THE DROVES
SOLAR FARM

The Droves Solar Farm

outline Construction Environmental Management Plan

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List of Contents

List of Tables

List of Appendices

1 Introduction

1.1 Background

1.1.1 This document provides the outline for the Construction Environmental Management Plan (CEMP) for The Droves Solar Farm (hereafter referred to as 'the Scheme').

1.1.2 A Development Consent Order (DCO) would provide the necessary authorisations and consents for the Scheme which comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station and associated development comprising a Battery Energy Storage System (BESS), a Customer Substation, and Grid Connection Infrastructure, including a new National Grid Substation. The Scheme would allow for the generation and export of over 50MW Alternating Current (AC) of renewable energy, connecting into the National Electricity Transmission System (NETS) overhead line that passes through the Site.

1.1.3 Due to its total capacity exceeding 50 MW the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) under Sections 14(1)(a) and 15(2) of the Planning Act 2008 **(Ref. 1)** and therefore requires consent via a DCO. The decision whether to grant a DCO will be made by the Secretary of State for Energy Security and Net Zero following the Examination and Recommendation by the Planning Inspectorate.

1.1.4 An Environmental Impact Assessment (EIA) has been undertaken for the Scheme and an **Environmental Statement (ES) [APP/6.1 to 6.5]** has been prepared in accordance with the Infrastructure Planning (EIA) Regulations 2017 (EIA Regulations) **(Ref. 2)**. In accordance with the requirements of the EIA Regulations, the ES contains the assessment of the likely significant effects on the environment that may be caused during the construction of the Scheme and describes proposed mitigation measures.

1.1.5 The aim of this oCEMP is to demonstrate how the mitigation measures relevant to construction activities included in the ES will be implemented. It also sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out and are effective. This document does not address operational or decommissioning activities, which would be subject to separate environmental management plans and procedures (under the **outline Operational Environmental Management Plan (oOEMP) [APP/7.8]** and **outline Decommissioning Strategy (oDS) [APP/7.10]**).

1.1.6 This oCEMP is designed with the objective of ensuring compliance with the relevant environmental mitigation measures set out within the ES. This document provides the likely structure of, and some outline information relevant to, the detailed CEMP. The detailed CEMP will be produced substantially in accordance with this oCEMP following the grant of the DCO before the Scheme becomes operational. It will then be submitted to Breckland

Council (BC) for approval, in accordance with Requirement 13 of the **draft Development Consent Order (draft DCO) [APP/3.1]**.

1.1.7 Compliance with the contents of the detailed CEMP is intended to provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making and managed appropriately. Detailed construction techniques and supporting Risk Assessment and Method Statements (RAMS), which would outline further mitigation requirements based on the measures discussed in the detailed CEMP and any supporting appendices, would be produced by the appointed contractor responsible for the construction of the Scheme.

1.1.8 The key elements of this oCEMP are:

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

1.1.9 In summary, this oCEMP identifies how commitments made in the EIA will be translated into actions during construction and includes a process for implementing the actions through allocation of key roles and responsibilities. Any additional construction licences, permits or approvals that are required will be listed in the detailed CEMP, including any environmental information submitted in respect of them. The detailed CEMP will be a live document updated throughout the construction phase as required, for example to reflect changes in legislation or contact details. This oCEMP has been designed with the objective of compliance with the relevant environmental legislation and mitigation measures set out within the ES.

1.1.10 It is noted that multiple detailed CEMPs may be prepared, approved, and implemented for specific works, for example separate CEMPs may be prepared for the Solar PV Site and the Customer Substation. Within this document, ‘detailed CEMP’ is defined to collectively refer to all detailed CEMPs which may be prepared.

1.1.11 The appointed contractor(s) will be responsible for working in accordance with the environmental controls documented in this oCEMP, pursuant to the DCO. The overall responsibility for implementation of the detailed CEMP will lie with the appointed contractor as a contractual responsibility to the Applicant, as the Applicant is ultimately responsible for compliance with Requirement 13 of the **draft DCO [APP/3.1]**.

1.1.12 **Appendix 1** of this oCEMP contains the Construction and Decommissioning Phase Dust Assessment; this sets out the potential level of dust risk associated with the construction and decommissioning phases of the Scheme from on-site works, as well as vehicle movements.

Through this assessment the suitable level of mitigation has been determined to be implemented during these processes, which has informed the measures contained within this oCEMP.

1.2 The Applicant

1.2.1 The Applicant is The Droves Solar Farm Limited. The Droves Solar Farm Limited is a 100%-owned subsidiary of Island Green Power UK Projects Limited, which is in turn a 100%-owned subsidiary of Island Green Power's UK group holding company, Island Green Power Group Limited (IGP). The Applicant is part of IGP, who are a leading international developer of utility-scale solar projects and battery storage systems, established in 2013.

1.2.2 IGP has successfully delivered nearly 40 solar projects worldwide that have generated more than 3 GW of energy capacity. This includes 21 solar projects in the UK. These range in size from below 5 MW to Nationally Significant Infrastructure Projects (NSIPs) such as Cottam, currently the UK's largest consented solar project. Cottam will generate 600 MW of clean, renewable and secure electricity and includes 600 MW of Battery Storage that will store then release energy as needed. .

1.2.3 IGP's mission is to deliver renewable energy solutions that create lasting value for the communities they serve, protecting the environment while fostering economic growth and energy independence.

1.3 The Scheme

1.3.1 The Scheme would be located within the Order limits, also referred to as 'the Site'. The Order limits contain all elements of the Scheme comprising the Solar PV Site, the Customer Substation, the National Grid Substation, BESS, Grid Connection Infrastructure, Mitigation and Enhancement Areas, and the Highway Works (shown in **ES Figure 3.2: The Order limits [APP/6.3]** are described further in **ES Chapter 3: Order limits and Context [APP/6.1]**).

1.3.2 Highway Works are sections of the highway network that will contain localised improvements, such as improvements to road edge where it is deteriorated, or temporary highway and traffic works required to safely accommodate the Abnormal Indivisible Load (AIL) deliveries. These areas will support the movement of construction vehicles on narrower sections of the local highway network within parts of the construction vehicle routes to the Site (refer to **ES Chapter 9: Transport and Access [APP/6.2]**).

1.3.3 Further details of the Site and the Scheme are presented in **ES Chapter 5: The Scheme [APP/6.1]**. The **Design Principles, Parameters and Commitments [APP/5.8]** set out the maximum parameters which will be met by the contractor and Applicant.

2 Construction Environmental Management

2.1 Roles and Responsibilities

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

- Site Manager – Overall responsibility for activity on-site, and will be based onsite full time.
- Construction Project Manager – Overall responsibility for ensuring all elements in the DCO, detailed CEMP and all environmental legal and other requirements are implemented, and appropriately resourced, managed, reviewed and reported.
- Environmental 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, will liaise with relevant environmental bodies and other third parties as appropriate.
- Archaeological Project Manager – Responsible for monitoring the completion of all archaeological works in accordance with the programme set, reporting and responding to any incidents or non-compliance as set out in the Written Scheme of Investigation (WSI) within **ES Appendix 8.7: outline Archaeological Mitigation Strategy [APP/6.4]**.
- 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 Manager – 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 Scheme as a formal forum for local issues to be raised. A Community Liaison Manager will be appointed to lead discussions with local communities, and also act as the primary point of contact should there be any queries or complaints.

2.1.2 These roles and responsibilities are indicative and will be confirmed in the detailed CEMP.

2.2 Construction Programme

2.2.1 The construction phase is anticipated to take up to 24 months. The final programme will be dependent on the detailed layout design and potential environmental constraints on the timing of construction activities. However, the Scheme is anticipated to energise in Q4 2033 or as early as National Grid are able to offer. Based on Q3 2033 energisation, it is anticipated that the earliest the construction phase would commence would be Q3 2031. There is likely to be a pre-construction period preceding the construction phase of approximately six months (Q1 and Q2 2031) to allow site preparation works.

2.3 Working Hours

2.3.1 The core construction working hours (excluding start-up and shut down works) are defined as:

- Monday to Friday from 07:00 to 18:00 (daylight hours permitting)
- Saturday from 08:00 to 13:30 (daylight hours permitting); and
- No Sunday or Bank Holiday working unless crucial to construction (for example for Horizontal Direction Drilling (HDD) which must be a continuous activity) or in an emergency.

2.3.2 Where practicable, construction deliveries would be coordinated to avoid HGV movements during the traditional network peak morning (08:00 to 09:00) and peak afternoon (17:00 to 18:00) hours. In addition, construction worker shift patterns will be coordinated to avoid travel during the network peak hours of 08:00-09:00 and 17:00-18:00. These provisions are set out in the **outline Construction Traffic Management Plan (oCTMP) [APP/7.7]** and will be secured via a requirement of the **draft DCO [APP/3.1]**.

2.3.3 Some activities may be required outside of these times such as the delivery of abnormal loads, concrete pours for foundations, night working for cable construction works in public highways and/or HDD activities.

2.4 Landscape and Ecology

2.4.1 The **outline Landscape and Ecological Management Plan (oLEMP) [APP/7.11]** provides a framework for delivering the landscape strategy and the successful establishment and future management of proposed landscape works associated with the Scheme. It sets out the short and long-term measures and practices that will be implemented by the Applicant to establish, monitor and manage landscape and ecology mitigation and enhancement measures embedded in the design (including biodiversity net gain). The latter will be achieved through habitat creation over and above that used for habitat mitigation.

2.4.2 Whilst there will inherently be crossover with the **oLEMP [APP/7.11]**, this oCEMP aims at capturing all construction related mitigation. Mitigation by design and Scheme evolution is secured in the **Design Approach Document (DAD) [APP/5.7]** and **oLEMP [APP/7.11]**.

2.5 Control of Noise

2.5.1 It is expected that construction works will be undertaken in accordance with the best practicable means (as defined in Section 72 of the Control of Pollution Act 1974 **(Ref. 3)**), to minimise noise and vibration effects. Noise control measures will be consistent with the recommendations of the current version of BS 5228 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' – 'Part 1: Noise' and 'Part 2: Vibration' (BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014) **(Ref. 5)**.

2.5.2 Where on-site works are to be conducted outside the core working hours, it is intended that the Applicant will voluntarily apply for Section 61 consent under the Control of Pollution Act 1974 **(Ref. 3)**, and the contractor will comply with any restrictions agreed with the relevant planning authority through that process, in particular regarding the control of noise and traffic. Compliance with these noise limits will ensure adverse effects are unlikely. Abnormal or emergency construction traffic movements may occur outside of normal working hours. In the event of these occurrences, specific noise mitigation measures will be put in place to reduce potential noise impacts at nearby noise sensitive receptors.

2.5.3 The hierarchy of mitigation measures for HDD activities noted in **Table 5** will ensure that HDD activity noise effects will be reduced as far as reasonably practicable. Depending on the location, plant and timing of works, temporary acoustic fencing could be installed around the HDD site boundary to screen receptors from noise emission.

2.6 Control of Light

2.6.1 Lighting will be required during construction for safety reasons but will be temporary in nature and predominantly limited to the core working hours. Any requirement for lighting outside standard working hours will be set out within the CEMP, secured by Requirement 13 of the **draft DCO [APP/3.1]**. It is understood that night-time working will not be employed apart from specific activities including the delivery of abnormal loads and HDD. Artificial working-area lighting in these exceptional operations should be minimised as far as possible between sunset and sunrise from the months of March to October inclusive during the construction phase of all elements of the Scheme.

2.6.2 Between the months of November and February inclusive, where lighting is considered essential, construction temporary site lighting in the form of mobile lighting towers will be positioned to ensure that light is directed onto the area of works only with as minimal light spillage onto the hedgerows/woodland as possible. The use of LED lighting and cowls, hoods and other similar screens will be adopted. Any working-area lighting requirements will be discussed and reviewed with the EcoCoW.

2.6.3 The following principles for lighting will be adhered to:

- Use of focused 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; and
- Lighting to be directed towards the middle of the Site rather than towards the boundaries.

2.6.4 Any unavoidable artificial lighting during the hours of darkness required within the period March to October inclusive will only be permitted following consultation with the EcoCoW in order to determine the severity of potential impacts and appropriate mitigation steps, including agreed hours of operation and numbers/specification of luminaires.

2.6.5 Security lighting may be installed on temporary site compounds and permanent structures following consultation with the EcoCoW to establish appropriate locations. Security lighting will be limited to the minimum number of luminaires required which will be defined through consultation with the EcoCoW and based on the sensitivity of the habitats potentially affected and baseline lux levels. Security luminaires will be motion-sensitive and set on a short (less than 2 minute) timer and oriented to reduce upward light spill as far as possible (i.e. horizontally oriented) in order to reduce the potential impact on light sensitive species such as bats.

2.7 Traffic Management

2.7.1 During construction, the appointed contractor(s) will ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable, by implementing the measures set out in the **oCTMP [APP/7.7]**.

2.7.2 During the construction phase, the Landowner will maintain pedestrian and vehicular use of the existing farm tracks within the Order limits to allow continued maintenance of existing woodland. The Landowner is granted access to woodland parcels that don't lie immediately adjacent to the existing farm tracks. Indicative access routes to woodland parcels that do not lie immediately adjacent to the existing farm tracks are illustrated in **oLEMP Appendix 1: Green Infrastructure Strategy Plans [APP/7.11]**.

2.8 Off Site Delivery Routes

2.8.1 The **oCTMP [APP/7.7]** provides details of the designated routes for HGV movements and worker car movements. It also details any measures designed to reduce travel during peak hours on the local road network.

2.9 Parking Provisions

2.9.1 As detailed in the **oCTMP [APP/7.7]**, the temporary construction compounds will include parking areas. The location and size of parking provisions on-site, loading and unloading areas for plant and materials, storage areas, wheel washing facilities and construction traffic management measures will be set out in the CTMP, which will also include a description of any laydown areas or accommodation areas. The location of temporary construction compounds is indicatively shown in **ES Figure 5.2: Construction Masterplan [APP/6.3]**.

2.9.2 Wheel cleaning facilities will be used by vehicles prior to exiting the Order limits onto the public highway if there is mud or debris from the construction site on the vehicles.

2.10 Recovery, Recycling and Disposing of Waste

2.10.1 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.

2.10.2 **Table 11** details the waste management measures to be implemented during the construction phase and specifies the waste streams which would be monitored and targets set with regards to the waste produced, including any re-use and recycling of materials. A Site Waste Management Plan (SWMP) will be prepared and submitted under a requirement of the DCO, detailing the specific measures to be implemented prior to the start of construction by the appointed contractor(s), based on the information provided within this oCEMP for the construction phase.

2.11 Security

2.11.1 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. 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). There will be designated security staff during construction who will manage the Order limits and patrol the perimeter where required.

2.12 Responding to Environmental Incidents and Emergencies

2.12.1 An emergency response plan will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events. The plan will detail the procedures for responding to incidents and emergencies on site, and any reporting.

2.13 Good Practice

2.13.1 The Considerate Constructors Scheme (CCS) **(Ref. 4)** will be adopted to assist in reducing pollution and nuisance from the Scheme, by employing good practice measures which go beyond statutory compliance.

2.14 Public Consultation and Liaison

2.14.1 Prior to commencing works on site, the contractor will develop and implement a Stakeholder Communications Plan that includes community engagement and will detail a complaints procedure. In line with the Stakeholder Communications Plan, a display board will be installed on-site, and a website will be set up. These will include contact details for the Site Manager or alternative public interface with whom nuisance or complaints can be lodged, and the head or regional office contact information. A logbook of complaints will be prepared and managed by the Site Manager or nominated representative.

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

2.14.3 A Community Liaison Manager (or alternative) would be appointed to lead discussions with local communities during the construction phase.

3 Mitigation and Monitoring – Solar PV Site, BESS and Customer Substation

3.1.1 This section of the oCEMP sets out the mitigation measures to be included as a minimum in the detailed CEMP pertaining to the Solar PV Site, BESS and Customer Substation. It also sets out monitoring requirements and the responsible party identified for each mitigation measure or monitoring requirement. This section will be updated and developed following consent as part of the preparation of the detailed CEMP.

3.2 Landscape and Visual

Table 1 Landscape and Visual

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Landscape and Visual effects on sensitive receptors	The **oLEMP [APP/7.11]** accompanies this DCO Application and sets out the measures proposed to mitigate the potential impacts and effects on landscape (and ecological) features, and to enhance the landscape and biodiversity value of the Site (i.e. the Green Infrastructure). The construction phase measures contained within the detailed LEMP, which is to be prepared in accordance with the **oLEMP [APP/7.11]** submitted with this DCO Application, are to be adhered to in addition to those within the detailed CEMP, which is to be prepared in accordance with this **oCEMP [APP/7.6]**. The buffers and offsets from existing landscape features, detailed in Table 5.2 of **ES Chapter 5: The Scheme [APP/6.1]**, have been embedded into the design of the Scheme and will be respected with the exception of where Access Tracks, perimeter fencing, Cabling and/or Grid Connection Cables are required to cross an existing feature. The following measures will be adhered to during the construction phase: • A pre-construction tree survey would be required prior to starting construction works to re-establish the baseline. This survey would inform the tree protection zones to be applied during construction. Site hoarding and construction exclusion zones would be	To be detailed in CEMP.

	introduced around retained vegetation in accordance with the requirements of BS 5837:2012 'Trees in relation to design, demolition and construction'. An approved Arboricultural Method Statement would be adopted incorporating best practice guidance set out in British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction which would ensure retained trees and other vegetation are not adversely affected during the construction process • The use of visual screening, such as hoardings, would be implemented for more sensitive visual receptors in proximity to the Site, including residential and PRoW receptors that have the greatest potential to be affected by the Scheme • Ensuring a tidy and neat working environment and covering stockpiles in accordance with best practice measures • Good practice measures would be employed to minimise light spill • Temporary lighting during construction required to enable safe working in the hours of darkness would be designed as far as reasonably practical to avoid light spill onto areas beyond the Site. Construction lighting would include directional fittings and would be restricted to the construction working hours set out in Section 2.3 of this oCEMP • Construction works which create dust would be kept to a minimum within proximity to existing pedestrian routes and residential properties, and dust prevention measures, such as damping, would be undertaken to reduce the impact on users of the PRoW network	

Amenity and Recreation Impacts	A total of 5 crossing points (associated with access to Fields 27, 30, 31, 34,16, 9, 12, 13, 11 and 14) for internal Access Tracks across existing PRoW require diversion during the construction phase; and These crossing points will be overseen by spotters or banksmen for HGVs. Where closures are deemed to be necessary, these will be prioritised for overnight work, will be temporary in nature and supported by appropriate amount of notice and suitable diversions. Any diversions to routes will be appropriately signed, and the duration and length of diversions will be optimised to minimise impacts on accessibility and desirability.	None required.

