One Earth Solar Farm

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Outline Construction Environmental Management Plan

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Abbreviations and Acronyms

Term	Meaning
ACM	Asbestos containing materials
ACoW	Archaeological Clerk of Works
BESS	Battery Energy Storage Systems
BGL	Below ground level
BNG	Biodiversity Net Gain
BPM	Best Practicable Means
BS	British Standards
CCS	Considerate Constructors Scheme
CDM	Construction (Design & Management)
CEMP	Construction Environmental Management Plan
CEZ	Construction Exclusion Zone
CIRIA	Construction Industry Research and Information Association
COSHH	Control of Substances Hazardous to Health
DBA	Desk-Based Assessment
DCO	Development Consent Order
DMP	Dust Management Plan
EA	Environment Agency
EcoCoW	Ecological Clerk of Works
ECoW	Environmental Clerk of Works
EIA	Environmental Impact Assessment
ERP	Emergency Response Plan
ES	Environmental Statement
GHG	Greenhouse Gases
GPP	Guidance for Pollution Prevention
LEMP	Landscape and Ecology Management Plan
LPAs	Local Planning Authorities
MW	Megawatts
NGET	National Grid Electricity Transmission

Term	Meaning
NJUG	National Joint Utilities Group
NO_2	Nitrogen dioxide
NSR	Noise Sensitive Receptors
oBSMP	Outline Battery Safety Management Plan
oCEMP	Outline Construction Environmental Management Plan
oCTMP	Outline Construction Traffic Management Plan
oDEMP	Outline Decommissioning Environmental Management Plan (including restoration)
oLEMP	Outline Landscape and Ecology Management Plan
oOEMP	Outline Operational Environmental Management Plan
oPRoW MP	Outline Public Rights of Way Management Plan
oSMP	Outline Soil Management Plan
oSWMP	Outline Site Waste Management Plan
OWSI	Overarching Written Statement of Investigation
PM10	Particulate matter
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PV	Photovoltaic
RACIM	Responsible, Accountable, Consulted, Informed and Monitor
RPA	root protection area
SMP	Soil Management Plan
SWMP	Site Waste Management Plan
WSI	Written Statement of Investigation

1. Introduction

1.1 Introduction

1.1.1 One Earth Solar Farm Ltd (hereafter referred to as the 'Applicant') has prepared this Outline Construction Environmental Management Plan (oCEMP) in relation to an application for a Development Consent Order (DCO) for the construction, operation and maintenance and decommissioning of the One Earth Solar Farm (hereafter referred to as the 'Proposed Development'). The terminology used in this document is defined in the **Glossary of Terms and Abbreviations [EN010159/APP/7.17].**

1.1.2 This document has been updated at Deadline 3. The document references have not been updated from the original submission. Please refer to the **Guide to the Application [EN010159/APP/1.3.4]** for the list of current versions of documents.

1.1.3 The Proposed Development will involve the installation, operation (including maintenance) and decommissioning of solar photovoltaic (PV) arrays, Battery Energy Storage Systems (BESS), onsite substations and associated grid connection infrastructure which will allow for the generation and export of electricity to the proposed National Grid High Marnham substation. The Applicant has secured a connection agreement with National Grid which would allow export and import up to 740 megawatts (MW) of electricity to the proposed High Marnham substation. The Proposed Development will be located within the 'Order Limits'. Further detail is provided in **ES Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5].**

1.1.4 The purpose of the oCEMP is to provide the framework through which the Construction Environmental Management Plan(s) (CEMP(s)) and relevant preliminary information will be prepared, which in turn detail how environmental measures for the management of construction activities will be implemented as part of the Proposed Development. This document does not address operational or decommissioning activities, which are subject to separate environmental management plans: **Outline Operational Environmental Management Plan [EN010159/APP/7.5]** and **Outline Decommissioning Environmental Management (including restoration) [EN010159/APP/7.6]** included in the submission documentation.

1.1.5 Likely significant effects have been identified through the Environmental Impact Assessment (EIA) process and are reported in the Environmental Statement (ES). A range of 'standard' or best practice mitigation and construction management measures were accounted for in the assessments and these will be implemented during construction of the Proposed Development. These mitigation measures will help to reduce the impact of the identified likely significant effects, in addition to addressing the mitigation of other potential environmental effects. This oCEMP details these construction mitigation measures. It also sets out the

monitoring activities designed to ensure that such mitigation measures are carried out, and that they are effective.

1.1.6 CEMP(s) for the Proposed Development will be produced following grant of the DCO, appointment of a contractor(s), and prior to the start of construction of the Proposed Development. Multiple CEMPs will be prepared, approved and implemented to address specific works or phases of the Proposed Development.

1.1.7 The CEMP(s) will be prepared in accordance with this oCEMP and produced in accordance with the Requirement in the **Draft DCO [EN010159/APP/3.1]**. It would be approved by the relevant local planning authorities in advance of starting the construction works.

1.1.8 The key elements of this oCEMP include:

- An overview of the Proposed Development and associated construction programme;
- Identification of potential environmental effects;
- Proposed design and other mitigation measures to prevent or reduce likely significant effects;
- Monitoring and reporting of effectiveness of mitigation measures;
- Key roles and responsibilities; and
- Links to other complementary plans and procedures.

1.1.9 The appointed contractor(s) will be responsible for working in accordance with the environmental controls documented in the oCEMP and for the preparation and implementation of the CEMP(s).

1.1.10 Any additional construction licences, permits or approvals that are required will be listed in the CEMP(s).

1.2 Complementary Plans and Procedures

1.2.1 A suite of complementary environmental plans and procedures have been included within the DCO application and set out proposed mitigation for the construction phase, and in some cases the operational phase.

1.2.2 These documents include:

- **Outline Landscape and Ecology Management Plan [EN010159/APP/7.7];**
- **Outline Soil Management Plan [EN010159/APP/7.10];**

- **Outline Battery Safety Management [EN010159/APP/7.11];**
- **Outline Public Rights of Way Management Plan [EN010159/APP/7.14];**
- **Outline Surface Water Drainage Strategy Plans [EN010159/APP/2.6];**
- **Outline Site Waste Management Plan [EN010159/APP/7.12];** and
- **Export Cable Route Construction Method Statement [EN010159/APP/7.13].**

1.2.3 Where the specific details of the mitigation are yet to be determined, further detailed plans are proposed, which will be approved by the relevant local authority, and where relevant in consultation with other stakeholders. These will be developed alongside the CEMP(s).

1.3 The Site

1.3.1 A description of the Site is included in **ES, Volume 1, Chapter 3: Description of the Site and Surrounding Area [EN010159/APP/6.3]**.

1.4 The Proposed Development

1.4.1 A description of the Proposed Development is presented in the **ES, Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5].**

2. Construction Environmental Management

2.1 Introduction

2.1.1 This section sets out the construction and general site arrangements for the Proposed Development.

2.2 Construction Activities

2.2.1 Activities expected to be undertaken through the construction of the Proposed Development will likely include, but are not limited to:

- Additional site surveys, as required
- Establishment of site and construction compounds, with associated worker amenities in line with CDM requirements
- Earthworks for areas including BESS, substation(s), trenchless cable crossing launch and receiving pits, access roads
- BESS/substation foundation and solar mounting structure piling (if required)
- Access junction upgrades and internal road construction
- Cabling trenching, installation and soil/vegetation reinstatement
- Fencing, lighting and CCTV installation
- Commissioning
- Demobilisation

2.2.2 An outline method statement for the export cable route has been developed in **Volume 7.0, Other Documents [EN010159/APP/7.13]**. This is indicative, and is for context on how ES commitments are considered in the grid corridor cable route construction.

2.2.3 A detailed list of activities will be produced within the CEMP (as relevant for the part of the Proposed Development the CEMP relates to), in accordance with requirements within this oCEMP.

2.3 Roles and Responsibilities

2.3.1 Key roles and responsibilities during the construction phase in managing environmental impacts will likely include, but are not limited to:

Project Director – Overall responsibility for Site compliance. Responsible for providing appropriate resources to the team including competent staff and training.

- Site Manager – Overall responsibility for activity onsite and will be based onsite full time.
- Construction Project Manager - Overall responsibility for ensuring all elements in the DCO, CEMP(s) and all environmental legal and other requirements are implemented, and appropriately resourced, managed, reviewed and reported.
- Environment Manager - Responsible for the overall management of environmental aspects on site, ensuring environmental legislation and best practices are complied with, and environmental mitigation and monitoring measures identified are implemented. The Environmental Manager will oversee environmental monitoring on-site and carry out regular environmental site inspections, reporting and responding to any incidents or non-compliance. The Environment Manager will liaise with relevant environmental bodies and other third parties as appropriate.
- Environmental Clerk of Works (ECoW) – Oversee the management of and provide advice about environmental and ecological risks during construction including for example, management of protected species, surface water management, pollution, air quality and noise.
- Ecological Clerk of Works (EcoCoW) - Management of the risks to biodiversity on construction sites, advising protecting valued biodiversity features and providing practical solutions.
- Flood Warden – There will be a dedicated responsibility to be prepared for, and manage, the response to flood incidents.
- Health and Safety Manager – Responsible for the monitoring and controlling of health and safety compliance and related rules and regulations on-site.
- Community Liaison Officer - A Community Liaison Group will be set up in accordance with the relevant DCO requirement prior to construction and will continue through until final commissioning of the Proposed Development as a formal forum for local issues to be raised. A Community Liaison Officer will be appointed to lead discussions with local communities, and act as the primary point of contact should there be any queries or complaints.

2.3.2 The roles and responsibilities for different tasks are listed in **Table 2.1** using the RACIM (Responsible, Accountable, Consulted, Informed and Monitor) system.

2.3.3 These roles and responsibilities are indicative and will be confirmed in the CEMP(s).

Table 2.1: Project roles and environmental responsibilities

Process Task	Role[1]					
	Project Manager / Director	**Site Manager**	**Construction Project Manager**	**Environmental Manager / ECoW / EcoCoW**	**Health and Safety Manager / Flood Manager**	**Community Liaison Officer**
Developing and maintaining the CEMP	A	C	M	R	C	I
Monitor environmental aspects through review of construction method statement, identify and implement control measures	-	A	M	R	R	I

[1] **RACIM Details**

R – Responsible: The individual(s) who perform an activity responsible for action/implementation – although usually only one, R's can be shared.

A – Accountable: The individual who is ultimately accountable including yes/no decision and power of veto – only one (A) can be assigned.

C – Consulted: The individual(s) to be consulted prior to a final decision being made of action taken – two-way communication.

I – Informed: The individual(s) who need to be informed after a decision is made or action is taken – one-way communication.

M – Monitor: Monitor the delivery of the proposed development on behalf of third parties and report on compliance.

