the relevant penalty/ correction should be applied in accordance with British Standard (BS) 4142 (Ref 7). Plant such as the substation and batteries will be designed to have minimal tonal, impulsive or intermittent features.</p> <p>Noise source data for plant in Chapter 13: Noise and Vibration of the ES [EN010142/APP/6.1] has been selected based on experience of previous solar farms. There is a requirement for flexibility in design so noise source data may not be representative of plant in the final design. Although there can be variations in noise emissions, noise emitting plant will be selected with consideration of noise emissions where practicable.</p> <p>In addition, the following measures will apply:</p> <ul style="list-style-type: none"> • Noise emissions are one of the criteria evaluated when procuring appropriate equipment for use on the Principal Site; • The location and orientation of Solar Stations and substations, inverters, transformers and cooling fans are in areas away from large concentrations of receptors such that operational noise emissions from electrical equipment are less impactful. There is a commitment to locate Solar and BESS Stations at least 250 m from residential properties; and • Transformers may be standalone units or pre-assembled with inverters and switchgear to form a single contained unit (i.e. they are enclosed). 	<p>Site staff will carry out regular monitoring and maintenance of equipment. This will include identifying any changes in sound pitches or volume early and carrying out the relevant maintenance. Further details are to be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator.</p>

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>Although the indicative Scheme layout has been optimised to minimise noise levels at sensitive receptors, there is a requirement to retain some flexibility 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 Figure 13-1: Noise Sensitive Receptors and Noise Monitoring Locations of the ES [EN010142/APP/6.3], the Applicant commits that noise at sensitive receptors will be no higher than the levels presented in Section 13.8 of Chapter 13: Noise and Vibration of the ES [EN010142/APP/6.1].</p>		

Table 3-9: Socio-Economics and Land Use

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Disruption or severance to communities and Public Rights of Way (PRoW) resulting from operational activity.</p>	<p>Primary mitigation measures are embedded within the Scheme 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 Framework PRoW Management Plan submitted alongside this DCO application [EN010142/APP/7.16].</p>		
<p>Additional permissive pathways and PRoW introduced as a result of the Scheme.</p>	<p>Mitigation, management and monitoring requirements during operation are covered in the following tables: Air Quality (Table 3-1), Noise and Vibration (Table 3-8), Transport and Access (Table 3-11) and Landscape and Visual Amenity (Table 3-7).</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>			

Table 3-10: Soils and Agriculture

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Risk of damage to soil structure associated with operational activities.</p>	<p>The Framework Soil Management Plan submitted alongside the DCO application [EN010142/APP/7.12] details the threats to the soil resource during the operational phase and required management measures.</p> <p>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 site for maintenance during the operational phase should comply with good practice guidance for handling soils (Ref 8).</p> <p>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 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 site has dried to a friable consistence.</p>	<p>As set out in the Framework Soil Management Plan [EN010142/APP/7.12]</p>	<p>The overall responsibility will be with the Operator.</p>

Table 3-11: Transport and Access

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Vehicular movements during operation.</p>	<p>No potential impacts related to transport and access are anticipated during operation, due to the low number of anticipated vehicle movements and nature of the Scheme.</p> <p>No specific mitigation measures or monitoring requirements during operation are required, although the following will be considered:</p> <ul style="list-style-type: none"> • Providing suitable points of access for operational phase vehicles; • Prohibiting vehicles from using any level crossings; • 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; • Maintaining access to all existing PRow within the Scheme, with no diversions or closures; and • Controlling areas where the internal maintenance routes cross 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 should give-way to other users (pedestrians and vulnerable 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 responsibilities will be confirmed in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator.</p>

Table 3-12: Glint and Glare

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
Potential to impact on residential, road and rail, and aviation receptors.	No mitigation is required due to the no significant effects found for the residential, road, rail and aviation receptors.	Not required.	Not required.

Table 3-13: Ground Conditions

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirement	Responsibility
<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>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> <ul style="list-style-type: none"> • 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; 	<p>To be included in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator.</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>	<ul style="list-style-type: none"> • 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; • Use of appropriate site control measures to minimise the migration of contaminated dusts and soils from the site to adjacent areas; • 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; • An emergency spillage action plan will be produced, which staff will be required to have read and understood prior to commencement of work, and provisions made to contain any leak/spill; 		
<p>Hazards to ecological</p>	<ul style="list-style-type: none"> • Should any potentially contaminated ground, including isolated 'hotspots' of contamination and/or potential deposits of asbestos 		

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirement	Responsibility
<p>receptors associated with chemical contaminants in made ground and groundwater, discharge to watercourses, sedimentation / dust deposition, physical damage to habitat, and increased human disturbance during maintenance.</p>	<p>containing materials (ACM), be encountered, 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> <ul style="list-style-type: none"> • 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; • In the event that contamination is identified, appropriate remediation measures would be taken to protect maintenance workers, future site users, water resources, structures and services; • 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; • 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 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; • 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; 		
<p>Contamination of ground gas to any on-site buildings.</p>	<ul style="list-style-type: none"> • 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 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>Creation of preferential pathways and mobilisation of contamination.</p>	<ul style="list-style-type: none"> • 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; 		

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirement	Responsibility
	<ul style="list-style-type: none">• 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.		