3.3 Ecology and Biodiversity

Table 2 Ecology and Biodiversity

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Potential for obtrusive glare and light spill to impact on ecology. Potential for spillages to enter watercourses and impact ecology. Clearance or damage of habitat to facilitate construction – resulting in temporary or permanent reduction in habitat extent and potential direct and indirect effects on associated species. Dust deposition on sensitive ecological receptors.	The **oLEMP [APP/7.11]** accompanies this DCO Application and sets out the measures proposed to mitigate the potential impacts and effects on landscape (and ecological) features, and to enhance the landscape and biodiversity value of the Site (i.e. the Green Infrastructure). The construction phase measures contained within the detailed LEMP, which is to be prepared in accordance with the **oLEMP [APP/7.11]** submitted with this DCO Application, are to be adhered to in addition to those within the detailed CEMP, which is to be prepared in accordance with this **oCEMP [APP/7.6]**. The buffers and offsets from existing landscape features, detailed in Table 5.2 of **ES Chapter 5: The Scheme [APP/6.1]**, have been embedded into the design of the Scheme and will be respected with the exception of where Access Tracks, perimeter fencing, Cabling and/or Grid Connection Cables are required to cross an existing feature. The following measures are to be employed during the construction phase: • An EcoCoW will be designated at the onset of the construction phase, which will provide ecological supervision during the completion of any works (including ditch trenching) which have	A pre-construction site walkover will be undertaken in advance of mobilisation/any potential advance works to reconfirm the ecological baseline conditions and to identify any new ecological risks, such as newly constructed badger setts. Further surveys for protected species may be conducted as required, for example where tree modification or removal is proposed where trees have potential to support roosting bats. Further surveys, including for species such as bats, otter, water vole and badger would be completed as appropriate to reconfirm the status of protected species identified, to inform mitigation requirements and support protected species

	the potential to impact protected and notable species, as appropriate • Criteria under which the EcoCoW would be required in order to oversee certain construction activities which have the potential to impact on protected species, such as localised habitat clearance, and ditch/watercourse engineering works. These criteria would trigger the need for EcoCoW attendance and, potentially, pre-commencement surveys or preparation by an ecologist, as well as follow up monitoring or reporting • Criteria under which certain potentially impactful operations would need to be restricted to particular months or seasons in order to lessen likely adverse ecological effects (for example, hibernation or nesting season for particular species) • To avoid an offence under the Wildlife and Countryside Act 1981 (as amended), the potential loss of active nests during construction will be avoided by either undertaking clearance of potential bird nesting habitat outside of the bird nesting season (March to August inclusive) or, if necessary, preceding any clearance with an inspection by a suitably qualified ecologist. Any nests identified will be cordoned off and protected until they cease to be active. Where necessary, the use of bird scarers or other deterrence methods will be used to minimise the risk of ground nesting birds occupying open ground once construction works have commenced. • Details of task-specific Method Statements for potentially ecologically impactful works • Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats	licence applications, if required, and the requirement for any EcoCoW supervision during the construction phase. Such surveys would be undertaken sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any necessary mitigation, prior to construction. Additional surveys may be required during the advance 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. Further details to be confirmed in the detailed CEMP.

	• Measures to limit the dust generating activities, such as when working in dry conditions • Measures to limit the mobilisation of sediments and run-off, such as when working in very wet conditions or the use of silt fencing when working in ditches or watercourses • Construction personnel will receive a Toolbox Talk detailing the presence of sensitive ecological features and will be informed that no materials should be stored in, or vehicles drive through, buffer zones • Temporary site lighting during construction will be required to enable safe working during construction during hours of darkness (likely over the winter months only) and will be designed as far as reasonably practicable to minimise potential for light spillage outside the Order limits, particularly towards valuable ecological habitats. Standard good practice measures would be employed to minimise light spill, including glare, during the construction phase. A sensitive lighting strategy will specify where and how any artificial lighting will be used, which will serve to mitigate adverse impacts on ecological receptors such as bats • Habitat and hedgerow would be reinstated as soon as possible through hedgerow and grassland replanting/translocation/re-seeding • Temporary construction hoarding and working safeguards will be employed, as necessary, to protect development buffer zones around key ecological habitats • Erection of tree protection fencing around retained woody vegetation, hedgerows and trees in accordance with BS5837:2012	

	• Erection of temporary fencing around construction areas, protecting retained habitats of ecological value • All contractors will be briefed as to the possible presence of protected and notable faunal species within the Site, with particular reference to the implications of legislation and licensing • Any trenches or deep pits within the Site that are to be left open overnight will be provided with a means of escape should a Badger or other mammal enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water • Any trenches/pits will be inspected each morning to ensure no animals have become trapped overnight • No fires will be permitted on site • The storage of topsoil or other 'soft' building materials in the Site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and will be subject to inspections by site contractors with consideration given to temporarily fencing any such mounds to exclude Badgers • Food and litter will not to be left within the working area overnight • Storage of chemicals and hazardous materials in line with best practice guidelines, ensuring that they are secure, well away from the Site boundaries and cannot be accessed or knocked over by roaming animals • To minimise adverse effects as a result of lighting during the construction phase, temporary lighting will be minimised, wherever practical. Where required for health and safety, security	

	or other reasons, it will be positioned so as to minimise light spill on to hedgerows and other boundary features • Disturbance from noise will be minimised by the adoption of good working practice; and • Should additional Badger setts be discovered in locations which cannot be accommodated within the Scheme design (including where new setts are discovered in locations which disrupt or prevent construction activities), it is anticipated that such setts would need to be closed under licence, with suitable mitigation measures/compensation provided in line with relevant licence requirements.	

3.4 Cultural Heritage and Archaeology

Table 3 Cultural Heritage and Archaeology

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Construction phase impacts upon Heritage / Archaeology assets	The construction works are to be undertaken in accordance with the Written Scheme of Investigation (WSI), which is to be prepared in accordance with **ES Appendix 8.7: outline Archaeological Mitigation Strategy [APP/6.4]** (AMS). The following measures will be adhered to during the construction phase: • The remains of the World War II bombing decoy are located on the western edge of Field 11 are not to be subject to any intrusive ground works • Geophysical survey (magnetometry) will be completed on the areas that area currently not available for survey (part of Field 3, Field 12, Fields 19 and 20, and part of Field 24) • The areas of known extensive impact (Customer Substation, BESS, Temporary Construction Compounds) will be subject to informative trenching at 3.5% by area • Informative trenching will be undertaken in the remaining areas of the Site not subject to previous trenching. It has been agreed with Norfolk Historic Environment Service (NHES) that the amount and location of any additional trenching will be targeted on areas of higher impact and proportionate to the overall impact.	Provision for archaeological mitigation and monitoring is detailed in the AMS (**ES Appendix 8.7: outline Archaeological Mitigation Strategy [APP/6.4]**). The AMS must be adhered to during constructional phases. All archaeological works will be undertaken by suitably qualified and experienced professional archaeological specialists. All archaeological works will be undertaken in line with national guidance (i.e. Historic England and CIfA guidance). The Archaeological Clerk of works and/or the Archaeological Advisors to the LPAs will monitor the completion of works in

	As such the amount and location of the trenches can only be confirmed following detailed design • The need for and location of deep impacts (up to 15m for piles and/or directional drilling) are not yet known and so it is not possible to firmly identify the need for and location of any geoarchaeological assessment. Once details are available the need for and scope of any geoarchaeological assessment will be agreed with NHES • Precise details of areas that will be subject to full archaeological excavation will be defined following completion of the geophysical survey and informative trenching and finalisation of the location and extent of development impacts. Some of the archaeological excavation areas may take the form of 'compensation' excavation rather than mitigation of individual impacts (i.e. certain areas may be examined in more detail in order to compensate for the loss of other areas) • The option for localised areas of above ground cabling to preserve significant archaeological remains in situ where it is not practicable or desirable to mitigate by archaeological excavation will be available and will be informed by the detailed design and informative trenching • It is known that the Roman period enclosure within Field 27 will be subject to almost complete removal by the installation of the Customer Substation and these remains will, therefore, require full excavation. Based on the information provided in **ES Chapter 5: The Scheme [APP/6.1]** this will be a minimum of 2.5ha but the area may extend following results of informative trenching; and • It is known that the proposed construction will necessitate cable trenches to be excavated across some of the existing Droves.	accordance with the programme set out in the AMS.

	Fincham Drove in particular is likely to have been formed in the Roman period, but the date of other elements of the Droves within the Order limits is not yet known. Therefore, any locations of cable trenches crossing Droves will be subject to detailed archaeological excavation. Archaeological monitoring (a 'watching brief') may be required in certain areas where the impacts are limited and/or where full excavation is not warranted. It has been agreed with NHES that the impact of piling for the panel support structures is of such a low level that it will not compromise the integrity of the archaeology or limit the ability to understand the remains should archaeological investigation be carried out at a future date, with the proviso that certain archaeological features would need to be avoided or fully excavated. Such features would include (but are not limited to) structures, waterlogged remains, features with high artefactual or environment potential, industrial features and human remains. Should such features be identified by the informative trenching this would require either the adjustment of the pile layout to avoid particular archaeological features and/or the targeted use of concrete feet rather than piles to support the panel support structure. It is not envisaged that extensive areas will require this treatment but any such works would be targeted and localised.	

3.5 Transport and Access

Table 4 Transport and Access

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Increased traffic throughout the Study Area that will impact both motorised users and non-motorised users.	A detailed CTMP(s) will be produced prior to the commencement of the construction phase. A final CTMP(s) will be secured by requirement of the DCO and approved by the Local Planning Authority in consultation with Norfolk County Council (NCC) and National Highways (NH) prior to commencement of the construction phase of the Scheme and will include details on the following: • Required access routes from the Local Road Network (LRN) • Scheme entry and exit points, including compound locations; and • Measures to mitigate the impact of construction vehicles. An **outline CTMP [APP/7.7]** has been produced as part of this DCO Application, on which the detailed CTMP will be prepared in accordance. The construction phase measures contained within the detailed CTMP are to be adhered to in addition to those within the detailed CEMP. Travel Plan measures are initially detailed within the **oCTMP [APP/7.7]** with a detailed Travel Plan secured by way of requirement on the DCO to be provided prior to commencement of the construction phase of the Scheme.	The appointed contractor will undertake such monitoring as is necessary. Further details to be confirmed in the detailed CEMP/CTMP/PROWPPMP. Any unforeseen issues that arise in relation to construction vehicle movement will be logged by the Site Manager. If necessary, the issues will be discussed with the local highway authority so that they can be resolved as appropriate.

	Where measures are secured in the detailed CTMP, mitigation measures relevant to the construction phase will not be duplicated in the detailed CEMP. The **Outline Public Right of Way and Permissive Path Management Plan (oPRoWPPMP) [APP/7.12]** contains measures that will be implemented during the construction phase of the Scheme to mitigate transport impacts on users of PRoW. The construction phase measures contained within the detailed **oPRoWPPMP [APP/7.12]** are to be adhered to in addition to those within the detailed CEMP. **Specific Highway Measures** Where existing accesses are utilised, these will be widened and formalised as appropriate. Visibility splays will be kept clear throughout the construction period. **Traffic Management** Traffic Management Measures will be utilised, including signage to warn drivers of the presence of construction traffic during the construction phase. Traffic marshals or banksmen will also be utilised to ensure the safe passage of construction vehicles at access junctions. Traffic management for abnormal load movements will be agreed with the local highway authority and police prior to the abnormal load movements taking place. **Signage**	

	Signs to direct construction vehicles associated with the development will be installed along the construction traffic route. Delivery drivers, contractors and visitors will be provided with a route plan in advance of delivering to Site to ensure that vehicles follow the identified route. The signage strategy will be agreed with the local highway authorities prior through the detailed CTMP. All signage on the designated route will be inspected daily by the Site Manager, to ensure they are kept in a well maintained condition and located in safe and appropriate locations. **Vehicle Movements** Construction deliveries by HGV will be coordinated to arrive/depart between 09:00-17:00. They will be coordinated to avoid vehicle movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00). Banksmen will be provided at the Site accesses to indicate to construction traffic when it is safe for them to enter and exit the Site. A Construction Worker Travel Plan will be implemented, to encourage construction workers to travel to the Site via sustainable travel, where practicable. Measure includes the provision of a shuttle bus and a car sharing scheme. Shifts will be coordinated to avoid travel during the network peak hours of 08:00-09:00 and 17:00-18:00. The management associated with Abnormal Load movements will be agreed with the local highway authority and the police prior to the delivery.	

	Booking System A booking system will be set up to manage arrivals and departures to the Site. A log will be kept as part of the booking system. The intention of this procedure is to avoid instances of HGVs passing each other in opposite directions on the local roads surrounding the Site. **Parking** Advisory signs informing contractors and visitors that parking is not permitted on-street in the vicinity of the Site or on the Site access road. Contractors and visitors will be advised that parking facilities will be provided on-Site in advance of visiting the Site and that they should not park on-street. **Wheel Washing Facility** A wheel washing facility will be provided at each access. This will be located at the egress point of each access road. A visual inspection of vehicles will be undertaken before they depart the Site, to ensure that they are not carrying any residual debris onto the highway. If required, a road sweeper will be provided for the area surrounding access to alleviate any residual debris generated during the construction phase, as required. **Noise Reduction and Air Quality** When on Site and when not in use, vehicle engines will be switched off. Vehicles carrying material off-Site will be sheeted to prevent the spread of dust. In dry conditions, areas near to the Site access will be sprayed with water supplied to prevent the spread of dust.	

	Site Security The Site will be secured at all times via a perimeter fence or temporary fencing. Closed-Circuit Television (CCTV) will be operational within the construction compound. All new access tracks will be secured by gates, which will be set back from the public highway. Where existing access tracks are used that also provide access to residential properties, appropriate security measures will be put in place in consultation with the relevant property owner(s). **Road Condition Survey** A pre-construction road condition survey will be carried out on the local highway network via video two weeks before the construction phase commences. The extent of the survey will be agreed with the local highway authority prior to commencement. Interim surveys and a completion survey will be carried out in order to identify any additional defects that can reasonably be attributable to construction activities at the Scheme. Any identified highways defects resulting from construction activities associated with the Scheme will be corrected to the satisfaction of the local highway authority **Community Engagement** The details of the Construction Site Manager will be provided to the local highway authority in advance of any work being carried out. The Construction Site Manager's details will also be provided on a Site-board at the Site accesses. If anyone in the local community has any issues during the construction phase, the Site Manager will be available to discuss.	

3.6 Noise and Vibration

Table 5 Noise and Vibration

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Noise and vibration as a result of the construction works causing annoyance at Noise Sensitive Receptors (NSRs) and damage to properties. Construction traffic noise at residential properties.	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 before works begin and throughout the construction programme • All contractors to be made familiar with current legislation and the guidance in BS 5228:2014 (Parts 1 and 2 **[Ref. 5]**) which should form a prerequisite of their appointment • When works are taking place within close proximity to sensitive receptors, the screening of noise sources via the erection of temporary screens would be employed where practicable • All construction machinery would be regularly maintained to control noise emissions, with particular emphasis on lubrication of bearings and the integrity of silencers • All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use	A construction noise monitoring scheme shall be developed and agreed with the relevant planning authority following appointment of a contractor and prior to commencement of construction works. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to and from local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate investigation and action. The complaints procedure will be managed in consultation with BC. Further details are to be confirmed in the detailed CEMP.

	• As far as practicable, works will be programmed to avoid noisy operations occurring simultaneously in close proximity to the same sensitive receptor • As far as practicable, construction compounds must be located a minimum of 250m from residential receptors • Adhere to the core working hours of the Scheme which are Monday to Friday 07:00 – 18:00 and between 08:00 and 13:30 on Saturdays unless otherwise approved in advance by BC (except in case of emergency) with a potential exception for HDD works where night-time working may be required. Those activities that are unlikely to give rise to noise audible at the Site boundary, or light vehicle traffic accessing the Site such as that involved with staff mobilisation, may continue outside of the stated hours • Where practicable, trenchless works that are likely to result in significant noise effects at nearby residential receptors will be restricted to daytime working hours on weekdays (i.e. 07:00 to 18:00, Monday to Friday). • Trenchless works will be completed in the shortest practical timescale. • Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place; and • Local residents will be informed of any percussive piling or earthworks construction activities planned as part of the reporting of information to local residents. Where percussive piling is undertaken for the foundations of the Solar PV Arrays within 400m of sensitive receptors, this should be restricted to no more than two periods of four hours each with at least	

	one hour of no piling between these four-hour periods and restricted to the hours of 07:00 to 18:00 Monday to Friday and 08:00 to 13:30 on Saturdays. In addition, piling works within 130m of Keepers Cottage will be further controlled to reduce noise levels to not exceed 65dB L_{Aeq} over the working day, through use of quieter piling techniques, and if possible, use of localised screening or a combination of these measures. Prior notice to the residents on the time and duration of the construction vibratory works on the highway slip roads should be provided, these activities are expected to be of very short duration at the nearest point to the respective noise sensitive receptors and will decrease as activity moves further away.	
Night-time Construction Noise	Core construction working hours will be Monday to Friday 07:00 – 18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads, night-time working for cable construction works in public highways or HDD activities). No noisy operations will take place during mobilisation/shut down which is 1 hour before and after working hours. As requirements and locations for cable construction activities will not be finalised until contractor is appointed. A hierarchy of mitigation measures is listed below for any potential night-time operations for HDD: • No HDD works will take place within 100m (the distance at which the temporary re-housing limit, as defined in BS 5228-1:2014 (Ref 5), of 65dB LAeq,8h is predicted at night) of residential receptors without the agreement of the property resident. No HDD works will be carried out at night-time at locations less than 50m from any residential property	A construction noise monitoring scheme shall be developed and agreed with the relevant planning authority following appointment of a contractor and prior to commencement of construction works. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to and from local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate investigation and action.

	• The potential for the use of quieter equipment will be explored by the principal contractor; and • Depending on the location, plant and timing of works, temporary acoustic fencing will be installed around the HDD site boundary to screen receptors from noise emission. This mitigation could provide 10dB of attenuation when the noise screen completely hides the sources from the receiver. For residential properties located within 300m of trenchless work areas that could experience significant night-time noise levels due to night-time works, the following measures will be considered and employed as necessary to mitigate any significant effects: • Use of alternative techniques such as micro-bore or pipe jacking • Crossing points requiring potential HDD and associated work areas will be identified and located to maximise distance from dwellings as much as reasonably practicable • Residents likely to be significantly affected by noise from trenchless works will be kept informed of the likely period during which the work will take place, the times and durations of planned works and the measures that are being taken to minimise noise. On completion of the trenchless works at a particular location, local residents will be informed that the works are complete and noise effects due to trenchless works will cease • Monitoring noise from the works and minimising the noisiest drilling work at night where possible and safe to do so • Exploring options for offering affected residents temporary re-housing should the night-time drilling works exceed 65dBA or	Further details are to be confirmed in the detailed CEMP.

	occur within 100m of a residential property, for the duration of the night-time drilling works • Any plant and equipment required for operation at night (23:00 - 07:00), e.g. generators or dewatering pumps, shall be silenced or suitably shielded to ensure that the night-time lower threshold of 45dB LAeq shall not be exceeded at the nearest noise-sensitive receptors; and • Temporary noise barriers will be installed around trenchless compounds in order to provide screening for sources located at low heights (note however that it is likely to be impractical to provide noise barriers that are high enough to screen an entire HDD drilling rig, for example).	

3.7 Soils and Agriculture

Table 6 Soils and Agriculture

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Impacts on agricultural land and soils.	The **outline Soil Management Plan (oSMP) [APP/7.13]** contains measures that will be implemented during the construction phase of the Scheme to mitigate transport impacts on soils. The construction phase measures contained within the detailed SMP are to be adhered to in addition to those within the detailed CEMP. The following measures will be implemented to address impacts on land use and soil: • A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey • Land used temporarily will be reinstated where practicable to its pre-construction condition and use (or a condition agreed with the landowner). Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner agreement; and • Earthwork mounds and stockpiled soil will be protected (to minimise erosion and dust generation) by covering, seeding, or	Site inspections by a suitably experienced soil scientist to ensure compliance with the SMP and identify any emerging issues.

	using water suppression where appropriate (to be determined by the soil types and the likely storage duration. Soil management measures will include but not be limited to the following: • Details of the soil resources present • How the topsoil and subsoil will be stripped and stockpiled • Suitable conditions for when soil handling will be undertaken, for example avoiding handling of waterlogged soil • Indicative soil storage locations • How soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil • Specific measures for managing sensitive soils • Suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works • Approach to reinstating soil, including measures to remove compaction, where required; and • Details of measures required for soil restoration. Measures to mitigate effects on agricultural land during construction, including soil storage methodology, will be set out in the detailed SMP, to be prepared suitably in accordance with the **oSMP [APP/7.13]** submitted with the DCO Application. These will include specific soil resource survey of the Order limits, site inspections by a suitably experienced soil scientist and the use of appropriate plant for soil handling and reduction of ground pressure.	