Process Task	Role[1]					
	Project Manager / Director	Site Manager	Construction Project Manager	Environmental Manager / ECoW / EcoCoW	Health and Safety Manager / Flood Manager	Community Liaison Officer
Monitoring construction works to ensure any necessary environmental issues and control measures are in places; ensuring they are effectively communicated, appropriate and implemented on site	-	A	M	R	C	I
Ensuring the work is performed by trained and qualified staff; and providing training where necessary	A	R	C	M	I	I
Ensuring the adequate resources are allocated for environmental management	A	R	M	M	I	I
Ensuring that all relevant environmental documentation and information (including permission, consents, permits and assessments) is communicated	A	R	M	M	C	I

Process Task	Role[1]					
	Project Manager / Director	Site Manager	Construction Project Manager	Environmental Manager / ECoW / EcoCoW	Health and Safety Manager / Flood Manager	Community Liaison Officer
Regular site inspections and maintaining a record of environmental performance, and reporting performance and monitoring environmental performance	A	C	M	M	R	I
Following good practice and minimising impact on the environment	C	A	M	M	R	I
Understanding project environmental obligations and mitigation measures	I	A	M	M	R	I
Liaison with local authority, other statutory bodies, members of the public, press and the media	C	A	M	M	C	R
Supporting all site staff with environmental management including reviewing and commenting on method statements and risk assessments	A	R	M	M	R	-

Process Task	Role[1]					
	Project Manager / Director	Site Manager	Construction Project Manager	Environmental Manager / ECoW / EcoCoW	Health and Safety Manager / Flood Manager	Community Liaison Officer
Ensuring that the environmental policy of the Applicant is delivered	C	A	M	R	M	-
Providing information on waste management/reduction procedures to relevant staff	R	A	M	R	M	-

2.4 Construction Programme

2.4.1 Subject to being granted consent and following a final investment decision, the earliest construction is anticipated to start in 2027 and construction will require an estimated 24 months, completing in 2029.

2.4.2 More detail on the construction programme and phasing will be provided within the CEMP(s).

2.5 Working Hours

2.5.1 Construction working hours will be 7.00 - 19.00 hours Monday to Saturday. The need to undertake some limited works outside normal working hours or overnight cannot be discounted, and 24-hour working may be necessary in some phases and locations. Such works may include, for example, some trenchless crossings if the technique in use and/or ground conditions dictate that continuous working is required, highways works (to minimise traffic disruption) or commissioning activities. If night-time working is required at specific locations, additional temporary lighting may be used at those locations for limited periods of time.

2.5.2 Where on-site works are to be conducted outside the core working hours, they will comply with the limits and controls detailed in the CEMP(s), and any other restrictions agreed with the relevant planning authorities.

2.6 Control of Noise

2.6.1 Noise thresholds have been identified for nearby noise sensitive receptors during construction, presented in **ES Volume 2, Chapter 15: Noise and Vibration [EN010159/APP/6.15]** (and based on Annex E of BS 5228- 1). These will be defined in the CEMP. Thus, potential impacts of construction noise will typically be limited to daytime hours only. The CEMP will include specific measures to limit the potential impact of noise during construction, such as those set out in Table 3.7 in Section 3 (Mitigation and Management) below. These measures include non-acoustic mitigation, such as communication and regular updates to residents of planned noisy construction activities, and monitoring and reporting of noise complaints during construction.

2.6.2 It is noted that certain residential receptors were identified in the construction noise assessment contained in **Appendix 15.3 of the ES [EN010159/APP/6.21]** as likely to experience noise levels that have the potential to result in elevated noise impacts during different stages of construction if unmitigated. Specific consideration of noise and vibration mitigation measures to reduce impacts at these receptors will therefore be included in the CEMP, along with general measures to limit noise and vibration impacts at other receptors. For reference,

the receptors that have been identified as having the potential for elevated impacts during construction are:

- Trenching (noise)
  - Northfield Farm, Northfield Lane, North Clifton
- Piling (noise)
  - 1 Skegby House Cottage, Skegby
  - 2 Skegby House Cottage, Skegby
  - Field House Farm, Dunham Road, Darlton
  - Wheatholme Farm, Main Road, South Clifton
  - 1 Long Row, Fledborough
  - 2 Long Row, Fledborough
  - 3 Long Row, Fledborough
  - The Chase, Main Road, South Clifton
  - Northfield Farm, Northfield Lane, North Clifton
  - 1 Park Farm Cottages, Park Farm Road, Kettlethorpe
- Access Tracks / Highways Works (noise and vibration)
  - Station House, Fledborough
  - 1 Station Cottage, Fledborough
  - 2 Station Cottage, Fledborough
  - The Chase, Main Road, South Clifton

2.6.3 Where on-site works are to be conducted outside the core working hours, they will comply with any restrictions agreed with the relevant planning authorities, in particular regarding the control of noise and traffic. These restrictions may include noise limits, or may include other noise control measures such as minimum separation distances between construction works and sensitive receptors, maximum duration of works outside core hours in a single area, implementation of mitigation measures specific to the works to be undertaken etc. Consent will be voluntarily obtained under s61 of the CPA 1974 for noisy works outside of normal working hours. Compliance with these noise limits will ensure adverse effects are unlikely.

2.6.4 Noise and vibration generated by construction traffic will primarily be controlled by routing of heavy vehicles away from sensitive receptors wherever practicable, restrictions on timing of vehicle movements and locations of site access points as described in the **outline Construction Traffic Management Plan [EN010159/APP/7.9]**. Should abnormal or emergency construction traffic

movements occur outside of normal working hours specific noise mitigation measures will be put in place to reduce potential noise impacts at nearby noise sensitive receptors.

2.7 Control of Light

2.7.1 Construction temporary site lighting, in the form of mobile lighting towers will be required in areas where natural lighting is unable to reach (sheltered/confined areas) and during core working hours within winter months. Artificial lighting would be provided to maintain sufficient security and health and safety for the Order Limits, whilst adopting the mitigation principles to avoid excessive glare and minimise spill of light to nearby receptors (including ecology and residents) outside of the Order Limits as far as reasonably practicable.

2.7.2 All construction lighting will be deployed in accordance with the following recommendations to prevent or reduce the impact on human and ecological receptors:

- The use of lighting will be minimised to that required for safe site operations,
- Lighting will utilise directional fittings to minimise outward light spill and glare (e.g. via the use of light hoods/cowls which direct light below the horizontal plane, preferably at an angle greater than 20° from horizontal); and
- Lighting will be directed towards the interior of the Order Limits rather than towards the boundaries.

2.7.3 Where necessary, e.g. emergency requirements, lighting will be designed in line with principles set out in guidance from the Institution of Lighting Professionals and the Bat Conservation Trust to avoid impacts on bats and other light averse animals.

2.8 Recovery, Recycling and Disposing of Waste

2.8.1 In order to control the waste generated during site preparation and construction, the contractor(s) will separate the main waste streams on-site, prior to transport to an approved, licensed third party waste facility for recycling or disposal.

2.8.2 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 **Outline Site Waste Management Plan [EN010159/APP/7.12]** and finalised with specific measures to be implemented prior to the start of construction, in accordance with the **Draft DCO [EN010159/APP/3.1]**.

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

2.8.4 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 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.

2.9 Security

2.9.1 Site security during construction will be managed by the contractor(s). The site security fencing will remain in place throughout the duration of the construction period. They will be constructed of wire mesh and wooden posts and designed to be stock proof, with a minimum height of 2m.

2.9.2 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).

2.9.3 There will be designated security staff during construction who will manage the Order Limits and patrol the perimeter.

2.10 Responding to Environmental Incidents and Emergencies

2.10.1 An Emergency Response Plan (ERP) will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency (EA) in relation to responding to flood warnings and events.

2.10.2 The plan will detail the procedures for responding to incidents and emergencies on site, and any reporting.

2.10.3 As described in the Outline Battery Safety Management Plan (OBSMP), developed in consultation with the local fire service, each BESS area will contain four 120,000 litre static tanks for firefighting as well as procedures for responding to incidents and emergencies on site, along with any reporting.

2.11 Good Practice

2.11.1 The Considerate Constructors Scheme (CCS) and its Code of Considerate Practice (CoCP) will be adopted to assist in reducing pollution and nuisance from the Proposed Development, by employing good practice measures which go beyond statutory compliance.

2.12 Working with other Projects

2.12.1 The Applicant is committed to working with other developers to reduce potential cumulative impacts where possible or practicable. Where there are any temporal or spatial construction overlaps the Applicant will:

- Engage proactively with other developers to share relevant information on construction programmes, site access arrangements, and key activities;
- Coordinate works, where practicable, to avoid or minimise cumulative impacts such as traffic congestion, noise, dust, or disruption to local communities and land users;
- Participate in any local or planning authority-led coordination groups, liaison committees, or working groups as required;

Seek to agree on mitigation measures with other developers where necessary to manage overlapping environmental effects (such as transport routes);

- Keep relevant local authorities, statutory consultees, and stakeholders informed of any coordination activities and outcomes;
- Document and maintain records of all engagement and cooperation efforts with third-party developers.

2.12.2 This approach will be maintained throughout the construction phase. Post consent, the CEMP will be updated as necessary to reflect changes in either project or surrounding development activities.

2.13 Working with National Grid Electricity Transmission

2.13.1 The Applicant is aware that National Grid Electricity Transmission (NGET) may need access to their overhead line assets that pass through the Solar Farm Site and Order Limits in order to undertake the construction of the new transmission line at a currently undefined point in the next 5 years.

2.13.2 In addition, NGET are proposing a new substation. The High Marnham Substation upgrade has been considered throughout the design process for the Proposed Development, as this will be the secured connection point for the Proposed Development, and the area of its potential location has been included within Work Area 4 of the Order Limits.

2.13.3 Where possible the project will coordinate works with NGET to minimise impact of the projects interacting. This will include undertaking the actions as listed above (see Working with other Projects).

3. Mitigation and Management

3.1 Purpose

3.1.1 This section of the oCEMP sets out the mitigation and management measures to be included as a minimum in the CEMP. It also identifies where monitoring is proposed to assess the effectiveness of the mitigation measures.

3.1.2 The overall responsibility for **Table 3.1** to **Table 3.14** will be with the Applicant who will delegate implementation to contractors. Specific responsibilities will be confirmed in the CEMP.

3.1.3 Additionally, specific responsibilities for cultural heritage shown in **Table 3.3,** and landscape and visual amenity shown in **Table 3.6** will be confirmed in the Landscape and Ecology Management Plan (LEMP). Specific responsibilities socio-economics and land use, shown in

3.1.4 **Table 3.8** will further be confirmed in the LEMP. Any specific responsibilities for waste in **Table 3.13** will also be confirmed in the SWMP.

