FENWICK SOLAR FARM

Fenwick Solar Farm

EN010152

Framework Construction Environmental Management Plan

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Revision History

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00	October 2024	DCO Application
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Prepared for:

Fenwick Solar Project Limited

Prepared by:

AECOM Limited

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1. Introduction

1.1 Introduction

1.1.1 This document provides the framework for the Construction Environmental Management Plan (CEMP) for Fenwick Solar Farm (hereafter referred to as 'the Scheme'), in relation to an application for a Development Consent Order (DCO) for the construction, operation and maintenance, and decommissioning of the Scheme.

1.1.2 A DCO would provide the necessary authorisations and consents for the Scheme which comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating facility with a proposed total capacity exceeding 50 megawatts (MW), and associated infrastructure including a Battery Energy Storage System Area (BESS Area) and an export and import connection to the National Grid either at the Existing National Grid Thorpe Marsh Substation or at an existing overhead power line. Due to its total capacity exceeding 50 MW the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) under Sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref. 1) and therefore requires consent via a DCO. The decision whether to grant a DCO will be made by the Secretary of State for Energy Security and Net Zero (hereafter referred to as 'the Secretary of State') following the Examination and Recommendation by the Planning Inspectorate.

1.1.3 The aim of this Framework CEMP is to provide a clear and consistent approach to the control of construction activities. This document does not address operational or decommissioning activities, which would be subject to separate environmental management plans and procedures (**Framework Operational Environmental Management Plan (OEMP) [EN010152/APP/7.8]** and **Framework Decommissioning Environmental Management Plan (DEMP) [EN010152/APP/7.9]**).

1.1.4 An Environmental Impact Assessment (EIA) has been undertaken for the Scheme and an Environmental Statement (ES) has been prepared in accordance with the Infrastructure Planning (EIA) 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 construction of the Scheme and describes a range of 'industry standard' or good practice mitigation measures. This Framework CEMP outlines these construction mitigation measures and sets out the monitoring activities designed to ensure that such mitigation measures are carried out.

1.1.5 A detailed CEMP will subsequently be produced for the Scheme by the appointed Contractor(s) following grant of the DCO, when the detailed design of the Scheme is known, in accordance with Requirement 11 of the DCO (see the **Draft DCO [EN010152/APP/3.1]**). Compliance with the contents of the detailed CEMP is intended to provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making and managed appropriately. Detailed construction techniques and supporting Risk Assessment Method

Statements (RAMS), which would outline further mitigation requirements based on the measures discussed in the detailed CEMP and any supporting appendices, would be produced by the Contractor.

1.1.6 The detailed CEMP will be prepared in accordance with this Framework CEMP and would be approved by the relevant planning authority in advance of starting the construction works. This document therefore provides the likely structure of the detailed CEMP and some outline information relevant to it.

1.1.7 It is noted that multiple detailed CEMPs may be prepared, approved, and implemented for specific works, for example separate CEMPs may be prepared for the Solar PV Site and the Grid Connection Corridor. The detailed CEMP(s) will be live documents updated throughout the construction phase as required, for example to reflect changes in legislation or contact details.

1.1.8 The key elements of this Framework CEMP are:

a. An overview of the Scheme and associated construction programme;
b. Prior assessment of environmental impacts (through the EIA process);
c. Proposed design and other mitigation measures to prevent or reduce potential adverse environmental effects;
d. Monitoring and reporting of effectiveness of mitigation measures;
e. Corrective action procedure; and
f. Links to other complementary plans and procedures.

1.1.9 In summary, the Framework CEMP will identify how commitments made in the EIA will be translated into actions at the Site and includes a process for implementing the actions through allocation of key roles and responsibilities.

1.1.10 The appointed Contractor(s) will be responsible for working in accordance with the environmental controls documented in the Framework CEMP, pursuant to the DCO. The overall responsibility for implementation of the CEMP will lie with the appointed Contractor as a contractual responsibility to the Applicant, as the Applicant is ultimately responsible for compliance with the Requirements of the DCO.

1.1.11 This Framework CEMP has been designed with the objective of compliance with the relevant environmental legislation and mitigation measures set out within the ES.

1.1.12 Any additional construction licences, permits or approvals that are required will be listed in the detailed CEMP, including any environmental information submitted in respect of them.

1.2 The Applicant

1.2.1 The Applicant (Fenwick Solar Project Limited) is a wholly owned subsidiary of BOOM Developments Limited who specialise in non-subsidised solar and battery storage projects. BOOM Developments Limited was founded in 2020, and the name BOOM is an acronym for Build Own Operate Maintain. This reflects the organisation's intentions to be involved in sustainable energy projects from day one right the way through to operation and maintenance.

1.2.2 Further information on BOOM Developments Limited can be found in **ES Volume I Chapter 1: Introduction [EN010152/APP/6.1]** and in the **Funding Statement [EN010152/APP/4.2]**.

1.2.3 The DCO Application is submitted to the Planning Inspectorate, with the decision of whether to grant a DCO to be made by the Secretary of State for Department for Energy Security and Net Zero (hereafter referred to as the 'Secretary of State') pursuant to the Planning Act 2008 (Ref. 1).

1.3 The Site and the Scheme

1.3.1 The Order Limits are shown on **ES Volume II Figure 1-2: Site Boundary Plan [EN010152/APP/6.2]** and represent the maximum extent of land to be acquired or used for the construction, operation and maintenance, and decommissioning of the Scheme. This includes land required for temporary and permanent uses. The 'Site' is the collective term for all land within the Order limits.

1.3.2 The Order Limits comprise approximately 509 hectares (ha) of land, 407 ha of which is made up of the Solar PV Site. The Site is approximately centred on National Grid Reference (NGR) SE 604 161 and located entirely within the City of Doncaster Council's administrative area. The surrounding landscape comprises largely agricultural fields and several small rural villages, including Fenwick, Moss, and Sykehouse, as well as the hamlet of Topham.

1.3.3 At the closest point, the Solar PV Site Boundary is located immediately adjacent to the east of the village of Fenwick and approximately 1 km west and 1 km north of the villages of Sykehouse and Moss respectively. The closest residential properties are located within 10 m of the Order limits, however, due to the provision of buffers and land for landscaping and habitat creation/enhancement, the actual distance of separation between residential properties and Solar PV Panels, Field Stations, the On-Site Substation and the BESS Area would be considerably greater.

1.3.4 The Order Limits comprise the following elements (as shown on **ES Volume II Figure 1-3: Elements of the Site [EN010152/APP/6.2]**).

a. The Site – the collective term for all land within the Order limits comprising the Solar PV Site, Grid Connection Corridor, and Existing National Grid Thorpe Marsh Substation;

b. Solar Photovoltaic (PV) Site – the total area covered by the ground-mounted Solar PV Panels, planting and mitigation areas, Field Stations, Battery Energy Storage System (BESS), On-Site Substation, and associated infrastructure;

c. Grid Connection Corridor – the area outside the Solar PV Site in which the 400 kilovolt (kV) and associated cables (the Grid Connection Cables) would be installed between the On-Site Substation to the Existing National Grid Thorpe Marsh Substation (approximately 6 km south of the Solar PV Site). The Grid Connection Corridor has an average width of 100m; and

d. Existing National Grid Thorpe Marsh Substation – the Existing Thorpe Marsh substation (owned and operated by National Grid) where the 400

kV Grid Connection Cables would connect to the National Electricity Transmission System (NETS).

1.3.5 The Order limits also include a section of highway at the junction of the A19 and Station Road in the town of Askern to allow for abnormal indivisible load (AIL) vehicle access and escort. This area is approximately 1 ha and is centred on the approximate National Grid Reference SE 56598 13647. At this location, the works are currently anticipated to be limited to temporary traffic signal and banksman control for the period of AIL delivery whilst it is escorted to site, as shown on the **Traffic Regulation Measures Plan [EN010152/APP/2.4]** and specified in the **Draft DCO [EN010152/APP/3.1]** Schedule. Based upon preliminary swept path analysis, it is not anticipated that any street furniture is required to be removed to facilitate the manoeuvre.

1.3.6 Temporary construction compounds comprising parking, storage, staff welfare, and waste management would be located within the Order Limits. The location of temporary construction compounds is shown in **ES Volume II Figure 2-3: Indicative Site Layout Plan [EN010152/APP/6.2]**).

1.3.7 The detailed CEMP will include (as relevant) plans showing the land within each administrative area and the Order limits, including construction compound areas.

1.3.8 Further details of the Site and the Scheme are presented in **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1]** and the **Outline Design Parameters [EN010152/APP/7.4].** The Outline Design Parameters set out the maximum parameters which will be met by the Contractor and Applicant.

2. Construction Environmental Management

2.1 Roles and Responsibilities

2.1.1 This section of the Framework CEMP sets out the key Contractor roles and responsibilities of parties involved in the construction of the Scheme. The detailed CEMP prepared by the appointed Contractor prior to construction will confirm exact roles and responsibilities and include contact details for key members of staff. Clearly establishing roles and responsibilities is vital to ensure the successful construction of the Scheme, including the implementation of the detailed CEMP.

Project Manager

2.1.2 The Project Manager is responsible for:

a. Coordinating the delivery of all elements of the Scheme including ensuring conformance with the CEMP and other management plans, as well as any incident investigation required;

b. Facilitating the dissemination of generic environmental requirements to the project team;

c. Overseeing the implementation and review of environmental procedures throughout the Scheme;

d. Monitoring the environmental performance of the Scheme through maintaining an overview of incidents, inspections and audits;

e. Ensuring that environmental considerations form an integral part of design and implementation of the works and to include environmental reviews as part of regular meetings;

f. Reviewing environmental matters with Safety, Health, and Environment (SHE) Manager on a regular basis and as per Scheme requirements;

g. Liaising with Scheme SHE Manager on all environmental issues as appropriate;

h. Ensuring that all environmental incidents are reported to SHE Manager/Advisor according to agreed procedures; and

i. Nominating individual team members to support the Applicant in public relations and community liaison activities, including local community meetings.

Site Manager/Engineer

2.1.3 The Site Manager/Engineer, working with the Project Manager is responsible for:

a. Understanding and implementing all environmental procedures as identified in the CEMP, and ensuring that site operation and maintenance functions are in compliance;

b. Reviewing risk assessments and method statements (RAMS) and/or Environmental Method Statements (EMS) submitted by the Contractor prior to beginning new works activities;

c. Reviewing the Safety, Health and Environment (SHE) Plan, prepared and amended by the SHE Manager/Advisor;

d. Reviewing and monitoring the implementation, and accuracy of, the CEMP;

e. Conducting incident investigation in the event of an incident or near miss being reported by any worker or member of site management staff during site walkovers or inspections;

f. Monitoring of contractor compliance with plans and procedures;

g. Liaising with the emergency services;

h. Conducting regular site inspections;

i. Reviewing applications for environmental consents and permits in line with the Project Manager; and

j. Notifying the SHE team (and/or local authority) when a variation in working time may cause impact upon local residents or upon a local authority consent.

Safety, Health and Environment Manager

2.1.4 The SHE Manager working with the Project Manager is responsible for the following safety, health and environmental matters:

a. Providing site inductions and toolbox talks on safety, health and environmental matters and sensitivities to the appropriate staff prior to works being undertaken;

b. Preparing, reviewing and updating the SHE Plan;

c. Assisting the Project Manager and Site Manager/ Engineer in reviewing and approving RAMS and/or Environmental Method Statements;

d. Ensuring the RAMS/ Environmental Management Plans (EMPs) are implemented, ensuring compliance with procedures and legislation. Checking all documents for Duty of Care requirements, including:

   i. Weekly routine audits of the Contractor's compliance with the CEMP – site activities and record keeping;
   ii. Monitoring or inspection of site activities in response to incidents, breaches of the CEMP or complaints received from a third party;
   iii. Inspections of works to ensure that environmental mitigation measures incorporated into the design have been implemented;
   iv. Implementing corrective mitigation measures where proposed mitigation results in effects over and above those within any DCO Requirement, or license;
   v. Delivering toolbox talks on environmental matters and sensitivities to the appropriate staff prior to works being undertaken.

e. Ensuring Duty of Care with respect to all waste generated from the Scheme;

f. Preparing site specific mitigation plans in consultation with statutory consultees (in line with the Stakeholder Communications Plan) to ensure works can proceed in accordance with all environmental commitments and legislation;

g. Providing technical advice on the implementation of the CEMP including changes to legislative requirements and good practice;

h. Undertaking regular site inspections/ walkovers to ensure construction practice is compliant with best working practices and approved RAMS/ Environmental Method Statements. Between the SHE Manager and Ecological Clerk of Works (ECoW) environmental inspections will be undertaken daily. The SHE Manager/ Advisor will have the authority to stop work where non-compliant working is observed;

i. Reporting any health and/or safety incidents to Site Management as per a defined reporting procedure (to be defined in the detailed CEMP);

j. Providing health and safety advice to construction managers;

k. Attending all construction progress meetings and providing updates on safety, health and environment performance of construction works. Also ensuring regular discourse with project site staff and subcontracted companies on environmental issues;

l. Monitoring weather forecasts and receiving Environment Agency flood alerts to allow works to be planned and carried out accordingly to manage extreme weather conditions, such as storms and flooding;

m. Investigating environmental complaints (in line with agreed project procedures, and communication to be in line with the Stakeholder Communications Plan);

n. Being the day-to-day contact with relevant authorities and other regulatory agencies, such as the Environment Agency; and

o. In conjunction with the Applicant, liaise with government departments, local authorities and other statutory authorities on environmental matters. Obtaining consents and permits, as per project needs.

1.1.2 The Contractor will be able to split and merge roles, should for example it be preferable for the Environmental Manager to be a separate role to Health and Safety.

Ecological Clerk of Works

2.1.5 An Ecological Clerk of Works (ECoW) will be appointed for the duration of the construction. The purpose of this appointment is to ensure that the environmental interests of areas that may be affected by the works are safeguarded. The ECoW will have the appropriate authority to review RAMS, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, for example to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.

2.1.6 The ECoW will ensure the implementation and compliance with the provisions of the CEMP and the mitigation contained within the ES as well as licensing or other conditions imposed on the construction.

2.1.7 The ECoW may be from a company who provide a general Clerk of Works who can liaise with a team of internal specialists (Technical Specialist Advisors) on specific environmental subjects, for example, ecology, soils, noise, air quality, or pollution where required throughout construction, or a suitably qualified individual.

2.1.8 In summary, the ECoW is responsible for:

a. Inspections of the contractor's work site to ensure compliance with environmental standards and requirements;

b. Weekly routine audits of the contractor's compliance with the CEMP – site activities and record keeping;

c. Monitoring or inspection of site activities in response to incidents, breaches of the CEMP or complaints received from a third party;

d. Inspections of works to ensure that environmental mitigation measures incorporated into the design have been implemented; and

e. Implementation of corrective mitigation measures where proposed mitigation results in effects over and above those within any DCO Requirement, or license.

Archaeological Clerk of Works

2.1.9 An Archaeological Clerk of Works (ACoW) will be appointed (by the Applicant or their Contractor) and will be responsible for monitoring the work undertaken by the Archaeological Contractor. Their role will include:

a. Liaison with the Contractor/EcoW/Archaeological Contractor and monitoring of construction activities to ensure compliance with the Archaeological Mitigation Strategy (AMS) and the CEMP;

b. Oversight of the archaeological programme (in conjunction with the Archaeological Contractor);

c. Being (alongside the Archaeological Contractor) the principal point of contact for the Curators; and

d. Organising and attend regular site meetings with Curators.