Drilling Fluid seepage to surrounding environment.	There is a potential risk of drilling fluid escaping the borehole during operations due to drilling pressures and ground conditions. In the event of surface seepage, contamination will be contained and cleaned up using sandbags and a vacuum tanker. Any surplus drilling fluid will be recovered from entry/exit pits post-installation by a specialist waste management company. This fluid will be collected and disposed of at a licensed facility. An Emergency Response Plan will include details for pollution prevention and will be prepared and included alongside the detailed CEMP.	No monitoring required.
Displacement and exposure of soils The discovery of ground contamination during groundworks Potential for risks to human health associated with waste generation, land contamination, airborne contamination, and groundwater contamination.	The following Best Practicable Means (BPM) will be applied, as far as reasonably practicable, during construction works: • Construction and management of roadways and access to the construction sites to minimise issues like dust, sedimentation of waterways, degradation of soil quality, loss of topsoil and surface run off • Management of excavated and excess soils and aggregates to be used in all aspects of the construction to avoid fugitive emissions of dust and run off to water courses • Management of any wastes generated by the construction process to make sure of no adverse impacts on receptors • Should any previously unidentified risks to groundwater receptors emerge during detailed design or construction, a detailed Hydrogeological Risk Assessment would be undertaken in consultation with the Environment Agency	The Environmental Manager will regularly record compliance in a log book. The detailed CEMP will detail the frequency. A groundwater and surface water monitoring plan will be kept up to date through the construction phase.

	• Any confined space entry, i.e. entry to open trenches or excavations, will be preceded by checks using appropriate instrumentation to detect the presence of methane, carbon dioxide or hydrogen sulphide, or low oxygen conditions; and • Where it is identified that disturbance of soils is not permissible, i.e. for protection of archaeological sites, concrete footings at surface will be used. This is not anticipated to have any impact on ground conditions or contamination. • Excavations are anticipated for services. Excavations will be supported or graded to a stable angle which may vary depending on ground conditions. Groundwater and the requirement for dewatering will be considered. • Where trenchless techniques will be employed and have the potential to impact groundwater or take place in land affected by contamination, appropriate mitigation. All trenchless excavation activity will be carried out in line with the guidance contained in BS5930: 2015 Code of Practice for Ground Investigations and BS EN 16228-3 Drilling and foundation equipment – Safety – Part 3: Horizontal directional drilling equipment (HDD); and • Good practice guidance including Management of spillage risk is included in the Emergency Response Plan. • Driven screw pile or post foundations are strongly preferred in the final design, which will minimise soil displacement, waste and general impact on soils and groundwater. In areas where archaeological protection is required, concrete feet or other non-ground penetrative techniques would be used. • All photovoltaic arrays/panels will be certified as PFAS free, meaning there is no risk of mobilisation of PFAS coatings on the	

	panels being leached or otherwise mobilised and entering ground or surface water.	

3.8 Water Resources

Table 7 Water Resources

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Increased sediment in surface water runoff	This section addresses the management of sediment and surface water runoff generated during the construction phase of the Scheme. A Pollution Prevention Plan (PPP) will be prepared in support of the detailed CEMP. Major construction works (e.g., large-scale earthworks) will be minimised during heavy precipitation events. A minimum of 10m from drainage ditches, watercourses, IDB maintained water courses, and marl pits will be observed for all infrastructure with the exception of fencing, watercourse crossing and access tracks. A detailed surface water drainage strategy will be prepared prior to construction of the Scheme. Drainage from the Site will include elements of Sustainable Drainage Systems (SuDS) design, where appropriate, such as at Temporary Construction Compounds, BESS, Customer Substation work areas. SuDS replicate natural drainage patterns and have a number of benefits: • SuDS will attenuate runoff, thus reducing peak flow and any flooding issues that might arise downstream • SuDS will treat runoff, which can reduce sediment and pollutant volumes in runoff before discharging back into natural drainage network; and	Specific details will be confirmed in the detailed CEMP.

	• SuDS measures, such as lagoons or retention ponds, correctly implemented will produce suitable environments for wildlife. ***Silt Traps and Silt Matting*** Silt traps may be utilised to trap and filter sediment-laden runoff from excavation works at the Scheme, including foundations for the compounds and access roads. Good practice will be followed prior to placement of silt traps adjacent to watercourses and land drains. Silt matting may be placed at the outfall of settlement lagoons to filter sediment during times of heavy rainfall. Semi-permeable structures may be placed in drainage channels to intercept silt. The silt traps and silt matting will be monitored by the EnvCoW and replaced when necessary. ***Site entrance / Bellmouth Drainage*** Channel drains will be installed at site entrances to prevent surface water leaving Site to the public highway. Access will be taken from existing access points, where suitable, and would initially be asphalt followed by graded Type 2 or 3 washed/clean aggregate or just use graded Type 2 or 3 washed/clean aggregate. Where new access points are required the bellmouth will typically be asphalt and would be limited in extent. This limits the potential for increased surface water runoff rates and sedimentation effects during rainfall events.	

	Location of Check Dams Check dams will be installed in new drainage ditches at regular intervals, where necessary. Check dams will facilitate the settlement of suspended solids by slowing the flow of water within the drainage ditches. Appropriately sized stone pitching will be used within the dam in order to provide a rough surface for water within the drainage ditch to pass over. ***Location of Settlement Lagoons*** Settlement lagoons will be implemented where appropriate, typically around foundations and hardstanding areas. Settlement lagoons will be actively managed to control water levels and ensure that any runoff is contained, especially during times of rainfall. If required to achieve the necessary quality of the final runoff, further measures may include the use of flocculent to facilitate the settlement of suspended solids. The sides of lagoons will be lined to reduce the potential for erosion and collapse. ***Outflow Monitoring From Settlement Lagoons*** Settlement lagoon outflow will be inspected regularly and discharge may be pumped, when required, for maintenance purposes. Pumping activities will be supervised and authorised by the contractor's Project Manager. Treated water will be discharged onto vegetated surfaces and directed away from surface watercourses. Within all catchments, irrigation techniques, which may include the use of perforated	

	discharge hoses, or similar, will be employed to rapidly distribute discharge across a vegetated area. 'Siltbusters' will be used to treat pumped/surplus water from lagoons during periods of heavy or persistent rainfall. Silt mats may be used at the outfalls of settlement lagoons to further aid the settlement from earthworks drainage. Discharges from settlement lagoons will be sampled/monitored during wet weather to limit the potential for suspended solids to be transferred to the wider hydrological environment. ***Provision For Storm Events*** Sections of the Scheme are at risk from surface water and fluvial flooding. In extreme storm events, there would be elevated levels of runoff from the hardstanding elements of the Scheme relative to greenfield flow rates, which has the potential to contribute to down-stream, off-site, flood risk. In the baseline scenario, the water table is not at the ground surface and hence some infiltration would be expected. The Scheme proposals could affect the water table (e.g., through pumping/dewatering of excavations), and therefore localised infiltration rates could change. Measures are proposed in this **oCEMP [APP/7.6]** that would reduce runoff rates from the baseline scenario. Temporary storage volume for storm runoff from the foundations and hardstanding areas would be provided via settlement lagoons. Along the access tracks, drainage channels on the downslope would shed track runoff to adjacent rough ground approximately every	

	30m, to attenuate flow and allow natural filtration to remove sediments. Appropriate licensing and discharge consents will be sought before the construction phase of the Scheme. ***Management of Drainage from Surplus Materials*** Excavated soils will be stored in accordance with the **oSMP [APP/7.13].** Careful consideration will be given to the storage areas for excavated soils. Storage areas will be either in a flat dry area away from watercourses or be protected by the addition of cut off drains above the storage areas to minimise the ingress of water. Mineral soils will not be allowed to dry out and silt fences and mats will be employed to minimise sediment levels in runoff. All stockpiled material will be stored at least 50m from drainage ditches in order to reduce the potential for sediment to be transferred into the wider surface water system and will be regularly inspected to ensure that erosion of the material is not taking place.	
Increase in runoff rates	***Access Tracks*** Access tracks will be designed to have adequate cross fall to avoid ponding of rainwater and surface runoff. Runoff from the access tracks will be directed into swales that will be designed to intercept, filtrate and convey the runoff. Check dams will be installed within the swales in order to increase the attenuation of runoff. Further measures could include the use of settlement ponds or possibly flocculent to further facilitate the settlement of suspended solids, if required.	Specific details will be confirmed in the detailed CEMP.

	Permanent swales and drainage ditches adjacent to access tracks will have outlets at specified intervals to reduce the volume of water collected in a single channel and, therefore, reduce the potential for erosion. Should areas of grassland be identified which have not established fully prior to the construction phase then the appointed construction contractor will implement SuDS measures such as cut off ditches or berms to slow runoff rates in these areas before dispersing to the wider hydrological network. The contractor is responsible for the management of all surface water runoff, including the design and management of a drainage scheme compliant with SuDS principles. This may include settlement lagoons and retention ponds, incorporating natural or assisted attenuation. Small sections of the Scheme are at risk from surface water and fluvial flooding. In extreme storm events, there would be elevated levels of runoff from the hardstanding elements of the Scheme relative to greenfield flow rates, which has the potential to contribute to down-stream, off-site, flood risk. In the baseline scenario, the water table is not at the ground surface and hence some infiltration would be expected. The Scheme proposals could affect the water table (e.g., through pumping/dewatering of excavations), and therefore localised infiltration rates could change. Measures are proposed in this **oCEMP [APP/7.6]** that would reduce runoff rates from the baseline scenario. If the volume of dewatering is likely to exceed the limit outlined in the EA's Temporary dewatering from excavations to surface water: RPS 261 then permits for dewatering will be applied for by the contractor.	

	Temporary storage volume for storm runoff from the foundations and hardstanding areas would be provided via settlement lagoons. Along the access tracks, drainage channels on the downslope would shed track runoff to adjacent rough ground approximately every 30m, to attenuate flow and allow natural filtration to remove sediments. Appropriate licensing and discharge consents will be sought before the construction phase of the Scheme.	
Impediments to Flow	***Watercourse / Drainage Ditch Crossings*** Crossings will be designed following granting of the DCO and commit to the soffit level of any crossing will sit above the design flood level. The design flood level for permanent crossings would be the 1% AEP plus Upper End climate change scenario (+40% CC) and will involve the following parameters: • Soffit height of the crossing will be a minimum of 600mm above the 1% AEP + Climate change allowance flood level • All abutments must be set back a minimum 1m from the top of bank and as minimal as possible • Any loss of floodplain due to abutments and ramps will need to be compensated for; and • All parapets and railings need to be permeable and open as possible with a minimum 100mm spacing. The use of in-situ fresh concrete in the construction of watercourse crossings will be avoided by the use of pre-cast elements. Existing culverts may be upgraded and are anticipated to be replaced with suitable pre-cast culvert designs. Ready-made concrete 'box style'	Specific details will be confirmed in the detailed CEMP.

	culverts will be used. Existing culverts requiring an upgrade will be replaced using ready-made culverts. Culverts will be designed based on good practice (CIRIA C689) to minimise effects of construction on the natural integrity and continuity of watercourses. The design will incorporate the following criteria: • Culverts will be well bedded to avoid settlement and protected by an adequate cover of road material • The substrate and side/head walls will be reinforced in order to prevent erosion over the lifetime of the Scheme • There is a preference to avoid construction in watercourses altogether through the use of arched culverts or beam bridge structures appropriately designed not to impede the flow of water and allow safe passage for wildlife. However, the short- and long-term impacts of designs should be considered, and there can be a case for using box culverts • Single culverts will be used in preference to a series of smaller culverts that may be more likely to become blocked with flotsam and create erosion (i.e., the crossings will not constrict the channel) • The width of the culvert will be greater than the active channel width of the watercourse • Ease and speed of construction are important to minimise disruption to the watercourse and surrounding habitat • Designs will be low maintenance and where possible self-cleaning; and • Structures will be visually in-keeping with the surroundings.	

	The Scheme will utilise existing access roads and agricultural tracks already in place where possible, and this will help to minimise ground disturbance and requirements for further watercourse crossings. Watercourse crossings will take one of several forms depending on the nature of works, habitat sensitivity, and other environmental and technical design considerations. HDD will be the default option for watercourse crossings by cables and is the least invasive, most sensitive method, although it may not be suitable or necessary in some locations, such as for small field drains. In such locations, watercourse crossings will take one of the following forms, which are listed in order of least to most impact and are likely to be appropriate, respectively, for the most to least sensitive features: • Single-span structures that do not interfere with the channel (banksides, bed or water column) • Span structures with in-stream supports or pre-cast structures with natural bed • Closed culverts with artificial invert; and • Open trench with over-pumping. ***Structural Design*** Each watercourse crossing shall be designed on a case-by-case basis taking into account a range of engineering and environmental factors. The structural design of watercourse crossings will consider: • Design loading (taking into account different delivery vehicles)	

	• Bearing capacity • Potential for short- and long-term settlement • Environmental conditions; and • Flood risk. All structures will be designed in accordance with the National Highways Design Manual for Roads and Bridges (DMRB). ***Culverts*** The following apply where a watercourse crossing uses a culvert design: • When installing culverts, care will be taken to ensure that the construction does not pose a permanent obstruction to wildlife • Culverts should be sized so that they do not interfere with the bed of the stream following construction (i.e., the culvert will leave the watercourse in as natural condition as possible or permit re-establishment of substrate) • Culverts will be well bedded to avoid settlement and will be protected by an adequate cover of road material • Culvert floors will have the same gradient (not exceeding a slope of 3%) and level, and carry similar bed material and flow, as the original steam • There shall be no hydraulic drop at the culvert inlet or outlet • The width of the culvert will be greater than the active channel width of the watercourse • Culverts will be used to conduct water under tracks	

	• Any fences or screens fitted on the inlet or outlet of the culvert will be designed to allow at least 230mm of space between the bars of the screen or fence, up to the high-water level • Box culverts on watercourses, where such structures are considered appropriate, will likely be pre-cast concrete. Inverts will be located below bed level reflecting ecological requirements • A natural stone headwall will be provided upstream and downstream of culverts to protect the road embankment. Further protection will be provided to the banks using soft engineering techniques as much as possible; and • Where there is risk of bed erosion upstream or downstream of culverts, natural stone rip-rap will be provided.	
Chemical Pollution	***Accidental Spillage*** Speed limits for vehicles transporting fresh concrete will be set at a maximum of 15 miles per hour (mph) and will be continually monitored. Maximum vehicle load capacities will not be exceeded. Although tracks will be maintained in good condition, vehicle loads and/or speeds will be reduced if rougher surfaces are identified prior to track maintenance. Appropriately sized spill kits will be provided at strategic locations, particularly where fresh concrete may be present. These will contain materials such as absorbent granules and pads, absorbent booms and collection bags. These are designed to halt the spread of spillage and will be deployed, as necessary, should spillage occur. **Vehicle Washing**	Surface Water Monitoring Surface water monitoring will be undertaken at locations on the principal watercourses downstream of the Scheme infrastructure and upstream of other non-natural influences and the locations and parameters will be agreed with the EA prior to establishing the hydrochemical baseline. Groundwater monitoring will also be undertaken from boreholes surrounding the Scheme.

	There will be a wash-out facility within construction compounds that handle fresh concrete, consisting of a sump overlain with a permeable geosynthetic membrane. The geosynthetic membrane will filter out the concrete fines leaving liquid water to pass through to the sump. The sump water will be pumped to a licenced carrier and taken off-site for approved disposal. No washing of concrete-associated vehicles will be undertaken outside the wash-out facilities, and the area will be signposted, with all site contractors informed of the locations. The frequency of concrete plant wash-out may also be reduced through the use of retarders. In the event that plant and wheel washing is required, dry wheel wash facilities and road sweepers will be provided to prevent (as far as is practicable) mud and debris being deposited on to the public roads. Signage will be put in place to direct all vehicles to use wheel wash facilities. The track section between the wash facility and the public road will be surfaced with tarmac or clean hardcore and the area surrounding the facilities will be kept clean and in good condition. The wheel wash facility, which will work on a closed cycle, or will utilise dry wheel cleaning, shall be operated throughout the construction period. Wheel wash facilities will be located within a designated area of hardstanding at least 50m from the nearest watercourse or 20m from the nearest surface drain. Should debris be spread on to the site access or public road adjacent to the Scheme, then road sweepers will be quickly utilised to clean affected areas. Loose debris will also be periodically removed from site tracks.	Regular visual inspections of surface watercourses / ditches are proposed, especially during major excavation works, as these allow rapid identification of changes in levels of suspended solids that could indicate construction-related effects are occurring upstream. Potential effects can then be investigated and remedial action taken to prevent further effects, if necessary. To supplement the visual inspections, it is anticipated that there would be several surface water monitoring points for extractive sampling and analysis. Details will be developed in advance of construction. The following indicative sampling frequency is proposed in order to establish baseline hydrochemical conditions of surface water constituents: Twice per month for at least six months prior to the construction phase.

	Concrete Pouring for Foundations It is important that all concrete pours are planned and that specific procedures are adopted where there may be a risk of surface water or groundwater contamination. These procedures may include, but not be limited to: • Ensuring that all excavations are sufficiently dewatered before concrete pours begin and that dewatering continues while the concrete cures, noting that fresh concrete will be isolated from the dewatering system • Using blinding concrete layer to ensure a quick curing process • Using an impermeable geotextile wrapping layer around the foundation - i.e. line the shuttering with the geotextile layer, therefore limiting the contact between groundwater/near-surface water and the foundation • Treating the outer concrete with a protective layer • Choosing the right concrete composition to make it as impermeable as possible; and • Ensuring that covers are available for freshly placed concrete to avoid the surface of the concrete washing away during heavy precipitation. ***Concrete Feet*** Should concrete feet be required for isolated areas in Work No. 1: Solar PV, these will be pre-cast and no concrete will be poured in-situ on-site.	The following indicative sampling frequencies are proposed in order to monitor surface water conditions against baseline conditions: • Weekly for the first three months of the construction phase • Twice a month during earthworks and concrete works, e.g., access track construction, foundations; and • Once a month, for six months after the construction phase. Establishing baseline conditions for surface waters will enable any trends in levels of critical parameters to be assessed and deviations from the norm identified and rectified through water management measures. Monitoring will not take place within catchments or sub-catchments where no construction activity has occurred for a period of two weeks or more.

	Potential Hydrocarbon Contamination All refuelling, oiling and greasing will take placein designated areas and on impermeable surface which provides protection to underground geology and groundwater and at least 10 maway from drains. Vehicles will not be left unattended during refuelling. Machinery will be regularly maintained to minimise the potential for fuel or oil leaks and spillages to occur. All maintenance will be conducted over drip trays or suitably absorbent spill pads to minimise the potential for groundwater and surface water pollution. All machinery will be equipped with drip pans to contain minor fuel spillage or equipment leakages. Appointed refuelling personnel will be trained in the correct methods of refuelling to ensure that pollution incidents are prevented and a quick response plan is implemented should a spill occur, to minimise the impact of spills. Fuel delivery vehicles servicing the site will only be allowed as far as the construction compounds. The construction compounds will include a bunded and impermeable refuelling area, and operations will only be permitted where they comply with the contractor's method statements. Fuel pipes on plant, outlets at fuel tanks, etc., will be regularly checked and maintained to ensure that no drips or leaks to ground occur. The following precautions will be taken: • Any flexible pipe, tap or valve should be fitted with a lock where it leaves the container and be locked when not in use • Flexible delivery pipes should be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use	***Monitoring Reporting*** The results of laboratory analysis of water samples will be tabulated and recorded and provided monthly to the EA's Water Quality email inbox. ***Water Infrastructure Watching Brief*** Where works are carried out within proximity to water distribution infrastructure, a 'Watching Brief' will be conducted during works by a Hydrologist or Engineer. The Watching Brief should be used to clearly mark and demarcate any sensitive areas around the pipes which serve the property and aim to isolate pipes from construction works and avoid impact on the pipe infrastructure. Employees will be briefed of the pipework and locations and be briefed on any controls and conditions put in place prior to the commencement of works. Should any works cross the pipes then measures will be

	• Warning notices including “No smoking” and “Close valves when not in use” shall also be displayed; and • Spill kits will be available within each item of plant or vehicle on site and also located close to identified pollution sources or sensitive receptors (fuel storage areas, watercourse crossings, etc.). Irrespective of the buffer distances to watercourses and location of refuelling points, interceptor drip trays or similar (noting that open metal drip trays are not acceptable) will be available. Interceptor drip trays will be positioned under any stationary mobile plant to prevent oil contamination of the ground surface or water. Plant and site vehicles are to be well maintained and any vehicles leaking fluids must be repaired or removed from site immediately. ***Non-Road Mobile Machinery*** Recommended mitigation measures in relation to NRMM are detailed below: • All NRMM should use fuel equivalent to ultra-low sulphur diesel (fuel meeting the specification within EN590:2004) • All NRMM should comply with either the current or previous EU Directive Staged Emission Standards (97/68/EC, 2002/88/EC, 2004/26/EC). As new emission standards are introduced the acceptable standards will be updated to the most current standard • All NRMM should be fitted with Diesel Particulate Filters conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting)	implemented to prevent damage to the pipes, such as laying of steel matting or concrete above the pipework.