3.1.5 A UXO Management Plan will be created to mitigate for the risk of encountering UXO before any intrusive works.

Table 3.1: Climate Change

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Increased flood risk on-site due to climate change needing to be considered in the design; Greenhouse Gas (GHG) emissions from construction traffic and equipment; and Use of natural resources in construction materials.	Appropriate standard and good practice control measures will include: • Adopting the CCS to assist in reducing pollution, including GHGs, from the Proposed Development by employing good industry practice measures which go beyond statutory compliance. • Encouraging the use of lower carbon modes of transport by identifying and communicating local bus and rail connections and pedestrian and cycle access routes to/ from the Proposed Development to all construction staff and providing appropriate facilities for the safe storage of cycles. • Utilising the Main Construction Compounds for construction worker parking (with a supporting shuttle service to/ from the Site) during the peak construction. • Liaising with construction personnel for potential to implement staff minibuses and car sharing options. • Implementing a Travel Plan to reduce the volume of construction staff and employee trips (note, there will be a separate Travel Plan for National Grid workers). • Increasing recyclability by segregating construction waste to be re-used and recycled where reasonably practicable. • Designing, constructing, and implementing the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon such as locally sourced products and materials with a higher recycled content. • Switching off vehicles and plant when not in use and ensuring construction vehicles conform to current EU emissions standards. • Conducting regular planned maintenance of the Proposed Development to optimise efficiency. • Measures will be taken to consolidate the delivery of materials on-Site and promote sustainable methods of construction workers to get to the Site, including the mandate for the cessation of construction plant when not in use.	The Environmental Manager will regularly record compliance in a logbook. The CEMP will detail the frequency.
The following measures are required to ensure safety of staff during construction from increased flood risk on-site due to climate change.	Storing topsoil and other construction materials outside of the 1 in 100-year floodplain extent (Flood Zone 3), as far as reasonably practicable. Appointing a designated Flood Warden who is familiar with the risks and remains vigilant to news reports, EA flood warnings, relevant weather warnings and water levels of the local waterways; and Health and safety plans developed for construction activities will be required to account for potential climate change impacts on workers, such as drier summers, droughts, flooding and heatwaves, wetter winters, extreme rainfall and wind and storms.	As above

	More details on the specific mitigation measures for flood risk are provided in **Table 3.5.**	

Table 3.2: Buried Heritage

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Potential impacts to heritage assets during construction	The Archaeological Mitigation Strategy will provide a framework for the following measures: Areas of Archaeological Constraint (AAC) will be identified prior to construction in consultation with the Archaeological Advisory Teams to the Local Planning Authorities (LPAs) and Historic England. In these areas, the mounting structure for solar arrays will involve micrositing of piles, in order to avoid specific archaeological features and/or it will be supported by concrete footings rather than piles, avoiding ground intrusive impact. Where preservation in situ is the preferred strategy, the AAC will be demarcated by fencing to avoid accidental entry and disturbance of archaeological remains during the construction, operation, maintenance and decommissioning of the Proposed Development. Each AAC Site will be defined to include a reasonable buffer to avoid impacts to the buried archaeological remains or extant earthworks. Where no appropriate design measure can be applied to the management of the archaeological resource, mitigation measures will be applied, including but not limited to: • A programme of archaeological mitigation through record, such as strip and map and sample, or detailed excavation, to a level commensurate with the significance of the asset, will be implemented for archaeological remains within the footprint of the Proposed Development prior to the construction works. • Where required, a programme of archaeological mitigation field work and recording willbe undertaken during the construction works. • Where non-intrusive trenching methods are proposed for cable routes, the CEMP(s) will include a detailed strategy for the monitoring and will include a contingency for archaeological intervention/mitigation in the event that unplanned activities threaten the preservation of known buried heritage remains. Any indirect impact arising from the trenchless crossing ground excavation will be assessed and mitigated accordingly. Any proposed archaeological protection and mitigation measures will be set out in the Mitigation Strategy.	Outline Written Scheme of Investigations – cover the allowances and role of the ACoW for the Construction phase. An Archaeological Clerk of Works (ACoW) will be appointed for the Construction Phase who will be reviewing and monitoring all works on Site. Requirements will be set out in the Archaeological Mitigation Strategy and compliance with measures regularly recorded via an appropriate method to be determined in the CEMP.

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Impact upon Scheduled Monuments	No development is proposed on or directly adjacent to the two Scheduled Monuments in the vicinity of the Site (the Roman Vexillation Fortress Scheduled Monument and Whimpton Moor Scheduled Monument). The embedded buffer would also mitigate or remove any adverse effect on any known and unknown buried heritage assets included in the buffer areas. The embedded buffer would also mitigate or remove any adverse effect on any known and unknown buried heritage assets included in the buffer areas. As avoidance measure, appropriate setbacks have been incorporated into the design of the Proposed Development, around Designated Heritage Assets (Scheduled Monuments) and selected villages: • No development is proposed on or directly adjacent to the two Scheduled Monuments in the vicinity of the Order Limits (the Roman Vexillation Fortress Scheduled Monument and Whimpton Moor Scheduled Monument). Substantial 50 m setbacks around these designated heritage assets are incorporated into the design; • North Clifton (approximatively 100m to Work No. 1); • South Clifton- (approximatively 500m to Work No. 1); • To the south of Newton-on-Trent (approximatively 100m to Work No. 1); • To the north, south and west of the Church of St Gregory in Fledborough (approximatively 160m to Work No. 1); • To the east and west of Ragnall (approximatively 150m to Work No. 1); • West of Thorney (approximatively 800m to Work No. 1); and • The area north of High Marnham (National High Marnham Substation) is proposed only for the cable routing for the Grid Connection, but no further development is expected in the area.	An Archaeological Clerk of Works (ACoW) will be appointed for the Construction Phase who will be reviewing and monitoring all works on Site. Requirements will be set out in the Archaeological Mitigation Strategy (AMS), and compliance with measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency of such recording.
Direct impacts on known and unknown archaeological remains	**Archaeological Mitigation Strategy** The CEMP will include an AMS, which will be secured by a DCO Requirement, and which sets out the objectives for the archaeological mitigation and the mechanisms for the appointed archaeological contractors to design and programme the fieldwork, undertake evaluation, mitigation, analysis, reporting and archiving. The AMS will be provided for the pre-construction archaeological investigation phase. The Archaeological Mitigation Strategy will provide a framework for the following measures: Areas of Archaeological Constraint (AAC) will be identified prior to construction in consultation with the Archaeological Advisory Teams to the Local Planning Authorities (LPAs) and Historic England. In these areas, the mounting structure for solar arrays will involve micrositing of piles, in order to avoid specific archaeological features and/or it will be supported by concrete footings rather than piles, avoiding ground intrusive impact.	As above

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Where preservation in situ is the preferred strategy, the AAC will be demarcated by fencing to avoid accidental entry and disturbance of archaeological remains during the construction, operation, maintenance and decommissioning of the Proposed Development. Each AAC Site will be defined to include a reasonable buffer to avoid impacts to the buried archaeological remains or extant earthworks. Any indirect impact arising from the trenchless crossing ground excavation will be assessed and mitigated accordingly. Any proposed archaeological protection and mitigation measures will be set out in the Mitigation Strategy. The following industry-wide recognised archaeological mitigation measures will be included in the Archaeological Mitigation Strategy: • Archaeological Excavation or Strip, Map and Record Excavation; and • Archaeological Watching brief. A proportionate and targeted post-consent archaeological evaluation will be considered where appropriate, in consultation with the Archaeological Advisors to the LPAs and Historic England to advise on buried heritage constraints and mitigation on specific areas. All archaeological mitigation works will be undertaken by an appropriately experienced and competent Archaeological Contractor. **Archaeological Clerk of Works** An Archaeological Clerk of Works (ACoW) will be appointed for the Construction Phase who will be reviewing and monitoring all works in the Order Limits. Requirements will be set out in the Archaeological Mitigation Strategy and compliance with measures regularly recorded via an appropriate method to be determined in the CEMP. **Areas of Archaeological Constraint** To inform the nature and the extent of the required mitigations, a proportionate and targeted post-consent archaeological evaluation will be considered where appropriate, in consultation with the Archaeological Advisors to the LPAs and Historic England to advise on buried heritage constraints and mitigation on specific areas. It is expected that this will target some of the areas of known archaeological potential identified by the geophysical survey and DBA, which have not been yet evaluated, when likely significant effects are expected on those areas.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Areas of Archaeological Constraint (ACC) will be identified prior to construction. In these areas, where necessary and practicable, the mounting structure for solar arrays will involve micrositing of piles in order to avoid specific archaeological features and/or it will be supported by concrete footings rather than piles, avoiding ground intrusive impact. **Archaeological Mitigation Works** Where specific embedded environmental measures cannot be employed or are not deemed sufficient to avoid or reduce the impact on buried heritage assets, significant adverse effects will be offset, where reasonably practicable, through the implementation of a programme of archaeological mitigation measures. These measures will comprise an appropriate programme of archaeological fieldwork, followed by assessment and reporting of the results and, where appropriate, publication. It is expected that the following industry-wide recognised archaeological mitigation measures will be included in the program of archaeological mitigation and will be applied as forms of control and mitigation over any impact on buried heritage assets, depending on their Sensitivity and the extent of our Proposed Development's impacts: • A programme of archaeological mitigation through record, such as strip and map and sample. or detailed excavation, to a level commensurate with the significance of the asset and the impact arising from the Proposed Development prior to the construction works, targeting the affected assets identified during the DBA, geophysical survey and trial trenching evaluation and outlined in **ES, Volume 2.0, Chapter 9: Buried Heritage [EN010159/APP/6.9]**. • Where required a programme of archaeological monitoring and recording will be undertaken during the construction works, including an Archaeological watching brief. • Where non-intrusive trenching methods are proposed for cable routes, the CEMP(s) will include a contingency for archaeological intervention/mitigation in the event that unplanned activities threaten the preservation of known buried heritage remains. All archaeological works will be undertaken by an appropriately experienced and competent Archaeological Contractor in accordance with a Written Scheme of Investigation (WSI) agreed with the Archaeological Advisors to Lincolnshire County Council Nottinghamshire County Council, Historic England and approved in writing by the relevant Local Planning Authorities	
Indirect impacts on known and unknown archaeological remains	A LEMP will be followed to ensure there will be no surface water run-off impacts from scour, on any alteration to the geology or the groundwater levels. An oLEMP is included within the submission documentation **Outline Landscape and Ecology Management Plan [EN010159/APP/7.7].**	As above

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Any potential indirect impact arising from the trenchless crossing ground excavation will be assessed and mitigated accordingly. Any proposed archaeological protection and mitigation measures will be set out in the AMS.	

Table 3.3: Cultural Heritage

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Temporary impacts on the setting of heritage assets during construction activity associated with increased visual and noise intrusion.	Control of noise, lighting and dust in order to mitigate the temporary intrusiveness of construction activity in the settings of heritage assets. These measures are set out in **Section 2.6** and **Table 3.7**, **Section 2.7** and **Table** Table 3.9 **3.9** for noise, lighting and air quality respectively. The management of visual impact in the setting of heritage assets, including management of existing vegetation screening, would be according to the **Outline Landscape and Ecology Management Plan [EN010159/APP/7.7]**. Construction traffic routes and modes of transport will seek to minimise impacts to numerous receptors, including heritage assets, by bypassing historic villages, where possible. This is further defined in the **Outline Construction Traffic Management Plan [EN010159/APP/7.9]**.	To be determined as part of the CEMP and LEMP.

Table 3.4: Ecology

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Habitat loss or gain – direct impacts associated with changes in land use resulting from the Proposed Development. Fragmentation of populations or habitats – indirect impacts due to the Proposed Development dividing a habitat, group of related habitats, site or ecological network, or the creation of partial or complete barriers to the movement of species, with a consequent impairment of ecological function. Disturbance – indirect impacts resulting from a change in normal conditions (light, noise, vibration, human activity) that result in individuals or populations of species changing behaviour or range. Habitat degradation – direct or indirect impacts resulting in the reduction in the condition of a habitat and its suitability for some or all the species it supports.	All works have been integrated into the existing landscape pattern, as far as possible, minimising vegetation loss and embedding minimum offsets from existing features, namely: • Hedgerows: 5m • Woodlands: 25m • Waterbodies: 10m • Watercourses: 10m (16m from the River Trent) Preparation of mitigation strategies for protected species and, where required, application for licenses from Natural England for translocation of animals away from construction areas will occur in advance of the works. This will allow sufficient time for the implementation and establishment of mitigation and to avoid delays to the construction program, where possible. The following mitigation measures will be implemented to protect retained vegetation, designated sites, protected species and other areas of biodiversity value from disturbance, damage and/or accidental pollution (these correspond to the environmental measures as described in Table 6.6 of Chapter 6 Biodiversity [REP1-023]): Environmental measure C2 - The cabling route will pass under the River Trent by use of trenchless crossing to minimise the effects on this main river. Trenchless crossing compounds will be located a minimum of 16 m from the bank top, and drilling will occur a minimum of 5 m below the river bed to avoid impacts of electro-magnetic fields (EMF)47 and heat from cables on riparian fauna. The drill profile will be designed to ensure risk of drilling fluid breakout is negligible. The design and approach to managing risks of drilling fluid breakout will be included within the CEMP. The same measures will be applied to cable crossings of wet ditches and watercourses except trenchless crossing compounds will be located a minimum of 10 m from the bank top, and drilling will occur a minimum of 2.5 m below the bed. Trenchless crossings of hedgerows along the route of transmission cables will be located a minimum of 3 m away from the hedgerow bottom. Transmission cabling to reach the grid connection point may pass under Marnham Railway Yard LWS and Fledborough to Harby Dismantled Railway LWS. Trenchless crossings of LWS along the route of transmission cables will be located a minimum of 10 m away from the LWS boundary.	Where required, additional surveys will be undertaken in advance of the 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(s).