Archaeological Contractor

2.1.10 An Archaeological Contractor will be appointed (by the Applicant or their Contractor) and will be responsible for the delivery of the archaeological mitigation programme, as set out in **Framework Archaeological Mitigation Strategy (AMS) [EN010152/APP/~~7.19]~~ 8.16]** submitted at Deadline 1. This responsibility will include:

a. Delivery of all on-site and off-site archaeological evaluation and mitigation works, including preparation of Site-Specific WSI's for each site;

b. Reporting, publication and deposition of archive;

c. Oversight of the archaeological programme (in conjunction with the Archaeological Clerk of Works); and

d. Being (alongside the Archaeological Clerk of Works) the principal point of contact for the Curators.

The Land Officer

2.1.11 The Land Officer is responsible for:

a. Discussing/agreeing with landowners and tenants all conditions relating to access, including fencing, gates, access to severed land, stock relocation, reinstatement, drainage, security and the complaints handling procedure with local land owners;

b. Liaison between the Contractor, landowners/tenant farmers, other stakeholders and appointed land officer supplier;

c. Being the first point of contact for any individuals, or agents of people, with interest in land and for all land related matters;

d. Dealing with all matters relating to compensation claims or losses, and complaints, from those with land interests arising as a result of the Scheme; and

e. Attending all construction progress meetings.

2.1.12 This role may be supported by an Agricultural Liaison Officer (ALO) or similar, employed to provide local landowners and those with land-related interests information regarding daily construction activities. The ALO will also assist on activities listed above.

Traffic Safety and Control Officer

2.1.13 If not undertaken by a named member of the Contractor's SHE team, a Traffic Safety and Control Officer (TSCO) may be appointed for the duration of the construction of the Scheme to act as the main point of contact and undertake the following duties in relation to traffic management:

a. Ensure that works are being carried out in accordance with the Construction Traffic Management Plan (CTMP);

b. Check all Traffic Management drawings for compliance prior to issue;

c. Manage applications for any required temporary Traffic Regulation Orders (TRO) in relation to any required road closures, one-way restrictions or partial blocking of the highway, or implementation of temporary speed limits; applications for the introduction of temporary traffic lights; or other notification to the Local Highways Authority;

d. Ensure sufficient resource is available to maintain traffic management on site;

e. Investigating and managing traffic related complaints (in line with agreed Scheme procedures); and

f. Monitor the Traffic Management schemes and layouts to ensure their effectiveness and safety to workers and public.

g. Implement, manage and develop the measures set out within the detailed Construction Traffic Management Plan (CTMP) and continue to monitor them during construction.

Community Liaison Officer

2.1.14 If not undertaken by a named member of the Contractor's team, a Community Liaison Officer will be appointed for the duration of the construction of the Scheme to act as the main point of contact (see Section 2.14).

Site Security

2.1.15 Site Security is responsible for mobilising site emergency contacts in the event of an out of hours incident occurring.

All Other Staff

2.1.16 All other staff will be expected to:

a. Understand and implement procedures relevant to their role as laid out in the detailed CEMP;

b. Conduct their work with a view to reducing the environmental impact of the Scheme and to raise any environmental concerns with the Site Engineer/Manager or SHE Team; and

c. Report all environmental incidents to the Site Manager or SHE Team as soon as possible.

2.1.17 An environmental incident response team is to be identified. They will be trained and competent to attend environmental incidents and provided with appropriate equipment to deal with any reported incident.

2.2 Construction Programme

2.2.1 Subject to being granted development consent and following a final investment decision, the earliest construction could start is in 2028. Construction of the Solar PV Site and Grid Connection Cables is anticipated to start in tandem. The Grid Connection Cables would require approximately 12 months, and the construction of the Solar PV Site would require an estimated 24 months, with the operation and maintenance phase anticipated to commence in 2030. The construction phase could be of longer duration however these timings have been used within the ES as a worst-case assumption for the technical chapters presented in **ES Volume I Chapter 6 to 14 [EN010152/APP/6.1],** for example to present the maximum predicted daily traffic flows and the amount of construction activity that could occur at any given time. The technical chapters each provide clarification on the assumptions used for the construction phase.

2.2.2 As noted in **ES Volume I Chapter 5: Environmental Impact Assessment Methodology [EN010152/APP/6.1],** should the DCO be granted the Applicant will pursue discussions with National Grid to bring forward the grid connection date (set to April 2032 as of October 2024) and ensure that the renewable energy generated by the Scheme would be available to the NETS as soon as possible, helping to meet net zero targets and contributing

towards security of supply. The Scheme could be operational from 2030 which has been assumed for the purposes of the assessment in this ES. The ES chapters each provide clarification of whether delaying or extending the construction period (and knock-on changes to the decommissioning date) would lead to changes in the outcome of the assessment provided.

2.3 Working Hours

2.3.1 The core working hours are defined as:

a. Monday to Friday 07.00 to 19.00 (daylight hours permitting);

b. Saturday 07.00 to 13.00 (daylight hours permitting); and

c. No Sunday or Bank Holiday working unless crucial to construction (for example Horizontal Directional Drilling (HDD) which must be a continuous activity) or in an emergency.

2.3.2 Emergency working may extend beyond the times quoted above timescales. For these purposes, "emergency" means a situation where, if the relevant action is not taken, there will be adverse health, safety, security or environmental consequences that in the reasonable opinion of the undertaker would outweigh the adverse effects to the public (whether individuals, classes or generally as the case may be) of taking that action.

2.3.3 Working hours will be shortened if working would necessitate artificial lighting and, therefore, the working day will be shorter in months with reduced daylight hours. It is not possible to avoid working in the winter period due to the length of construction programme. However, cabling and groundworks will be prioritised during the drier summer months where practicable.

2.3.4 As an exceptional activity, trenchless cable installation via HDD or similar techniques may require 24-hour working, for example to cross the Thorpe Marsh Drain flood defence crossing. The Local Authority will be notified in advance of any proposed works outside the core working hours identified above.

2.3.5 Additionally, quiet non-intrusive works such as the installation of Solar PV Panels may take place over longer periods during the high summer and other quiet non-intrusive works such as electrical testing, commissioning and inspection may take place over longer periods throughout the year. Quiet non-intrusive works are works that do not give rise to elevated levels of noise. These comprise a variety of activities that do not require the use of loud power tools or machinery, including (but not limited to) administrative tasks, toolbox talks with construction staff, installation of Solar PV Panels, electrical testing, commissioning and site inspection.

2.4 Landscape and Ecology

2.4.1 The **Framework Landscape and Ecological Management Plan (LEMP) [EN010152/APP/7.14]** 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 by the Applicant to establish, monitor and manage landscape and ecology mitigation and enhancement measures embedded in the design (including

biodiversity net gain). The latter will be achieved through habitat creation over and above that used for habitat mitigation.

2.4.2 Whilst there will inherently be crossover with the Framework LEMP, this Framework CEMP aims at capturing all construction related mitigation. Mitigation by design and Scheme evolution is secured in the **Design Principles Statement [EN010152/APP/7.4]** and **Framework LEMP [EN010152/APP/7.14].**

2.5 Control of Noise

2.5.1 Where on-site works are to be conducted outside the core working hours, it is intended that the Applicant will voluntarily apply for Section 61 consent under the Control of Pollution Act 1974 (Ref. 1), and the Contractor will comply with any restrictions agreed with the relevant planning authority through that process, in particular regarding the control of noise and traffic. Compliance with these noise limits will ensure adverse effects are unlikely. Abnormal or emergency construction traffic movements may occur outside of normal working hours. In the event of these occurrences, specific noise mitigation measures will be put in place to reduce potential noise impacts at nearby noise sensitive receptors.

Acoustic Fencing

2.5.2 Temporary/mobile acoustic fencing will be used to screen sensitive receptors where cable laying activities are required within 15m of a sensitive receptor. Acoustic barriers are proposed where night-time HDD works are required to take place within 200 m of a sensitive receptor.

2.5.3 Further details on the control of construction noise are presented in Table 3-7.

2.6 Control of Light

2.6.1 Construction works will generally be limited to daylight hours only, with focussed task specific lighting provided where this is not practicable, for example at those HDD locations requiring night-time working. Within construction compounds, task specific and fixed ‘general’ lighting may be required in winter periods (early mornings and up to 19.00 hrs for general workforce) to meet safety requirements. Additionally, mobile lighting, such as torches, would be used by the roving security teams during their regular checks and ‘emergency’ visits (if an alert is triggered).

2.6.2 Outside of core working hours, Passive Infra-Red (PIR) controlled lights (motion sensors) will be used at construction compounds and at welfare areas. The closed circuit television (CCTV) system will also use Infrared (IR) lighting to provide night vision functionality meaning that no visible lighting will be needed for the security system.

2.6.3 During construction all works (cable installation and within the Solar PV Site) will be restricted to daylight hours except HDD drilling operations (outlined in **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1]** and **ES Volume II Figure 2-4: Location of Temporary Construction Compounds and Indicative HDD Areas [EN010152/APP/6.2]),** unless directed by authorities or areas requiring road closures. Within construction compounds

and at welfare areas, motion activated security lighting will be employed outside of core hours. Task specific and fixed 'general' lighting may be required in winter periods (early mornings and up to 7 pm) to meet safety requirements. Additionally, mobile lighting, such as torches, would be used by the security teams during their regular checks.

2.6.4 Lighting will be directional with care to minimise potential for light spillage beyond the Order Limits particularly towards houses, live traffic, and habitats, and will be designed with reference to the Institute of Lighting Professionals Guidance Notes (in particular GN-8: Bats and Artificial Lighting (Ref. 4) which was produced in collaboration with the Bat Conservation Trust, and GN-1: Reduction of Obtrusive Light (Ref. 5) in so far as it is reasonably practicable.

2.6.5 This includes the implementation of measures such as:

a. Lights installed will be of the minimum brightness and/or power rating capable of performing the desired function;

b. Light fittings will be used that reduce the amount of light emitted above the horizontal (reduce upward lighting);

c. Light fittings will be positioned correctly, inward facing and directed downwards;

d. Direction of lights will seek to avoid spillage onto neighbouring properties, highways or waterways;

e. Direction of lights will seek to avoid spillage onto neighbouring terrestrial or aquatic habitats for example to avoid potential impacts to migrating and spawning fish; and

f. PIR controlled lights (motion sensors) will be used except where temporary focussed task specific lighting is required.

2.6.6 Where the use of security cameras is required, no visible lighting will be needed as Infrared (IR) lighting will be provided by the CCTV/security system to provide night vision functionality for CCTV.

2.7 Traffic Management

2.7.1 Traffic management mitigation measures are set out in the **Framework Construction Traffic Management Plan (CTMP) [EN010152/APP/7.17]**. This will be updated to a detailed CTMP prior to construction and agreed with the relevant highways authority, as secured via DCO Requirement 13 **(Draft DCO [EN010152/APP/3.1]).**

2.7.2 Initial investigation of accessibility in relation to Heavy Goods Vehicles (HGV) and abnormal indivisible loads (AIL), including Swept Path Analysis (SPA), has been undertaken to ascertain the feasibility of required manoeuvres by these vehicles on a number of potential access routes. Proposed access layouts, visibility splays and swept paths for the Scheme are presented in Annex A of the **Framework CTMP [EN010152/APP/7.17]**.

2.7.3 It is noted that the movement of Heavy Good Vehicles (HGV) on the public highway has been reduced as far as is practicable. When on Site, materials will be transferred to smaller tractor-trailers similar to the agricultural vehicles currently using the road network, for onward transport to point of need.

2.7.4 During construction, the appointed Contractor will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised by implementing the measures set out in the detailed CTMP which will be prepared in accordance with the **Framework CTMP [EN010152/APP/7.17].**

2.7.5 All construction access will be confirmed as the Scheme design progresses and in consultation with National Highways and the local highway authority Currently existing accesses are proposed for construction access to the Site where this is practicable.

2.7.6 If there is mud or debris on the construction site and a risk of this being tracked out by vehicles onto the public highway, wheel cleaning facilities will be used by vehicles prior to exiting the Site. For loads unable to use a fixed wheel wash, it is anticipated that localised wheel washing would be set up to cater for these individually and as required to ensure no detrimental effect to the highway.

2.8 Off Site Delivery Routes

2.8.1 The **Framework CTMP [EN010152/APP/7.17]** provides details of the designated routes for HGV movements and worker car movements. It also details measures designed to reduce travel during peak hours on the local road network.

2.8.2 Wheel washing facilities will be provided within each temporary construction compound to prevent mud from being trafficked onto the highway.

2.9 Parking Provisions

2.9.1 During the construction phase, limited (but sufficient) parking will be provided at the temporary construction compounds within the Solar PV Site and the Grid Connection Corridor which are shown on **ES Volume II Figure 2-4: Location of Temporary Construction Compounds and Indicative HDD Areas [EN010152/APP/6.2]**. In order to limit the requirement for parking, a Car Share scheme and a minibus service will be implemented as described in the **Framework CTMP [EN010152/APP/7.17]**.

2.10 Recovery, Recycling and Disposing of Waste

2.10.1 The Contractor will separate the main waste streams on-site, prior to transport to an approved, licensed third party waste management facility for recovery, recycling or disposal.

2.10.2 A Site Waste Management Plan (SWMP) will be prepared by the contractor which will provide a waste estimate, and specify key responsibilities, reporting and auditing requirements and waste recovery targets. The SWMP will be based on the **Framework SWMP [EN010152/APP/7.18]** and finalised with specific measures to be implemented prior to the start of construction, in accordance with DCO Requirement 15.

2.10.3 Waste Duty of Care will be ensured with respect to 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 management facilities and managed in line with the requirements of the Waste (England

and Wales) Regulations (2011) (Ref. 6) and the Hazardous Waste (England and Wales) Regulations (2005) (as amended) (Ref. 7). The Scheme will apply the waste management hierarchy, in priority order: prevention, preparation for reuse, recycle, other recovery and disposal.

2.10.4 If required, a Materials Management Plan (MMP) would be developed under the Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice (Ref. 8) by the appointed construction contractor to support the reuse of excavated materials, minimise off-site disposal, and to demonstrate the necessary lines of evidence to support the proper reuse/off-site disposal of materials and ensure compliance with regulatory guidance.

2.11 Security

2.11.1 Site security during construction will be managed by the Contractor(s). The erection of the Solar PV Site Perimeter Fencing will be the first stage of construction activities and therefore security fencing will be in place throughout the duration of the construction phase. Any storage of materials will be kept secure to prevent theft or vandalism. A safe system for accessing the materials storage areas would be implemented by the Contractor(s).

2.11.2 Temporary CCTV will be installed at strategic locations during construction (until the permanent system is installed) – for example to monitor construction compounds and accesses into the Solar PV Site. The CCTV will use thermal imaging and IR lighting to provide night vision functionality meaning that no visible lighting will be needed for security.

2.12 Responding to Environmental Incidents and Emergencies

2.12.1 Prior to construction, the Contractor will develop an Emergency Response Plan (ERP) 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.