	• The ongoing conformity of plant retrofitted with Diesel Particulate Filters, to a defined performance standard should be monitored via regular checks • Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded; and ensure equipment is properly maintained to ensure efficient energy consumption; and • NRMM and plant should be well maintained. If any emissions of dark smoke occur then the relevant machinery will stop immediately and any problem rectified. ***Chemical Storage*** Potentially contaminating chemicals stored on site will be kept within a secure bunded area to prevent any accidental spills from affecting hydrological resources. The bunds will have a capacity 110% of that of the fuel or chemical store, in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001. The bunded area will be within the temporary construction compounds and will be underlain by an impermeable ground membrane layer to reduce the potential pathways for contaminants to enter watercourses and groundwater. The chemicals storage area will be kept secure to prevent theft or vandalism. A safe system for accessing the storage area will be implemented by the contractor. Oil storage areas will be covered in order to prevent rainwater collecting within the bunded area. ***Foul Drainage***	

	Portable toilet facilities will be deployed for site personnel. The toilets will be emptied by a waste contractor thereby avoiding the need for onsite treatment and discharge and minimising potential effects on drainage ditches and watercourses. ***Compound Locations*** Temporary Construction Compounds will be sited outside Source Protection Zone 1, where possible.	
Horizontal Directional (HDD) Drilling Fluid Breakout Risk	A risk assessment and contingency plan identifies breakout risks for the site and actions to minimise any breakout impact that occurs. Designing the HDD crossing requires identifying the ground conditions for the intended drill path and the selection of drilling fluid viscosity. Identifying the theoretical pressure during hydro fracture analysis will be compared against actual pressure to identify a blocked borehole or increased risk of breakout during drilling. Monitoring activities reduce the risk of breakout during drilling: Monitoring whether a decrease in fluid returning to the entry pit occurs as this would indicate a breakout. Downhole annular pressure monitoring to assess whether an increased pressure occurs. The HDD contractor will keep records of drilling process details and activities carried out.	Specific details will be confirmed in the detailed CEMP.

	This good practice measure is expected to minimise breakout risk during HDD drilling by assessing results against expectations and adjusting the process to minimise breakout risk. In the event of a breakout of drilling fluid, the following actions should be followed: • Confirm the source of the breakout, the volume of fluid, and area affected • Remove fluid and deposits by pumping or hand • Remove temporary containment materials or bunds • Suitable restoration of surface areas affected by the breakout of fluid. • Prior to drilling restarting, the breakout cause will be identified; and • The drilling methodology will be adjusted to minimise breakout reoccurrence. Clean-up equipment is required onsite at all times during HDD drilling to ensure a rapid response in the event of a breakout.	

3.9 Climate Change

Table 8 Climate Change

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Greenhouse Gas (GHG) impact on waste	Reducing waste: • Reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping • Off-site prefabrication, where practical, including the use of prefabricated elements; and • Segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling. • Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible. • Reusing suitable infrastructure and resources already available within the Site where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements); 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.	To be confirmed in detailed CEMP

	General practices: • Adopting the Considerate Constructors Scheme (CCS) to assist in reducing pollution, including GHGs, from the Scheme by employing good industry standard practice measures, e.g., recycling and separating waste and choosing low carbon and recyclable materials where feasible • Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency; and • Retention of existing vegetation as far as practicable.	
GHG emissions from construction traffic and equipment.	Appropriate standard and good practice control measures will be included in the detailed CEMP, which would include: • Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible • Reusing suitable infrastructure and resources already available within the Site where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements) • Encouraging the use of lower carbon modes of transport by identifying and communicating local bus connections and pedestrian and cycle access routes to/from the Scheme to all construction staff, and providing appropriate facilities for the safe storage of cycles	To be confirmed in detailed CEMP

	• Liaising with construction personnel for the potential to implement staff minibuses and car sharing options • Implementing a Travel Plan, as detailed in the **oCTMP [APP/7.7]** to reduce the volume of construction staff and employee trips to the Scheme • Switching vehicles and plant off when not in use and ensuring construction vehicles conform to current UK emissions standards • Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency • Health and safety plans and risk assessments developed for construction and decommissioning activities will be required to account for potential climate change impacts on workers, such as flooding and heatwaves. This will include for the provision of flood defence equipment (e.g. sandbags) on site and best practice health management measures for construction staff working in heat such as wearing loose clothing, staying hydrated and applying sun protection • Protecting workers and resources from extreme weather conditions through appropriate PPE and working practices • Using equipment's cooling systems where necessary/adapting working practices and equipment used based on current weather conditions; • Monitoring weather forecasts and the news for Environment Agency flood warnings, relevant weather warnings, and water levels of the local waterways; and	

	• Battery Energy Storage System (BESS) systems include Heating, Ventilation and Cooling (HVAC) systems and these to be contained within the individual equipment containers.	
Stronger winds, heatwaves, heavy precipitation and increased risk of fires/wildfires.	The contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions. The contractors will monitor weather forecasts and receive Environment Agency's flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding. Fire suppression system on site to rapidly action in case of fire.	To be confirmed in detailed CEMP

3.10 Socio-Economics

Table 9 Socio-Economics

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Peak impacts on the socio-demographic and tourism environment	The construction phase is anticipated to take up to 24 months. Works during the construction phase are phased and staggered across the Site to reduce likely significant effects on environmental receptors, to reduce the peak number of construction workers and movements or alter when this peak occurs in the construction period.	To be confirmed in the detailed CEMP.
Disruption to local residents, businesses and community facilities	An **outline Employment, Skills and Supply Chain Strategy (oESSCS) [APP/7.15]** has been submitted with the DCO Application. This plan sets out the likely economic benefits of the Scheme, and the context and characteristics of the local community and economy in which it is located. It identifies potential opportunities for activities relating to Skills, Supply Chain and Employment which the Applicant could take forward post-planning, together with a framework for future delivery. During the construction phase, the Applicant will implement employment and skills measures designed to maximise local benefits from the Scheme. These will include the creation of apprenticeship and trainee opportunities, targeted engagement with local education providers and STEM organisations, and collaboration with council initiatives such as the Boost Programme, Careers Hub, and Breckland Skills Assembly. The Applicant will seek to source services from local contractors and sub-contractors where	To be confirmed in the detailed ESSCS.

	feasible, advertise jobs through local channels, and deliver skills workshops for residents. The potential to locate temporary workers in either private rental accommodation or in temporary serviced accommodation to moderate the level of demand for temporary accommodation will be considered to mitigate impacts on accommodation demand for both residents, and visitors and tourists, especially during periods of peak visitor demand.	
Additional demand for housing	Support for construction workers to find suitable private rental accommodation, or hotels or other serviced accommodation, in locations where impact upon existing residents and visitors can be minimised.	To be confirmed in the detailed CEMP.
Visual impact on tourism and recreation facilities	The Scheme design provides embedded offsets and planting buffers from roads, PRoW, neighbouring buildings, and other tourism destinations to onsite infrastructure such as Solar PV Arrays, Customer Substation, and BESS to reduce the visual impacts on these receptors for tourism and recreational use during construction.	To be confirmed in the detailed CEMP.
Disruption to users of Public Rights of Way	Recreational routes crossing or within the Order limits will be sought to be kept open during the construction phase, with any crossing or traffic conflict points overseen by spotters or banksmen for HGVs. Where closures are deemed to be necessary, these will be prioritised for overnight work, will be temporary in nature and supported by appropriate amount of notice and suitable diversions. Any diversions to routes will be appropriately signed, and the duration and length of	To be confirmed in the detailed PRoWPPMP. Regular inspections of PRoWs within the Order limits will be undertaken, including additional inspections for PRoWs subject to onsite

	diversions will be optimised to minimise impacts on accessibility and desirability.	diversions or closures to ensure a suitable quality of surface, and any required diversion signage is in place. A Community Liaison Manager, will also be available for members of the public to report any concerns or issues with PRoWs during construction and should report any concerns to the responsible construction site manager to oversee any investigative, and if required, remediation work.

3.11 Human Health

Table 10 Human Health

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Peak impacts on Human Health	Works during the construction phase are phased and staggered, across the Solar PV Site to reduce impacts on environmental receptors, to reduce the peak number of construction workers requiring access to local amenities, and to reduce the peak intensity of onsite works.	To be confirmed in the detailed CEMP
Disruption to users of Public Rights of Way	The Scheme design is embedded with offsets and planting buffers from roads, PRoWs, recreation facilities, and neighbouring buildings and land uses to minimise the visual impact of the Scheme on the desirability of these receptors for leisure and play, and local perceptions of community identity.	To be confirmed in the detailed CEMP
Disruption to the local community	A Community Liaison Manager will be appointed, to whom any comments, concerns or complaints about the development of the Scheme can be raised, either directly by members of the public, or via elected representatives on parish or town councils, councillors, and Members of Parliament. This role will be used to continue open channels of communication between the community and the operators of the Scheme as set up during the application and DCO process, and through the discharge of requirements process. In doing so, this will mitigate impacts on community identity and influence by allowing the community to continue to be involved in the	To be confirmed in the detailed CEMP

	development of their local environment as the Scheme is constructed.	
Increased demand to GPs and primary and emergency healthcare	Construction workers will be given additional support by the Applicant or contractor to find and register with GPs across the Wider Baseline Study Area in reasonable proximity to their temporary or full-time accommodation and where such GP surgeries have reasonable capacity to take on additional patients.	To be confirmed in the detailed CEMP
Disruption to the provision of care services and to users of social and residential healthcare facilities	The Applicant or contractor will be required to keep in direct contact with the operators of care homes and service providers ahead of and during the construction phase, to ensure that operators at these receptors are suitably resilient to reduce the likelihood of construction impacts affecting the functional operation and quality of environment for residents and users.	To be confirmed in the detailed CEMP

3.12 Other Environmental Matters

Table 11 Other Environmental Matters

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Telecommunications, Utilities and Television Receptors		
Utilities, Telecommunications and Television Receptors	The following embedded mitigation measures have been incorporated into the Scheme design to identify and manage utilities interactions. These include precautionary measures such as: • In advance of construction, the Applicant would liaise with all utility providers with assets in the area in regard to construction timelines, activities, proximity to assets and construction management measures • Locating the Scheme outside of utilities protected zones, where practicable • Above-ground infrastructure located with adequate offsets (developed in consultation with third parties) from existing telecommunications and utility infrastructure to provide clear access and to minimise potential conflicts, such as damage from piling, excavation, or compaction • Use of topographical data alongside mapping provided by telecommunication and utilities providers to ensure underground and overground utilities are adequately offset	No monitoring required.

	• Use of ground penetrating radar before excavation to identify any unknown utilities • Use of trenching and HDD activities to lay cabling where crossings are required • Consultation and agreement of construction/demobilisation methods prior to the works commencing • Pipelines will be located using techniques such as CAT scanning • During the construction phase, there will be safe working beneath any overhead lines in line with National Grid's technical guidance note 287 including, for example, ensuring adequate clearances are in place when plant and equipment are being moved beneath overhead lines, and limiting any planting beneath overhead lines to low growing species; and • Measures in relation to safe working near buried utilities, particularly gas pipelines, will be in place at all phases of the Scheme. For example safety measures set out in National Grid and Northern Gas Networks guidance documents for third parties working in the vicinity of high pressure gas pipelines and associated installations.	
Waste		
Potential to impact on sensitive receptors (humans, wildlife, and controlled waters) if not stored and	The contractor will consider the objectives of sustainable resource and waste management and seek to use material resources efficiently, reduce waste at source, reduce waste that requires final disposal to landfill and apply the principles of the waste hierarchy. This would include, where reasonably	The types, quantities and final destination of waste generated during the construction phase would

managed appropriately. Impacts on waste recycling and handling facility capacity.	practical, segregation of construction materials on-site for appropriate re-use, recycling and recovery with landfill as a last resort. All waste management will be undertaken in accordance with the relevant regulations and waste would be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them. This would be achieved by a combination of measures, including: • A detailed SWMP will be prepared before commencement of construction and will be implemented by the contractor, once appointed • All waste transported off site will be delivered to the appropriately licenced receivers of such materials • As part of the SWMP, the contractor would segregate construction waste to be re-use and recycled where reasonably practicable • The contractor would prepare and implement a Construction Resource Management Plan (CRMP), outlining the strategic approach to planning, coordinating, and managing the labour, materials and equipment; and • Temporary Construction Compounds and welfare facilities should be located and consolidated to minimise the amount of excavation and construction waste required for hardstanding for access, material storage, and welfare unit placement, and to reduce construction wastewater and	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.

	electricity use. Pre-fabricated welfare units and construction site offices should be prioritised, so that they can be reused on other construction projects, to further reduce construction waste.	
Impacts of waste to the surrounding environment.	To minimise impacts of waste on the surrounding environment, the following measures would be implemented: • 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 construction workers will be required to use appropriate personal protective equipment 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 contractors; 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 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.

Electromagnetic Fields		
Potential for risks to human health associated with electromagnetic fields.	The following embedded mitigation measures have been incorporated into the Scheme design: • The Scheme will be designed so that the maximum levels of electromagnetic radiation received at existing residential properties, places of work, and PRoWs, from the 400kV cables during operation will be below ICNIRP reference levels **[Ref. 6]** • A minimum 10m setback will be imposed between receptors (residential dwellings) and 400kV cables; and • All proposed cables and associated electrical infrastructure will be 'UKCA' and/or 'CE' marked.	The Environmental Manager will regularly record compliance in a logbook, as secured through the detailed CEMP.
Air Quality		
Fugitive dust emissions during the construction phase.	Mitigation and control measures will be included in the detailed CEMP, to 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 Site. This may be the Environmental Manager; and	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed CEMP. The following monitoring will be undertaken: • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection

	• Display the contractor's head or regional office contact information. **Dust Management** • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the relevant local authorities. **Site Management** • 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- or off-site, and the action taken to resolve the situation in the logbook. • Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. **Preparing and maintaining the site** • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	results, and make the log available to the local authorities when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authorities when asked. • 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. • Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the local authority. Where practicable, commence baseline monitoring at least three months before work commences on site or, if it a large

	• Erect solid screens or barriers around dusty activities or the site boundary so that are at least as high as any stockpiles on site. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Avoid site runoff of water or mud, in line with the measures detailed in the **oSMP [APP/7.13]**. • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. **Operating vehicle/machinery and sustainable travel** • Ensure all off-road vehicles comply with the requirements of the Non-Road Mobile Machinery (NRMM) standards, where applicable. Use stage 4 NRMM as a minimum and stage 5 where practicable. • Ensure all vehicles/machinery are switched off when stationary/not in use. • Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. • Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work	site, before work on a phase commences. • Any unforeseen issues that arise in relation to construction vehicle movements will be logged by the Site Manager. If necessary, the issues will be discussed with the local highway authority so that they can be resolved as appropriate.

	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 authorities, where appropriate). • Produce a detailed CTMP to manage the sustainable delivery of goods and materials. • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). • Signs to direct construction vehicles associated with the Scheme will be installed along the construction traffic route. **Operations** • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where practicable and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	

	• 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** • No bonfires or burning of waste materials. **Earthworks** • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise 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. **Construction** • 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.	

	• 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. • Avoid dry sweeping of large areas. In dry conditions, areas near to the Site access will be sprayed with water supplied to prevent the spread of dust. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • 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). A wheel washing facility will be provided at each access. This will be located at the egress point of each access road.	

	• A visual inspection of vehicles will be undertaken before they depart the Site, to ensure that they are not carrying any residual debris onto the highway; • If required, a road sweeper will be provided for the area surrounding access to alleviate any residual debris generated during the construction phase, as required; • 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. • Entrance gates to be located at least 10m from receptors where practicable.	
Vehicle and plant emissions during the construction phase	Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards for the vehicle type as follows: • Euro 4 (Oxides of Nitrogen (NOx)) for petrol cars, vans and minibuses • Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and • Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Glint and Glare		

Glint and Glare effects	The following embedded mitigation measures have been incorporated into the Scheme design: • The Scheme design has incorporated setbacks from dwelling receptors where practicable Temporary hoarding is to be erected on the A1065 in the areas shown on **ES Figure 5.2: Construction Masterplan [APP/6.3]**, until the advanced planting (detailed in the **oLEMP [APP/7.11]** reaches 3m in height in these areas. Additionally, 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. For full details, see the **oLEMP [APP/7.11]**.	Specific measures will be confirmed in the detailed LEMP.
Arboriculture		
Tree Removal	Tree removal will be avoided wherever practicable. Should tree removal be unavoidable, trees of lower quality and life expectancy will be preferably removed over those of higher quality and life expectancy. Trees with a BS5837:2012 Quality Category of U shall be preferentially removed followed by Category C, B and A trees in that order of priority. Veteran trees will not be removed under any circumstances. Tree removals will be marked on-site by the Arboricultural Clerk of Works (ACoW), with final decisions made during detailed site design and cable trench micro-siting. Only qualified arboricultural contractors, in accordance with British Standard 3998:2010, will perform tree work. Construction workers will not	Ongoing under consultation with the ACoW.

	perform tree removals unless qualified and specifically instructed. Prior to removal, legal restrictions, such as those protecting nesting birds and roosting bats, will be observed. Where trees are protected by a Tree Preservation Order (TPO), removal will only occur if deemed necessary to prevent obstruction or interference with the Scheme. The ACoW will be consulted to ensure compliance and explore alternatives before proceeding with works on TPO trees. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Tree Pruning	Prior to any necessary tree pruning, the ACoW will liaise with the construction contractor on the requirements for pruning and the ACoW will provide a specification for the pruning works required which will then be implemented by a suitably qualified, insured and experienced arboricultural contractor working in accordance with British Standard 3998: 2010 'Tree Work – Recommendations'. Pruning works to veteran trees will be avoided and pruning will aim to prioritise trees of low quality (BS5837:2012 Category U and C trees) over trees of moderate or high quality (BS5837:2012 Category A and B trees). No tree works will be undertaken by construction workers unless qualified and instructed to do so. All tree pruning works will have due consideration for ecological mitigation.	Ongoing under consultation with the ACoW.