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Environmental measure C3 - Semi-natural habitats along the Fledborough Viaduct (Fledborough to Harby dismantled railway Local Wildlife Site (LWS) and Marnham Railway Yard LWS) will be retained and protected to maintain connectivity throughout the landscape. This will be achieved through installation of fencing/hoarding to protect sensitive habitat features during construction and a stand-off distance of no less than 10 m to solar modules and associated infrastructure (excluding an access track by West Wood following an existing farm access located to avoid additional tree loss). All other LWS (other than West Wood LWS) present will also have setbacks of at least 10m implemented between their boundaries and any surface construction or decommissioning activity. At West Wood an access track (following existing farm access) is proposed at least 5m from the LWS to avoid loss of trees by creating a new opening. Environmental measure C4 - Appropriate buffers (minimum 5 m) will be maintained or created around habitats of medium and high distinctiveness (in terms of Biodiversity Net Gain Assessment), including woodland, hedgerows, and individual trees (other than at access points and in areas of grassland loss). Watercourses, such as drainage ditches, will have a minimum buffer of 10 m, ponds 10 m and to the River Trent, the minimum buffer will be 16 m. These buffers will protect features during construction, operation and decommissioning, from impacts including pollutant loss (fines, hydrocarbons etc.), dust, noise and vibration. Environmental measure C5 - Existing trees and hedgerows will be retained as far as possible and protected in accordance with best practice (BS 5837), where unavoidable, features of low distinctiveness and classified as poor in condition (using BNG Condition Assessment criteria) will be selected over habitats of medium or high distinctiveness or classified as moderate or good condition. Environmental measure C6 - Existing tracks and field access locations across the Site will be utilised wherever possible. Where new access is unavoidable, where possible, habitats of low distinctiveness and poor condition will be selected, with a maximum width of 6 m removed for internal tracks and 25 m for bell mouths alongside the public highway. Vegetation within visibility splays will be retained through management to an appropriate height (0.9 m) and then allowed to regrow following completion of construction. Environmental measure C7 - The crossing of wet ditches and watercourses will be avoided wherever possible. Where unavoidable, they will be designed to ensure the maintenance of connectivity for aquatic fauna (fish) and semi-aquatic fauna (water vole and otter). They will be delivered using clear span bridges, avoiding impacts to the channel and its banks.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Environmental measure C8 - Working hours will be limited to 07:00 until 19:00 in the construction period and 08:00 until 18:00 during the operational period to avoid the need for artificial lighting, other than at the trenchless crossing of the River Trent, where 24 hour working may be required for a short period when drilling, sheltered/confined areas where light does not penetrate and localised areas where health, safety and security need to be maintained during winter months. Where necessary, e.g. emergency requirements, lighting will be designed in line with principles set out in guidance from the Institution of Lighting Professionals and the Bat Conservation Trust48 to avoid impacts on bats and other light averse animals. Environmental measure C9 - Security fencing will be installed throughout the Order Limits, around solar array fields and supporting infrastructure. They will be constructed of wire mesh and wooden posts and designed to be stock proof, with a minimum height of 2 m. To avoid fragmentation of habitats, there will be ground level holes at strategic locations, large enough to allow movement of badgers, hedgehogs and foxes. Strategic locations will be adjacent to habitat parcels of medium or high distinctiveness (woodland, mixed scrub, ponds) and on or close to established mammal runs. Specific locations will be identified during the pre-construction surveys, due to the potential for commuting routes to change frequently, however, a minimum of one hole per 150 m of fencing will be created, with a higher frequency around suitable habitats and identified badger sett locations. Environmental measure C10 - Pre-construction surveys will be conducted during the winter period to search for any new, previously unidentified, badger setts within, or adjacent to the Order Limits. Where found, a buffer of up to 30 m will be established using hazard tape to prevent accidental disturbance during construction activities. Setts located close to the Proposed Development will be monitored prior to works using cameras at entrances to establish the presence of badgers and levels of activity. The buffer may be reduced dependent on the proposed construction activity (level of noise or vibration it may cause) and the type of sett (occasionally used outlier or main sett). Where disturbance or destruction of the sett is unavoidable (e.g. a new sett within the footprint of a substation location), a licence from Natural England (NE) will be required to close the sett and create a replacement. Badger setts are often located within dense vegetation which cannot be fully assessed during pre-construction surveys, therefore a suitably qualified ecologist will supervise vegetation clearance and search for setts as vegetation is removed, allowing access to previously unsurveyed areas. Where a sett is found, all works will stop and the process described above will be followed.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Environmental measure C11 - Pre-construction surveys will be conducted to assess trees within, and adjacent to, the Order Limits for potential roost features for bats (woodpecker holes, tear outs, etc). Where found, a buffer of 15 m will be implemented to avoid disturbance during the construction period. If this is not possible, trees will be inspected using an endoscope either from the ground or by aerial access (ladder or rope and harness). Features will be classified as either PRF I (supporting individual bats of low conservation value), PRF M (supporting multiple bats of high conservation value) or negligible (little to no value to roosting bats). PRF I features will receive a single summer inspection (May to August inclusive) and PRF M features will receive three inspection visits during the summer and autumn period (May to September), and negligible features will require no further inspection. If bats, or evidence of bats (droppings) is found, the detailed scheme design e.g. buffers, standoff distances, siting of lighting columns, may require amendment to mitigate for potential adverse impacts. Alternatively, a Natural England (NE) licence may be obtained to derogate from the legislation. If bats are not confirmed, those with PRF-I and PRF-M will be soft felled to account for residual risk. Environmental measure C13 - Construction areas will be fenced using appropriate materials to prevent legally protected and other notable species (e.g. badgers, reptiles etc.) from entering active works, thereby protecting them from accidental injury or killing. Environmental measure C14 - Good housekeeping measures will be implemented throughout the construction period, including the safe storage of hazardous chemicals, carrying and use of spill kits, storage of equipment when not in use (overnight), covering of excavations overnight (to prevent animals from falling in and becoming trapped), identification and control of invasive non-native species and storage of heavy plant off-site or in allocated areas. Environmental measure C15 - Vegetation clearance will be timed to avoid the main bird nesting season (March to August inclusive), and periods where reptiles and amphibians are active (climate dependent) to avoid injury or killing. Habitats will be inspected prior to works by an Ecological Clerk of Works (ECoW) to search for potential bird nests and features suitable to support sheltering herptiles. If found, active nests will be monitored to confirm occupation (nest building, egg incubation or with young) to determine the requirement for a suitable stand-off distance to be implemented. Features suitable for sheltering amphibians or reptiles will be carefully dismantled by hand during the active period, with any animals found passively displaced or moved to a safe location nearby. Two-stage Directional vegetation clearance will be implemented where necessary (e.g. dense grassland, hedgerows, scrub etc.) to allow active herptiles to be passively displaced. If European Protected Species (EPS) are found (great-crested newt), all works would stop before a licence is obtained from Natural England.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	The ECoW will be responsible for ensuring compliance with all relevant wildlife legislation and the Biodiversity Management Plan that will form part of the Construction Environmental Management Plan. Environmental measure C21 - Drainage swales and basins will form part of the Sustainable Drainage System (SuDS) for the Proposed Development. The location and size will be determined in response to detailed infrastructure design to avoid flooding in areas of high flood risk (see Hydrology and Hydrogeology Chapter [EN010159/APP/6.7]); basins will be designed to hold areas of permanent water (ponds) in a way that will not compromise their primary function, i.e. permanent water is not a typical feature of an attenuation basin (minimum of three ponds). These features will be plug planted and seeded with a range of native aquatic plants and emergent vegetation, creating areas of reedbed with both steep and shallow banks. Reedbed areas of common reed, reed canary grass and reedmace will provide nesting habitat for passerines, waders and harvest mice, and will provide forage and cover for water voles. A SuDS feature will be created within the proposed coastal and floodplain grazing marsh lying adjacent to the west of the River Trent. It would take the form of a drainage ditch, connecting the existing ditch network and providing additional habitat for invertebrates, birds, reptiles and water vole which occur in the vicinity. Additional water features (minimum of 25), in the form of 'scrapes' will be created throughout the Order Limits, primarily in areas of low lying land which are more likely to hold water over the winter period, and close to existing ponds and SuDS. in each of the locations, two to three scrapes will be created (where practicable) with one larger, one medium and one small, allowing a range of conditions. The larger scrape will reach a maximum depth of 1 m, with a steep bank at one end and a shallow bank at the other, covering approximately 20 m2 but of varying shapes (both linear and round). The surface will be left rough and will naturally colonise. Environmental measure C32 - Land that is identified for mitigation and compensation purposes (e.g. grassland for skylarks) in fields where no construction works are proposed will have habitat establishment works begun at least 3 months ahead of construction activity. Tree planting and hedgerow planting will take place over the winters of each of the two year construction programme. The aims will be to: • Gap up and plant standards in one third of the defunct hedgerows each winter • Plant one third of new hedgerows (including standards) each winter	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Take existing hedgerows into positive management for biodiversity at least 3 months ahead of construction activity commencing (other than at access points and other areas where vegetation management will be needed to aid delivery). Habitat creation and enhancement measures will be detailed within the Landscape and Ecology Management Plan Environmental measure C33 - Monitoring of bat activity using static acoustic devices will be conducted at the same locations as baseline monitoring (once during construction and in years 1, 3, 5 and 10 post construction) to compare activity levels and to assess mitigation efficacy and inform the need for intervention - to adjust or amend the mitigation approach. The same method will be used between years to allow direct comparison of data sets. Reports will be produced to be made publicly available for the development of bat mitigation strategies for future solar schemes in the UK and beyond. Environmental measure C34 - Skylark monitoring will be conducted to assess the efficacy of mitigation and compensation during construction and operation. Sampling of both developed and undeveloped areas will be undertaken to record breeding densities and usage (i.e. for breeding, feeding etc.). The results will be used to inform any adaptive management measures required through the LEMP. Environmental measure C37 - All veteran trees identified in Appendix 11.6 Arboricultural report will be retained. An exclusion zone will be implemented around each tree in line. The exclusion zone will be at least 15 times larger than the diameter of the tree. The buffer zone should be 5 metres from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter. This will create a minimum root protection area in line with Government guidance. Environmental measure C38 - Pre-construction surveys will be conducted between April and September to search for signs of otter and water vole within, or adjacent to the Order Limits. The information gathered will inform the detailed design (including location) of clear span bridges and the methods of working to install them. Should it be necessary this information would also be used for applications to Natural England for derogation licenses. Otter and water vole presence will be monitored during the period of operation. Environmental measure C39 - Surveys for birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) such as barn owl and quail, will be undertaken in locations where construction scheduling could result in disturbance.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	The **Outline Landscape and Ecology Management Plan [EN010159/APP/7.7]** sets out the key measures required to avoid, mitigate and compensate for the impacts and effects of the Proposed Development on biodiversity (and landscape) features, and to enhance the biodiversity, landscape and green infrastructure value of all land within the Order Limits.	