2.12.2 The plan will detail the procedures for responding to incidents (such as spills, leaks or generation of silt laden runoff so as to prevent pollution) and emergencies (such as flooding) on site, and any reporting.

2.13 Good Practice

2.13.1 The Contractor will be required to be a member of the Considerate Constructors Scheme (CCS) (Ref. 9) which will assist in reducing pollution and nuisance from the Scheme, by employing good practice measures which go beyond statutory compliance.

2.14 Public Communication and Liaison

2.14.1 Prior to commencing works on site, the Contractor will develop and implement a Stakeholder Communications Plan that includes community engagement and will detail a complaints procedure. In line with the Stakeholder Communications Plan, a display board will be installed on-site,

and a website will be set up. These will include contact details for the Site Manager or alternative public interface with whom nuisance or complaints can be lodged, and the head or regional office contact information. A logbook of complaints will be prepared and managed by the Site Manager or nominated representative.

2.14.2 Any environmental complaints received will be investigated, with appropriate action taken and recorded, so that a full audit trail is available should the complainant raise the issue(s) with the local authority.

2.14.3 A Community Liaison Group would also be set up prior to construction and a Community Liaison Officer (or alternative) would be appointed to lead discussions with local communities during construction.

3. Mitigation and Monitoring

3.1.1 This section of the Framework CEMP sets out the mitigation measures to be included as a minimum in the detailed CEMP. It also sets out monitoring requirements and the responsible party identified for each mitigation measure or monitoring requirement. This section will be updated and developed following consent as part of the preparation of the detailed CEMP.

3.1 Climate Change

Table 3-1: Climate Change

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Greenhouse Gas (GHG) emissions from construction traffic (including vehicles on site and transportation of materials) and end embodied emissions of materials and products.	Appropriate standard and good practice control measures will be included in the detailed CEMP, which would comprise: a. Adopting the CCS (Ref. 9) to assist in reducing pollution, including GHGs, from the Scheme by employing good industry practice measures which go beyond statutory compliance; b. Implementing a Framework **Construction Traffic Management Plan [EN010152/APP/7.17]** to reduce the volume of construction staff and employee trips to the Site; c. Liaising with construction personnel on the potential to implement staff minibuses and car sharing options; d. Switching vehicles and plant off when not in use and ensuring construction vehicles conform to European Union (EU) vehicle emissions standards for the types of plant and vehicles to be used; e. Conducting regular planned maintenance of the plant and machinery to optimise efficiency; f. Increasing recyclability by segregating construction waste to be reused and recycled where reasonably practicable; g. Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste; h. Preparing a detailed Site Waste Management Plan (SWMP) based upon the **Framework SWMP [EN010152/APP/7.18];** and i. Where practicable, maximising the use of alternative materials with lower embodied carbon such as locally sourced products and materials with a higher recycled content.	SHE Manager to record compliance in a logbook.	The overall responsibility will be with the Contractor.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Climate Change Risks Extreme rainfall events leading to surface water flooding. Impact on workers – for example flooding and heatwaves.	Appropriate standard and good practice control measures will be included in the detailed CEMP, which would comprise: a. Conducting regular planned maintenance of the plant and machinery to operate efficiently; b. Storing topsoil and other construction materials outside of the 1 in 100-year floodplain extent within the Solar PV Site, as far as reasonably practicable; c. Named person(s) – likely Safety, Health and Environment Manager/Environmental Clerk of Works – to monitor weather forecasts and receive Environment Agency flood alerts to allow works to be planned and carried out accordingly to manage extreme weather conditions such as storms and flooding; and d. Health and safety plans developed for construction activities will be required 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. Consideration will also be given to the UKCP18 climate change projections outlined in **ES Volume I Chapter 6: Climate Change [EN010152/APP/6.1**] section 6.5, and the resilience of the Scheme's infrastructure to these, through the detailed design process.	SHE Manager to monitor weather forecasts and flood alerts.	The overall responsibility will be with the Contractor.

3.2 Cultural Heritage

Table 3-2: Cultural Heritage

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Temporary impacts on the setting of heritage assets during construction associated with increased visual and noise intrusion.	Physical impacts to known heritage assets within the Order Limits have been avoided by the Scheme design, where practicable. Fields immediately surrounding the listed buildings at Fenwick Hall Farm and Lily Hall, and the Scheduled Monument Fenwick Hall moated site, have been excluded from the Scheme. Heritage Buffer Areas have been applied to the field adjacent to the Scheduled Monument Fenwick Hall moated site and areas of archaeological interest across the Solar PV Site identified from the geophysical survey and trial trenching. The Scheme has been designed to avoid or minimise potential changes to the setting of designated heritage assets through the retention and enhancement of existing hedgerows. The planning of construction traffic routes and modes of transport has sought to reduce impacts to numerous receptors, including heritage assets. Construction traffic will be managed via the detailed Construction Traffic Management Plans (CTMP) which will be based off the **Framework CTMP [EN010152/APP/7.17]** submitted as part of this ES. The Contractor will incorporate into the detailed CEMP the measures for managing cultural heritage during the construction phase, as set out in the detailed Archaeological Mitigation Strategy (AMS) (~~based of~~in substantial accordance with the **Framework AMS [EN010152/APP/~~7.19~~8.16]** submitted ~~as part of this ES~~at Deadline 1). These measures will include, but not be limited to:	None	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	a. Methodology for how buffer zones around heritage assets are to be maintained during the construction phase to achieve successful preservation of archaeological remains; b. Inclusion of heritage management measures in site inductions and Toolbox Talks; and c. Measures for minimising impacts to heritage assets arising from noise, vibration, light and dust intrusion during construction activities.		
Potential direct impacts on buried archaeological remains	Potential direct impacts on buried archaeological remains will be managed through a programme of additional mitigation which may include preservation in situ, archaeological investigation and recording, archaeological monitoring and a protocol for dealing with unexpected archaeological discoveries during construction. The guiding principles and methodology for the planning and implementation of the archaeological mitigation, including further evaluation, will be set out in a detailed Archaeological Mitigation Strategy (AMS) (based of the **Framework AMS [EN010152/APP/~~7.19~~8.16]** submitted ~~as part of this ES~~at Deadline 1) which will be agreed with the archaeology officer for the Local Authory. The **Framework AMS [EN010152/APP/8.16]** includes a requirement for Site-Specific WSI's to be produced by the Applicant's Archaeological Contractor to achieve the mitigation measures. The Site-Specific WSI's will be agreed with the Applicant's appointed Archaeological Clerk of Works (AcoW) and the archaeology officer for the Local Authority prior to the commencement of the archaeological works.	The detailed AMS will establish the objectives for the cultural heritage works and set out the mechanisms for the appointed archaeological contractor to undertake further evaluation, mitigation, analysis, reporting and deposition of the archive prior to construction.	The overall responsibility will be with the Contractor and ACoW. Specific responsibilities will be confirmed in the detailed CEMP.