	Temporary construction compounds will be sited outside of the canopy spreads and Root Protection Areas (RPAs) of adjacent trees and woodlands. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Root loss/damage from excavation or soil compaction within RPAs	Tree protection fencing and/or perimeter fencing will be installed prior to construction to establish a Construction Exclusion Zone (CEZ) around RPAs. The fencing will consist of wire mesh and wooden posts or other protective fencing, and will prevent entry of machinery, materials, or spoil into the protected areas and be checked by the ACoW prior to construction near trees commencing, to be secured via a detailed Arboricultural Method Statement. Temporary construction compounds will be sited outside of the RPAs of adjacent trees and woodlands. In cases where construction activities must occur within RPAs, suitable ground protection will be installed to prevent soil compaction. The type of ground protection will vary based on the weight of traffic and will comply with BS5837:2012 recommendations, ranging from scaffold boards for pedestrian use to reinforced systems for heavy machinery. Micro-siting techniques will be used to minimize root disturbance, with cable routing designed to avoid RPAs of retained trees. If work within RPAs is unavoidable, the ACoW	Ongoing under consultation with the ACoW.

	will supervise and guide precautionary measures such as hand digging and root pruning. HDD will be utilised to avoid damaging roots, maintaining a minimum depth of 1m to bypass the majority of roots, which typically exist in the upper 600mm of soil. All HDD machinery will be sited outside the canopies and RPAs of retained trees. All machinery used for trenchless solutions (e.g. HDD) will be situated outside the RPAs of retained trees. Entry and exit points for the trenchless solutions will be sited more than 15m from retained tree stems. Trenchless solution depths will exceed 1m under RPAs. Throughout construction, movement of machinery and storage of materials will be managed to prevent encroachment into RPAs. In the event that access is required, temporary ground protection will be employed to safeguard the tree roots. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Root loss/damage from fencing installation	Around Solar PV arrays, permanent perimeter fencing will be installed using a typical 'deer fence' comprising of wire mesh with wooden or metal posts, driven into the ground with a standard post driver. In most cases, the alignment for permanent fencing will form a Construction Exclusion Zone (CEZ) to exclude construction activity. Where this specification of fencing will not be used, it may be necessary to install Temporary Protection Fencing (TPF) to an appropriate	Ongoing under consultation with the ACoW.

	specification. This fencing will be installed before the commencement of other construction activity. It is preferred that all fencing will be installed with the desired buffer from retained trees, and outside RPAs. Where TPF is required, the specification should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. Weatherproof signage (rigid plastic or Foamex foamboard) will be attached to the fencing with words such as 'Construction Exclusion Zone – No Access'.	
Root loss/damage from Access Track installation	The construction of access tracks within RPAs should follow a 'no-dig' methodology, utilising a cellular confinement system to provide a load-bearing surface and reduce the likelihood of ground compaction.	Ongoing under consultation with the ACoW.
Dust/sediment impacts to adjacent woodlands	Measures to limit the dust generating activities, such as when working in dry conditions. To mitigate the risk of airborne contamination, a dust suppression and management system will be implemented. Other sediment mitigation includes: • Cut-off ditches or geotextile silt-fences, installed around excavations, exposed ground and stockpiles to prevent uncontrolled release of sediment • All potentially contaminated waters (for example washdown areas, stockpiles and other areas of risk for water contamination) to have separate drainage. Any	No monitoring required.

	contaminated waters would be taken away by tanker from the Solar PV Sites; and • Vehicles carrying material off-Site will be sheeted to prevent the spread of dust.	
Damage to canopies/stems from machinery movements	To mitigate damage to tree canopies and stems from machinery, tree pruning will be carefully managed and conducted by qualified arboricultural contractors under the guidance of the ACoW Pruning will aim to prioritise trees of low quality (BS5837:2012 Category U and C trees) over trees of moderate or high quality (BS5837:2012 Category A and B trees). No tree works will be undertaken by construction workers unless qualified and instructed to do so. All tree pruning works will have due consideration for ecological mitigation. Tree protection fencing will be installed around RPAs before construction begins, creating a CEZ to prevent machinery from entering protected areas. The fencing will remain in place throughout construction and only be altered under ACoW supervision. If construction activities must take place within RPAs, ground protection will be used to minimise soil compaction, and precautionary working methods such as hand digging will be employed. HDD or other non-intrusive methods will be used where necessary to avoid disturbing roots, with entry and exit points positioned outside RPAs. When tall machinery is working near the canopies of tree canopies the machine operator will be accompanied by a	Ongoing under consultation with the ACoW.

	banksman who will work from ground level and ensure that moving machinery parts avoid the stems and branches of retained trees. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Major Accidents and Disasters		
Major Accidents and Disasters	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 contractor prior to construction, which will be implemented to minimise the risk of accidents and disasters on site. An **outline Battery Safety Management Plan (oBSMP) [APP/7.14]** details the risks associated with fires from the BESS and sets out measures to minimise the impact of an incident during construction.. An Emergency Response Plan would be followed in the event of fire. Furthers risks of major accidents and disasters are covered in the other tables in this oCEMP relating to Hydrology, Flood Risk and Drainage; Transport and Access; Soils; Human Health; and Glint and Glare.	No monitoring required.

4 Mitigation and Monitoring – National Grid Substation and Grid Connection Infrastructure

4.1.1 This Section of the oCEMP sets out the mitigation measures to be included as a minimum in the detailed CEMP pertaining to the Scheme with the exception of the National Grid Substation and Grid Connection Infrastructure; these measures are detailed in **Section 4** of the oCEMP. It also sets out monitoring requirements and the responsible party identified for each mitigation measure or monitoring requirement. This section will be updated and developed following consent as part of the preparation of the detailed CEMP.

4.2 Landscape and Visual

Table 12 Landscape and Visual

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Landscape and Visual effects on sensitive receptors	The **oLEMP [APP/7.11]** accompanies this DCO Application and sets out the measures proposed to mitigate the potential impacts and effects on landscape (and ecological) features, and to enhance the landscape and biodiversity value of the Site (i.e. the Green Infrastructure). The construction phase measures contained within the detailed LEMP, which is to be prepared in accordance with the **oLEMP [APP/7.11]** submitted with this DCO Application, are to be adhered to in addition to those within the detailed CEMP, which is to be prepared in accordance with this **oCEMP [APP/7.6]**. The buffers and offsets from existing landscape features, detailed in Table 5.2 of **ES Chapter 5: The Scheme [APP/6.1]**, have been embedded into the design of the Scheme and will be respected with the exception of where Grid Connection Cables are required to cross an existing feature. The following measures will be adhered to during the construction phase: • A pre-construction tree survey would be required prior to starting construction works to re-establish the baseline. This survey would inform the tree protection zones to be applied during construction. Site hoarding and construction exclusion zones would be introduced around retained vegetation in accordance with the requirements of BS 5837:2012 ‘Trees in relation to design, demolition and construction’. An approved Arboricultural Method Statement would be adopted incorporating best practice	To be detailed in CEMP.

	guidance set out in British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction which would ensure retained trees and other vegetation are not adversely affected during the construction process • The use of visual screening, such as hoardings, would be implemented for more sensitive visual receptors in proximity to the Site, including residential and PRoW receptors that have the greatest potential to be affected by the Scheme • Ensuring a tidy and neat working environment and covering stockpiles in accordance with best practice measures • Good practice measures would be employed to minimise light spill. • Temporary lighting during construction required to enable safe working in the hours of darkness would be designed as far as reasonably practical to avoid light spill onto areas beyond the Site. Construction lighting would include directional fittings and would be restricted to the construction working hours set out in **ES Chapter 5: The Scheme [APP/6.1]**; and • Construction works which create dust would be kept to a minimum within proximity to existing pedestrian routes and residential properties, and dust prevention measures, such as damping, would be undertaken to reduce the impact on users of the PRoW network.	

4.3 Ecology and Biodiversity

Table 13 Ecology and Biodiversity

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Potential for obtrusive glare and light spill to impact on ecology. Potential for spillages to enter watercourses and impact ecology. Clearance or damage of habitat to facilitate construction – resulting in temporary or permanent reduction in habitat extent and potential direct and indirect effects on associated species. Dust deposition on sensitive ecological receptors.	The **oLEMP [APP/7.11]** accompanies this DCO Application and sets out the measures proposed to mitigate the potential impacts and effects on landscape (and ecological) features, and to enhance the landscape and biodiversity value of the Site (i.e. the Green Infrastructure). The construction phase measures contained within the detailed LEMP, which is to be prepared in accordance with the **oLEMP [APP/7.11]** submitted with this DCO Application, are to be adhered to in addition to those within the detailed CEMP, which is to be prepared in accordance with this **oCEMP [APP/7.6]**. The buffers and offsets from existing landscape features, detailed in Table 5.2 of **ES Chapter 5: The Scheme [APP/6.1],** have been embedded into the design of the Scheme and will be respected with the exception of where Grid Connection Cables are required to cross an existing feature. The following measures are to be employed during the construction phase: • An EcoCoW will be designated at the onset of the construction phase, which will provide ecological supervision during the completion of any works (including ditch trenching) which have the potential to impact protected and notable species, as appropriate • Criteria under which the EcoCoW would be required in order to oversee certain construction activities which have the potential to	A pre-construction site walkover will be undertaken in advance of mobilisation/any potential advance works to reconfirm the ecological baseline conditions and to identify any new ecological risks, such as newly constructed badger setts. Further surveys for protected species may be conducted as required, for example where tree modification or removal is proposed where trees have potential to support roosting bats. Further surveys, including for species such as bats, otter, water vole and badger would be completed as appropriate to reconfirm the status of protected species identified, to inform mitigation requirements and support protected species licence applications, if required, and the requirement for any

		impact on protected species, such as localised habitat clearance, and ditch/watercourse engineering works. These criteria would trigger the need for EcoCoW attendance and, potentially, pre-commencement surveys or preparation by an ecologist, as well as follow up monitoring or reporting • Criteria under which certain potentially impactful operations would need to be restricted to particular months or seasons in order to lessen likely adverse ecological effects (for example, hibernation or nesting season for particular species) • To avoid an offence under the Wildlife and Countryside Act 1981 (as amended), the potential loss of active nests during construction will be avoided by either undertaking clearance of potential bird nesting habitat outside of the bird nesting season (March to August inclusive) or, if necessary, preceding any clearance with an inspection by a suitably qualified ecologist. Any nests identified will be cordoned off and protected until they cease to be active. Where necessary, the use of bird scarers or other deterrence methods will be used to minimise the risk of ground nesting birds occupying open ground once construction works have commenced. • Details of task-specific Method Statements for potentially ecologically impactful works • Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats • Measures to limit the dust generating activities, such as when working in dry conditions • Measures to limit the mobilisation of sediments and run-off, such as when working in very wet conditions or the use of silt fencing when working in ditches or watercourses • Construction personnel will receive a Toolbox Talk detailing the presence of sensitive ecological features and will be informed that	EcoCoW supervision during the construction phase. Such surveys would be undertaken sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any necessary mitigation, prior to construction. Additional surveys may be required during the advance 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. Further details to be confirmed in the detailed CEMP.

	no materials should be stored in, or vehicles drive through, buffer zones • Temporary site lighting during construction will be required to enable safe working during construction during hours of darkness (likely over the winter months only) and will be designed as far as reasonably practicable to minimise potential for light spillage outside the Order limits, particularly towards valuable ecological habitats. Standard good practice measures would be employed to minimise light spill, including glare, during construction. A sensitive lighting strategy will specify where and how any artificial lighting will be used, which will serve to mitigate adverse impacts on ecological receptors such as bats • Habitat and hedgerow would be reinstated as soon as possible through hedgerow and grassland replanting/translocation/re-seeding • Temporary construction hoarding and working safeguards will be employed, as necessary, to protect development buffer zones around key ecological habitats • Erection of tree protection fencing around retained woody vegetation, hedgerows and trees in accordance with BS5837:2012 • Erection of temporary fencing around construction areas, protecting retained habitats of ecological value • No fires will be permitted on site • All contractors will be briefed as to the possible presence of protected and notable faunal species within the Site, with particular reference to the implications of legislation and licensing • Any trenches or deep pits within the Site that are to be left open overnight will be provided with a means of escape should a Badger or other mammal enter. This could simply be in the form	

	of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water • Any trenches/pits will be inspected each morning to ensure no animals have become trapped overnight • The storage of topsoil or other 'soft' building materials in the Site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and will be subject to inspections by site contractors with consideration given to temporarily fencing any such mounds to exclude Badgers • Food and litter will not to be left within the working area overnight • Storage of chemicals and hazardous materials in line with best practice guidelines, ensuring that they are secure, well away from the Site boundaries and cannot be accessed or knocked over by roaming animals • To minimise adverse effects as a result of lighting during the construction phase, temporary lighting will be minimised, wherever practical. Where required for health and safety, security or other reasons, it will be positioned so as to minimise light spill on to hedgerows and other boundary features • Disturbance from noise will be minimised by the adoption of good working practice; and • Should additional Badger setts be discovered in locations which cannot be accommodated within the Scheme design (including where new setts are discovered in locations which disrupt or prevent construction activities), it is anticipated that such setts would need to be closed under licence, with suitable mitigation measures/compensation provided in line with relevant licence requirements.	

4.4 Cultural Heritage and Archaeology

Table 14 Cultural Heritage and Archaeology

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Construction phase impacts upon Heritage / Archaeology assets	The construction works are to be undertaken in accordance with the Written Scheme of Investigation (WSI), which is to be prepared in accordance with **ES Appendix 8.7: outline Archaeological Mitigation Strategy [APP/6.4]**. The following measures will be adhered to during the construction phase: • The need for geophysical survey along the working corridor for Grid Connection Infrastructure will be determined once the details of potential below ground disturbance are known • The areas of known extensive impact (National Grid Substation, Temporary Construction Compounds) will be subject to informative trenching at 3.5% by area • The need for and location of deep impacts (up to 15m for piles) are not yet known and so it is not possible to firmly identify the need for and location of any geoarchaeological assessment. Once details are available the need for and scope of any geoarchaeological assessment will be agreed with NHES • Precise details of areas that will be subject to full archaeological excavation will be defined following completion of the geophysical survey and informative trenching and finalisation of the location and extent of development impacts. Some of the archaeological excavation areas may take the form of 'compensation' excavation rather than mitigation of individual impacts (i.e. certain areas may	Provision for archaeological mitigation and monitoring is detailed in the AMS (**ES Appendix 8.7: outline Archaeological Mitigation Strategy [APP/6.4]**). The AMS must be adhered to during constructional phases. All archaeological works will be undertaken by suitably qualified and experienced professional archaeological specialists. All archaeological works will be undertaken in line with national guidance (i.e. Historic England and CIfA guidance). The Archaeological Clerk of works and/or the Archaeological Advisors to the LPAs will monitor the completion of works in accordance with the programme set out in the AMS.

	be examined in more detail in order to compensate for the loss of other areas) • It is known that the Roman period enclosure within Field 27 will be subject to almost complete removal by the installation of the National Grid Substation and these remains will, therefore, require full excavation. Based on the information provided in **ES Chapter 5: The Scheme [APP/6.1]**, this will be a minimum of 2.5ha but the area may extend following results of informative trenching; and • Archaeological monitoring (a 'watching brief') may be required in certain areas where the impacts is limited and/or where full excavation is not warranted.	

4.5 Transport and Access

Table 15 Transport and Access

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Increased traffic throughout the Study Area that will impact both motorised users and non-motorised users.	A detailed CTMP will be produced prior to the commencement of the construction phase. A final CTMP will be secured via requirement under the DCO and approved by the Local Planning Authority in consultation with NCC and NH prior to commencement of the construction phase of the Scheme and will include details on the following: • Required access routes from the LRN • Scheme entry and exit points, including compound locations; and • Measures to mitigate the impact of construction vehicles. An **outline CTMP [APP/7.7]** has been produced as part of this DCO Application submission, on which the detailed CTMP will be prepared in accordance. The construction phase measures contained within the detailed CTMP are to be adhered to in addition to those within the detailed CEMP. Travel Plan measures are initially detailed within the **oCTMP [APP/7.7]** with a detailed Travel Plan secured by way of requirement on the DCO to be provided prior to commencement of the construction phase of the Scheme. Where measures are secured in the CTMP mitigation measures relevant to the construction phase will not be duplicated in the detailed CEMP.	The appointed contractor will undertake such monitoring as is necessary. Further details to be confirmed in the detailed CEMP/CTMP/PROWPPMP. Any unforeseen issues that arise in relation to construction vehicle movement will be logged by the Site Manager. If necessary, the issues will be discussed with the local highway authority so that they can be resolved as appropriate.

	The **oPRoWPPMP [APP/7.12]** contains measures that will be implemented during the construction phase of the Scheme to mitigate transport impacts on users of PRoW. The construction phase measures contained within the detailed PROWPMMP are to be adhered to in addition to those within the detailed CEMP. **Specific Highway Measures** Where existing accesses are utilised, these will be widened and formalised as appropriate. Visibility splays will be kept clear throughout the construction period. **Traffic Management** Traffic Management Measures, including signage to warn drivers of the presence of construction traffic during the construction phase. Traffic marshals or banksmen will also be utilised to ensure the safe passage of construction vehicles at access junctions. Traffic management for abnormal load movements will be agreed with the local highway authority and police prior to the abnormal load movements taking place. **Signage** Signs to direct construction vehicles associated with the development will be installed along the construction traffic route. Delivery drivers, contractors and visitors will be provided with a route plan in advance of delivering to Site to ensure that vehicles follow the identified route. The signage strategy will be agreed with the local highway authorities prior through the detailed CTMP. All signage on the designated route will be inspected daily by the Site Manager, to ensure they are kept in a well maintained condition and located in safe and appropriate locations.	

	Vehicle Movements Construction deliveries by HGV will be coordinated to arrive/depart between 09:00-17:00. They will be coordinated to avoid vehicle movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00). Banksmen will be provided at the Site accesses to indicate to construction traffic when it is safe for them to enter and exit the Site. A Construction Worker Travel Plan will be implemented, to encourage construction workers to travel to the Site via sustainable travel, where practicable. Measures include the provision of a shuttle bus and a car sharing scheme. Shifts will be organised to avoid construction worker movement between 08:00-09:00 and 17:00-18:00. The management associated with Abnormal Load movements will be agreed with the local highway authority and the police prior to the delivery. **Booking System** A booking system will be set up to manage arrivals and departures to the Site. A log will be kept as part of the booking system. The intention of this procedure is to avoid instances of HGVs passing each other in opposite directions on the local roads surrounding the Site. **Parking** Advisory signs informing contractors and visitors that parking is not permitted on-street in the vicinity of the Site or on the Site access road. Contractors and visitors will be advised that parking facilities	

	will be provided on-Site in advance of visiting the Site and that they should not park on-street. **Wheel Washing Facility** A wheel washing facility will be provided at each access. This will be located at the egress point of each access road. A visual inspection of vehicles will be undertaken before they depart the Site, to ensure that they are not carrying any residual debris onto the highway. If required, a road sweeper will be provided for the area surrounding access to alleviate any residual debris generated during the construction phase, as required. **Noise Reduction and Air Quality** When on Site and when not in use, vehicle engines will be switched off. Vehicles carrying material off-Site will be sheeted to prevent the spread of dust. In dry conditions, areas near to the Site access will be sprayed with water supplied to prevent the spread of dust. **Site Security** The Site will be secured at all times via a perimeter fence or temporary fencing. CCTV will be operational within the construction compound. All new access tracks will be secured by gates, which will be set back from the public highway. Where existing access tracks are used that also provide access to residential properties, appropriate security measures will be put in place in consultation with the relevant property owner(s). **Road Condition Survey** A pre-construction road condition survey will be carried out on the local highway network via video two weeks before the construction phase commences. The extent of the survey will be agreed with the	

	local highway authority prior to commencement. Interim surveys and a completion survey will be carried out in order to identify any additional defects that can reasonably be attributable to construction activities at the Scheme. Any identified highways defects resulting from construction activities associated with the Scheme will be corrected to the satisfaction of the local highway authority. **Community Engagement** The details of the Construction Site Manager will be provided to the local highway authority in advance of any work being carried out. The Construction Site Manager's details will also be provided on a Site-board at the Site accesses. If anyone in the local community has any issues during the construction phase, the Site Manager will be available to discuss.	

4.6 Noise and Vibration

Table 16 Noise and Vibration

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Noise and vibration as a result of the construction works causing annoyance at NSRs and damage to properties. Construction traffic noise at residential properties.	The following 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 before works begin and throughout the construction programme • All contractors to be made familiar with current legislation and the guidance in BS 5228:2014 (Parts 1 and 2 **[Ref. 5]**) which should form a prerequisite of their appointment • When works are taking place within close proximity to sensitive receptors, the screening of noise sources via the erection of temporary screens would be employed where practicable • All construction machinery would be regularly maintained to control noise emissions, with particular emphasis on lubrication of bearings and the integrity of silencers • All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use • As far as practicable, works will be programmed to avoid noisy operations occurring simultaneously in close proximity to the same sensitive receptor	A construction noise monitoring scheme shall be developed and agreed with the relevant planning authority following appointment of a contractor and prior to commencement of construction works. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to and from local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate investigation and action. Further details are to be confirmed in the detailed CEMP.