Table 3.5: Flood Risk, Drainage and Surface Water

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Pollution of surface or groundwater (which inherently includes impacts on surface water and groundwater abstractions) due to deposition or spillage of soils, sediment, oils, fuels, or other construction chemicals, or through uncontrolled site run-off. Temporary impacts on sediment dynamics and hydro-morphology within watercourses and waterbodies, where new crossings are required to lay cables, or where culverting is required for new access tracks. Temporary impacts on groundwater flow due to the requirement for below ground excavations, including for the drilling/boring launch and receiving pits for watercourse cable crossings.	**General** The Applicant will comply with: • Guidance for Pollution Prevention (GPP) 1: Understanding your environmental responsibilities – good environmental practices (Ref. 21 in References); • GPP 2: Above ground oil storage tanks (Ref. 5 in References); • GPP 3: Use and design of oil separators in surface water drainage systems (Ref. 25 in References); • GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer (Ref. 6 in References); • GPP 5: Works and maintenance in or near water (Ref. 7 in References); • GPP 8: Safe storage and disposal of used oils (Ref. 8 in References); • GPP 13: Vehicle washing and cleaning (Ref. 13 in References); • GPP 19: Vehicles: Servicing and Repairs (Ref. 14 in References); • GPP 20: Dewatering underground ducts and chambers (Ref. 15 in References); • GPP 21: Pollution incident response planning (Ref. 9 in References); and • GPP 26: Safe storage – drums and intermediate bulk containers (Ref. 17 in References). 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.	Temporary drainage will be monitored throughout construction. Specific details will be confirmed in CEMP. The WMP 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 EA's automatic water quality monitoring network.

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Temporary changes in flood risk from changes in surface water runoff and exacerbation of localized flooding, due to deposition of silt, sediment in drains and ditches. Temporary changes in flood risk due to the construction of solar PV panels, site compound and storage facilities, trenchless crossings, which alter the surface water runoff from the Order Limits. Potential impacts on local water supplies.	Construction phase operations would be carried out in accordance with guidance contained within the following PPG: • PPG6: Working at construction and demolition sites (Ref. 22 in References); • PPG7: Safe Storage – the safe operation of refueling facilities (Ref. 23 in References); and • PPG18: Managing fire water and major spillages (Ref. 24 in References). • Advice contained within the guidance will be listed in or appended to the CEMP(s). The CEMP(s) will be supported by a Water Management Plan (WMP), that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction. The WMP 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 EA's automatic water quality monitoring network. The WMP will include details for pollution prevention and response in the event of an incident. It is expected that variable depths to groundwater may be present across the Order Limits, hence construction works will be phased to limit the impacts to groundwater flows. **Staff Awareness and Training** The Contractor(s) 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. **Pollution Plans** Plans to deal with accidental pollution would be included within the CEMP(s) prior to commencement of construction. Any necessary equipment (e.g. spillage kits) would be held on-site and all site personnel would be trained in their use. The EA would be informed immediately in the unlikely event of a suspected pollution incident. **Unexpected Contamination**	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	If, during the carrying out of the authorised development, contamination not previously identified is found to be present no further development (unless otherwise agreed in writing with the relevant planning authority) must be carried out on the area(s) on which the contamination has been found until a remediation strategy detailing how such contamination must be dealt with has been submitted to and approved by the relevant planning authority. Remediation work would not commence until agreement had been reached with the planning authority regarding the intended scope of work. Groundworks personnel will be briefed to maintain vigilance for visual and olfactory signs of contamination, particularly in areas of historical mineral extraction, and to be aware of the need for the application of the discovery protocol as outlined and secured via Table 3.10 of this document. If unexpected contamination is discovered, the following process would be enacted: • Works in the immediate area of contamination would be halted immediately and the Environmental Manager/ECoW would be notified. • Any contaminated material would be replaced back into the excavation or onto a membrane to prevent further spread, in line with best practice avoidance and mitigation measures described below. • A suitably qualified geo-environmental consultant would be appointed by the Contractor to undertake investigation in accordance with Land Contamination: Risk Management process and BS 10175:2011+A2:2017 (investigation of potentially contaminated sites), the results of which would be used to develop a suitable remediation strategy, the scope of which would be agreed with the relevant planning authority. • The approved remediation strategy would then be implemented with a verification report produced and submitted to the relevant planning authority to demonstrate compliance with the remediation strategy. Ground investigation works will be undertaken prior to commencing construction. Results will be reviewed by the appointed contractor(s), including any additional investigation or mitigation measures beyond the impact avoidance measures stated here. **Storage of Materials** The CEMP(s) will incorporate measures set out in relevant Construction Industry Research and Information Association (CIRIA) Guidance (Ref. 12 in References). In addition to those measures set out above in this table, examples of such measures include: • Placing arisings and temporary stockpiles outside of the Flood Zone 3 flood extent and away from drainage systems. If areas located within Flood Zone 2 are to be utilised for the storage of construction materials, then a standard rules permit will be sought from the EA. If temporary stockpiles are required within the floodplain, breaks in stockpiles will be provided at regular intervals to ensure impact on flood flows are minimised;	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Placing all refuelling and storage areas for fuel, oil and chemicals at least 10 m away from the top of the bank of watercourses; • All storage areas will be covered where possible to prevent the accumulation of rainwater. Where coverage is not adequate in heavy rainfall, containment measures such as bunds may include a valve to release accumulated rainwater; • Containment measures will be implemented, including drip trays, bunding or double-skinned tanks of fuels and oils. These will have a minimum capacity of 110% of the capacity of the containers; • Where these containment measures, such as bunds, are stored on impermeable surfaces, an oil separator (interceptor), or other device to remove oil from water, may need to be installed. This will be detailed in the CEMP if required; • All chemicals would be stored in accordance with their Control of Substances Hazardous to Health (COSHH) guidelines, whilst spill kits will be provided in areas of fuel/oil/minor chemicals storage; • An emergency spillage plan will be produced, which site staff will have read and confirmed that they understand, via the site induction; • The mixing and handling of materials would be undertaken in designated areas and away from surface water drains; • Plant and machinery will be kept away from surface waterbodies wherever possible and would have drip trays installed beneath oil tanks/engines/gearboxes and hydraulics, which would be checked and emptied regularly. Refueling and delivery areas would be located away from surface water drains; and • No machinery or spoil/materials would be stored within the identified flood extent, to ensure no impact to contractors, or deviation in flow routes due to the proposed works. • Exposed ground and stockpiles would be protected as appropriate and practicable to prevent windblown migration of potential contaminants. Water suppression would be used if there is a risk of fugitive dust emissions. **Discharge/Disposal of Site Runoff** Site drainage, including surface runoff and dewatering effluents, will be discharge to the surrounding watercourses and there is no need to discharge to any public sewer network. Discharge to watercourses will only be permitted where discharge consent or other relevant approval has been obtained (where necessary). Proposed Development drainage during construction will receive appropriate pollution control measures/protective provisions that are agreed with the Trent Valley Internal Drainage Board (IDB). Holding or settling tanks, separators and other measures which may be required, will be provided and maintained;	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	The relevant sections of BS 6031: Code of practice for earthworks (Ref. 18 in References) will be followed for the general control of site drainage. Where practical, earthworks will be undertaken during the drier months of the year. When undertaking earth moving works periods of very wet weather will be avoided, where practical, to minimise the risk of generating runoff contaminated with fine particulates. However, it is likely that some working during wet weather periods will be unavoidable, in which case other mitigation measures will be implemented to control fine sediment laden runoff. 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(s) in accordance with the pollution prevention principles described in this chapter. To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20m 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. Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided. Construction site runoff will either be treated on site and discharged under a Water Discharge Activity Permit from the EA to Controlled Waters (potentially also including infiltration to ground) or to the nearest public sewer with sufficient capacity for treatment or removed from site for disposal at an appropriate and licensed waste facility. Where needed equipment and plant are to be washed out and cleaned in designated areas within the compound where runoff can be isolated for treatment before disposal. Mud deposits will be controlled at entry and exit points to the Site using wheel washing facilities and/or road sweepers operating during earthworks activities or as required. Wash water will be prevented from passing untreated into watercourses. The exact measures to ensure this will be detailed in the CEMP post-consent. Vehicle wash out and wheel washing facilities will be sited a minimum of 10 m from top of bank of watercourses, and mitigation measures are likely to include a designated impermeable or lined area and sediment management measures (i.e. silt fencing). Any SuDS that may be incorporated will provide sufficient treatment for suspended solids, metals and hydrocarbons. If road transport is required to remove wash water to an offsite disposal facility then there should be regard for this within the waste management procedures, which will be detailed in the CEMP.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Containment measures for concrete washout, such as bunds and lined washout pits, will be designed in to the site, and measures will also be implemented during the construction phase. These may include drain covers, ground protection (such as plastic sheeting), and wheel-washing facilities for vehicles travelling to and from site. Operatives will be briefed on the environmental risks and correct washout procedures. 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 receptacles, grid covers and the presence of site security fencing; and foul water from any site compound (including temporary toilets) will be tankered away to an appropriate disposal facility by a licensed waste disposal contractor. If any suspected contaminated material is discovered during the works, the contractor would be required to investigate the areas and assess the need for containment or disposal of the material. If material is considered to be contaminated, it will be disposed of to an appropriately licensed facility; Foundations and services will be designed and constructed to prevent the creation of pathways for the migration of contaminants and would be constructed of materials that are suitable for the ground conditions and designed use. For example, water supply pipes would be designed in accordance with current good practice and applicable guidance to ensure pipes are protected from potential impacts associated with contamination; and no discharges from any self-contained wheel wash and localised wheel wash will be permitted to discharge directly into any surface water system. **Temporary Drainage** Measures that would be considered for implementation for temporary drainage through the construction design and/or CEMP(s) include: • 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 principles set out in industry guidelines. Measures may include use and maintenance of temporary lagoons, tanks, bunds and fabric silt fences or silt screens as well as consideration of the type of plant used; • A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. This will include identifying all land drains and waterbodies in the Proposed Development area and ensuring that they are adequately protected using drain covers, sand bags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment (e.g. lamella clarifiers); • Connectivity will be maintained between the floodplain and the adjacent watercourses, with no increase in ground levels within the floodplain;	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Cut-off ditches or geotextile silt-fences, installed around excavations, exposed ground and stockpiles to prevent uncontrolled release of sediments; • Site access points would be regularly cleaned to prevent build-up of dust and mud; and all potentially contaminated waters (for example washdown areas, stockpiles and other areas of risk for water contamination) to have separate drainage. Any contaminated waters would be tankered away from the Order Limits. In addition, if monitoring demonstrates unsatisfactory levels of solids or other pollutants, measures would be implemented (e.g. changes to site drainage and settlement facilities and/or use of flocculants) to control suspended solids or other contaminated discharge to watercourses. **Concrete** Concrete can be a risk to water quality as it is a known source of hazardous substances, particularly during the curing phase. The exact locations and method of installation of concrete works within the site are not confirmed at this stage. This information will be detailed in the CEMP post-consent. Typical mitigation measures are likely to include managing the timing of concrete works to account for weather conditions, and to introduce for runoff controls. For example, where practicable concrete pours will be minimised during heavy precipitation events and carried out during dry periods. Regarding runoff control, the topography and layout of the site will be considered to direct works away from drainage channels, surface water features and sensitive areas. **Spillage Risk** Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002 (Ref. 19 in References), and the Control of Pollution (Oil Storage) (England) Regulations 2001 (Ref. 20 in References). Particular care will be taken with the delivery and use of concrete and cement as it is highly corrosive and alkaline. 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). Any plant, machinery or vehicles will be regularly inspected 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 only at designated areas within the Site compound. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted on site. Drip trays will be placed below static mechanical plant.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling; As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses. All fixed plant used on the Site will be self-bunded. The Surface Water Drainage Strategy Plans will include details for pollution prevention and will be prepared and included alongside the CEMP(s). 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. The Order Limits will be secure to prevent any vandalism that could lead to a pollution incident; Construction waste/debris are to be prevented from entering any surface water drainage or water body. All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses. Surface water drains on public roads trafficked by plant or within the construction compound will be identified and, where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sandbags) or the road regularly cleaned by road sweeper. 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 Site for appropriate disposal at a suitably licensed waste facility. Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and dealt with effectively. Details of the water quality monitoring regime (including monitoring intervals) will be set out within the CEMP post consent, but will likely include monitoring upstream and downstream of any proposed surface water outfalls and water crossings as a minimum; and Any site welfare facilities will be appropriately managed and all foul waste disposed of by an appropriate contractor to a suitably licensed facility.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	A site specific frac-out risk assessment will be produced and included in the CEMP prior to drilling the cable crossings, as is standard practice, to mitigate any water quality deterioration from the drilling process. The CEMP will also include a bentonite fluid breakout plan and an emergency spill response procedure. **Fire Water** In order to mitigate the contamination of watercourses or groundwater as a result of the potential mobilisation of contaminants in the event of a fire, various measures will be implemented. The BESS sites will include an area lined with an impermeable membrane to contain contaminants. The substations will likely include the same, but this will be confirmed and detailed in the CEMP post-consent. It should be noted that the transformers in the substation will all be bunded to ensure any potential contaminants are contained. **Watercourse Crossings** A typical trenchless watercourse crossing and an example of a launch put for a trenchless crossing are shown in the **Export Cable Route Construction Method Statement [EN010159/APP/7.13].** A pre-works hydro morphology survey will be carried out for each watercourse to ensure the correct depth for passing under the watercourse. A tidal riverbed survey will be required prior to the works under the River Trent. A site-specific fracture risk assessment will be produced prior to commencing works to define the methodology and mitigation required on ground conditions. For the cable route crossings, the launch and receiving pits will typically be a maximum size of 120m x 80m and 50m x 70m respectively. Watercourses will have a minimum buffer of 8m, ponds 10m, and a 16m buffer to the River Trent. The launch and receiving pits will be a minimum of 10m from the watercourse edge. The cable route crossing of the River Trent will be a minimum of 5m below the bed of the river and the trenchless compounds will be located a minimum of 16m from the bank top. For other smaller watercourses, the crossing will be a minimum of 2.5m below the bed of the watercourse and the trenchless crossing compounds will be located a minimum of 10m from the bank top.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	There is a small risk of drilling fluid break out from drilling to the watercourse if not appropriately mitigated for site specific conditions. A site-specific hydraulic fracture risk assessment will be produced as part of the CEMP prior to commencing works to define the mitigation required based on ground conditions. Also included in this CEMP will be a bentonite fluid breakout plan and an emergency spillage response procedure. The crossing of wet ditches will be avoided wherever possible. Where unavoidable, they will be designed to ensure the maintenance of connectivity for aquatic fauna (fish) and semi-aquatic fauna (water vole and otter). They will be delivered using clear span bridges, avoiding impacts to the channel and its banks. **Flood Risk** Construction works undertaken adjacent to watercourses and within flood zones will comply with relevant guidance (e.g. CIRIA guidance) during construction. Construction works specifically in areas located within Flood Zone 3, would not be undertaken when an EA Flood Warning is in place. Construction compounds will be designed to account for the relevant flood levels present in their location. Safe refuge from flood waters will be provided as part of the Proposed Development's design. The CEMP(s) will incorporate measures aimed at preventing an increase in flood risk during the construction works. Materials would be stored outside of Flood Zone 2 and 3 and the construction laydown area site office and supervisor would be notified of any potential flood occurring by use of the Floodline Warnings Direct service. The Contractor(s) will be required to produce a Flood Risk Management Action Plan/Method Statement with the CEMP(s) which will provide details of the response to an impending flood and include the following: • 24-hour availability and ability to mobilise staff in the event of a flood warning. • All plant, machinery and material which is capable of being mobilised in a flood risk area will be moved by the Contractor(s) to safe locations, to mitigate flood risk elsewhere by blocking flood flow paths etc. during a flood event; • Details of the evacuation and site closedown procedures; • Arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works areas; • The Contractor(s) will sign up to EA flood warning alerts and describe in the ERP 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(s) will implement more stringent protection measures;	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• If water is encountered during below ground construction, suitable de-watering methods will be used. Any groundwater dewatering required in excess of the exemption thresholds will be undertaken in line with the requirements of a full or temporary water abstraction license(s) from the EA (under the Water Resources Act 1991 as amended) and the Environmental Permitting Regulations (England and Wales) 2016; and 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.	
Impacts to drainage as a result of the Proposed Development	Drainage swales and basins will form part of the Sustainable Drainage System (SuDS) for the Proposed Development. The location and size will be determined in response to detailed infrastructure design to avoid flooding in areas of high flood risk. Basins will be designed to hold areas of permanent water (ponds) in a way that will not compromise their primary function (minimum of three ponds). These features will be plug planted and seeded with a range of native aquatic plants and emergent vegetation. A SuDS feature will be created within the proposed coastal and floodplain grazing marsh lying adjacent to the west of the River Trent. It would take the form of a drainage ditch. Strategic SuDS features such as filter drains, swales and basins/scrapes are incorporated within the solar array areas to encourage infiltration to the ground and also provide ecological and biodiversity benefits. Additional water features (minimum of 25), in the form of 'scrapes' will be created throughout the Site, primarily in areas of low lying land which are more likely to hold water over the winter period, and close to existing ponds and SuDS. In each of the locations, two to three scrapes will be created (where practicable) with one larger, one medium and one small, allowing a range of conditions. The larger scrape will: • reach a maximum depth of 1m, with a steep bank at one end and a shallow bank at the other • cover approximately 20m^2 but of varying shapes (both linear and round). • The surface will be left rough and will naturally colonise.	
Impacts to public water and drainage utilities	Controls are anticipated to include a requirement for the Applicant to obtain approval from the utility owner of works that are within proximity to their assets. Bespoke stand-off distances will be applied to the strategic supply mains of between 3m and 6m. Stand-offs from these assets will be free from construction, structures and haul and access roads.	
Impacts to Potable Water	If at detailed design, it is confirmed that potable water demand at the construction or operational stage is in excess of 20m^3/day, then a Water Resource Assessment will be produced in consultation within Anglian Water.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Potential impacts to hydrology during construction.	A hydrogeological risk assessment will be produced for river/watercourse crossings prior to detailed design and suggest this is secured through requirement.	