Table 3-14: Major Accidents and Disasters

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
<p>Potential for fire associated with certain types of batteries.</p>	<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 site office.</p> <p>A Framework Battery Safety Management Plan (FBSMP) has been produced for the Scheme alongside the Application [EN010142/APP/7.13] 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 operational phase of the Scheme.</p> <p>A summary of the anticipated safety provisions provided in the FBSMP includes:</p> <ul style="list-style-type: none"> • There shall be suitable access roads for emergency services vehicles with safe routes to BESS sites and appropriate fire service infrastructure. • 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 9Ref 10At 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 	<p>To be included in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator.</p>

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	<p>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.</p> <ul style="list-style-type: none"> • 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. • 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. • 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. • An appropriate risk assessment will be produced to minimise the risk of major accidents during operation. 		
<p>Potential for criminal damage.</p>	<p>As described in Chapter 3: Scheme Description of the ES [EN010142/APP/6.1], a security fence will enclose the PV panel areas of the Principal Site. The fence will be a 'deer fence' type, up to 2.5 m in height measured from the ground. Pole mounted CCTV systems will also be deployed around the perimeter of the operational areas of the Scheme. These would be a maximum of 3m in height. CCTV cameras would have fixed views and will be aligned to face along the fence. During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within</p>	<p>To be included in the detailed OEMP(s).</p>	<p>The overall responsibility will be with the Operator.</p>

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
	the Scheme 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.		
Potential rail accidents at the intersection of the Cable Route Corridor and the Network Rail railway line.	The operation of the crossing will be managed to the specific requirements of Network Rail.	As agreed with Network Rail.	As agreed with Network Rail

Table 3-15: Telecommunications, Television Reception and Utilities

Potential Impact	Mitigation Measure	Monitoring Requirements	Responsibility
Interference with telecommunications infrastructure.	The Scheme consists of low-lying infrastructure and will not exceed 5 m in height so will not interfere with telecommunication infrastructure during the operational phase.	Not required.	Not required.
Interference with low-lying television reception infrastructure.	Telecommunications and utilities infrastructure that crosses the Scheme has been mapped and strategically avoided through the design of the Scheme. Any maintenance and replacement activities will be undertaken with due regard to the existing telecommunications and utilities records to avoid impacting on these.		
Damage to utilities through maintenance and replacement activities.			

Table 3-16: Materials and Waste

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
Operational waste arisings associated with Solar Farm Control Centre waste and general waste.	<p>During operation, the Scheme 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>A register of waste loads leaving the Order limits 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. Specific responsibilities will be confirmed in the detailed OEMP.</p>
Production of waste and consumption of materials associated with the periodic replacement of solar infrastructure elements.	<p>Also refer to Section 2.7 of this report.</p>		
Potential for waste to impact on sensitive receptors if not stored and managed appropriately.			

Table 3-17: Electric and Electro-Magnetic Fields

Potential Impact	Mitigation / Enhancement Measure	Monitoring Requirements	Responsibility
Impact of electro-magnetic field on residential receptors.	It is unlikely that 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.	None required.	None required.

4. Complementary Plans and Procedures

4.1.1 In addition to this Framework OEMP, the following plans submitted with the Application provide requirements for the operational phase of the Scheme:

- a. **Framework Landscape and Ecological Management Plan [EN010142/APP/7.17];**
- b. **Framework Soil Management Plan [EN010142/APP/7.12];**
- c. **Framework Public Rights of Way Management Plan [EN010142/APP/7.16];**
- d. **Framework Battery Safety Management Plan [EN010142/APP/7.13];**
and
- e. **Outline Drainage Strategy (Appendix 10-4 of the ES) [EN010142/APP/6.2].**

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:
 - a. Results of routine site inspections by Environmental Manager/Project Manager;
 - b. Environmental surveys and investigations;
 - c. Environmental Action Schedule;
 - d. Environmental equipment test records;
 - e. Licences and approvals; and
 - f. 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. Existing control measures and mitigation will not be amended without prior agreement with the local authorities.

7. References

- Ref 1 HMSO (2008). The Planning Act 2008. Available at <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 13/03/2024]
- Ref 2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at <https://www.legislation.gov.uk/uksi/2017/572/contents/made> [Accessed 13/03/2024]
- Ref 3 HMSO (2005). The Hazardous Waste (England and Wales) Regulations 2005. Available at <https://www.legislation.gov.uk/uksi/2005/894/contents/made> [Accessed 13/03/2024]
- Ref 4 HMSO (2011). The Waste (England and Wales) Regulations 2011. Available at: <https://www.legislation.gov.uk/uksi/2011/988/contents/made> [Accessed 13/03/2024]
- Ref 5 HMSO (2013) Waste Electrical and Electronic Equipment (WEEE) Regulations 2013. Available at <https://www.legislation.gov.uk/uksi/2013/3113/contents/made> [Accessed 13/03/2024]
- Ref 6 Solar Power Europe (2021) Lifecycle Quality Best Practice Guidance. Available at [REDACTED] [Accessed 29 February 2024]
- Ref 7 BSI (2019). BS4124:2014+A1:2019 Code of Practice for Earth Works. Methods for rating and assessing industrial and commercial sound
- Ref 8 The Institute of Quarrying (2021). Good Practice Guide for Handling Soils in Mineral Workings.
- Ref 9 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 10 NFPA (2020). NFPA 855, Standard for the Installation of Stationary Energy Storage Systems.