3.3 Ecology

Table 3-3: Ecology

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Potential to introduce/spread invasive non-native species beyond the Order Limits during construction of the Scheme through vehicles/machinery and people.	Himalayan balsam has been identified along watercourses and aquatic INNS have been identified within and in the vicinity of the Order Limits through site survey and desk-based study. See **ES Volume 1 Chapter 8: Ecology [EN01052/APP/6.1].** Pre-construction surveys will be undertaken where required to provide an update on the presence and location of any INNS that could be impacted by the Scheme, the findings of which will inform the implementation of measures to prevent their spread. A Biosecurity Plan prior to construction (secured through DCO Requirement 11 / 18) will set out procedures to ensure that no invasive species are brought onto or exported out of the Order Limits (e.g. Wildlife and Countryside Act 1981 ((as amended) Schedule 9 species) (Ref. 10). In the event that any future infestations of invasive non-native species are identified prior to and or during the development process, exclusion zones will be established around them, and a suitably qualified ecologist contacted for advice as required. Site/species specific method statements (or similar) will be prepared as required.	Pre-construction site walkovers will be undertaken in advance of mobilisation/any potential advance works to re-confirm the ecological baseline conditions and to identify any new ecological risks, and any INNS present within the Order Limits. Ongoing monitoring of habitats and species will be undertaken throughout construction, over seen by an appointed ECoW of suitable qualifications and experience, or in charge of a team of appropriately qualified ecologists. The ECoW will have the appropriate authority to review RAMS, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, for example to safeguard protected species and their habitats, or where any other	ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
		breaches of environmental legislation are likely to occur.	
Potential for obtrusive light spill to impact on ecology.	Controls on lighting/illumination to minimise visual intrusion and potential adverse effects on sensitive ecological features (e.g. water bodies, watercourses, woodlands, hedgerows and individual trees) will be implemented as far as reasonably practicable. Lighting to be designed in accordance with reference to the Institute of Lighting Professionals Guidance Notes (in particular GN-8: Bats and Artificial Lighting (Ref. 4) which was produced in collaboration with the Bat Conservation Trust (see Section 2.6).	The SHE Manager/ECoW will undertake site checks as required, including for lighting.	SHE Manager and ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Potential for spillages to enter watercourses and impact ecology, noise and vibration disturbance to species, dust deposition on sensitive ecological features.	**ES Volume III Appendix 9-4: Framework Drainage Strategy [EN010152/APP/6.3]** has been developed to manage surface water runoff from the BESS Area and On-Site Substation and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats. The design of the Scheme will comply with industry good practice and environmental protection legislation during construction e.g. prevention of surface and ground water pollution, fugitive dust management, noise prevention or amelioration. Standard measures for avoiding potential impacts on watercourses and fish during construction will include the implantation of suitable buffers from watercourses; avoiding fish spawning and migration periods for work near	The SHE Manager/ECoW will undertake site checks as required.	SHE Manager and ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	watercourses; and keeping any chemicals/fuels outside of floodplains. Where open-cut crossings are required, water flow would be maintained by damming and over-pumping, except where works are undertaken in the drier months and this is not necessary. To comply with the Eels (England and Wales) Regulations 2009 (REF), if over-pumping is required for the crossing of larger drains, rotor flush pumps will be used to prevent the entrainment and impingement of eels and other fish. Table 3-4 specifies mitigation requirements in relation to the prevention of spillages and water pollution. Table 3-7 specifies mitigation requirements in relation to noise and vibration. Table 3-11 specifies mitigation requirements in relation to air quality (including dust emissions). Prior to construction, the Contractor will develop an Emergency Response Plan (ERP) (see also Section 2.12 and Table 3-4). With the exception of open trench crossing and HDD of watercourses for cable installation, where required, no works will be undertaken within at least 10 m of watercourses and ponds (30 m of Moss Road and London Hill Drain, Moss Little Common Drain, Hawkhouse Green Dike, Mill Dike, Wrancarr Drain, Engine Dike and ~~Thorp~~Thorpe Marsh Engine Drain) which is considered sufficient to mitigate for potential hazards such as chemical spills to avoid potential direct impacts to watercourses and any		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	protected/notable species that use them. The detailed CEMP would also specify requirements for the safe storage of chemicals/other hazardous materials (e.g. fuel) reaching watercourses during flood events during construction. The buffer from water features, together with the measures to be outlined within this Framework CEMP, will ensure all construction activities for the installation of Solar PV Panels and infrastructure would be offset from surface watercourses, other than where there is a need for crossing of a watercourse (such as for cabling installation or possible temporary access) or connection for surface water drainage (that may be for temporary works or for the operational Scheme).		
Disturbance to species/habitats during HDD operations.	Construction methods across Wrancarr Drain which makes up part of Wrancarr Drain and Braithwaite Delves Local Wildlife Site, will utilise trenchless HDD. During the construction of the Grid Connection Corridor, Moss Road and London Hill Drain, Moss Little Common Drain, Hawkhouse Green Dike, Mill Dike, Wrancarr Drain, Engine Dike and Thorpe Marsh Engine Drain will be crossed using underground (HDD) techniques that would not disturb the watercourses. All cables will be installed a minimum of 1.5 m below the bed of watercourses, except for Mill Dike, Wrancarr Drain, Engine Dike and Thorpe Marsh Drain ~~and Engine Dike~~ due to connectivity to the River Don where the minimum installation depth would be	None.	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	5.~~0m~~0 m below the riverbed within the Grid Connection Corridor. The core fish migration season of September to February, and May, will be avoided where practicable for HDD beneath Moss Road and London Hill Drain, Moss Little Common Drain, Hawkhouse Green Dike, Mill Dike and Wrancarr Drain, unless the depth of the HDD is confirmed to be of a sufficient minimum distance of approximately 5m below the riverbed to avoid noise and vibration effects. Where watercourses/ditches are crossed by cabling works and open cut techniques are required, habitats that are temporarily lost will be reinstated after installation. The installation of new culverts will be avoided. Where small watercourses/ditches (not Main Rivers) are crossed for access (either temporarily during construction or permanently during operation and maintenance), new crossings will be clear-span and wide enough to avoid the loss of in-channel habitats. A hierarchy of mitigation measures for HDD activities will ensure that where required, HDD activity noise effects (disturbance to species and habitats) will be reduced as far as reasonably practicable. This hierarchy includes (but is not limited to) the potential for the use of quieter equipment than listed in **ES Volume 6.3 Appendix 11-4: Construction and Operation Noise Modelling [EN010152/APP/6.3]**. A site-specific hydraulic fracture risk assessment would be developed prior to construction following		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. This will assess the risk of drill fluid leaking into the watercourse and groundwater during HDD activities. If any bentonite leakage occurs during drilling, the drilling must cease. ECoW may be required at the drilling location with regard to disturbance to protected species due to vegetation clearance, noise and vibrations.		
Removal of vegetation present within the Order Limits.	Habitats supporting the majority of breeding bird species throughout the Order Limits, such as hedgerows and woodland areas, will be retained, however there will be loss of arable fields that are suitable for ground-nesting birds. Habitats of value to reptiles will be retained and avoided and sensitive vegetation clearance, under the assumption of reptile and amphibian presence, will be adopted to displace reptiles into adjacent habitats and ensure no mortality occurs. This will comprise phased and directional vegetation clearance, moving at a walking pace to allow reptiles and amphibians to disperse. Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year to avoid the nesting bird period and minimise incidental injuring or killing of reptiles and amphibians. Therefore, construction will avoid the nesting bird period (i.e. March to August inclusive) for vegetation clearance and, in areas suitable for reptiles, would be undertaken	None.	ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	at an appropriate time of year, concordant with requirements for other species (such as nesting birds and brown hare). Where vegetation clearance within the nesting bird period is unavoidable, vegetation will be checked for the presence of any nests by a suitably experienced ornithologist, prior to removal. If active nests are found, appropriate buffer zones will be put in place and the area monitored until follow up surveys can confirm that the young birds have fledged. Vegetation with the potential to support reptiles will be cut in a phased approach, firstly cutting to 30cm (centimetres), then, following a period of no less than 24 hours, to 15cm and then to ground level, after another 24 hours. Any habitat features which may conceal hibernating reptiles (e.g., log piles, rubble mound bunds, any other debris) will not be dismantled during winter months (i.e., between November and February) and will be conducted during the reptile active season (i.e., March (dependent on weather) to October) during warm weather conditions (i.e., above 5°C) to avoid killing or injuring potential hibernating reptiles. Checks for nesting birds listed under Schedule 1 of the WCA 1981 (as amended), especially barn owl (Tyto alba) will be undertaken prior to construction (including the appropriate season prior to for monitoring purposes, and immediately prior to for vegetation clearance) and will be carried out where the Scheme intersects or passes close to suitable breeding habitats or known breeding locations for these species. If nesting Schedule 1 birds are found, a		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	suitably qualified ornithologist will be consulted to advise whether a temporary no disturbance buffer around the nest is required to avoid disturbance to Schedule 1 breeding species, the size of which will be determined by the species, stage of nesting and construction activity proposed. If any tree pruning is required where this was not previously anticipated, a suitably qualified ecologist must be contacted and further surveys for potential roosting bats may be required.		
Clearance or damage of habitat to facilitate construction – resulting in temporary or permanent reduction in habitat extent and potential direct and indirect effects on associated species.	The following measures will be implemented during construction to protect retained vegetation, designated sites, protected species and other areas of biodiversity value from disturbance, and damage: a. To comply with relevant wildlife legislation, pre-construction surveys, such as updated UKHab and badger walkovers, and bat roost assessments of trees to be lost, will be undertaken to support the baseline survey findings; b. Where cables are installed beneath watercourses/ditches by open cut techniques, habitats will be reinstated. The working widths will be kept to a minimum where cables are laid using open cut methods to limit temporary habitat loss. It is assumed that where open-cut crossings are required that water flow would be maintained by damming and over pumping or fluming. Works will be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of	Updated species surveys, including but not limited to bats, breeding and non-breeding (wintering) birds, otter, water vole and badger, would be completed as appropriate to re-confirm the status of protected species identified, to support protected species licence applications, if required. Such surveys would be undertaken sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any necessary mitigation, prior to construction. Additional surveys may be required during the advance	ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	ephemeral watercourses. The watercourses will be reinstated as found and water quality monitoring will be undertaken prior to, during and following on from the construction activity. Monitoring of the vegetation re-establishment of the banks will also be undertaken. A Method Statement would be developed to ensure works within watercourse crossings include suitable measures to allow the continued passage of fish and riparian mammals throughout construction (i.e. during fluctuating water levels). c. Whilst the Scheme design retains habitats of greater aquatic interest, measures to ensure incursion into these habitats does not occur will be put in place (e.g. security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction. Where practicable, culverts extensions and any improved structure will be set 150mm (millimetres) below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for aquatic fauna. Where a new drainage ditch crossing is required, an open--span bridge crossing will be used, with the specific type of crossing selected being determined based on site specific factors and in consultation with the relevant authority (generally the Internal Drainage Board (IDB) or Lead Local Flood Authority (LLFA) for the Solar PV Site). This will also ensure that connectivity is maintained along the watercourses;	works, site clearance and construction phase as advised by the Applicant's ecologist, based on the findings of the updated walkover and protected species surveys, or otherwise as identified as appropriate by the Applicant or their appointed Contractor. Immediately prior to site clearance and the start of construction in each relevant part of the Order Limits, further site walkover surveys would be undertaken by the ECoW (or ecologist) to confirm whether the risks remain as previously assessed and/or to confirm the correct implementation of impact avoidance measures (e.g. protected species stand-offs). The scope of the required walkovers would be defined on a case-by-case basis, in consultation with the project team, or other relevant statutory consultees as necessary, based on the specific risks.	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	d. Existing designated sites will be avoided and measures will be embedded within the Scheme design to ensure that they are not impacted during construction, e.g. through siting construction routes away from and out with designated sites and buffer zones, and security fencing to protect retained habitats and protected sites from incursion; e. Perimeter security fencing required for the Scheme will be implemented early in the construction phase to secure the Site. The fence design will include gaps or suitable gates to allow mammals to pass underneath at strategic locations. The fencing will also prevent construction activity in proximity to retained vegetation, in particular Priority habitats and designated sites within and adjacent to the Order Limits and where required specific tree protection measures will be implemented, including fencing and construction exclusion zones; f. Temporary heras-style fencing (which does not impede the movement of small mammals) will be used to demarcate the working width of the Grid Connection Corridor. This fencing will also prevent construction activity in proximity to retained vegetation, in particular Habitats of Principal Importance and designated sites within and adjacent to the Order limits; g. Preparation of mitigation strategies for protected species and, where required, application for species licences (including the DLL from Natural England which has been pursued for the Scheme)		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	sufficiently in advance of the works to meet with the optimum time for mitigation and to minimise any changes to the construction programme; h. Checks for nesting Schedule 1 birds, focussing on barn owl, if the Scheme intersects or passes close to suitable breeding habitats or known breeding locations for these species. Requirements for such surveys would be established at DCO application stage. Measures to prevent disturbance would be required and would be species and site-specific. If nesting Schedule 1 birds are found, a suitably qualified ornithologist will be consulted to advise whether a temporary no disturbance buffer around the nest is required to avoid disturbance to Schedule 1 breeding species, the size of which will be determined by the species, stage of nesting and construction activity proposed. i. Reasonable avoidance measures, including appropriate buffers (of ~~up to~~at least 30 m for construction works involving heavy machinery, horizontal drilling and heavy plant vehicles) around any identified active badger setts present), or trees with bat roost suitability (a buffer of 15 m) where practicable throughout the Scheme (e.g. Solar PV Site and along the Grid Connection Corridor). Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas and preventing them falling into and becoming trapped in excavations;		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	j. Specific tree protection measures will be implemented, including fencing and construction exclusion zones. Tree Root Protection fencing will be erected around retained trees, in line with 'British Standard BS 5837: Trees in relation to design, demolition and construction – Recommendations' and these undeveloped buffers will be of at least 15 m for individual veteran/ancient trees, 15 m from woodlands, individual trees and hedgerows with trees and at least 5 m from hedgerows without trees (Ref. 11). This will prevent damage/compaction of roots by plant and other machinery and prevent direct or indirect impacts to trees k. In all cases RPA incursions (of which 17 features have been identified) will be managed so that there will be no detrimental impacts on the health or amenity of retained trees. Twenty-seven tree features have been identified as likely to require pruning to facilitate access, working space and visibility requirements. Proposed pruning will not significantly impact on the health or amenity of affected trees and will help to prevent any inadvertent damage during construction and where necessary, provide a framework for future management during operation and maintenance; l. Habitats to be temporarily lost or damaged during construction would be fully reinstated on a like-for-like basis at the same location on completion of construction works, where practical. Some habitats would be restored and/or created and managed with the aim of increasing their biodiversity value in the		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	long-term as set out within the **Framework LEMP [EN010152/APP/7.14];** m. A suitably experienced ECoW (or similar) will be employed/contracted to advise on relevant environmental commitments, the findings of the updated surveys, protected species licencing requirements and with reference to the relevant programmes; n. Relevant site staff will receive toolbox talks on the ecological risks present, legal requirements and working arrangements necessary to comply with legislation. Toolbox talks would be repeated as necessary over the duration of the relevant works; o. Sustainable management of soil resources which are disturbed by the Scheme (and their associated seedbanks) and support the habitats within the Order Limits will be undertaken, based upon standard industry good practice measures such as those in Defra's Code of Practice (Ref. 12), ensuring that stored soils retain their quality and function. Additionally, soils of different types or supporting different habitats will be stored separately and replaced in the area they were taken from so that the incorporated seedbank is not lost. These measures are set out in a **Framework Soil Management Plan (SMP), [EN010152/APP/7.10]** and Table 3-9; and p. Should additional trees be identified for removal or reduction which are suitable for roosting bats, further surveys will be undertaken as necessary,		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	which may identify the requirement for additional mitigation and/or a Natural England mitigation licence, where impacts to roosting bats cannot be avoided. Where further surveys are necessary, and for the subsequent requirements and mitigation regarding loss of or disturbance to trees, the relevant guidance at the time would need to be followed which may differ from that in place when previous surveys were conducted.		
Effects on protected or notable species	The following precautionary working methods would be employed to minimise potential adverse effects on protected/notable species prior to, and during, construction: a. Precautionary working method statements would be produced to specify working requirements and other impact avoidance measures and would be controlled and implemented through the detailed CEMP; b. Where reasonably practicable, vegetation clearance works would be undertaken outside the bird breeding season (as detailed above). Similarly, works to any trees suitable for barn owl will be suitably timed to avoid direct impacts to barn owl (i.e., injury or killing) and will be carried out only following inspection by a suitable licenced person and if absence is confirmed; c. Reasonable avoidance measures would be used during clearance of any habitat suitable for reptiles and amphibians, to minimise the risk of injury/killing including phased clearance of vegetation to	The detailed CEMP (based on this Framework document) will set out the monitoring requirements.	ECoW. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	gradually reduce suitability for reptiles and amphibians, thereby encouraging animals to move away from affected areas into adjacent suitable habitat; d. The District Level Licence (DLL) for Great crested newt route has been pursued for the Scheme. The Impact Assessment and Conservation Payment Certificate (IACPC) has been issued by Natural England. The DLL will be in place prior to commencement of works; e. Cleared ground would be maintained in a disturbed state in the run-up to construction commencing to minimise the risk of ground nesting birds attempting to nest on cleared ground; f. Precautionary measures would be implemented to prevent trapping wildlife in construction excavations in order to ensure compliance with animal welfare legislation. All excavations deeper than 1 m would be covered or fenced overnight, or where this is not practicable, a means of escape would be fitted (e.g. battened soil slope or scaffold plank) to provide an escape route should any animals stray into the construction site and fall into an excavation; g. Precautionary methods of working will be adopted for vegetation clearance within areas where reptiles, notable mammals (e.g. hedgehog, brown hare, harvest mouse) or amphibians could be present; to minimise the risk of injury/killing. This incudes pre-commencement checks for these species by a		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	suitably qualified ecology prior to vegetation clearance; and h. Additional precautionary methods and ECoW will be required with regard to open-cut channel crossings, and fish rescues may be required.		

3.4 Water Environment

Table 3-4: Water Environment

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Pollution of surface water ~~or~~, groundwater (including Source Protection Zones (SPZ)), and any designated ecology sites that are water dependent~~)~~ due to deposition or spillage of soils, sediments, oils, fuels, or other construction chemicals, or through uncontrolled site run-off including dewatering of excavations or piling. Temporary impacts on the hydromorphology of watercourses from open-cut watercourse crossings or temporary vehicle access as may be required. Temporary changes in flood risk from changes in surface water	The construction of the Scheme will be undertaken in accordance with standard and good industry practice as detailed below. Where not disapplied through the DCO, there may be the need for a number of secondary permissions for temporary and potentially some permanent works affecting watercourses or groundwater (e.g. flood risk activity permits, water activity permits, land drainage consents, and abstraction licences). It is assumed that all temporary works will be carried out under the necessary consents/permits and that the Contractor will comply with any conditions imposed by any relevant permission. **Good Practice Guidance** The following relevant Good Practice Guidance (Guidance for Pollution Prevention (GPP)) methods have been released to date on the NetRegs website (Ref. 24) and are	Temporary drainage will be monitored throughout construction. Specific details will be confirmed in detailed CEMP. Where intrusive groundworks have the potential to impact shallow groundwater, pre-construction groundwater monitoring will be undertaken to establish groundwater depths. This monitoring will account for seasonal variations in groundwater levels. Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively. Specific	SHE Manager. Specific responsibilities to be confirmed in detailed CEMP