Table 3.6: Landscape and Visual Amenity

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Loss of existing landscape features, e.g. vegetation. Visibility of construction activities.	The **Outline Landscape Environmental Management Plan [EN010159/APP/7.7]** sets out proposed measures 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 LEMP will be submitted to and approved by the relevant planning authority including measures to: • Protect and retain existing trees and vegetation; • Manage and enhance landscape and biodiversity; • Ensure compliance through management and monitoring; and • Ensure maintenance and management, including a landscaping maintenance plan. **Tree Works** The findings of the pre-construction tree survey and Arboricultural Report, accompanied by Arboricultural Method Statements, where construction works are likely to affect trees, will be taken into account by the appointed contractor(s). 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. 10 in References) and National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees; and all necessary protective fencing will be installed prior to the commencement of any site clearance or construction works. **Lighting** Temporary site lighting during construction required to enable safe working during construction in hours of darkness will be designed as far as reasonably practical so as not to cause a nuisance outside of the Order Limits. Standard good practice measures would be employed to minimize light spill, including glare during construction. **Screening**	An arboricultural survey in line with BS 5837:2012 (Ref. 10 in References) would be undertaken concurrently with detailed design of the Proposed Development, 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 Landscape and Biodiversity Management Plan. Where required additional surveys will be undertaken during the advance works, site clearance and construction phase as advised as necessary by the Applicant's 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 Measures	Monitoring Requirements
	Existing vegetation along the boundary of the Order Limits will be retained and managed where practicable to ensure its continued presence and to aid the screening of low-level views into the Order Limits. The Proposed Development has been designed to minimise glint and glare impacts on existing sensitive receptors. Embedded mitigation will comprise hedgerows to be grown, infilled, gapped up and maintained to a height of at least 4m for sensitive receptors as identified in the **Glint and Glare [EN010159/APP/7.16]**. Temporary screens will be installed whilst hedgerows establish where glint and glare has potential to impact road users.	

Table 3.7: Noise and Vibration

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Noise due to construction activities, including traffic, plant, and machinery, at nearby Noise Sensitive Receptors (NSR). Vibration due to construction activities causing annoyance at NSRs and damage to building structures.	The following Best Practicable Means (BPM) 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: • Ensuring that all appropriate processes, procedures and measures are in place to minimise noise and vibration before works begin and throughout the construction programme; • All contractor(s) 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; • Ensuring that, where reasonably practicable, noise and vibration is controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), the construction programme and methodology is reviewed by the principal contractor to consider quieter methods, consideration is given to the location of potentially noise-generating equipment on-site and control of working hours; • Use of modern plant, complying with applicable UK noise emission requirements; • Use of alternative techniques for breaking and piling (e.g. hydraulic breaking, augur piling, etc.) to be used in preference to percussive techniques, where reasonably practicable; • Drop heights of materials will be minimised; • Plant and vehicles will be sequentially started up rather than all together; • Off-site pre-fabrication where reasonably practicable; • Use of noise screening locally around significant noise producing plant and activities (e.g. via temporary site hoardings / temporary noise barriers); • Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.	A construction noise monitoring plan shall be developed and agreed with appropriate stakeholders following appointment of a principal contractor and prior to commencement of construction works. The CEMP(s) would also set out a methodology for monthly reporting to local residents providing information and advising of potential noisy works that are due to take place. The CEMP(s) will also set out a methodology for monitoring noise complaints and reporting to the Applicant for immediate investigation and action.