	• As far as practicable, construction compounds must be located a minimum of 250m from residential receptors • Adhere to the core working hours of the Scheme which are Monday to Friday 07:00 – 18:00 and between 08:00 and 13:30 on Saturdays unless otherwise approved in advance by BC (except in case of emergency) with a potential exception for HDD works where night-time working may be required. Those activities that are unlikely to give rise to noise audible at the Site boundary, or light vehicle traffic accessing the Site such as that involved with staff mobilisation, may continue outside of the stated hours • Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place • Local residents will be informed of any percussive piling or earthworks construction activities planned as part of the reporting of information to local residents.	
Night-time Construction Noise	Core construction working hours will be Monday to Friday 07:00 – 18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads or night-time working for cable construction works in public highways). No noisy operations will take place during mobilisation/shut down which is 1 hour before and after working hours. As requirements and locations for cable construction activities will not be finalised until contractor is appointed. The potential for the use of quieter equipment will be explored by the principal contractor.	A construction noise monitoring scheme shall be developed and agreed with the relevant planning authority following appointment of a contractor and prior to commencement of construction works. The detailed CEMP would also set out a scheme for the provision of monthly reporting information to and from local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate

			investigation and action. Further details, including the complaints procedure, are to be confirmed in the detailed CEMP.

4.7 Soils and Agriculture

Table 17 Soils and Agriculture

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Impacts on agricultural land and soils.	The **oSMP [APP/7.13]** contains measures that will be implemented during the construction phase of the Scheme to mitigate transport impacts on soils. The construction phase measures contained within the detailed SMP are to be adhered to in addition to those within the detailed CEMP. The following measures will be implemented to address impacts on land use and soil: • A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey • Land used temporarily will be reinstated where practicable to its pre-construction condition and use (or a condition agreed with the landowner). Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner agreement; and • Earthwork mounds and stockpiled soil will be protected (to minimise erosion and dust generation) by covering, seeding, or using water suppression where appropriate (to be determined by the soil types and the likely storage duration.	Site inspections by a suitably experienced soil scientist to ensure compliance with the SMP and identify any emerging issues.

	Soil management measures will include but not be limited to the following: • Details of the soil resources present • How the topsoil and subsoil will be stripped and stockpiled • Suitable conditions for when soil handling will be undertaken, for example avoiding handling of waterlogged soil • Indicative soil storage locations • How soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil • Specific measures for managing sensitive soils • Suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works • Approach to reinstating soil, including measures to remove compaction, where required; and • Details of measures required for soil restoration. Measures to mitigate effects on agricultural land during construction, including soil storage methodology, will be set out in the detailed SMP, to be prepared suitably in accordance with the **oSMP [APP/7.13]** submitted with this DCO Application. These will include specific soil resource survey of the Order limits, site inspections by a suitably experienced soil scientist and the use of appropriate plant for soil handling and reduction of ground pressure.	
Drilling Fluid seepage to surrounding environment.	There is a potential risk of drilling fluid escaping the borehole during operations due to drilling pressures and ground conditions. In the event of surface seepage, contamination will be contained and cleaned up using sandbags and a vacuum tanker.	No monitoring required.

	Any surplus drilling fluid will be recovered from entry/exit pits post-installation by a specialist waste management company. This fluid will be collected and disposed of at a licensed facility. An Emergency Response Plan will include details for pollution prevention and will be prepared and included alongside the detailed CEMP.	
Displacement and exposure of soils The discovery of ground contamination during groundworks Potential for risks to human health associated with waste generation, land contamination, airborne contamination, and groundwater contamination.	• Construction and management of roadways and access to the construction sites to minimise issues like dust, sedimentation of waterways, degradation of soil quality, loss of topsoil and surface run off. • Management of excavated and excess soils and aggregates to be used in all aspects of the construction to avoid fugitive emissions of dust and run off to water courses. • Management of any wastes generated by the construction process to make sure of no adverse impacts on receptors. • Should any previously unidentified risks to groundwater receptors emerge during detailed design or construction, a detailed Hydrogeological Risk Assessment would be undertaken in consultation with the Environment Agency. • Any confined space entry, i.e. entry to open trenches or excavations, will be preceded by checks using appropriate instrumentation to detect the presence of methane, carbon dioxide or hydrogen sulphide, or low oxygen conditions. • Where it is identified that disturbance of soils is not permissible, i.e. for protection of archaeological sites, concrete footings at surface will be used. This is not anticipated to have any impact on ground conditions or contamination. • Excavations are anticipated for services. Excavations will be supported or graded to a stable angle which may vary depending	The Environmental Manager will regularly record compliance in a log book. The detailed CEMP will detail the frequency. A ground and surface water monitoring plan

	on ground conditions. Groundwater and the requirement for dewatering will be considered • Good practice guidance including Management of spillage risk is included in the Emergency Response Plan.	

4.8 Water Resources

Table 18 Water Resources

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Increased sediment in surface water runoff	This section addresses the management of sediment and surface water runoff generated during the construction phase of the Scheme. A Pollution Prevention Plan (PPP) will be prepared in support of the detailed CEMP. Major construction works (e.g., large-scale earthworks) will be minimised during heavy precipitation events. A minimum of 10m from drainage ditches, watercourses, IDB maintained water courses, and marl pits will be observed for all infrastructure with the exception of fencing and watercourse crossing. A detailed surface water drainage strategy will be prepared prior to construction of the Scheme. Drainage from the Site will include elements of SuDS design, where appropriate, such as at temporary construction compounds, and National Grid Substation work areas. SuDS replicate natural drainage patterns and have a number of benefits: • SuDS will attenuate runoff, thus reducing peak flow and any flooding issues that might arise downstream • SuDS will treat runoff, which can reduce sediment and pollutant volumes in runoff before discharging back into natural drainage network; and • SuDS measures, such as lagoons or retention ponds, correctly implemented will produce suitable environments for wildlife.	Specific details will be confirmed in the detailed CEMP.

		Silt Traps and Silt Matting Silt traps may be utilised to trap and filter sediment-laden runoff from excavation works at the Scheme, including foundations for the temporary construction compounds and National Grid Substation compound. Good practice will be followed prior to placement of silt traps adjacent to watercourses and land drains. Silt matting may be placed at the outfall of settlement lagoons to filter sediment during times of heavy rainfall. Semi-permeable structures may be placed in drainage channels to intercept silt. The silt traps and silt matting will be monitored by the EnvCoW and replaced when necessary. ***Site entrance / Bellmouth Drainage*** Channel drains will be installed at site entrances to prevent surface water leaving Site to the public highway. Access will be taken from existing access points, where suitable, and would initially be asphalt followed by graded Type 2 or 3 washed/clean aggregate or just use graded Type 2 or 3 washed/clean aggregate. Where new access points are required the bellmouth will typically be asphalt and would be limited in extent. This limits the potential for increased surface water runoff rates and sedimentation effects during rainfall events. ***Location of Check Dams*** Check dams will be installed in new drainage ditches at regular intervals, where necessary. Check dams will facilitate the settlement of suspended solids by slowing the flow of water within the drainage	

	ditches. Appropriately sized stone pitching will be used within the dam in order to provide a rough surface for water within the drainage ditch to pass over. ***Location of Settlement Lagoons*** Settlement lagoons will be implemented where appropriate, typically around foundations and hardstanding areas. Settlement lagoons will be actively managed to control water levels and ensure that any runoff is contained, especially during times of rainfall. If required to achieve the necessary quality of the final runoff, further measures may include the use of flocculent to facilitate the settlement of suspended solids. The sides of lagoons will be lined to reduce the potential for erosion and collapse. ***Outflow Monitoring From Settlement Lagoons*** Settlement lagoon outflow will be inspected regularly and discharge may be pumped, when required, for maintenance purposes. Pumping activities will be supervised and authorised by the contractor's Project Manager. Treated water will be discharged onto vegetated surfaces and directed away from surface watercourses. Within all catchments, irrigation techniques, which may include the use of perforated discharge hoses, or similar, will be employed to rapidly distribute discharge across a vegetated area. 'Siltbusters' will be used to treat pumped/surplus water from lagoons during periods of heavy or persistent rainfall. Silt mats may be used at the outfalls of settlement lagoons to further aid the settlement from earthworks drainage.	

	Discharges from settlement lagoons will be sampled/monitored during wet weather to limit the potential for suspended solids to be transferred to the wider hydrological environment. ***Provision For Storm Events*** Sections of the Scheme are at risk from surface water and fluvial flooding. In extreme storm events, there would be elevated levels of runoff from the hardstanding elements of the Scheme relative to greenfield flow rates, which has the potential to contribute to down-stream, off-site, flood risk. In the baseline scenario, the water table is not at the ground surface and hence some infiltration would be expected. The Scheme proposals could affect the water table (e.g., through pumping/dewatering of excavations), and therefore localised infiltration rates could change. Measures are proposed in this oCEMP that would reduce runoff rates from the baseline scenario. Temporary storage volume for storm runoff from the foundations and hardstanding areas would be provided via settlement lagoons. Along the access tracks, drainage channels on the downslope would shed track runoff to adjacent rough ground approximately every 30m, to attenuate flow and allow natural filtration to remove sediments. Appropriate licensing and discharge consents will be sought before the construction phase of the Scheme. ***Management of Drainage from Surplus Materials*** Excavated soils will be stored in accordance with the **oSMP [APP/7.13]**. Careful consideration will be given to the storage areas for excavated soils. Storage areas will be either in a flat dry area	

	away from watercourses or be protected by the addition of cut off drains above the storage areas to minimise the ingress of water. Mineral soils will not be allowed to dry out and silt fences and mats will be employed to minimise sediment levels in runoff. All stockpiled material will be stored at least 50m from drainage ditches in order to reduce the potential for sediment to be transferred into the wider surface water system and will be regularly inspected to ensure that erosion of the material is not taking place.	
Chemical Pollution	***Accidental Spillage*** Speed limits for vehicles transporting fresh concrete will be set at a maximum of 15mph and will be continually monitored. Maximum vehicle load capacities will not be exceeded. Although tracks will be maintained in good condition, vehicle loads and/or speeds will be reduced if rougher surfaces are identified prior to track maintenance. Appropriately sized spill kits will be provided at strategic locations, particularly where fresh concrete may be present. These will contain materials such as absorbent granules and pads, absorbent booms and collection bags. These are designed to halt the spread of spillage and will be deployed, as necessary, should spillage occur. **Vehicle Washing** There will be a wash-out facility within temporary construction compounds and the National Grid Substation compound that handle fresh concrete, consisting of a sump overlain with a permeable geosynthetic membrane. The geosynthetic membrane will filter out the concrete fines leaving liquid water to pass through to the sump. The sump water will be pumped to a licenced carrier and taken off-site for approved disposal.	***Surface Water Monitoring*** Surface water monitoring will be undertaken at locations on the principal watercourses downstream of the Scheme infrastructure and upstream of other non-natural influences and the locations and parameters will be agreed with the EA prior to establishing the hydrochemical baseline. Groundwater monitoring will also be undertaken from boreholes surrounding the Scheme. Regular visual inspections of surface watercourses are proposed, especially during major excavation works, as these allow rapid identification of changes in levels of suspended solids that could indicate construction-related

		No washing of concrete-associated vehicles will be undertaken outside the wash-out facilities, and the area will be signposted, with all site contractors informed of the locations. The frequency of concrete plant wash-out may also be reduced through the use of retarders. In the event that plant and wheel washing is required, dry wheel wash facilities and road sweepers will be provided to prevent (as far as is practicable) mud and debris being deposited on to the public roads. Signage will be put in place to direct all vehicles to use wheel wash facilities. The track section between the wash facility and the public road will be surfaced with tarmac or clean hardcore and the area surrounding the facilities will be kept clean and in good condition. The wheel wash facility, which will work on a closed cycle, or will utilise dry wheel cleaning, shall be operated throughout the construction period. Wheel wash facilities will be located within a designated area of hardstanding at least 50m from the nearest watercourse or 20m from the nearest surface drain. Should debris be spread on to the site access or public road adjacent to the Scheme, then road sweepers will be quickly utilised to clean affected areas. Loose debris will also be periodically removed from site tracks. ***Concrete Pouring for Foundations*** It is important that all concrete pours are planned and that specific procedures are adopted where there may be a risk of surface water or groundwater contamination. These procedures may include, but not be limited to: • Ensuring that all excavations are sufficiently dewatered before concrete pours begin and that dewatering continues while the	effects are occurring upstream. Potential effects can then be investigated and remedial action taken to prevent further effects, if necessary. To supplement the visual inspections, it is anticipated that there would be several surface water monitoring points for extractive sampling and analysis. Details will be developed in advance of construction. The following indicative sampling frequency is proposed in order to establish baseline hydrochemical conditions of surface water constituents: • Twice per month for at least six months prior to the construction phase. The following indicative sampling frequencies are proposed in order to monitor surface water conditions against baseline conditions: • Weekly for the first three months of the construction phase

		concrete cures, noting that fresh concrete will be isolated from the dewatering system • Using blinding concrete layer to ensure a quick curing process • Using an impermeable geotextile wrapping layer around the foundation - i.e. line the shuttering with the geotextile layer, therefore limiting the contact between groundwater / near-surface water and the foundation • Treating the outer concrete with a protective layer • Choosing the right concrete composition to make it as impermeable as possible; and • Ensuring that covers are available for freshly placed concrete to avoid the surface of the concrete washing away during heavy precipitation. ***Potential Hydrocarbon Contamination*** All refuelling, oiling and greasing will take placein designated areas and on impermeable surface which provides protection to underground geology and groundwater and at least 10 maway from drains. Vehicles will not be left unattended during refuelling. Machinery will be regularly maintained to minimise the potential for fuel or oil leaks and spillages to occur. All maintenance will be conducted over drip trays or suitably absorbent spill pads to minimise the potential for groundwater and surface water pollution. All machinery will be equipped with drip pans to contain minor fuel spillage or equipment leakages. Appointed refuelling personnel will be trained in the correct methods of refuelling to ensure that pollution incidents are prevented and a quick response plan is implemented should a spill occur, to minimise the impact of spills.	• Twice a month during earthworks and concrete works, e.g., access track construction, foundations; and • Once a month, for six months after the construction phase. Establishing baseline conditions for surface waters will enable any trends in levels of critical parameters to be assessed and deviations from the norm identified and rectified through water management measures. Monitoring will not take place within catchments or sub-catchments where no construction activity has occurred for a period of two weeks or more. ***Monitoring Reporting*** The results of laboratory analysis of water samples will be tabulated and recorded and provided monthly to the EA's Water Quality email inbox. ***Water Infrastructure Watching Brief*** Where works are carried out within proximity to water

		Fuel delivery vehicles servicing the site will only be allowed as far as the temporary construction compounds. The temporary construction compounds will include a bunded and impermeable refuelling area, and operations will only be permitted where they comply with the contractor's method statements. Fuel pipes on plant, outlets at fuel tanks, etc., will be regularly checked and maintained to ensure that no drips or leaks to ground occur. The following precautions will be taken: • Any flexible pipe, tap or valve should be fitted with a lock where it leaves the container and be locked when not in use • Flexible delivery pipes should be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use • Warning notices including “No smoking” and “Close valves when not in use” shall also be displayed; and • Spill kits will be available within each item of plant or vehicle on site and also located close to identified pollution sources or sensitive receptors (fuel storage areas, watercourse crossings, etc.). Irrespective of the buffer distances to watercourses and location of refuelling points, interceptor drip trays or similar (noting that open metal drip trays are not acceptable) will be available. Interceptor drip trays will be positioned under any stationary mobile plant to prevent oil contamination of the ground surface or water. Plant and site vehicles are to be well maintained and any vehicles leaking fluids must be repaired or removed from site immediately. ***Non-Road Mobile Machinery*** Recommended mitigation measures in relation to NRMM are detailed below:	distribution infrastructure, a ‘Watching Brief’ will be conducted during works by a Hydrologist or Engineer. The Watching Brief should be used to clearly mark and demarcate any sensitive areas around the pipes which serve the property and aim to isolate pipes from construction works and avoid impact on the pipe infrastructure. Employees will be briefed of the pipework and locations and be briefed on any controls and conditions put in place prior to the commencement of works. Should any works cross the pipes then measures will be implemented to prevent damage to the pipes, such as laying of steel matting or concrete above the pipework.

	• All NRMM should use fuel equivalent to ultra-low sulphur diesel (fuel meeting the specification within EN590:2004) • All NRMM should comply with either the current or previous EU Directive Staged Emission Standards (97/68/EC, 2002/88/EC, 2004/26/EC). As new emission standards are introduced the acceptable standards will be updated to the most current standard • All NRMM should be fitted with Diesel Particulate Filters conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting) • The ongoing conformity of plant retrofitted with Diesel Particulate Filters, to a defined performance standard should be monitored via regular checks • Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded; and ensure equipment is properly maintained to ensure efficient energy consumption; and • NRMM and plant should be well maintained. If any emissions of dark smoke occur then the relevant machinery will stop immediately and any problem rectified. ***Chemical Storage*** Potentially contaminating chemicals stored on site will be kept within a secure bunded area to prevent any accidental spills from affecting hydrological resources. The bunds will have a capacity 110% of that of the fuel or chemical store, in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001. The bunded area will be within the temporary construction compounds and will be underlain by an impermeable ground membrane layer to reduce	

	the potential pathways for contaminants to enter watercourses and groundwater. The chemicals storage area will be kept secure to prevent theft or vandalism. A safe system for accessing the storage area will be implemented by the contractor. Oil storage areas will be covered in order to prevent rainwater collecting within the bunded area. ***Foul Drainage*** Portable toilet facilities will be deployed for site personnel. The toilets will be emptied by a waste contractor thereby avoiding the need for onsite treatment and discharge and minimising potential effects on drainage ditches and watercourses. ***Compound Locations*** Temporary construction compounds will be sited outside Source Protection Zone 1, where possible.	

4.9 Climate Change

Table 19 Climate Change

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
GHG impact on waste	Reducing waste: • Reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping • Off-site prefabrication, where practical, including the use of prefabricated elements • Segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling • Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible • Reusing suitable infrastructure and resources already available within the Site where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements); 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. General practices:	To be confirmed in detailed CEMP

	• Adopting the CCS to assist in reducing pollution, including GHGs, from the Scheme by employing good industry standard practice measures, e.g., recycling and separating waste and choosing low carbon and recyclable materials where feasible; and • Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency.	
GHG emissions from construction traffic and equipment.	Appropriate standard and good practice control measures will be included in the detailed CEMP, which would include: • Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible • Reusing suitable infrastructure and resources already available within the Site where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements) • Encouraging the use of lower carbon modes of transport by identifying and communicating local bus connections and pedestrian and cycle access routes to/ from the Scheme to all construction staff, and providing appropriate facilities for the safe storage of cycles • Liaising with construction personnel for the potential to implement staff minibuses and car sharing options • Implementing a Travel Plan, as stated in the **oCTMP [APP/7.7]** to reduce the volume of construction staff and employee trips to the Scheme • Switching vehicles and plant off when not in use and ensuring construction vehicles conform to current UK emissions standards	To be confirmed in detailed CEMP

	• Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency • Health and safety plans and risk assessments developed for construction and decommissioning activities will be required to account for potential climate change impacts on workers, such as flooding and heatwaves. This will include for the provision of flood defence equipment (e.g. sandbags) on site and best practice health management measures for construction staff working in heat such as wearing loose clothing, staying hydrated and applying sun protection • Protecting workers and resources from extreme weather conditions through appropriate PPE and working practices • Using equipment's cooling systems where necessary/adapting working practices and equipment used based on current weather conditions • Monitoring weather forecasts and the news for Environment Agency flood warnings, relevant weather warnings, and water levels of the local waterways; and • BESS systems include HVAC systems and these to be contained within the individual equipment containers.	
Stronger winds, heatwaves, heavy precipitation and increased risk of fires/wildfires.	Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions. The contractors will monitor weather forecasts and receive Environment Agency's flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding. Fire suppression system on site to rapidly action in case of fire.	To be confirmed in detailed CEMP

4.10 Socio-Economics

Table 20 Socio-Economics

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Peak impacts on the socio-demographic and tourism environment	The construction phase is anticipated to take up to 24 months. Works during the construction phase are phased and staggered across the Site to reduce likely significant effects on environmental receptors, to reduce the peak number of construction workers and movements or alter when this peak occurs in the construction period.	To be confirmed in the detailed CEMP.
Disruption to local residents, businesses and community facilities	An **oESSCS [APP/7.15]** has been submitted with this DCO Application. This plan sets out the likely economic benefits of the Scheme, and the context and characteristics of the local community and economy in which it is located. It identifies potential opportunities for activities relating to Skills, Supply Chain and Employment which the Applicant could take forward post-planning, together with a framework for future delivery. During the construction phase, the Applicant will implement employment and skills measures designed to maximise local benefits from the Scheme. These will include the creation of apprenticeship and trainee opportunities, targeted engagement with local education providers and STEM organisations, and collaboration with council initiatives such as the Boost Programme, Careers Hub, and Breckland Skills Assembly. The Applicant will seek to source services from local contractors and sub-contractors where feasible, advertise jobs through local channels, and deliver skills workshops for residents.	To be confirmed in the detailed ESSCS.