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
runoff (e.g. disruption of stream flows during any potential culvert construction works) and exacerbation of localised flooding, due to deposition of silt, sediment in drains, ditches. Potential impacts on groundwater resources and local water supplies (licenced and unlicenced abstractions) and potentially the baseflow to watercourses from temporary dewatering of excavations or changes in hydrology.	listed below. While these are not regulatory guidance in England where the UK government website outlines regulatory requirements, it remains a useful resource for good practice and will be followed where applicable. The good practice approaches include: a. GPP 1 Understanding your environmental responsibilities – good environmental practices; b. GPP 2 Above ground oil storage tanks; c. GPP 3: Use and design of oil separators in surface water drainage systems; d. GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer; e. GPP 5: Works and maintenance in or near water; f. GPP 6: Working at construction and demolition sites; g. GPP 8: Safe storage and disposal of used oils; h. GPP 13: Vehicle washing and cleaning; i. GPP 19: Vehicles: Service and Repair; j. GPP 20: Dewatering underground ducts and chambers; k. GPP 21: Pollution incident response planning; l. GPP 22: Dealing with spills; and	details will be confirmed in detailed CEMP. The WMP (to be delivered post-consent secured through a DCO Requirement 9) will include details of pre, during and post construction water quality monitoring. This will be based on a combination of visual observations and reviews of the Environment Agency's water quality monitoring network. For any open cut crossing installations, regular observations of the watercourses will be required post-works during vegetation re-establishment of the banks, especially following wet weather, to ensure that no adverse impacts have occurred.	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	m. GPP 26: Safe storage – drums and intermediate bulk containers. Where new GPPs are yet to be published, previous Pollution Prevention Guidance (PPGs) still provide useful advice on the management of construction to avoid, minimise and reduce environmental impacts, although they should not be relied upon to provide accurate details of the current legal and regulatory requirements and processes. Construction phase operations would be carried out in accordance with guidance contained within the following PPGs: a. PPG7: Safe storage – the safe operation of refuelling facilities; and b. PPG18: Managing fire water and major spillages. Additional good practice guidance for mitigation to protect the water environment that the Contractor will comply with includes: a. British Standards Institute (2009) BS6031:2009 Code of Practice for Earth Works (Ref. 13); b. British Standards Institute (BSI) (2013) BS8582 Code of Practice for Surface Water Management of Development Sites (Ref. 14);		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	c. CIRIA C753 (2015) The SuDS [Sustainable Drainage Systems] Manual (second edition) (Ref. 15); d. CIRIA C741 (2015) Environmental good practice on site guide (fourth edition) (Ref. 16); e. CIRIA C648 (2006) Control of water pollution from linear construction projects, technical guidance (Ref. 17); f. CIRIA C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice (Ref. 18); g. CIRIA C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors (Ref. 19); and h. CIRIA C736F Containment systems for prevention of pollution (Ref. 20). **Management of Construction Site Runoff** The measures outlined below would be required for the management of fine particulates in surface water runoff that may occur as a result of the construction activities: a. All reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from construction activities. The measures will accord with the		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	principles set out in industry guidelines including CIRIA guidance documents C532 and C648 (Ref. 17; Ref. 19). Measures may include use and maintenance of temporary lagoons, tanks, bunds and fabric silt fences etc. or silt screens as well as consideration of the type of plant used; b. A temporary drainage system will be developed to prevent runoff contaminated with fine particulates or chemicals in solution from entering surface water drains without treatment. This will include identifying all land drains and water features in the Order Limits and ensuring that they are adequately protected using drain covers, sandbags, earth bunds, geotextile silt fences, straw bales etc., or proprietary treatment (e.g. lamella clarifiers), etc. where required; c. Mitigation measures (see below) will be implemented to control fine sediment laden runoff during wet weather. Water may also be required to dampen earthworks during dry weather to reduce dust impacts, and any runoff generated will need to be appropriately managed by the Contractor in accordance with the pollution prevention principles described herein; d. To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	minimum of 20 m from watercourses on flat lying land. Where this is not practicable, and it is to be stockpiled for longer than a two-week period, the material will either be covered with geotextile mats, seeded to promote vegetation growth, or runoff prevented from draining to a watercourse without prior treatment; e. Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided; f. Construction site runoff will either be treated on Site and discharged under a Water Discharge Activity Permit from the Environment Agency to Controlled Waters (potentially also including infiltration to ground) or to the nearest public sewer with sufficient capacity for treatment following discussions with Yorkshire Water, or else removed from site for disposal at an appropriate and licensed waste management facility; g. Equipment and plant are to be washed out and cleaned in designated areas within the Scheme compound only, where runoff can be isolated for treatment before disposal as outlined above; h. Mud deposits will be controlled at entry and exit points to the Site using wheel washing facilities and/or road sweepers operating		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	during earthworks activities or other times as required; i. Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste containers, grid covers and the presence of site security fencing; and j. A Water Management Plan (WMP) (which will be produced post consent along with a detailed CEMP) will include details of pre, during and post-construction water quality monitoring. This will be based on a combination of visual observations and reviews of the Environment Agency's automatic water quality monitoring network. **Management of Spillage Risk** The measures outlined below will be implemented to manage the risk of accidental spillages within the Order Limits and potential conveyance to nearby water features via surface runoff or land drains. The following measures will be adopted during the construction works: a. Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001 (Ref. 21; Ref. 22). Particular care will be taken with the		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	delivery and use of concrete and cement as it is highly corrosive and alkaline; b. Fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers, which includes 10% more capacity than is needed); c. Any plant, machinery or vehicles will be inspected before every use and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place off site if possible or, if on site, only at designated areas within the Scheme site compound. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted in the Order Limits. Drip trays or plant nappies will be placed below static mechanical plant; d. All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses; e. All refuelling, oiling and greasing of plant will take place above drip trays/plant nappies or on an impermeable surface which provides protection to underground strata and watercourses, and away from		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling; f. As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses; g. All fixed plant used on the Site will be self-bunded; h. Mobile plant is to be in good working order, kept clean, fitted with plant nappies at all times and are to carry spill kits; i. A WMP (which will be produced post consent) will include details for pollution prevention and will be prepared and included alongside the detailed CEMP. Spill kits and oil absorbent material will be carried by mobile plant and located at high-risk locations across the Order Limits and regularly topped up. All construction workers will receive spill response training and tool box talks; j. The Order Limits will be secure to prevent any vandalism that could lead to a pollution incident; k. Construction waste/debris are to be prevented from entering any surface water drainage or water body; l. Surface water drains on public roads trafficked by plant or within the construction compound will be identified and, where		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sand bags) or the road regularly cleaned by road sweeper; m. Suitable facilities for concrete wash water (e.g. geotextile wrapped sealed skip, container or earth bunded area) will be adequately contained, prevented from entering any drain, and removed from the Order Limits for appropriate disposal at a suitably licenced waste management facility; and n. Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively. In addition, any site welfare facilities will be appropriately managed, and all foul waste (e.g. from cesspit) disposed of by an appropriate contractor to a suitably licensed facility if it is not possible to connect to the public sewer. **Management of Flood Risk** Construction works undertaken adjacent to, beneath and within watercourses will comply with relevant guidance, including Environment Agency and other guidance documents ((e.g.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	GPP 5: Works and maintenance in or near water) Ref. 23)). Measures aimed at preventing an increase in flood risk during the construction works include: a. To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20 m from watercourses on flat lying land; b. Storing topsoil and other construction materials outside of the 1 in 100-year floodplain extent (Flood Zone 3), as far as reasonably practicable; c. Floodplain compensation will be provided to account for loss of floodplain volume where permanent Scheme infrastructure (comprising Solar PV Mounting Structures and Field Stations) is located within the Credible Maximum Scenario flood extent; ~~c.~~d. Within the Solar PV Site, the Main Temporary Construction Compound, located south of Haggs Lane and west of the BESS Area, along with the northern most Temporary ~~satellite~~ Construction Compound will be located outside of areas of fluvial Flood Zones 2 and 3. The eastern most temporary Construction Compound within the Solar PV Site is currently located in Flood Zones 2 and 3. ~~The~~Along the Grid Connection Corridor, the northern most		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	Temporary Construction Compound is located outside of Flood Zone 2 and 3. The southern most Temporary Construction Compound is located within Flood Zone 3, however, will be outside the 3.3% Annual Exceedance Probability (AEP) flood extent (i.e. Flood Zone 3b). Temporary works will be designed in a way to ensure ~~it is~~they are resilient to flooding, whilst also ~~minimise~~minimising flood risk impacts to third parties through any required mitigation; ~~d.~~e. Connectivity would be maintained between the floodplain and the adjacent watercourses, with no changes in ground levels within the floodplain as far as practicable; ~~e.~~f. During the construction phase, the Contractor would monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly. For example, works in the channel of any watercourses would be avoided or halted were there to be a significant risk of high flows or flooding; and ~~f.~~g. Named person(s) (likely the SHE Manager or ECoW) to monitor weather forecasts and receive of Environment Agency flood alerts (‘Floodline’ warning service). This will allow works to be planned and carried out accordingly to manage extreme weather conditions such as storms		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	and flooding. This information would be immediately passed to site offices and supervisors. The Contractor would be required to produce an Emergency Response Plan (ERP) as part of the detailed CEMP which would provide detail of the response to an impending flood and include: a. A 24-hour availability and ability to mobilise staff in the event of a flood warning; b. The removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period where there is a forecast risk that the Site may be flooded; c. Details of the evacuation and site closedown procedures; d. Arrangements for removing any potentially hazardous material and implement more stringent protection measures; e. The contractor will sign up to Environment Agency flood warning alerts and describe in the Emergency Response Plan the actions it will take in the event of a flood event occurring. These actions will be hierarchical meaning that as the risk increases the contractor will implement more stringent protection measures; f. If water is encountered during below ground construction, suitable de-watering methods		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	would be used. Any groundwater dewatering required in excess of the exemption thresholds would be undertaken in line with the requirements of the Environment Agency (under the Water Resources Act 1991 as amended (Ref. 25)) and the Environmental Permitting Regulations (2016) (Ref. 26); and g. Safe egress and exits are to be maintained at all times when working in excavations. When working in excavations a banksman is to be present at all times. **Buffer** With the exception of open trench crossing and HDD of watercourses for cable installation and construction of bridge crossings, where required, no works will be undertaken within at least 10 m of watercourses **Staff Awareness and Training** The Contractor will ensure that construction staff are fully aware of the potential impact to water resources associated with the construction works and procedures to be followed in the event of an accidental pollution event occurring. This would be included in the site induction and training, with an emphasis on procedures and guidance to reduce the risk of water pollution. **Additional Survey Requirements**		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	A pre-works survey and post-works survey of the condition of any flood defences will be undertaken prior to and after the following works: a. HDD drilling within 16 m of flood defences b. Driven piling of PV structures within 25 m of a flood defence c. Vibratory rollers for any reinstatement works within 15 m of flood defences. **Watercourse Crossings: HDD** It is proposed to install Grid Connection Cables beneath Ell Wood and Fenwick Grange Drain, Moss Road and London Hill Drain, Moss Little Common Drain, Hawkehouse Green Dike, Mill Dike, Wrancarr Drain, Engine Dike, Thorpe Marsh Drain and a parallel unnamed IDB drain, via HDD, or other non-intrusive technique. (refer to **ES Volume II Figure 2-4: Location of Temporary Construction Compounds and Indicative HDD Areas [EN010152/APP/6.2]** for locations. Installation would be a minimum of 1.5 m below the bed of the watercourse, except for Thorpe Marsh Drain and Engine Dike where the minimum installation depth would be 5.0 m below the lowest surveyed point of the riverbed within the route corridor (due to the connectivity of these watercourses to the River Don). A maximum depth would be finalised		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	based on site specific risk assessment at each crossing location in order to minimise groundwater interactions where practicable. Integrity of flood defences along the River Don and Thorpe Marsh Drain would be maintained with works undertaken in accordance with Environment Agency access requirements for future works to, and maintenance of, the flood defences. There is currently a commitment for a 16 m stand off from the flood defences to ensure no impact on the flood defences during the HDD process. The depth of construction will be identified through consultation with the Environment Agency to ensure sufficient depth of construction to avoid detrimental effects on the flood defences. A pre-works survey of the condition of any flood defences that will be crossed by HDD will be undertaken prior to construction. The pre-works survey is to ensure that there is a formal record of the condition of the flood defences prior to commencement of works. In addition to the control and management measures for site runoff and spillage risk noted above, the methodology of the drilling, or other trenchless techniques, would include measures to minimise the risk to the environment.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	A site-specific Hydraulic Fracture Risk Assessment would be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. This will assess the risk of drill fluid leaking into the watercourse and groundwater during HDD activities. There is also a need to manage drilling muds and wastewater so that this will not be spilt into the channel when working close to the banks of a watercourse. Directional drilling, or other trenchless techniques, would be undertaken by a specialist contractor and the water column above the drill path would be continuously monitored during drilling. It is acknowledged that drill fluid leakage into a watercourse is not a common problem, particularly given the proposed depths. However, where there is an increased perceived risk (i.e. lack of drilling mud returns) the drilling/boring operation would be suspended, remediation action implemented, and subsequently the methodology for that crossing re-evaluated. The drill fluids used within the drilling machine would be water based, such as naturally occurring bentonite clay. The fluid component of the drilling mud would be mains water		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	supply at the Solar PV Site. There would be some recycling of drilling muds by the drilling plant used. The bentonite within the drilling fluid enables the fluid to have sufficient viscosity to carry the cutting chips back to the surface machine whilst lubricating and cooling the drilling bit. The drilling fluid that returns to the drilling rig would be recycled within that drilling rig. Any wastewater/drilling products that are not recycled will be stored and removed from the Order Limits by a suitable waste management contractor and disposed of at a licenced wastewater facility. The sections of the cables that will be installed via trenchless approaches will require launch and receive pits to be installed at each crossing point. The launch and receive pit excavations for drilling/boring will be located at least 10 m from the top of bank. Where there are flood defences, the launch and receive pit excavations for drilling/boring will need to be a minimum of 16 m from the landward toe of flood defences. This may require survey work (prior to construction) in some locations to adequately define and agree the top of bank position. The depth and method of construction around the Thorpe Marsh Water Storage Area (WSA)		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	will be identified through liaison with the Environment Agency and HDD will be used at a sufficient depth to avoid compromising the structural integrity of the WSA. The exact dimensions of the launch and receive pits would be determined by site and ground conditions but will be kept to a safe minimum in terms of length, width and depth. Maximum parameters considered here as a worst case are dimensions of 8 m length x 3 m width x 2.4 m depth. A shoring system appropriate to the ground conditions will be used as appropriate to minimise water ingress into the pits. To be chosen based on suitability for the Site conditions by the specialist contractor. The ingress of any groundwater will be carefully managed through design of the launch or receive pit, shoring method, and a pumping and treatment system. Excessive ingress of water would make the pit unsafe and thus it is important that ingress is minimised and that a suitable system of managing that water is implemented. Once the cable is installed beneath the watercourse the pits and any cable trenches will be backfilled to the original ground level and seeded to reduce the risk of runoff and fine sediments entering the watercourse.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	Watercourse Crossings: Open-cut installation Open-cut would be used to install cables in trenching up to 1.4 m in depth. Mitigation measures would include: a. Where underground techniques are not feasible, crossings will be installed using open-cut, or intrusive, techniques. In such cases, water flow would be maintained (e.g. by over-pumping or fluming around the works). b. A pre-works morphology survey of the channel of each watercourse to be crossed will be undertaken prior to construction. The pre-works survey is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works to install cables beneath the channel; c. At this stage it is assumed that where open-cut crossings are required that water flow would be maintained by damming and over pumping or fluming. Works will be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of ephemeral watercourses; d. Once the watercourses are reinstated, silt fences, geotextile matting or straw bales should be used initially to capture mobilised		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	sediments until the watercourse has returned to a settled state; e. Watercourses will be reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity; and f. Regular observations of the watercourses will be undertaken post-works during vegetation re-establishment of the banks, especially following wet weather, to ensure that no adverse impacts have occurred. **Access Track Crossings of Watercourses** Access tracks will be constructed across the Solar PV Site, these are to access the Field Stations, the BESS Area, the On-Site Substation and the Operations and Maintenance Hub. Mitigation measures include: a. The internal road layout will be designed to avoid drainage ditch and watercourse crossings wherever possible; b. Existing watercourse crossing locations have been utilised to avoid the need for new crossing locations where practicable. No new culverts are proposed, however, the access track design round the Solar PV Site utilises an existing culvert over the north tributary to Fleet Drain to cross from Field NE7 to NE8. The existing culvert may be extended by up to 2 m with length-for-length		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	equivalent watercourse enhancements required. A further culvert extension may be required for the access track crossing an existing culvert between Field NW8 and SW1/SW2. Extensions to the existing culvert between Field NE7 and Field NE8 and will be designed to maintain connectivity along the watercourse for aquatic species and riparian mammals. All culverts to convey watercourses will be set 150 mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for aquatic fauna. c. There are four areas labelled as Bridge Options where the access track will cross watercourses. Two Bridge Options are proposed for Fenwick Common Drain (one northwest of Field SW3, and one southeast of Field SW5 in the area of the confluence with Fleet Drain), one Bridge Option is proposed on south tributary to Fleet Drain, west of Riddings Farm, northwest of Field NW8, and one southwest of Field SW8 over Ell Wood and Fenwick Grange Drain. Bridge abutments will be set back from the top of the bank sufficiently to avoid encroaching on the watercourse, with the type of crossing selected based on site-specific factors and in consultation with the relevant authority (generally the IDB/lead		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	local flood authority. New clear-span bridges will be designed to have a soffit at least 300 mm above the design flood event. Bridge Options are shown on **ES Volume II Figure 2-3 [EN010152/APP/6.2]**; and d. As part of the Scheme a section of culverted Fleet Drain would have the culvert removed. This current culvert is located on Fleet Drain east of Fenwick Hall. **Construction of Drainage Outfalls** a. The final location, position and orientation of the new outfalls will be carefully determined and informed by a hydromorphological survey to minimise any adverse local impacts on river processes; b. If headwalls are required, appropriate micro-siting of the outfalls will minimise loss of bank habitat, the need for bed scour or hard bank protection, and localised flow disturbance or disruption to sediment transport processes; and c. Soft green ditch connections between swales and outfalls to watercourses will be implemented, where practicable. This will be secured within the detailed drainage strategy (which will be produced post consent through DCO requirement 9);		