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• All construction plant and equipment to be properly maintained, silencers / attenuators fitted where appropriate, operated to prevent excessive noise and switched off when not in use; • Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Order Limits to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable; • Appropriate routing of construction traffic on public roads and along access tracks pursuant to the Construction Traffic Management Plan. **An Outline Construction Traffic Management Plan [EN010159/APP/7.9]** (oCTMP) is included in the submission documentation. • Provision of information to the relevant planning authority and residents to advise of potential noisy works that are due to take place. Monitoring of noise complaints and reporting 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 contact details for the Site Manager or alternative public interface with whom nuisance or complaints can be lodged. A logbook of complaints will be prepared and managed by the Site Manager; • Normal construction working hours on the solar farm will run from 07:00 to 19:00 Monday to Saturday. Any works that are required outside of these hours (e.g. horizontal directional drilling in relation to the cable route construction) will be subject to s61 applications with the appropriate Local Planning Authority under the CPA 1974, which will include noise control methods specific to those works. • Heavy ground works, including piling, mechanical breaking, mechanical excavation and vibratory compaction, will not take place within 30m of residential properties before 08:00 or after 18:00 on any weekday, or within 50m of residential properties before 08:00 or after 13:00 on a Saturday. • Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas. • Liaison will be undertaken with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration. All communications will contain contact details to direct any questions or complaints to; and • Consideration has been given to traffic routing, timing and access points to the Proposed Development to minimise noise impacts at existing receptors. Management of HGVs within the Proposed Development and being let on to the highway network will be managed through an CTMP. • The trenchless crossing compounds for the cable across the River Trent will be located as far as is reasonably practicable from, and not within 100m of, noise sensitive receptors.	

Table 3.8: Socio-Economics and Land Use

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Potential for damage to soil. Causing soil compaction by carrying out works in inappropriate (wet) conditions could reduce infiltration potentially enhancing any run-off and/or erosion issues. If compacted the land may be of lower quality on decommissioning.	Prior to commencement of works a Soil Management Plan (SMP) will be prepared in accordance with the **Outline Soil Management Plan [EN010159/APP/7.10]**. The SMP will detail the management of soil on areas such as temporary working compounds, temporary and permanent tracks and sites of temporary and permanent buildings. The SMP will include details of topsoil and subsoil stripping depths, how and where soils will be stored, conditions under which soil stripping and reinstatement will be carried out and how the reinstatement will be carried out. The oSMP and SMP will follow the principles of best practice including the Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref. 26 in References).and The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings (Ref. 27 in References).	Soil assessments and monitoring will be undertaken as detailed in the oSMP.
Disruption to local residents, businesses and community facilities	Primary mitigation measures are embedded within the Proposed Development, as set out in the respective chapters, to reduce other construction and operational 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.	As above

Table 3.9: Air Quality

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
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.	Appropriate mitigation and control measures will be included in the CEMP(s), which would include: **Communications:** • Develop and implement a stakeholder communications plan that includes community engagement before work commences on-site; • 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; • Display the head or regional office contact information; and • Develop and implement a Dust Management Plan (DMP), which will include measures to control other appropriate emissions. The DMP will include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections. **Site Management:**	Measures in the CEMP(s) will include the implementation of: Inspection procedures at the Order Limits boundary to periodically visually assess any dust and air pollution which may be generated; Inspection of maintenance schedules for construction vehicles, plant and machinery; and Inspection and recording procedures relating to the level of traffic movements, use and condition of haul routes.

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• 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; • Make the complaints log available to the local authority when asked; • Record any exceptional incidents that cause dust and/or air emissions, either on-site or off- site, and the action taken to resolve the situation in the logbook. • Provide 6-monthly reports to the Local Authority with records of complaints and significant incidents; • Hold regular liaison meetings with other high-risk construction sites within 500m 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; • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when requested; • Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and • Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on-site or, if it a large site, which is the case for the Order Limits, before work on a phase commences; **Preparing and Maintaining the Site:** • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible; • Erect solid screens or barriers around dusty activities that are at least as high as any stockpiles on-site where stockpiles are within 100m of receptors; • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period where operations are within 100m of receptors; • Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods; and • Remove materials that have a potential to produce dust from the Order Limits as soon as possible, unless being re-used on-site. If they are being re-used on-site cover as described below; and • Cover, seed or fence stockpiles to prevent wind whipping. **Operating Vehicles / Machinery and Sustainable Travel:**	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Ensure all vehicles switch off engines when stationary where practical. Vehicles will conform to current EU emissions standards ((EU) 2016/1628 (as amended)) and can be registered for inspection by the appropriate Competent Authority if required; • Avoid the use of diesel – or petrol-powered generators and use mains electricity of battery powered equipment where practicable; • Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate; • Produce a Construction Traffic Management Plan (CTMP) to manage the sustainable delivery of goods and materials; • Implement a CTMP that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing); • Static construction plant will be located away from Order Limits boundaries that are close to sensitive receptors, where reasonable and practicable; • Measures with be taken to keep roads and accesses clean; and • Vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly. **Operations:** • All cutting, grinding, or sawing equipment will be fitted with, or used in conjunction with suitable dust suppression techniques, such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; • Damping down of dust-generating equipment and vehicles within the Order Limits and the provision of dust suppression in all areas of the Order Limits that are likely to generate dust; • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate; and • 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:** • Avoid bonfires and burning of waste materials. **Earthworks:** • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilize surfaces as soon as practicable. Use hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; • Only remove the cover in small areas during work and not all at once; • Avoid site runoff of water or mud;	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Keep site fencing, barriers and scaffolding clean using wet methods; • Remove materials that have a potential to produce dust from the Order Limits as soon as possible, unless being re-used on-site. If they are being re-used on-site cover as described below; and • Cover, seed or fence stockpiles to prevent wind whipping. **Construction Activities** • Avoid scabbling (roughening of concrete surfaces) if possible; • 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; • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. **Trackout** • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; • Regular inspection of haul routes and prompt repair (if required) will be undertaken. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable; • Record all inspections of haul routes and any subsequent action in a site logbook. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; • Implement a wheel washing system; (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; • Access gates to be located at least 10m from receptors where possible; • Haul routes will be maintained to control dust emissions, as far as reasonably practicable. The frequency of cleaning will be suitable for the purposes of suppressing dust emissions from the site boundaries; and	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• Enforcement of speed limits on haul roads for safety reasons and for the purposes of suppressing dust emissions will be implemented.	

Table 3.10: Ground Conditions

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Potential for risks to human health associated with waste generation, land contamination, airborne contamination, and groundwater contamination. The discovery of ground contamination during groundworks. Levelling of the Order Limits including the possible introduction of new fill materials.	If, during the carrying out of the authorised development, contamination not previously identified is found to be present no further development (unless otherwise agreed in writing with the relevant planning authority) must be carried out on the area(s) on which the contamination has been found until a remediation strategy detailing how such contamination must be dealt with has been submitted to and approved by the relevant planning authority. Remediation work would not commence until agreement had been reached with the planning authority regarding the intended scope of work. Groundworks personnel will be briefed to maintain vigilance for visual and olfactory signs of contamination, particularly in areas of historical mineral extraction, and to be aware of the need for the application of the discovery protocol as outlined and secured via the discovery protocol detailed below. If unexpected contamination is discovered, the following process would be enacted: • Works in the immediate area of contamination would be halted immediately and the Environmental Manager/ECoW would be notified. • Any contaminated material would be replaced back into the excavation or onto a membrane to prevent further spread, in line with best practice avoidance and mitigation measures described below. • A suitably qualified geo-environmental consultant would be appointed by the Contractor to undertake investigation in accordance with Land Contamination: Risk Management process and BS 10175:2011+A2:2017 (investigation of potentially contaminated sites), the results of which would be used to develop a suitable remediation strategy, the scope of which would be agreed with the relevant planning authority. • The approved remediation strategy would then be implemented with a verification report produced and submitted to the relevant planning authority to demonstrate compliance with the remediation strategy.	The Environmental Manager will regularly record compliance in a logbook. The CEMP will detail the frequency.

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	Ground investigation works will be undertaken prior to commencing construction. Results will be reviewed by the appointed contractor(s), including any additional investigation or mitigation measures beyond the impact avoidance measures stated here. Best practice avoidance and mitigation measures include: • All workers will be required to wear Personal Protective Equipment (PPE) such as dust masks as applicable; • Containment measures will be implemented, including drip trays, bunding or double- skinned tanks of fuels and oils; all chemicals would be stored in accordance with their COSHH guidelines, whilst spill kits would be provided in areas of fuel/oil storage; • All plant and machinery will 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 will be located away from surface water drains; • An emergency spillage action plan will be produced, which staff would have read and understood, and provisions made to contain any leak/spill; • Should any potentially contaminated ground, including isolated 'hotspots' of contamination and/or potential deposits of asbestos containing materials (ACM), be encountered, the contractor(s) will be required to investigate the areas and assess the need for containment or disposal of the material. The contractor(s) will also be required to assess whether any additional health and safety measures are required; • To further minimise the risks of contaminants being transferred and contaminating other soils or water, construction workers will be briefed as to the possibility of the presence of such materials; • In the event that contamination is identified, appropriate remediation measures would be taken to protect construction workers, future site users, water resources, structures and services; • Arisings and temporary stockpiles will be placed away from watercourses and drainage systems, whilst surface water would be directed away from stockpiles to prevent erosion. • The risk to surface water and groundwater from run-off from any contaminated stockpiles during 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 licenses/permits. • It will be ensured 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. • Any waters removed from excavations by dewatering would be discharged appropriately, subject to the relevant permits being obtained from the EA.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
	• A dust suppression/management system will be implemented in order to control the potential risk from airborne contamination migrating off-site to adjacent sites. • Piling design and construction works will be completed following the preparation of a piling risk assessment. If required, a piling risk assessment will be undertaken before the start of construction works. This will minimise impacts on groundwater as a result of piling activities. • Health and safety measures for construction workers will include the use of personal protective equipment, training and toolbox talks. Work will be conducted in accordance with relevant Construction Design Management (CDM) Regulations 2015.	

Table 3.11: Major Accidents and Disasters

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Workplace injuries	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.	Site Manager

Table 3.12: Telecommunications, Television Receptors and Utilities

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements
Potential to affect existing utility infrastructure above and below ground	The risk of damage to utilities during construction will be minimised through mitigation, which will involve: Locating the Proposed Development outside of utilities' protected zones. The use of ground penetrating radar or other appropriate techniques will be employed before excavation to identify any unknown utilities. Consultation and agreement of construction/demobilization methods will be undertaken prior to works commencing (this would be covered by the protective provisions included in the DCO).	No monitoring required

	Infrastructure that crosses the Proposed Development will be mapped and avoided through the design. Undertaking works in accordance with protective provisions included in the **Draft DCO [EN010159/APP/3.1]**.	

Table 3.13: Waste

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility

Disposal of waste (potential waste streams are listed in Volume 7 Waste Impact Assessment)
 	
Potential to impact on sensitive receptors (humans, wildlife and controlled waters) if not stored and managed appropriately.
	The Proposed Development will aim to prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.
	
	All management of waste will be in accordance with the relevant regulations and waste will be transported by licensed waste haulers to waste management facilities which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.
	
	The construction of the Proposed Development 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. An **Outline Site Waste Management Plan [EN010159/APP/7.12]** accompanies the measures set out in this document, and is included alongside the ES, which sets out:
	
	• The types, quantities and destination of waste generated during the decommissioning phase will be completed prior to decommissioning starting and will set out:
	  ○ The waste streams that will be generated;
	  ○ How the waste hierarchy will be applied to these wastes;
	  ○ Good practice measures for managing waste; and
	  ○ Roles and responsibilities for waste management.
	