	The potential to locate temporary workers in either private rental accommodation or in temporary serviced accommodation to moderate the level of demand for temporary accommodation will be considered to mitigate impacts on accommodation demand for both residents, and visitors and tourists, especially during periods of peak visitor demand.	
Additional demand for housing	Support for construction workers to find suitable private rental accommodation, or hotels or other serviced accommodation, in locations where impact upon existing residents and visitors can be minimised.	To be confirmed in the detailed CEMP.
Visual impact on tourism and recreation facilities	The Scheme design provides embedded offsets and planting buffers from roads, PRoW, neighbouring buildings, and other tourism destinations to onsite infrastructure such as the National Grid Substation and Grid Connection Infrastructure, to reduce the visual impacts on these receptors for tourism and recreational use during construction. Measures to mitigate visual impacts from onsite construction lighting, and the location of construction equipment and onsite works compounds and laydown areas, to reduce visual impacts on tourism and recreation facilities.	To be confirmed in the detailed PRoWPPMP.
Disruption to users of Public Rights of Way	Recreational routes crossing or within the Order limits will be sought to be kept open during construction, with any crossing or traffic conflict points overseen by spotters or banksmen for HGVs. Where closures are deemed to be necessary, these will be prioritised for overnight work, will be temporary in nature and supported by appropriate amount of notice and suitable diversions. Any diversions to routes will be appropriately signed, and the duration and length of	To be confirmed in the detailed CEMP. Regular inspections of PRoWs within the Order limits will be undertaken, including additional inspections for PRoWs subject to onsite diversions or closures to ensure

	diversions will be optimised to minimise impacts on accessibility and desirability.	a suitable quality of surface, and any required diversion signage is in place. A Community Liaison Manager, will also be available for members of the public to report any concerns or issues with PRoWs during construction and should report any concerns to the responsible construction site manager to oversee any investigative, and if required, remediation work.

4.11 Human Health

Table 21 Human Health

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Disruption to users of Public Rights of Way	The Scheme design is embedded with offsets and planting buffers from roads, PRoWs, recreation facilities, and neighbouring buildings and land uses to minimise the visual impact of the Scheme on the desirability of these receptors for leisure and play, and local perceptions of community identity.	To be confirmed in the detailed CEMP.
Disruption to the local community	A Community Liaison Manager will be appointed, to whom any comments, concerns or complaints about the development of the Scheme can be raised, either directly by members of the public, or via elected representatives on parish or town councils, councillors, and Members of Parliament. This role will be used to continue open channels of communication between the community and the operators of the Scheme as set up during the application and DCO process, and through the discharge of requirements process. In doing so, this will mitigate impacts on community identity and influence by allowing the community to continue to be involved in the development of their local environment as the Scheme is constructed.	To be confirmed in the detailed CEMP.
Increased demand to GPs and primary and emergency healthcare	Construction workers will be given additional support by the Applicant or contractor to find and register with GPs across the Wider Baseline Study Area in reasonable proximity to their temporary or full-time accommodation and where such GP surgeries have reasonable capacity to take on additional patients.	To be confirmed in the detailed CEMP.

Disruption to the provision of care services and to users of social and residential healthcare facilities	The Applicant or contractor will be required to keep in direct contact with the operators of care homes and service providers ahead of and during construction, to ensure that operators at these receptors are suitably resilient to reduce the likelihood of construction impacts affecting the functional operation and quality of environment for residents and users.	To be confirmed in the detailed CEMP.

4.12 Other Environmental Matters

Table 22 Other Environmental Matters

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirements
Telecommunications, Utilities and Television Receptors		
Utilities, Telecommunications and Television Receptors	The following embedded mitigation measures have been incorporated into the Scheme design to identify and manage utilities interactions. These include precautionary measures such as: • In advance of construction, the Applicant would liaise with all utility providers with assets in the area in regard to construction timelines, activities, proximity to assets and construction management measures • Locating the Scheme outside of utilities protected zones, where practicable • Above-ground infrastructure located with adequate offsets (developed in consultation with third parties) from existing telecommunications and utility infrastructure to provide clear access and to minimise potential conflicts, such as damage from piling, excavation, or compaction • Use of topographical data alongside mapping provided by telecommunication and utilities providers to ensure underground and overground utilities are adequately offset • Use of ground penetrating radar before excavation to identify any unknown utilities	No monitoring required.

	• Consultation and agreement of construction/demobilisation methods prior to the works commencing • During the construction phase, there will be safe working beneath any overhead lines in line with National Grid's technical guidance note 287 including, for example, ensuring adequate clearances are in place when plant and equipment are being moved beneath overhead lines, and limiting any planting beneath overhead lines to low growing species; and • Measures in relation to safe working near buried utilities, particularly gas pipelines, will be in place at all phases of the Scheme. For example, safety measures set out in National Grid and Northern Gas Networks guidance documents for third parties working in the vicinity of high pressure gas pipelines and associated installations	
Waste		
Potential to impact on sensitive receptors (humans, wildlife, and controlled waters) if not stored and managed appropriately. Impacts on waste recycling and handling facility capacity.	The contractor will consider the objectives of sustainable resource and waste management and seek to use material resources efficiently, reduce waste at source, reduce waste that requires final disposal to landfill and apply the principles of the waste hierarchy. This would include, where reasonably practical, segregation of construction materials on-site for appropriate re-use, recycling and recovery with landfill as a last resort. All waste management will be undertaken in accordance with the relevant regulations and waste would be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them. This would be achieved by a combination of measures, including:	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,

	• A detailed SWMP will be prepared before commencement of construction and will be implemented by the contractor, once appointed • All waste transported off site will be delivered to the appropriately licenced receivers of such materials • As part of the SWMP, the contractor would segregate construction waste to be re-use and recycled where reasonably practicable • The contractor would prepare and implement a Construction Resource Management Plan (CRMP), outlining the strategic approach to planning, coordinating, and managing the labour, materials and equipment; and • Temporary Construction Compounds and welfare facilities should be located and consolidated to minimise the amount of excavation and construction waste required for hardstanding for access, material storage, and welfare unit placement, and to reduce construction wastewater and electricity use. Pre-fabricated welfare units and construction site offices should be prioritised, so that they can be reused on other construction projects, to further reduce construction waste.	quantities and management methods.
Impacts of waste to the surrounding environment.	To minimise impacts of waste on the surrounding environment, the following measures would be implemented: • 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	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

	sealed in containers at the end of each day prior to storage in appropriately protected and bunded storage areas • All construction workers will be required to use appropriate personal protective equipment whilst performing activities on-site • Off-site pre-fabrication, where reasonably practical, including the use of prefabricated structural elements, cladding units, mechanical and electrical risers and packaged plant rooms • 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.	compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.
Electromagnetic Fields		
Potential for risks to human health associated with electromagnetic fields.	The following embedded mitigation measures have been incorporated into the Scheme design: • The Scheme will be designed so that the maximum levels of electromagnetic radiation received at existing residential properties, places of work, and PRoWs, from the 400kV cables during operation will be below ICNIRP reference levels **[Ref. 6]** • A minimum 10m setback will be imposed between receptors (residential dwellings) and 400kV cables • All proposed cables and associated electrical infrastructure will be 'UKCA' and/or 'CE' marked	The Environmental Manager will regularly record compliance in a logbook.
Air Quality		

	Fugitive dust emissions during the construction phase.	Mitigation and control measures will be included in the detailed CEMP, to 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 Site. This may be the Environmental Manager; and • Display the contractor's head or regional office contact information. **Dust Management** • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the relevant local authorities. **Site Management** • 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- or off-site, and the action taken to resolve the situation in the logbook. • Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed CEMP. The following monitoring will be undertaken: • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authorities when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authorities when asked. • Increase the frequency of site inspections by the

	minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. **Preparing and maintaining the site** • 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 or the site boundary so that are at least as high as any stockpiles on site. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. **Operating vehicle/machinery and sustainable travel** • Ensure all off-road vehicles comply with the requirements of the Non-Road Mobile Machinery (NRMM) standards, where applicable. Use stage 4 NRMM as a minimum and stage 5 where practicable. • Ensure all vehicles/machinery are switched off when stationary/not in use.	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. • Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the local authority. Where practicable, commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. • Any unforeseen issues that arise in relation to construction vehicle movements will be logged by the Site Manager. If necessary, the issues will be discussed with the local highway authority so that they can be resolved as appropriate.

	• Avoid the use of diesel- or petrol-powered generators and use mains electricity or 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 authorities, where appropriate). • Produce a CTMP to manage the sustainable delivery of goods and materials. • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). • Signs to direct construction vehicles associated with the Scheme will be installed along the construction traffic route. **Construction Operations** • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where practicable and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	

	• 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** • No bonfires or burning of waste materials. **Earthworks** • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise 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. **Construction** • 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. • 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. • Avoid dry sweeping of large areas. In dry conditions, areas near to the Site access will be sprayed with water supplied to prevent the spread of dust. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • 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). A wheel washing facility will be provided at each access. This will be located at the end of each access road, ahead of the egress onto the local highway network. • A visual inspection of vehicles will be undertaken before they depart the Site, to ensure that they are not carrying any residual debris onto the highway. • If required, a road sweeper will be provided for the area surrounding access to alleviate any residual debris generated during the construction phase, as required. • 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.	

	• Entrance gates to be located at least 10m from receptors where practicable.	
Vehicle and plant emissions during the construction phase	Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards for the vehicle type as follows: • Euro 4 (Oxides of Nitrogen (NOx)) for petrol cars, vans and minibuses • Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and • Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the detailed CEMP.
Glint and Glare		
None relevant to the National Grid Substation or Grid Connection Infrastructure	N/A	N/A
Arboriculture		
Tree Removal	Tree removal will be avoided wherever practicable. Should tree removal be unavoidable, trees of lower quality and life expectancy will be preferably removed over those of higher quality and life expectancy. Trees with a BS5837:2012 Quality Category of U shall be preferentially removed followed by Category C, B and A trees in	Ongoing under consultation with the ACoW.

	that order of priority. Veteran trees will not be removed under any circumstances. Tree removals will be marked on-site by the ACoW, with final decisions made during detailed site design and cable trench micro-siting. Only qualified arboricultural contractors, in accordance with British Standard 3998:2010, will perform tree work. Construction workers will not perform tree removals unless qualified and specifically instructed. Prior to removal, legal restrictions, such as those protecting nesting birds and roosting bats, will be observed. Where trees are protected by a TPO, removal will only occur if deemed necessary to prevent obstruction or interference with the Scheme. The ACoW will be consulted to ensure compliance and explore alternatives before proceeding with works on TPO trees. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Tree Pruning	Prior to any necessary tree pruning, the ACoW will liaise with the construction contractor on the requirements for pruning and the ACoW will provide a specification for the pruning works required which will then be implemented by a suitably qualified, insured and experienced arboricultural contractor working in accordance with British Standard 3998: 2010 'Tree Work – Recommendations' Pruning works to veteran trees will be avoided and pruning will aim to prioritise trees of low quality (BS5837:2012 Category U and C trees) over trees of moderate or high quality (BS5837:2012 Category A and B trees). No tree works will be undertaken by construction	Ongoing under consultation with the ACoW.

	workers unless qualified and instructed to do so. All tree pruning works will have due consideration for ecological mitigation. Temporary construction compounds will be sited outside of the canopy spreads of adjacent trees and woodlands. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Root loss/damage from excavation or soil compaction within RPAs	Tree protection fencing and/or Perimeter Fencing will be installed prior to construction to establish a CEZ around RPAs. The fencing will consist of wire mesh and wooden posts or other protective fencing, and will prevent entry of machinery, materials, or spoil into the protected areas and be checked by the ACoW prior to construction near trees commencing, to be secured via a detailed Arboricultural Method Statement. Temporary construction compounds will be sited outside of the RPAs of adjacent trees and woodlands. In cases where construction activities must occur within RPAs, suitable ground protection will be installed to prevent soil compaction. The type of ground protection will vary based on the weight of traffic and will comply with BS5837:2012 recommendations, ranging from scaffold boards for pedestrian use to reinforced systems for heavy machinery. Micro-siting techniques will be used to minimize root disturbance, with cable routing designed to avoid RPAs of retained trees. If work within RPAs is unavoidable, the ACoW will supervise and guide precautionary measures such as hand digging and root pruning.	Ongoing under consultation with the ACoW.

	Throughout construction, movement of machinery and storage of materials will be managed to prevent encroachment into RPAs. In the event that access is required, temporary ground protection will be employed to safeguard the tree roots. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Dust/sediment impacts to adjacent woodlands (including ancient woodlands)	Measures to limit the dust generating activities, such as when working in dry conditions. To mitigate the risk of airborne contamination, a dust suppression and management system will be implemented. Other sediment mitigation includes: • Cut-off ditches or geotextile silt-fences, installed around excavations, exposed ground and stockpiles to prevent uncontrolled release of sediment • All potentially contaminated waters (for example washdown areas, stockpiles and other areas of risk for water contamination) to have separate drainage; and • Vehicles carrying material off-Site will be sheeted to prevent the spread of dust.	No monitoring required
Damage to canopies/stems from machinery movements	To mitigate damage to tree canopies and stems from machinery, tree pruning will be carefully managed and conducted by qualified arboricultural contractors under the guidance of the ACoW Pruning will prioritise low-quality trees (Category U and C) over higher-quality trees (Category A and B), with veteran trees being preserved wherever practicable. All pruning will comply with British Standard 3998:2010 and take ecological protection into account. Tree protection fencing will be installed around RPAs before construction begins, creating a CEZ to prevent machinery from	Ongoing under consultation with the ACoW.

	entering protected areas. The fencing will remain in place throughout construction and only be altered under ACoW supervision. If construction activities must take place within RPAs, ground protection will be used to minimize soil compaction, and precautionary working methods such as hand digging will be employed. HDD or other non intrusive methods will be used where necessary to avoid disturbing roots, with entry and exit points positioned outside RPAs. When tall machinery is working near the canopies of tree canopies the machine operator will be accompanied by a banksman who will work from ground level and ensure that moving machinery parts avoid the stems and branches of retained trees. A detailed Arboricultural Method Statement, based on post-DCO detailed design, will be produced prior to construction commencing and will be included within the detailed CEMP.	
Major Accidents and Disasters		
Major Accidents and Disasters	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 contractor prior to construction, which will be implemented to minimise the risk of accidents and disasters on site. Furthers risks of major accidents and disasters are covered in the other tables in this document relating to Hydrology, Flood Risk and	No monitoring required.

	Drainage; Transport and Access; Agriculture and Soils; and Human Health.	

5 Complimentary Plans and Procedures

5.1.1 A suite of complementary environmental plans and procedures have been included within this DCO Application and set out proposed mitigation for the construction phase, and in some cases cover the operation and decommissioning phases as well. These documents comprise:

- **oSMP [APP/7.13]**
- **oPRoWPPMP [APP/7.12]**
- **oLEMP [APP/7.11]**
- **oESSCS [APP/7.15]**
- **oBSMP [APP/7.14]**
- **oCTMP [APP/7.7]**
- **outline Archaeological Mitigation Strategy (ES Appendix 8.7) [APP/6.4]**; and
- **Arboricultural Impact Assessment (ES Appendix 16.5) [APP/6.4]**.

6 Implementation and Operation

6.1.1 The detailed CEMP 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.

6.1.2 The Construction Project Manager and Environmental Manager have responsibility for ensuring compliance with the CEMP.

7 Monitoring and Reporting

7.1 Monitoring

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

7.1.2 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 detailed CEMP in a logbook, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the detailed CEMP as soon as possible following identification of such issues. The Environmental Manager would also act as day-to-day contact with relevant local authorities and other regulatory agencies such as the Environment Agency.

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

7.1.4 The Environmental Manager will also arrange regular formal inspections and audits to ensure the requirements of the detailed CEMP are being met. Details of monitoring, inspection and audits to be undertaken will be provided in the CEMP. After completion of the works, the Environmental Manager will conduct a final review.

7.2 Records

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

- Results of routine site inspections by Environmental Manager / Construction 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 detailed CEMP or complaints received from a third party.

7.2.2 The detailed CEMP 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.

7.3 Management Review

7.3.1 The detailed CEMP will be signed off on completion of the construction works (by an appropriately qualified person(s) such as the Environmental Manager) and will form the basis (in combination with the **oOEMP [APP/7.8]**) of the detailed OEMP(s), which will be developed by the Operator of the Scheme.

8 References

Ref. 1 The Planning Act 2008 (as amended).

Ref. 2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

Ref. 3 The Control of Pollution Act 1974.

Ref. 4 Considerate Constructors Scheme, The code of considerate practice.

Ref. 5 BSI (2014) BS 5228-1:2009+A1:2014. Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part 2: Vibration 2009

Ref. 6 1998 International Commission on the Non-Ionizing Radiation Protection (ICNIRP) guidelines.

Appendix 1: Construction and Decommissioning Phase Dust Assessment

The Droves Solar Farm. Appendix 1 – Construction and Decommissioning Phase Dust Assessment.

1.1 Introduction.

This Appendix sets out the potential level of dust risk associated with the construction and decommissioning phases of the Scheme from on-site works, as well as vehicle movements. The Scheme would be located within the Order limits, also referred to as 'the Site'. This has been used to determine the suitable level of mitigation to be implemented during these processes.

This assessment seeks to provide further basis for scoping out impacts from the release of dust and particulate matter as requested by the Planning Inspectorate in ES Appendix 2.2 Scoping Opinion [APP/6.4]. Information on construction traffic numbers and routing referred to and used for assessment purposes is as presented within ES Chapter 9: Transport and Access [APP/6.2].

1.2 Methodology.

The assessment of construction and decommissioning dust impacts has been undertaken in line with the methodology outlined in the IAQM guidance[1]. The methodology outlined within this assessment is also applicable to the decommissioning phase, as the associated activities and potential effects are anticipated to be lesser in scale than the construction phase. Activities on the within the Order limits have been divided into four types to reflect their different potential impacts. These are:

- Demolition, such as the removal of any hard-standing structures on-site
- Earthworks, including any excavation, tipping, stockpiling and landscaping
- Construction, such as the building of any hard-standing structures on-site; and
- Trackout, resulting from the transport of dust and dirt from the construction / decommissioning within the Order limits onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.

The risk of dust emissions was assessed for each activity with respect to:

- Potential loss of amenity due to dust soiling
- The risk of health effects due to a significant increase in exposure to PM_{10}; and
- The risk of ecological impacts due to a significant increase in exposure to PM_{10}.

Construction dust has been assessed as PM_{10} throughout this assessment. As reported in the European Environment Agency EMEP/EEA Guidance[2], research indicates that dust suspended by construction activities has a relatively low content of $PM_{2.5}$ in PM_{10}.