3.5 Landscape and Visual Amenity

Table 3-5: Landscape and Visual Amenity

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Loss of existing landscape features e.g. vegetation Visibility of construction activities	The Scheme has been designed and refined, as far as practicable, to avoid adverse effects on the landscape and visual amenity through option identification, selection of locations of infrastructure, and mitigation vegetation. These principles have been embedded in the design in order to mitigate potential adverse effects and maximise the delivery of local landscape benefits. The **Framework Landscape and Ecological Management Plan (LEMP) [EN010152/APP/7.14]** 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 Order Limits (i.e. the green infrastructure). A detailed LEMP, which takes into account and is prepared in accordance with the principles of the Framework LEMP, will be submitted to and approved by the relevant planning authority (secured through DCO Requirement 6). Measures proposed include: a. To protect and retain existing trees and vegetation via construction exclusion zones and tree protective fencing (see below Tree Works); b. Lighting at the minimal levels of lux and luminance as necessary during the temporary construction lighting (see below and Section 2.6);	A High-level Tree Survey Report, including site walkover survey and detailed tree survey (to BS5837:2012) of any potential ancient and/or veteran tree features is presented as **ES Volume III Appendix 10-7: Arboricultural Impact Assessment [EN010152/APP/6.3]**. Further arboricultural survey in line with BS5837:2012 will be undertaken to identify where trees are likely to be affected by the construction works and to inform the development of the detailed design. Such pre-construction surveys would be undertaken in accordance with the Framework LEMP. Additional surveys may be required during the advance works, site clearance and construction phase as advised as necessary by the Applicant's	Contractor. The detailed LEMP (based on the Framework LEMP as secured through DCO Requirement 6) will set out roles and responsibilities for implementation. These will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	c. Landscape and biodiversity management and enhancement measures including replacement tree planting; d. ECoW to ensure that the landscape and ecology requirements of the detailed CEMP are adhered to and that the construction works are monitored; and e. An implementation timetable for maintenance and management proposals, including an annual landscaping maintenance plan. **Tree Works** a. The findings of the pre-construction tree survey and Arboricultural Report (**ES Volume III Appendix 10-7: Arboricultural Impact Assessment [EN010152/APP/6.3]**), accompanied by an Arboricultural Method Statements, where construction works are likely to affect trees, will be taken into account by the appointed Contractor; b. Where works in close proximity to retained trees cannot be practically avoided, these works will be undertaken in accordance with current best practice, defined in British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (Ref. 11); and c. All necessary protective fencing will be installed prior to the commencement of any site clearance or construction works. **Conserving existing vegetation patterns** The layout of the Scheme has been designed to minimise the loss of, and avoid significant impacts on,	arboricultural specialist, based on the findings of the tree survey, or otherwise as identified as appropriate by the Applicant or their appointed main Contractor.	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	existing landscape features, where practicable. This includes minimum offsets of: a. 15 m from individual trees (or greater if required by the root protection area); b. 15 m from woodland; c. 5 m from hedgerows; d. 20 m from standing water; and e. 10 m from watercourses. Where practicable, the layout of the Scheme will use existing farm tracks and field openings as the preferred routes for construction access, minimising loss of hedgerows, where practicable. **Sensitive Design in Relation to Form, Colour, and Materials** a. Details outlining the design principles for the Scheme includes indicative materials, colours and finishes; b. The maximum height of the Solar PV Panels would be 3.5 m. The minimum AGL would be 0.8 m; and c. The proposed solar farm perimeter fencing has been designed to minimise its visual prominence. The fence will be a stock proof mesh-type with wooden posts up to approximately 2.2 m in height. **Lighting** The proposed lighting has been designed to avoid and minimise the potential for adverse landscape and visual effects, as described in Section 2.6. **Screening**		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	Existing trees and vegetation will be retained to aid screening of views where practicable, and protected during construction. Tree protection measures and the methodology for sensitive works near retained trees will be developed as part of an Arboricultural Method Statement and final Tree Protection Plan (TPP). Where tree loss is unavoidable it will be mitigated with a scheme of new tree planting. New planting including trees and hedgerows will be managed and maintained. **Additional Mitigation** Additional mitigation to reduce identified significant effects on residential receptors has been considered and includes: Specimen tree and shrub planting, or the planting of 'ready hedges' at an approximate height of 1.5m at time of planting in sensitive locations. This would reduce the time between planting during the construction phase and establishment when the planting would provide an effective screen, usually Year 15. These locations include, as set out within the **Framework LEMP [EN010152/APP/7.14]:** a. Along the southern edge of Fields NW3 and NW4 to help provide early screening for properties along the northern side of Lawn Lane in Fenwick; b. Along the southern edge of Field SE3 to help provide early screening for properties at West End; and c. Along the southern and western edge of Field SW12 to provide early screening for properties along London Lane and Fenwick Common Lane.		

3.6 Arboriculture

Table 3-6 Arboriculture

Potential Impact	Mitigation/Enhancement Measure	Monitoring	Responsibility
Tree Loss, or Direct or indirect damage to retained trees.	**ES Volume III Appendix 10-7: Arboricultural Impact Assessment [EN010152/APP/6.3]** has been produced which identifies the likely maximum extent of tree loss to facilitate the Scheme. A final assessment of arboricultural impacts, tree protection measures and the methodology for sensitive works near retained trees will be developed as part of an Arboricultural Method Statement and final Tree Protection Plan (TPP) as part of the detailed CEMP. No ancient or veteran trees will be removed. Retained trees will be protected with a fenced exclusion zone (installed in advance of commencement of works in that location) where feasible – as described in Annex E of the **Arboricultural Impact Assessment**. Where access over the Root Protection Area (RPA) of a retained tree is unavoidable this will be achieved using existing hard surfacing or ground protection (which will be sufficient to protect roots and the structure of the soil in which they grow) – as described in Annex E of the **Arboricultural Impact Assessment**. Where works are unavoidable within the RPA of retained trees, the final working methodology will be detailed in the Arboricultural Method Statement as part of the detailed CEMP.	The arrangements for site monitoring and supervision will be detailed in the Arboricultural Method Statement as part of the detailed CEMP. This is likely to include regular site visits by an arboriculturist to check on the implementation of tree protection measures (e.g., fencing and ground protection) as well as an arboricultural watching brief for any pruning and careful works within RPAs.	The detailed LEMP (based on the Framework LEMP as secured through DCO Requirement 6) will set out roles and responsibilities for implementation. These will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring	Responsibility
	Where HDDs are routed beneath trees, the depth of drill will be a minimum of 2 m to avoid impacts to roots, as most roots do not typically develop deeper than this**.** Where trees require pruning, the extent of pruning will be the minimum feasible to achieve the objective and works will be carried out in accordance with the principles of BS3998: 2010 Treework – Recommendations (**Error! Reference source not found.**). The final extent of any pruning will be determined by the Arboricultural Method Statement submitted as part of the detailed CEMP. The storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5 m from the edge of the RPA of retained trees. Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs. The detailed design will seek to further avoid or reduce any loss or impact to trees, especially those of the greatest value. Where tree loss is unavoidable it will be mitigated with a scheme of new tree planting set out in the detailed LEMP (based on the **Framework LEMP [EN010152/APP/7.14]**). Biosecurity measures will be applied as recommended in the Arboricultural Association (2018) Guidance Note 2 Application of Biosecurity in Arboriculture (Ref. 27). A Biosecurity Plan will be included in the detailed CEMP.		

3.7 Noise and Vibration

Table 3-7: Noise and Vibration

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Noise due to construction activities causing annoyance at Noise Sensitive Receptors (NSR) and damage to building structures.	Best Practicable Means will be applied, as far as reasonably practicable, during construction works to minimise noise and vibration at NSRs, including, neighbouring residential properties and other sensitive receptors arising from construction activities: a. Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme. b. All contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) which should form a prerequisite of their appointment (Ref. 28). c. Ensuring that, where reasonably practicable, noise and vibration is controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the construction programme and methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours (see Section 2.3). d. Use of modern plant, complying with applicable UK noise emission requirements. e. Hydraulic techniques for breaking to be used in preference to percussive techniques, where reasonably practicable. f. When piling, use of lower noise piling where reasonably practicable. g. Off-site pre-fabrication where reasonably practicable. h. Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.	A construction noise monitoring scheme shall be developed and agreed with the relevant local authorities following appointment of a Contractor and prior to commencement of construction works. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate investigation and action. Further details are to be confirmed in the detailed CEMP.	SHE Manager. The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in thewCEMP

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	i. All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use. j. Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Site to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable. k. All vehicles used on-site shall incorporate broadband reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable. l. Provision of information to local authorities and local residents to advise of potential noisy works that are due to take place. m. Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use. n. Drop heights of materials will be minimised. o. Plant and vehicles will be sequentially started up rather than all together. p. Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where practicable, loading and unloading will also be carried out away from such areas. q. A communication strategy forms part of this Framework CEMP. Prior to construction works being undertaken, liaison would be undertaken with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration. Noise complaints will be monitored and reported to the Applicant for immediate investigation and action. A display board will be installed on-site, and a website will be set up. These will include		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	contact details for the Community Liaison Officer or alternative with whom nuisance or complaints can be lodged. A logbook of complaints will be prepared and managed by the Site Manager. The communication strategy and noise complaint system is secured through the DCO as part of the **Framework CEMP [EN010152/APP/7.7]** and **Framework DEMP [EN010152/APP/7.9]** (DCO requirement 11 / 18 respectively).		
Impacts to nearby residents	Noise generating activities near residential properties, such as use of power tools or piling, would be limited to the hours between 08:00 and 18:00 from Monday to Friday and between 08:00 and 13:00 on Saturday. Core working hours onsite will be 07:00 to19:00 Monday to Friday and 07:00 to 13:00 on Saturday, but will be shortened if working would necessitate artificial lighting and therefore the working day may be shorter in the winter months (with the exception of activities such as HDD which require continuous working). There will be no work on a Sunday or Bank Holiday unless crucial to construction (e.g., HDD which must be a continuous activity etc.) or in an emergency. Where high noise generating works are required to be undertaken outside of core daytime working hours, consent will be sought voluntarily from the relevant local authority under Section 61 of the Control of Pollution Act 1974 (Ref. 29) for the proposed construction works, excluding non-intrusive surveys. The Section 61 application would set out the specific method of working, calculations of noise levels at nearby receptors, the actual working hours required, noise monitoring locations, details of	The Section 61 application will set out the specific method of working, calculations of noise levels at nearby receptors, the actual working hours required, noise monitoring locations, details of communication measures and the mitigation measures implemented to minimise noise and vibration impacts.	SHE Manager. The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	communication measures and the mitigation measures implemented to minimise noise and vibration impacts.		
Noise disturbance at night due to continuous HDD activities	As requirements and locations for HDD activities will not be finalised until a principal contractor is appointed, a hierarchy of mitigation measures is outlined to ensure that significant noise effects do not occur due to potential night-time works: a. Where practicable, avoid HDD works within 200 m (the distance at which significant effects are predicted at night) of residential receptors (although this will depend on the results of the ground investigation survey); b. The potential for the use of quieter equipment than listed in **ES Volume III Appendix 11-4: Construction and Operation and Maintenance Noise Modelling [EN010152/APP/6.3]** will be explored by the Contractor; and c. Depending on the location, plant and timing of works, temporary acoustic fencing will be installed around the HDD site boundary to screen receptors from noise emission if HDD works are required within 200 m of a sensitive receptor. This mitigation could provide up to 10 dB of attenuation when the noise screen completely screens the sources from the receiver.	For HDD works that are required to be undertaken outside core work hours, an application for prior consent to carry out noisy work under Section 61 of the Control of Pollution Act (Ref. 3) will be submitted to demonstrate that noise and vibration has been minimised as far as reasonably practicable.	SHE Manager. The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Vibration due to construction activities causing annoyance at Noise Sensitive Receptors (NSR) and damage to	The effect of vibration on nearby sensitive receptors can be minimised through a good communication strategy. Prior to construction works being undertaken, liaison will be undertaken with occupiers of sensitive receptors that may be adversely affected by construction vibration. The communication strategy and complaint system to be developed will include:	A construction vibration monitoring scheme shall be developed and agreed with the relevant local authority following appointment of a principal contractor and prior to	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
building structures.	a. Vibration complaints will be monitored and reported to the Applicant for immediate investigation and action; b. A display board will be installed on-site, and a website will be set up. These will include contact details for the Community Liaison Officer or alternative with whom nuisances or complaints can be lodged; and c. A logbook of complaints will be prepared and managed by the Site Manager.	commencement of construction works. Vibration complaints will be monitored and reported to the Applicant for immediate investigation and action as set out in the detailed CEMP. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to local residents to advise of potential vibration generating works that are due to take place	in the detailed CEMP. The SHE Manager will regularly record compliance in a logbook.
Construction traffic, on the local road network.	Consideration has been given to traffic routing, timing, and access points to the Scheme to minimise noise impacts at existing receptors as detailed in **ES Volume I Chapter 13: Transport and Access [EN010152/APP/6.1]**. Management of Heavy Goods Vehicles (HGV) on the highway network would be managed through the **Framework CTMP [EN010152/APP/7.17]** secured via DCO Requirement 13. Appropriate routing of construction and decommissioning traffic on public roads and along access tracks would be pursuant to the **Framework CTMP [EN010152/APP/7.17]**.	See **Framework CTMP, ES Volume 2 [EN010152/APP/7.17]**.	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Noise and vibration from HDD activities.	When finalising the locations of HDD pits, the distance to sensitive receptors will be considered and kept as large as reasonably practicable with a minimum distance of 85 m between HDD work sites and sensitive receptors.	N/A	The overall responsibility will be with the contractor.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
			Specific responsibilities will be confirmed in the detailed CEMP.

3.8 Socio-Economics and Land Use

Table 3-8: Socio-Economics and Land Use

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Disruption to users of Public Rights of Way (changes to journey times, local travel patterns and certainty of routes)	A **Framework Public Rights of Way Management Plan (PRoW MP) [EN010152/APP/7.13]** has been submitted as part of the DCO Application which sets out how PRoW will be managed during the Scheme construction phase to ensure the safety of users and Site staff.	None	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed Public Rights of Way Management Plan.
Disruption to local residents, businesses and community facilities	Primary mitigation measures are embedded within the Scheme to reduce adverse construction effects (such as noise, air quality, transport, and landscape and visual) which in turn will mitigate the effects on the local community and existing facilities from a socio-economic and land use perspective. Measures to mitigate the effects of visual impacts during construction are outlined in Table 3-5: Landscape and Visual Amenity. Measures to mitigate the effects of construction noise are outlined in Table 3-7: Noise and Vibration.	—	—

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	Measures to mitigate the effects of construction traffic are outlined in Table 3-10: Transport and Access. Measures to mitigate the effects on air quality are outlined in Table 3-11: Air Quality.		