	To reduce the potential impacts from waste, and to achieve high levels of sustainability in the Proposed Development as a whole, the Contractor will apply the principles of the waste hierarchy and adopt BPM which go beyond statutory compliance. This may include BPMs set out in construction industry guidance.
	
	The following approaches will be implemented, where practicable, to minimise the quantity of waste arising and requiring disposal during decommissioning:
		The types, quantities and final destination of waste generated during the construction phase would be identified, measured, and recorded through the SWMP.
		
		A register of all waste loads leaving the Order Limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities, and management methods.
			The overall responsibility will be with the Contractor. Specific responsibilities will be confirmed in the detailed CEMP and SWMP

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
	• Segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and • 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. • The Principal Contractor will implement the following waste management measures, where practicable, in order to minimise the likelihood of any localised impacts from pollution or nuisance from waste on the surrounding environment: • Damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the site as required; • Burning of waste or unwanted materials will not be permitted on-site; • 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; • All workers will be required to use appropriate Personal Protective Equipment (PPE) whilst performing activities on-site; • Any waste effluent will be tested and, where necessary, disposed of at a correctly licensed facility by a licensed specialist contractor/s; and • Materials requiring removal from the site 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. 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. This will include BPMs set out in construction industry guidance at the time for example, guidance from the Considerate Constructors Scheme (CCS), Waste & Resources Action Programme (WRAP) and CIRIA. To ensure the cumulative generation of waste is managed appropriately, the Applicant commits to working collaboratively to: • Share data and reporting on waste types and volumes to support regional waste planning and avoid overburdening local waste infrastructure; • Engage with the host authorities and waste planning bodies to ensure consistency with regional waste management strategies and capacity constraints; and • Review and update waste mitigation measures regularly through continued dialogue with other developers post-consent.		

Table 3.14: Arboriculture

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
Destruction or harm of trees or hedges during construction, operation or decommissioning the Proposed Development.	Known tree and hedgerow removal are outlined in the **Outline Landscape and Ecology Management Plan [EN010159/APP/7.7].** Tree works will adhere to 'BS3998: 2010 Tree Work – Recommendations', which is outlined below. An Arboricultural Method Statement will be prepared as part of the Construction Environmental Management Plan post consent to set out the finalised tree protection measures. Tree protective measures shall stay in place until all construction operations are completed, and removal is agreed with the Site arboriculturist and/or the Local Authority Tree Officer as appropriate. No works will take place in the root protection area (RPA)/buffer zone of any additional veteran trees identified within the Order Limits that are outside the surveyed areas shown on the Vegetation Removal Plan (determined as 15 multiplied by stem diameter or canopy +5m – whichever is greater). Retained trees must be protected from construction operations where there is a risk of damage or impact with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ). The micro siting of infrastructure to protect RPAs will be undertaken at detailed design. Pruning works will be undertaken when trees are dormant or outside periods of high functional activity (between November to February and July to August (subject to the presence of protected species)).	An Arboricultural Method Statement will be prepared as part of the Construction Environmental Management Plan to set out monitoring requirements.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
	Excavation must only take place within the RPA of a retained tree within the Order Limits outside the areas shown on the Vegetation Removal Plan with the prior agreement of an arboriculturist and the Local Authority Tree Officer. Any excavation must be undertaken using hand tools or compressed air (such as an air spade). Roots will only be exposed for the minimum period possible. In the interim period any exposed retained roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations will utilise the parent material and will not be significantly compacted. The storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 10m from the edge of the RPA of retained trees. Where hedgerows require removal for visibility splays to facilitate temporary access routes these will be coppiced to just above ground level or will be pruned or laid to a greater height allowing for the necessary visibility splay. The trees can then be allowed to regenerate to current dimensions following completion of site works and the removal of temporary access routes. Where this is likely to be applicable, the loss or reduction of benefits such as amenity will be temporary. Where possible individual trees within visibility splays will be retained where any obstruction to visibility is within acceptable limits. The cable route will be positioned as far from the stem of retained trees as possible and all trenching will be outside of the RPA of retained trees. Any spoil or arisings will be stored outside of the RPA or on ground protection boards to protect soil structure below. All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the RPA or crown spread of retained trees. Trenchless crossings such as horizontal directional drilling (HDD) will be utilised as required to mitigate impact on tree belts or hedgerows. The top of the run will be a minimum of 2m deep below ground level (BGL) and access and retrieval pits will be positioned outside of the RPAs of retained trees. Trenchless crossings of hedgerows along the route of transmission cables will be located a minimum of 3 m away from the hedgerow bottom. Where existing services become redundant within the RPA of a retained tree, the default position must be that they be decommissioned and left in situ. Should they need to be removed, the advice of an arboriculturist will be sought. Where plant or machinery is required to operate within 5m of a retained tree canopy a bankman must be present to avoid physical damage to trees.		

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
	Any services within RPAs must be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring or HDD) with all access pits and inspection chambers being located outside of the RPA. Where new trees are to be planted, the minimum planting distances detailed in Annexe A, Table A.1 of BS5837:2012 will be adhered to, to prevent direct damage to services and structures from future tree growth. New tree planting will be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations. Existing trees and hedgerows will be retained as far as possible and protected in accordance with best practice (BS 5837), where unavoidable, features of low distinctiveness and classified as poor in condition (using BNG Condition Assessment criteria) will be selected over habitats of medium or high distinctiveness or classified as moderate or good condition.		

Table 3.15: Agricultural land and soils

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
Potential construction impacts to land and soils receptors	At the start of the construction phase, the areas of agricultural land required for the temporary construction compounds and access tracks will be stripped of topsoil, a suitable membrane will be spread, and stone or matting will be laid down. The topsoil will be removed and matting laid across the temporary Construction Compound locations, onto which stone will be spread. This prevents intermixing of soil with the temporary stone surface. The topsoil removed during the construction process will be placed temporarily in a low-level bund or bunds on land outside of the area of the temporary construction compounds. Topsoil mounds will be shaped to repel water and if they will be in place for more than 6 months they will be sown with a low maintenance grass seed mix, in accordance with the measures detailed in the oSMP (**Outline Soil Management Plan [EN010159/APP/7.10]**). Where vehicle movements are required over soils, these will be managed by measures detailed in the oSMP to prevent damage to soil structure.	The activities undertaken during the construction phase will be audited against the requirements detailed in the oSMP. This work will be completed by an appropriately qualified person to ensure adherence. The Water Management Plan (WMP) will include details of pre, during and post-construction water quality monitoring.	

Potential Impact	Mitigation / Enhancement Measures	Monitoring Requirements	Responsibility
	Where vehicle movements are required over soils, these will be managed by measures detailed in the oSMP to prevent damage to soil structure. A Water Management Plan will be provided as part of the CEMP that will provide greater detail regarding the mitigation to be implemented to protect the water environment during construction.		

4. Implementation and Monitoring

4.1.1 The CEMP(s) will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this oCEMP, including:

An organogram showing team roles, names and responsibilities;

- Training requirements for relevant personnel on environmental topics;
- 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;

Measures to advise employees of changing circumstances as work progresses;

- Communication methods;
- Document control;

Monitoring, inspections and audits of site operations; and

- Environmental emergency procedures.

4.1.2 The Project Manager and Environmental Manager have responsibility for ensuring compliance with the oCEMP and CEMP(s).

5. Monitoring and Reporting

5.1 Monitoring

5.1.1 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 CEMP(s) and related construction controls, and allow for corrective action to be taken where necessary.

5.1.2 As part of the monitoring process the designated Environmental Manager will be present on site throughout the construction process and when new activities are commencing. The Environmental Manager will observe site activities and report any deviations from the CEMP(s) in a logbook, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the CEMP(s) as soon as possible following identification of such issues. The Environmental Manager would also act as day-to-day contact with relevant local authorities and other regulatory agencies such as the EA.

5.1.3 During construction, the Environmental Manager will conduct walkover surveys to ensure all requirements of the CEMP(s) are being met. Action from these surveys will be documented on an Environmental Action Schedule, discussed with the Site Manager for programming requirements and issued weekly for actioning.

5.1.4 The Environmental Manager will also arrange regular formal inspections and audits to ensure the requirements of the CEMP are being met. Details of monitoring, inspection and audits to be undertaken will be provided in the CEMP(s).

5.1.5 After completion of the works, the Environmental Manager will conduct a final review.

5.2 Records

5.2.1 The Environmental Manager/ Project Manager will retain records of all monitoring, inspections and audits. These records will include:

- Results of routine site inspections by Environmental Manager / Project Manager;
- Environmental surveys and investigations;
- Environmental Action Schedule;
- Environmental equipment test records;
- Licences and approvals; and

- Corrective actions taken in response to incidents, breaches of the approved CEMP(s) or complaints received from a third party.

5.2.2 The CEMP(s) will be updated if it is necessary to add additional control measures, with a full review as required throughout the construction period. Existing control measures and mitigation will not be amended without prior agreement with the local authorities.

6. References

Ref. 1 HMSO (2008) The Planning Act 2008.
Ref. 2 HMSO (1974); Control of Pollution Act 1973.
Ref. 3 HMSO (1995); Environmental Act 1995.
Ref. 4 British Standards Institute (2014) BS 5228:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites, Noise, BSi, London.
Ref. 5 Northern Ireland Environment Agency (NIEA) (2018), Above ground oil - Storage tanks: GPP 2.
Ref. 6 NIEA (2017), Treatment and disposal of wastewater where there is no connection to the public foul sewer, GPP 4.
Ref. 7 NIEA (2018); Works maintenance in or near water, GPP 5.
Ref. 8 NIEA (2017); Safe storage and disposal of used oils, GPP 8.
Ref. 9 NIEA (2017); Pollution incident response planning GPP 21.
Ref. 10 British Standards Institute (2012) BS 5837:2012 – Trees in relation to design, demolition and construction. Recommendations, Noise, BSi, London.
Ref. 11 Department for Food and Rural Affairs (Defra) Guidance on protecting our water, soils and air.
Ref. 12 Construction Industry Research and Information Association (CIRIA) Guidance.
Ref. 13 NIEA (2017); Vehicle washing and cleaning.
Ref. 14 NIEA (2017) Vehicles: Servicing and Repairs.
Ref. 15 NIEA (2017) Dewatering underground ducts and Chambers.
Ref. 16 NIEA (2018) Guidance for Pollution Prevention.
Ref. 17 NIEA (2018) Safe storage of Drums and Intermediate Bulk Containers (IBCs).
Ref. 18 British Standards Institute (2009) BS6031:2009 Code of Practice for Earthworks (British Standards Institute, 2009).
Ref. 19 HMSO (2002) Control of Substances Hazardous to Health Regulations.
Ref. 20 HMSO (2001) Control of Pollution (Oil Storage) (England) Regulations
Ref. 21 NIEA (2020) A general guide to preventing pollution, GPP1
Ref. 22 Environment Agency. Pollution Prevention Guidelines. Working at construction and demolition sites: PPG6.
Ref. 23 Environment Agency. Pollution Prevention Guidance. Safe storage- the safe operation of refuelling facilities: PPG7.
Ref. 24 Environment Agency. Pollution Prevention Guidance. Managing Fire Water and Major Spillages: PPG18.
Ref. 25 NetRegs Environmental Guidance for your Business in Northern Ireland and Scotland. GPP3: Use and design of oil separators in surface water drainage systems.
Ref. 26 Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
Ref. 27 The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings.

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