The first stage of the assessment involves screening to determine whether there are any sensitive receptors within the threshold distances defined by the IAQM guidance[1]. A detailed assessment of the impact of dust from construction sites is required where:

- A 'human receptor' is located within 250 m of the Order limits or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance; and
- An 'ecological receptor' is located within 50 m of the Order limits or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance.

[1] Institute of Air Quality Management (2024) Guidance on the assessment of dust from demolition and construction v2.2 – [online], (Last accessed: 13/03/2025)
[2] European Environment Agency (2023) European Environment Agency EMEP Guidance, -[online], (Last accessed: 22/04/2025)

The magnitude of dust emission for each activity is determined on the basis of the guidance, indicative thresholds, information available relating to the project and expert judgement. The risk of dust impacts arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of dust impacts is then used to determine the mitigation requirements. Following the implementation of the appropriate mitigation, residual effects are considered to be not significant.

Table 1.1: Sensitivity of the area to dust soiling effects on people and property, from the IAQM guidance[1].

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 1.2: Sensitivity of the area to human health effects, from the IAQM guidance[1].

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Low
		10 – 100	High	High	Medium	Low
		1 – 10	High	Medium	Low	Low
	28 – 32 µg/m^3	>100	High	High	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low
	24 – 28 µg/m^3	>100	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10 – 100	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	28 – 32 µg/m^3	>10	Medium	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	24 – 28 µg/m^3	>10	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
		1 – 10	Low	Low	Low	Low
Low	-	1	Low	Low	Low	Low

Table 1.3 – Sensitivity of the area to ecological impacts, from the IAQM guidance[1].

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table 1.4 to Table 1.7 illustrate how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table 1.4: Risk of dust impacts– Demolition, from the IAQM guidance[1].

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 1.5: Risk of dust impacts – Earthworks, from the IAQM guidance[1].

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 1.6: Risk of dust impacts – Construction, from the IAQM guidance[1].

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 1.7: Risk of dust impacts – Trackout, from the IAQM guidance[1].

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

1.3 Construction phase dust assessment.

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

1.3.1 Assessment screening.

There are 'human receptors' in the form of residential properties within 250 m of the Order limits and designated habitat sites within 50 m of the Order limits and within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance as shown in Figure 16.2.1 and Figure 16.2.2.

Therefore, an assessment of construction dust at both human and ecological receptors is required.

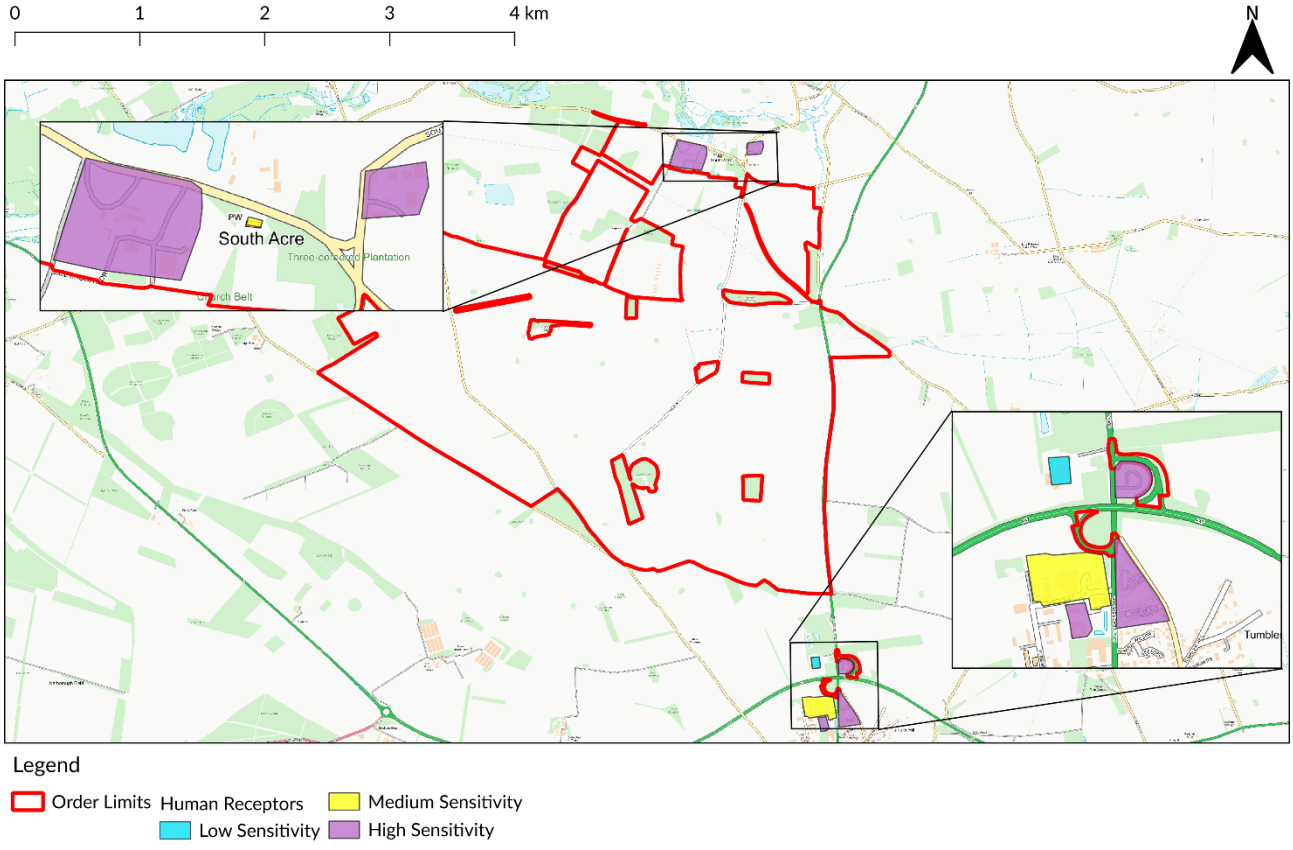

Figure 1.1: Sensitive human receptors. Contains OS Data © Crown Copyright and Database rights 2025.

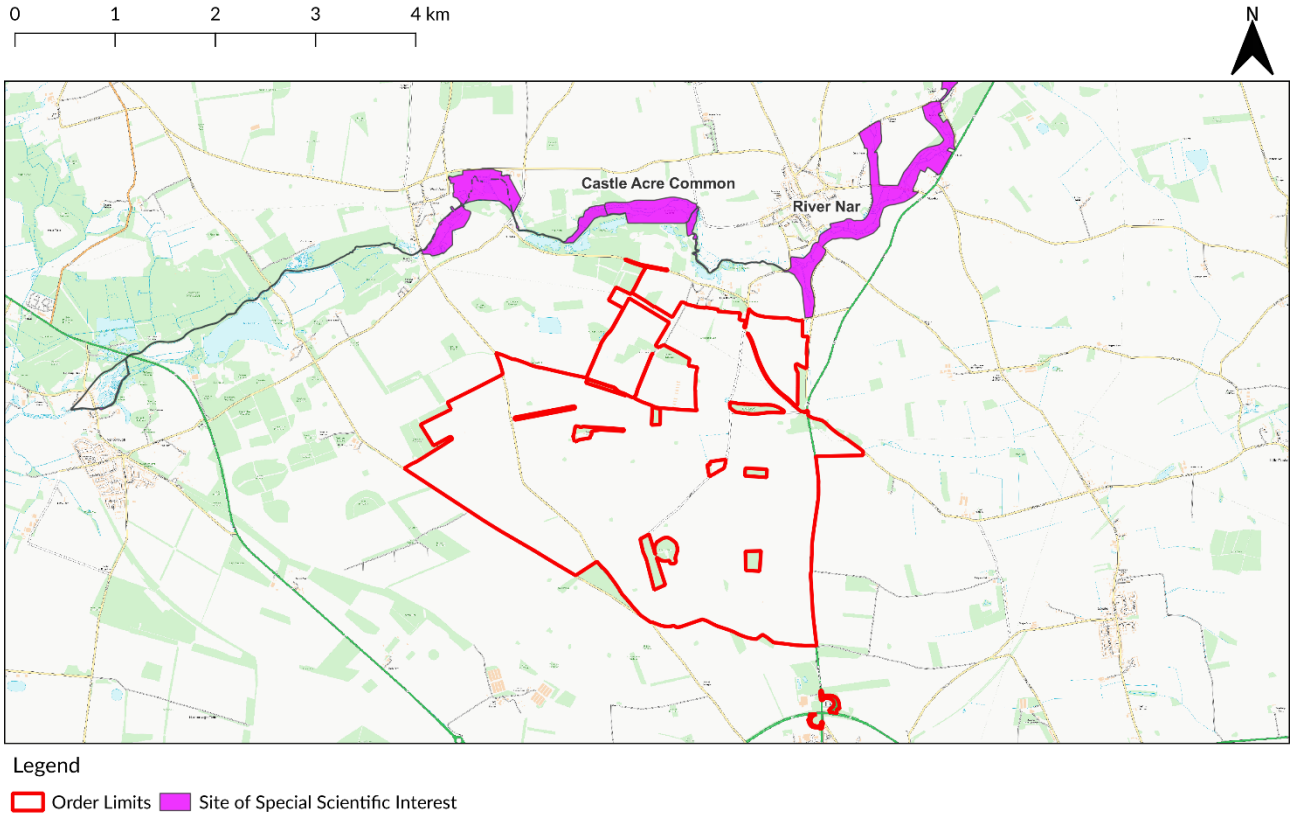

Figure 1.2: Sensitive ecological receptors. Contains OS Data © Crown Copyright and Database rights 2025.

1.3.2 Potential dust emission magnitude.

The potential magnitude of dust emissions from earthworks, construction and trackout have been assessed, as identified in Table 1.8. This section has been completed in line with Chapter 5: The Scheme [APP/ 6.2]. Demolition has been screened out of this assessment as there are no existing hard-standing structures on-site to be demolished.

Table 1.8: Predicted magnitude of dust emissions.

Activity	Magnitude	Justification
Earthworks	Medium	Earthworks will be limited to distinct areas within the Order limits for the Battery Energy Storage System (BESS), cable route trenches and substation facilities, including the Customer Substation and National Grid Substation. The total area within the Order limits is expected to be between 18,000 m^2 and 110, 000 m^2., the IAQM criteria for a medium risk of dust impacts from earthworks. The soil type is predominantly classified as "sandy" and "loamy"[3], which have a moderate potential for dust emissions. Overall, in line with the IAQM guidance, the magnitude of dust emissions from earthworks is anticipated to be medium.
Construction	Small	As construction will involve mainly modular construction, the construction volume is expected to be less than 25,000 m^3. This will primarily involve the installation of Solar PV Arrays which are not anticipated to have a high potential for dust. As such, in line with the IAQM guidance, the magnitude of dust emissions from construction is expected to be small.

[3] Cranfield Soil and Agrifood Institute Soilscapes map – [online], (last accessed: 13/03/2025), Available at: http://www.landis.org.uk/soilscapes/

Activity	Magnitude	Justification
Trackout	Large	The unpaved road length within the Order limits will be greater than 100 m during the construction phase. As outlined in Section 16.2 of ES Chapter 16: Other Environmental Matters [APP 6.2] , it is anticipated that there will be a maximum of 86 heavy-duty vehicles (HDV) operating within the Order limits per day during peak construction. The soil type is predominantly classified as "sandy" and "loamy"[3], which have a moderate potential for dust emissions. Overall, in line with the IAQM guidance, the magnitude of dust emissions from trackout is considered to be large as a worst case.

1.3.3 Sensitivity of the study area.

The sensitivity of the area, defined in line with the criteria set out in Table 1.1 and Table 1.2, takes into account the following factors:

- The specific sensitivities of receptors in the area
- The proximity and number of those receptors
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

The IAQM distance bands for sensitivity are illustrated relative to the Order limits in Figure 1.3.

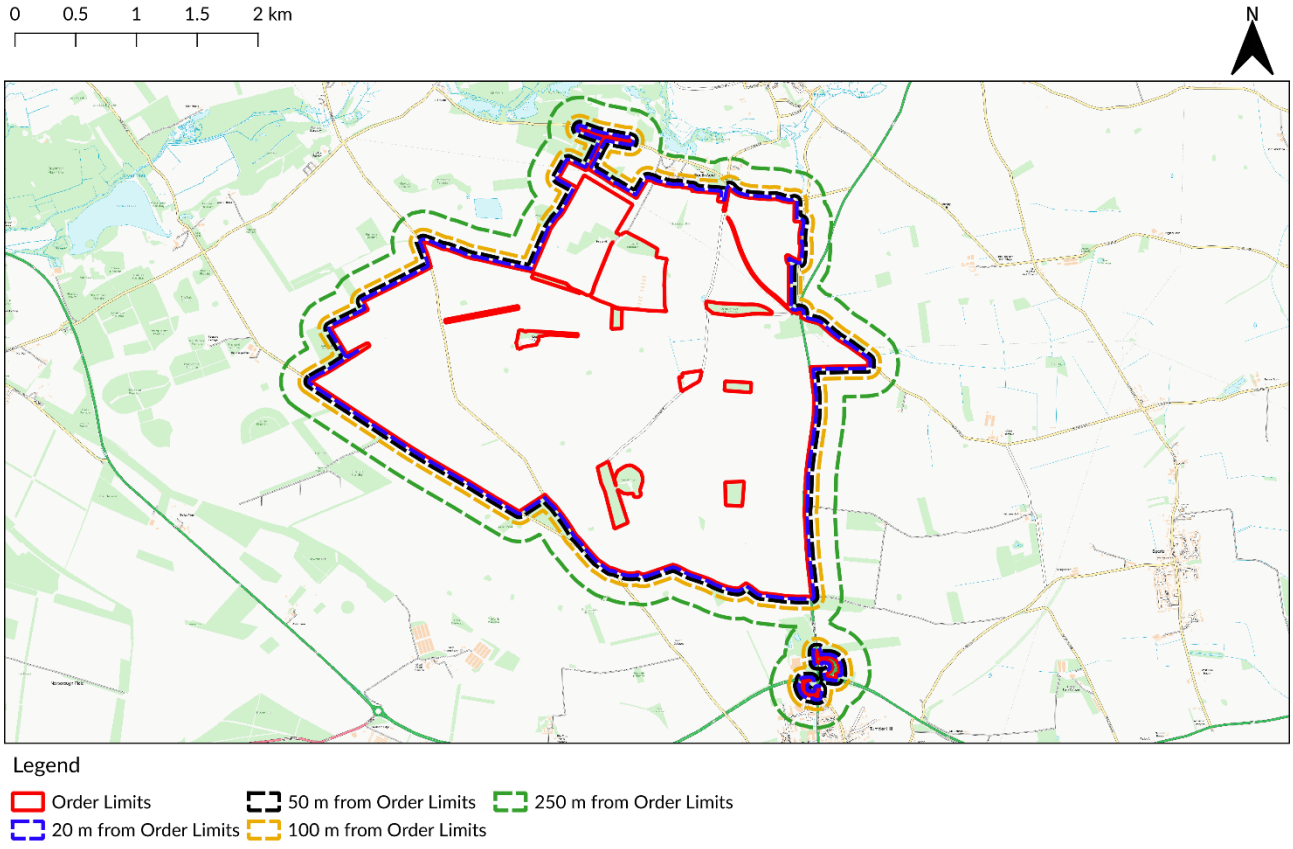

Figure 1.3: IAQM demolition and construction dust distance criteria from the Order limits. Contains OS Data © Crown Copyright and Database rights 2025.

The sensitivity of the area and the factors considered are detailed in Table 1.9. Construction routes for trackout have been obtained from ES Figure 9.1: Vehicle Routing and Constraints [APP/6.3] of the ES.

Table 1.9: Sensitivity of the area.

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site Activity	Trackout
Dust Soiling	For construction activities, within 20 m of the Order limits there is a residential traveller site to the south which would be considered a high sensitivity receptor to dust soiling. In addition, The Keepers Cottage is a residential property located outside of but encompassed by the Order limits. There are approximately 1-10 commercial car parking spaces to the south which would be considered medium sensitivity to dust soiling. Within 50 m of the Order limits, there are a further 10-100 commercial car parking spaces along with 1-10 residential properties to the south which would be considered high sensitivity. Within 100-250 m from the Order limits, there are a further 10-100 residential properties, in addition to a medical centre and care home to the south which would also be considered high sensitivity to dust soiling. Overall, in line with the IAQM guidance, the sensitivity of the area to dust soiling from on-site activity is anticipated to be high. For trackout, distances are measured from the sides of the roads anticipated to be used by construction traffic up to 250 m from the Site entrance. Within this distance, there are approximately 10-100 residential properties, a traveller site and 1-10 commercial properties. As such in line with the IAQM guidance, the sensitivity of the area to dust soiling from trackout is anticipated to be high.	High	High
Human Health	The Defra predicted background concentrations[4] at the Order limits are below 24 µg/m^3. For construction activities, within 20 m of the Order limits there is a residential traveller site to the south which would be considered a high sensitivity receptor to human health impacts. In addition, The Keepers Cottage is a residential property located outside of but encompassed by the Order limits. Within 50 m of the Order limits, there are 1-10 residential properties to the south which would be considered high sensitivity. Within 100-250 m from the Order limits, there are a further 10-100 residential properties, in addition to a medical centre and care home to the south which would also be considered high sensitivity to human health impacts. Overall, in line with the IAQM guidance, the sensitivity of the area to human health impacts from on-site activity is anticipated to be low. For trackout, distances are measured from the sides of the roads anticipated to be used by construction traffic up to 250 m from the Site entrance. Within this distance, there are approximately 10-100 residential properties, a traveller site and 1-10 commercial properties. As such in line with the IAQM guidance, the sensitivity of the area to human health impacts from trackout is anticipated to be low.	Low	Low

[4] Defra (2024) Background Pollution Maps – 2021 – [online], (Last accessed: 13/03/2025), Available at: uk-air.defra.gov.uk/data/laqm-background-maps?year=2021

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site Activity	Trackout
Ecological Effects	For construction activities, the River Nar SSSI is located approximately 40 m from the Order limits and as such the sensitivity of the area to ecological effects is anticipated to be low. For trackout, there are no designated ecological receptors within 50 m of a road within 250 m of the site entrance.	Low	-

1.3.4 Risk of dust impacts.

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 1.10 details the risk of dust impacts for earthworks, construction and trackout activities.

Table 1.10: Summary of potential unmitigated dust risks.

Potential Impact	Sensitivity	Earthworks	Construction	Trackout
Magnitude		Medium	Small	Large
Dust Soiling Impacts	High	Medium risk	Low risk	High risk
Human Health Impacts	Low	Low Risk	Negligible	Low risk
Ecological Effects	Low	Low Risk	Negligible	Negligible

1.4 Mitigation.

To mitigate the potential impacts during the construction phase it is recommended that mitigation measures as detailed in the IAQM guidance[1] are implemented. These mitigation measures have been selected for the Scheme and are based upon the dust risk categories outlined above in Table 1.10. The mitigation measures are provided in Table 1.11. These mitigation measures are included in the outline Construction Environmental Management Plan (oCEMP) [APP/7.6] and the outline Decommissioning Strategy (oDS) [APP/7.10], submitted in support of the DCO Application and secured via requirements in the DCO.

Table 1.11: Mitigation measures for construction phase.

Issue	Mitigation measure
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.
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.
Site Management	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- or off- site, and the action taken to resolve the situation in the log book.
	Hold regular liaison meetings with other high risk construction sites within 250 m of the Order limits, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling check of surfaces such as street furniture, cars, window sills within 100 m of the Order limits, with cleaning to be provided if necessary.

Issue	Mitigation measure
	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 asked.
	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.
	Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible, commence baseline monitoring at least three months before work commences on site or, if it is a large site, 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 or the Order limits that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicles/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph 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 applicable).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing)
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	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.
Construction	Avoid scrabbling (roughening of concrete surfaces) if possible.

Issue	Mitigation measure
	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.
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 in continuous use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	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 log book.
	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 10 m from receptors where possible.

THE DROVES
SOLAR FARM