3.9 Soils and Agricultural Land

Table 3-9 Soils and Agricultural Land

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Land take, loss of BMV resource and degradation to soils	Prior to start of construction, a Soil Management Plan (SMP) will be prepared (secured through DCO requirement 15) following the guidance in the Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites and other relevant documents such as The Institute of Quarrying's Good Practice Guide for Handling Soils in Mineral Workings and the British Society of Soil Science Guidance Note - Benefiting from Soil Management in Development and Construction (Ref. 12; Ref. 30; Ref. 31). This will be based upon the **Framework Soil Management Plan [EN010152/APP/7.10]** submitted with the DCO Application. Damage to the structure, function and resilience of soil resources (and consequent impacts to its ability to support agriculture) will be mitigated by the use of industry standard good practice measures for the stripping, handling and storage of soil materials, in line with the SMP. The following main rules will be observed during all soil handling tasks: a. No trafficking/driving of vehicles/plant or materials storage to occur outside designated areas;	None	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	b. No trafficking/driving of vehicles/plant on reinstated soil (topsoil or subsoil); c. Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage); d. Soils should only be moved under the driest practicable conditions, and this must take account of prevailing weather conditions; e. Soil handling should not be undertaken during or immediately after rainfall events. Where the 'wet-working' of soils cannot be avoided specific methodologies will be followed. These will be set out in the detailed SMP; f. No mixing of topsoil with subsoil, or of soil with other materials; g. Soil only to be stored in designated soil storage areas, away from watercourses to avoid sediment in runoff; h. Soils of different types to be stored separately. Clear records of the stockpiles (including annotated plans) will be maintained; i. All plant and machinery must always be maintained in a safe and efficient working condition; j. Daily records of operations undertaken, and site and soil conditions should be maintained; and k. Low ground pressure (LGP models) or tracked vehicles should be used where practicable. Soil handling operations will be appropriately monitored to ensure compliance with the SMP to ensure soils are suitable for reuse within the Scheme. The appropriate management of soil resources will maintain soil volumes and quality to prevent loss/lowering of Agricultural Land Classification (ALC) grade between pre- and post-construction and thus potential loss of BMV status.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	Topsoil stripping will be undertaken outside of the (wetter) winter period (October to March inclusive) where practicable and will not be undertaken during or immediately after rainfall events. Where soils are worked 'wet' specific methodologies (to be set out in the detailed SMP) will be followed. The SMP will be informed by soil and ALC surveys. Targeted pre-commencement soil and ALC surveys on agricultural land that will be subject to direct disturbance will be undertaken to inform the detailed SMP, as well as providing baseline land quality data for the success of reinstatement within the cable working corridor to be measured against. For the Grid Connection Corridor, access to agricultural land and water supplies will be maintained throughout the construction process, as far as is practicable, for example by preventing severance of fields. The construction of the Solar PV Site will be sequential, with land continuing its pre-development agricultural use for as long as practicable before the start of construction. Wherever practicable the Grid Connection Corridor will be routed along roads and in roadside verges to avoid impacts to agricultural land. Where topsoil is stripped to form access roads and foundations / hardstanding areas within the Solar PV Site and Grid Connection Corridor, it will be stored within designated storage areas as close as reasonably practicable to the area of origin and seeded to reduce erosion risk. Soils of different types will be stored separately. Clear records of the stockpiles (including annotated plans) will be maintained. All land would be fully reinstated as near as practicable to its former condition. Topsoil would be prepared and, where required (for example for the establishment of permanent pasture in the Solar PV Site), sown using an appropriate seed mix.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	For the Grid Connection Corridor, to ensure that the maximum area of productive land remains in agricultural use during the construction period, cable routeing and access tracks will be directed to the edge of fields, in field boundaries, or through less productive areas of individual fields wherever practicable, taking into account other environmental, socio-economic and engineering constraints. Access to water supplies will be maintained throughout the construction period where reasonably practicable. For the Grid Connection Corridor, access to agricultural lands will be maintained throughout the construction process, as far as is practicable. The construction of the Solar PV Site will be phased, with land continuing with its pre-development agricultural use for as long as is practicable before the start of construction. The loss of soil resource is considered as the main cause of disease and pathogen transfer, due to the transfer of soil (and incorporated seed/spore bank) from infected to uninfected areas. A SMP to be prepared prior to construction will set out appropriate measures to minimise soil loss and hence biosecurity risk. This will also be covered in the Biosecurity Plan (secured through the CEMP and delivered prior to construction). This may include measures such as appropriate cleaning and/or disinfection of machinery and equipment in areas considered to be at high risk before moving into uninfected areas. UK Government's website advertising current occurrences and imposed restrictions with regards to animal and plant diseases will be checked both pre-construction and at regular intervals throughout construction. The Contractor will also subscribe to the Animal Disease Alert Subscription Service. All restrictions will be adhered to and may include additional biosecurity measures being implemented such as restricted movements within prevention zones and additional measures around		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	the disinfection of plant and equipment (including boots and manual tools). Soil stockpiles anticipated to be in place for longer than six months will be seeded with appropriate seed mix. Along with protecting the soil against erosion and nutrient loss, this will also help prevent colonisation of the stockpile by nuisance weeds that could spread seed onto adjacent land. Stockpiles will be monitored for the presence of undesirable weed species and the stockpile vegetation cover will be managed as appropriate. Where the Grid Connection Cables are laid in agricultural land, they will be installed below typical plough depth at a minimum depth of cover at 0.9m, so as not to interfere with normal agricultural operations. Within the Solar PV Site installation depth/ depth of cover of On-Site cables may be shallower as no ploughing will occur, but a minimum depth of 0.9 m will be in place for the Grid Connection Cables.		

3.10 Transport and Access

Table 3-10: Transport and Access

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Increased traffic flows, including HGVs on the roads leading to the Site. Severance and intimidation associated	A **Framework Construction Traffic Management Plan (CTMP) [EN010152/APP/7.17]** has been submitted as part of the DCO Application and will form the framework for a detailed CTMP produced prior to construction (secured through DCO Requirement 13). Details to mitigate impacts from increased construction traffic are	There will be monitoring of HGVs, staff vehicles travelling to and from the Order limits, together with safety monitoring at	Named person as Traffic Safety Control Officer (TSCO) (to be confirmed in detailed CEMP and CTMP) to oversee management, monitoring and

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
with increased construction traffic and abnormal loads.	included in Section 5 of the **Framework CTMP [EN010152/APP/7.17].**	specific locations, as detailed in the **Framework CTMP [EN010152/APP/7.17]**. Further details to be confirmed in the detailed CEMP.	implementation of the individual measures within the detailed CTMP. Other responsibilities are to be confirmed in the detailed CEMP.

3.11 Air Quality

Table 3-11: Air Quality

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Increased nitrogen dioxide (NO_2) and particulate matter (PM_{10}) from on-site and off-site construction vehicle/plant emissions. Increased particulates and deposited dust from Site activities, materials transportation, storage and handling, including use of haul roads.	The adoption of good site practice will be implemented through measures to control dust as outlined within the Institute of Air Quality Management (IAQM) guidance, which are commensurate with the level of risk identified in the assessment and the construction phase activities for the Scheme. **Communications** a. Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site. b. Display the name and contact details of person(s) accountable for air quality and dust issues on the Order Limits. This may be the environment manager/engineer or the Site manager. c. Display the head or regional office contact information.	Measures in the detailed CEMP will include the implementation of: a. Daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as	SHE Manager. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	d. Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority (the City of Doncaster Council). The level of detail will depend on the risk, and should include as a minimum the highly recommended measures within the IAQM guidance. The desirable measures should be included as appropriate for the Site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections. **Site Management** a. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. b. Make the complaints log available to the Local Authority (City of Doncaster Council) when asked. c. Record any exceptional incidents that cause dust and/or air emissions, either on or off-site, and the action taken to resolve the situation in the log book. d. Hold regular liaison meetings with other high risk construction sites within 500 m of the Order Limits, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. **Preparing and maintaining the Site**	street furniture, cars and window sills within 100 m of Order Limits, with cleaning to be provided if necessary. b. Regular Site inspections to monitor compliance with the DMP: record inspection results, and make an inspection log available to the Local Authority when asked. Increase the frequency of Site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. c. Inspection of maintenance schedules for construction vehicles, plant and machinery. d. Inspection and recording procedures	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	a. Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. b. Avoid site runoff of water or mud. c. Keep site fencing, barriers and scaffolding clean using wet methods. d. Remove materials that have a potential to produce dust from site as soon as possible, unless being reused on Site. If they are being reused on-site cover as described below. e. Cover, seed or fence stockpiles to prevent wind whipping. f. Operating vehicle/machinery and sustainable travel. g. Ensure all vehicles switch off engines when stationary – no idling vehicles. h. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. i. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced work areas. j. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. k. Implement a Travel Plan (as part of the **Construction Traffic Management Plan [EN010152/APP/7.17])** that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). **Operations** a. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such	relating to the level of traffic movements, use and condition of haul routes.	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. b. Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/ mitigation, using non-potable water where practicable and appropriate. c. Use enclosed chutes and conveyors and covered skips. d. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. e. 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. **Waste management** a. Avoid bonfires and burning of waste materials. **Earthworks** a. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. b. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. c. Only remove the cover in small areas during work and not all at once **Construction** a. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	b. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. **Trackout** a. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Order Limits. This may require the sweeper being continuously in use. b. Avoid dry sweeping of large areas. c. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport d. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. e. Record all inspections of haul routes and any subsequent action in a Site log book. f. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. g. Access gates to be located at least 10 m from receptors where practicable.		

3.12 Glint and Glare

Table 3-12: Glint and Glare

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Potential to impact on residential receptors	Native hedgerows will be planted/infilled and maintained to a height of at least 3.5 m along the southern boundary of Field SE2, along the southwest boundary of Fields SW11 and SW12, and along the southern boundary of Field SW10.	Monitoring of hedgerows is described in the **Framework LEMP [EN010152/APP/7.14].**	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

3.13 Ground Conditions

Table 3-13: Ground Conditions

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Potential for risks to human health associated with waste generation, land contamination, airborne contamination and groundwater contamination.	Ground investigation works will be undertaken prior to commencing construction. Results would be reviewed by the appointed Contractor, including any additional investigation or mitigation measures beyond the impact avoidance measures stated here. Best practice avoidance and mitigation measures proposed include: a. All workers would be required to wear Personal Protective Equipment (PPE), such as dust masks, as applicable; b. Containment measures would be implemented, including drip trays, bunding or double-skinned tanks of fuels and oils; all chemicals	To be included in the detailed CEMP.	The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
The discovery of ground contamination during groundworks. Levelling of the Site should this include the introduction of new fill material.	would be stored in accordance with their COSHH guidelines, whilst spill kits would be provided in areas of fuel/oil storage; c. All plant and machinery would be kept away from surface water bodies wherever possible, 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; d. An Emergency Spillage Action Plan (or similar title) will be produced prior to construction. This will be covered in the site induction or at separate ToolBox Talk ensuring that all staff are aware of and understand its content and the provisions made to contain any leak/spill; e. Should any potentially contaminated ground, including isolated 'hotspots' of contamination and/or potential deposits of asbestos containing materials (ACM), be encountered, the Contractor would investigate the areas and assess the need for containment or disposal of the material. The Contractor would assess whether any additional health and safety measures are required; f. To further seek to minimise the risks of contaminants being transferred and contaminating other soils or water, construction workers would be briefed as to the possibility of the presence of such materials; g. In the event that ~~contamination~~ contaminated material, including groundwater, which was not previously assessed is identified~~,~~ ~~appropriate remediation measures~~ at any time during construction, the Contractor would ~~be taken~~complete the following steps to protect construction workers, future site users, water resources, structures and services~~;~~: i. Cease works in the vicinity of that contamination and undertake a risk assessment of the contamination;		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	ii. Dependent on the outcome of the risk assessment, submit a written scheme and programme of remedial works to be undertaken, if required, to the Environment Agency and relevant local planning authority for consultation; and iii. Undertake remedial works, if required, in accordance with the written scheme and programme, and submit a verification report to the relevant local planning authority and the Environment Agency following completion of the remedial works . h. The Contractor 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; i. The risk to surface water and groundwater from run-off from any contaminated stockpiles during construction works would 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 would be designed in line with current good practice, follow appropriate guidelines and all relevant licences/permits; j. The Contractor 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; k. Any waters removed from excavations by dewatering would be discharged appropriately, subject to the relevant permits being obtained from the Environment Agency; l. The Contractor will implement a dust suppression/management system in order to control the potential risk from airborne contamination migrating off-site to adjacent sites; and		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	m. Piling design and construction works will be completed following the preparation of a piling risk assessment. Dust management measures are described in Table 3-11. Prior to work commencing, a health and safety risk assessment should be undertaken by the appointed principal contractor and developed in accordance with current health and safety regulations. This assessment should cover potential risks to construction staff, current site users/visitors and neighbouring users. Based on the findings of this health and safety risk assessment, appropriate mitigation measures should be implemented during the construction period. Limited intrusive ground investigation and Generic Quantitative Risk Assessment (GQRA) is proposed to be undertaken prior to construction in the areas of potential contamination, as indicated in the Phase 1 PRA reports (**ES Volume III Appendix 14-3: Phase 1 Preliminary Risk Assessment – Solar PV Site [EN010152/APP/6.3]** and **ES Volume III Appendix 14-4: Phase 1 Preliminary Risk Assessment – Grid Connection Corridor [EN010152/APP/6.3]).** As indicated in **ES Volume III, Appendix 14-5: Pre-Desk Study Assessment for UXO [EN010152/APP/6.3],** "*a detailed desk study, whilst always prudent, is not essential in this instance"* and therefore is not included in this DCO application. During construction, the Scheme will be undertaken in compliance with Construction Design and Management (CDM) 2015 Regulations (Ref. 32).		

3.14 Major Accidents and Disasters

Table 3-14: Major Accidents and Disasters

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Plant or Animal Disease	a. A Biosecurity Plan will be provided post consent. This will provide measures to prevent the spread of plant or animal diseases and the transfer of injurious weed species and invasive species. Measures are likely to include appropriate cleaning and/or disinfection of machinery and equipment in areas considered to be at high risk – see also Table 3-3 Ecology, Table 3-5 Landscape and Visual Assessment and Table 3-9 Soils and Agriculture. b. The UK Government's website advertising current occurrences and imposed restrictions with regards to animal and plant diseases will be checked both pre-construction and at regular intervals throughout construction The species mix described in the **Framework LEMP [EN010152/APP/7.14]** has been chosen to avoid the use of species for which there is a known increased risk of disease or pathogen and to introduce greater variety (and resilience) into the planting. **Framework LEMP [EN010152/APP/7.14**] has been chosen to avoid the use of species for which there is a known increased risk of disease or pathogen and to introduce greater variety (and resilience) into the planting.	No monitoring required.	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Utilities Failure	Electrical cables are required to connect generating components with electricity management infrastructure within the Solar PV Areas before connecting to the On-Site Substation. These works	No monitoring required	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	are subject to Risk Assessment Method Statements (RAMS) which will be produced by the Contractor. 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 induction. The relevant risk assessments for safety during construction will be required and produced by the contactor prior to construction, which will be implemented to minimise the risk of accidents and disasters on site. Measures to mitigate the risks of major accidents and disasters are covered in the following tables: Table 3-1: Climate Change; Table 3-3: Ecology; Table 3-4: Water Environment; Table 3-10: Transport and Access; Table 3-15: Telecommunications, Television Reception and Utilities; and Table 3-16: Materials and Waste.		

3.15 Telecommunications, Television Reception and Utilities

Table 3-15: Telecommunications, Television Reception and Utilities

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Potential to affect existing utility infrastructure above and below ground as a result of excavation	Precautionary measures have been included as part of the embedded mitigation for the Scheme, including: a. Locating the Scheme outside of utilities protected zones;	SHE Manager to conduct daily monitoring for signage and height barriers.	SHE Manager. The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
and engineering operations.	b. Reviewing available utilities data/mapping and the use of ground penetrating radar before excavation to identify any unknown utilities; and c. Agreement of construction/demobilisation methods prior to works commencing. Engagement with relevant statutory undertakers is ongoing. Additionally, measures in relation to safe working beneath overhead lines will be in place at all stages of the Scheme, for example ensuring adequate clearances are in place when plant and equipment is being moved beneath the overhead lines. Similarly, measures in relation to safe working near buried utilities, particularly gas pipelines, will be in place at all stages of the Scheme. For example mitigation set out in National Grid and Northern Gas Networks guidance documents for third parties working in the vicinity of high pressure gas pipelines and associated installations (Ref. 33 and Ref. 34). Measures outlined in these documents are likely to include: **Pre-Work Consultation and Planning** a. Contacting National Grid or Northern Gas Networks early in the project planning stage to discuss the proximity to pipelines and associated risks; b. Use of pipeline location services (such as “Dial Before You Dig”) to accurately locate high-pressure pipelines before any work begins; and c. Implementation of Site-Specific Risk Assessments considering the presence of pipelines and installations, to develop appropriate safety controls. **Establish Safe Working Practices**		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	a. Adhere to minimum safe working distances from pipelines, which may vary depending on the type of work and the equipment being used; b. Hand digging is required when working directly over or near a pipeline to avoid accidental damage; c. Restrictions apply to the use of powered mechanical tools. If allowed, these tools must not be used directly above the pipeline and should be operated at a safe distance. d. Protective measures, such as using fencing or physical barriers, may be required to prevent accidental damage from construction equipment. **Permit and Supervision Requirements** a. In some cases, a permit-to-work system will be required, meaning no work can start until the appropriate permits have been obtained. b. National Grid or Northern Gas Networks may require on-site supervision by their representatives to monitor work and ensure safety measures are followed. **Pipeline Integrity and Monitoring** a. Regular monitoring during construction activity to ensure that pipelines remain stable and undisturbed; b. Avoiding Heavy Loads Over Pipelines; and c. Techniques such as sleeving, padding, or additional protective layers may be employed where necessary to protect the pipeline from physical impacts. **Emergency Procedures**		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	a. Production of an Emergency Response Plan (ERP) including details on evacuation plans and immediate reporting of any damage or gas leaks; and b. If a pipeline is struck or suspected of being damaged, all work must stop immediately, and the incident must be reported to the relevant authorities. **Post-Work Inspection** a. After work is completed, an inspection may be required to verify that the pipeline and surrounding area remain safe and undamaged; and b. Accurate records of the work carried out near pipelines should be kept for future reference and compliance checks. The **draft DCO [EN010152/APP/3.1]** includes protective provisions for the protection of electronic communication networks and utilities.		

3.16 Materials and Waste

Table 3-16: Materials and Waste

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Disposal of waste (potential waste streams are listed in **ES Volume I Chapter 14: Other**	The Scheme will aim to prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.	The types, quantities and final destination of waste generated during the construction phase would be identified, measured	SHE Manager. The overall responsibility will be with the contractor.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
Environmental Topics) Potential to impact on sensitive receptors (humans, wildlife and controlled waters) if not stored and managed appropriately.	All management of waste will be in accordance with the relevant regulations and waste will be transported by licensed waste hauliers to waste management facilities which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them. The construction of the Scheme will be subject to measures and procedures which will include the implementation of industry standard practice and control measures for environmental impacts arising during construction, such as the control of dust and the approach to material and waste management on-site. A **Framework Site Waste Management Plan (SWMP) [EN010152/APP/7.18]** accompanies the measures set out in this document, and is included alongside the ES, which sets out: a. The waste streams that will be generated; b. How the waste hierarchy will be applied to these wastes; c. Good practice measures for managing waste; and d. Roles and responsibilities for waste management. The construction contractor will use these documents to produce their CEMP and SWMP prior to works commencing on-site. To reduce the potential impacts from materials and waste, and to achieve high levels of sustainability in the Scheme as a whole, the Principal Contractor will apply the principles of the waste hierarchy and adopt best practice measures (BPM) which go beyond statutory compliance.	and recorded through the SWMP. A register of all waste loads leaving the Site 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.	Specific responsibilities will be confirmed in the detailed CEMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	This may include BPMs set out in construction industry guidance for example, guidance from the Considerate Constructors Scheme (CCS), Waste & Resources Action Programme (WRAP) and CIRIA. The following approaches will be implemented, where practicable, to minimise the quantity of waste arising and requiring disposal: a. Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme; b. Implementation of a 'just-in-time' material delivery system where practicable to avoid materials being stockpiled, which can increase the risk of damage and subsequent disposal as waste; c. Attention to material quantity requirements to avoid over-ordering and the generation of waste materials due to surplus; d. Reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping; e. Off-site prefabrication, where practical, including the use of prefabricated structural elements; f. Segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and g. Off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. Through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site.		

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements	Responsibility
	The Principal Contractor will implement the following waste management measures, where practicable, to minimise the likelihood of any localised impacts from pollution or nuisance from waste on the surrounding environment: a. Damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the Order Limits as required; b. Burning of waste or unwanted materials will not be permitted on-site; c. All hazardous materials including fuels, chemicals, cleaning agents, solvents and solvent containing products to be properly sealed in containers at the end of each day prior to storage in appropriately protected and bunded storage areas; d. All construction workers will be required to use appropriate personal protective equipment whilst performing activities on-site; e. Any waste effluent will be tested and, where necessary, disposed of at a correctly licensed facility by a licensed specialist contractor/s; and f. Materials requiring removal from the Order Limits will be transported using licensed carriers and records will be kept detailing the types and quantities of waste moved, and the destinations of this waste, in accordance with the relevant regulations.		

4. Complementary Plans and Procedures

4.1.1 A suite of complementary environmental plans and procedures have been prepared as part of the DCO Application. These set out proposed mitigation for the construction phase, and in some cases the operation and maintenance phase, and include the following:

a. Framework Soil Management Plan [EN010152/APP/7.10];

b. Framework Public Rights of Way Management Plan [EN010152/APP/7.13];

c. Framework Landscape and Ecology Management Plan (LEMP) [EN010152/APP/7.14];

d. Framework Skills, Supply Chain and Employment Plan [EN010152/APP/7.15];

e. Framework Construction Traffic Management Plan (CTMP) [EN010152/APP/7.17]; and

f. Framework Site Waste Management Plan (SWMP) [EN010152/APP/7.18]; and

g. ES Volume III Appendix 9-4: Framework Drainage Strategy [EN010152/APP/6.3].

5. Implementation and Operation

5.1.1 The detailed CEMP will set out:

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.

6. Checking and Corrective Action

6.1 Monitoring

6.1.1 Monitoring and reporting will be undertaken for the duration of the construction phase in order to demonstrate the effectiveness of the measures set out in the detailed CEMP and related construction controls and allow for corrective action to be taken where necessary.

6.1.2 As part of the monitoring process the Contractor will allocate a designated SHE Manager and ECoW, who will be present on Site throughout the construction process and when new activities are commencing. The SHE Manager and ECoW will observe site activities and report any deviations from the detailed CEMP, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the detailed CEMP as soon as possible following identification of such issues. The SHE Manager would also act as day-to-day contact with relevant local authorities and other regulatory agencies, such as the Environment Agency.

6.1.3 During construction, the SHE Manager and ECoW will conduct walkover surveys to ensure all requirements of the detailed CEMP are being met. Action from these surveys will be documented on an Environmental Action Schedule (or similar), discussed with the Project Manager for programming requirements and issued weekly for actioning.

6.1.4 The SHE Manager and/or Project Manager will arrange regular formal inspections to ensure the requirements of the detailed CEMP are being met. Details of monitoring, inspection, and audits to be undertaken will be provided in the detailed CEMP.

6.2 Records

6.2.1 The SHE Manager or Project Manager will retain records of environmental monitoring and implementation of the detailed CEMP. This will allow provision of evidence that the detailed CEMP is being implemented effectively. These records will include:

a. Environmental Action Schedule;
b. Licences and approvals;
c. Results of inspections by SHE Manager/Project Manager;
d. Other environmental surveys and investigations;
e. Environmental equipment test records; and
f. Corrective actions taken in response to incidents, breaches of the detailed CEMP or complaints received from a third party.

6.2.2 The detailed CEMP will be a ‘live’ document and will be updated as and when required, such as when there are changes to the project team or when additional information becomes available (for example through detailed civil design or additional data supply or surveys such as pre-construction ecological surveys). A full review of the CEMP will be undertaken as required (at least quarterly) throughout the construction phase. Existing control

measures and mitigation will not be amended without prior agreement with the local authorities.

6.2.3 The CEMP will be signed off by an appropriately qualified person(s) on completion of the construction works.

6.3 Management Review

6.3.1 The detailed CEMP will be signed off on completion of the construction works (by an appropriately qualified person(s) such as the SHE Manager) and will form the basis (in combination with the **Framework OEMP [EN010152/APP/7.8])** of the Operational Environmental Management Plan which will be developed by the Operations and Maintenance Contractor.

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Abbreviations

Abbreviation/Term	Definition
ACM	asbestos containing materials
ACoW	Archaeological Clerk of Works
AEP	Annual Exceedance Probability
AIL	Abnormal Invisible Load
ALC	Agricultural Land Classification
ALO	Agricultural Liaison Officer
AMS	Archaeological Mitigation Strategy
BNG	Biodiversity Net Gain
BESS	Battery Energy Storage System
BOOM	Build Own Operate Maintain
BPM	Best Practicable Measures
BSI	British Standards Institute
BS	British Standard
BSMP	Battery Safety Management Plan
CCTV	Closed Circuit Television
CCS	Considerate Constructors Scheme
CDM	Construction Design and Management
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
COSHH	Control of Substances Hazardous to Health Regulations
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DEMP	Decommissioning Environmental Management Plan
DLL	District Level Licence
DMP	Dust Management Plan
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMS	Environmental Method Statement
EMP	Environmental Management Plan
ERP	Emergency Response Plan

ES	Environmental Statement
ESAP	Emergency Spillage Action Plan
EU	European Union
LEMP	Landscape and Ecological Management Plan
GCN	great crested newts
GHG	Greenhouse Gas
GPP	Guidance for Pollution Prevention
GQRA	Generic Quantitative Risk Assessment
ha	hectares
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
IBC	Intermediate Bulk Containers
ILP	Institute of Lighting Professionals
INNS	Invasive Non-Native Species
IR	Infrared
LEMP	Landscape and Ecological Management Plan
LGP	Low Ground Pressure
LGV	Light Goods Vehicle
MW	Megawatts
MMP	Materials Management Plan
NETS	National Electricity Transmission System
NGR	National Grid Reference
NO_2	nitrogen dioxide
NSIP	Nationally Significant Infrastructure Project
NSR	Noise Sensitive Receptors
OEMP	Operational Environmental Management Plan
PIR	Passive Infra-Red
PM_{10}	particulate matter
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PRA	Prudential Regulation Authority
PRoW	Public Right of Way
PRoWMP	Public Rights of Way Management Plan

PV	photovoltaic
RAMS	Risk Assessment Method Statement
SMP	Soil Management Plan
SHE	Safety, Health, and Environment
SPA	Swept Path Analysis
SQEP	Suitable Qualified and Experienced Persons
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
TRO	Traffic Regulation Orders
TSCO	Traffic Safety and Control Officer
TTM	Temporary Traffic Management
WRAP	Waste & Resources Action Programme
WMP	Water Management Plan
WSI	Written Scheme of Investigation

Glossary of Frequently Used Terms

Term	Definition
Applicant	Fenwick Solar Project Limited.
Biodiversity Net Gain (BNG)	BNG is a strategy to develop land and contribute to the recovery of nature. It is a way of making sure the habitat for wildlife is in a better state than it was before development.
Battery Energy Storage System (BESS)	Proposed development of a battery storage installation and associated development to allow for the storage and exportation of energy to the National Grid. The BESS would be stored in battery containers.
Detailed Construction Environmental Management Plan (CEMP)	Subsequently produced following the appointment of the contractor, when the detailed design of the Scheme is known, in accordance with a requirement of the DCO prior to commencing construction. It will be a live document and will provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making and managed appropriately.
Development Consent Order (DCO)	Development consent is required pursuant to the Planning Act 2008 for Nationally Significant Infrastructure Projects. A development consent order is the order which grants development consent when an application is made to the Secretary of State.

Term	Definition
Environmental effect	The consequence of an action (impact) upon the environment such as the decline of a breeding bird population as a result of the removal of hedgerows and trees.
Environmental impact	The change in the environment from a development such as the removal of a hedgerow.
Environmental Impact Assessment (EIA)	A process by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making. For certain projects, EIA is a statutory requirement.
Environmental Statement (ES)	A document produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations to report the results of an EIA.
Existing National Grid Thorpe Marsh Substation	The existing substation at Thorpe Marsh which would connect the Solar PV Site to the National Grid.
Field Station Units	Single enclosures that comprise the inverters, a transformer, and switchgear in a single containerised unit.
Field Stations	Areas where electrical equipment such as central inverters, transformers, and switchgear are located.
Framework CEMP	This document. Provides a framework from which a final CEMP will be developed to avoid, minimise or mitigate any construction effects on the environment.
Framework Decommissioning Environmental Management Plan (DEMP)	A specific plan developed to ensure that appropriate environmental management practices are followed during the decommissioning phase of a project.
Framework Operational Environmental Management Plan (OEMP)	A specific plan developed to ensure that appropriate environmental management practices are followed during the operational phase of a project.
Grid Connection Corridor	Corridor which represents the maximum extent of land within which the cable route would be located.
Heavy Goods Vehicle (HGV)	A vehicle that has a weight over 3.5 tonnes.
Inverter	Inverters convert the direct current (DC) electricity collected by the PV modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid. Battery energy storage systems also use inverters to convert between DC and AC. The batteries function in DC and electricity must be converted to AC to pass into or from the grid.

Term	Definition
Mitigation	Measures including any process, activity, or design to avoid, prevent, reduce, or, if practicable, offset any identified significant adverse effects on the environment.
Nationally Significant Infrastructure Projects (NSIP)	NSIPs are large scale developments such as certain new harbours, power generating stations (including wind farms), highways developments and electricity transmission lines, which require a type of consent known as 'development consent' under procedures governed by the Planning Act 2008 (and amended by the Localism Act 2011).
On-Site Cables	Cables within the Solar PV Site with a voltage of up to 33 kV.
On-Site Substation	New substation(s) within the Solar PV Site that would receive electricity from the Field Stations for export to the National Grid.
Order Limits	The limits shown on the land plans and works plans within which the authorised development may be carried out and land acquired or used.
Scheme	The project (as described in section 1.3 of this document) for which the DCO Applicant is sought.
Solar PV Site	The portion of the Scheme where Solar PV Panels, BESS Area, and associated infrastructure would be located.
Solar array	Combining several solar panels creates an array.
Solar photovoltaics (PV)	Solar electricity panels, also known as PV, capture the sun's energy and convert it into electricity for consumer use.
Solar PV Panels	Convert sunlight into electrical current (as direct current, DC). Typically consist of a series of photovoltaic cells beneath a layer of toughened, low reflectivity glass.
String inverters	A device used with solar arrays to convert the energy that is generated (DC) to usable electricity for a home (AC).
Switchgear	Switchgear is an integral part of an electric power system. It includes fuses, switches, relays, isolators, circuit breaker, potential and current transformer, indicating device, lightning arresters, etc. that protects electrical hardware from faulty conditions.
The Site	The collective term for the Solar PV Site, Grid Connection Corridor, and the Existing National Grid Thorpe Marsh Substation.

Term	Definition
Transformers	Transformers control the voltage of the electricity generated across the site before it reaches the electrical infrastructure.

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