

Byers Gill Solar
EN010139

6.4.2.6 Environmental Statement

Appendix 2.6 Outline Construction Environmental Management Plan

Planning Act 2008

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms
and Procedure) Regulations 2009

Volume 6

February 2024

Revision C01



Table of Contents

Page

1.	Introduction	1
1.1.	Purpose of the report	1
1.2.	Structure of the Outline CEMP	2
2.	The Proposed Development	4
2.1.	Description of the Proposed Development	4
2.2.	Proposed Development Location	4
2.3.	Control of construction activities	4
3.	Project team roles and responsibilities	11
3.1.	Site roles and responsibilities	11
4.	Management and mitigation measures	13
5.	Implementation	28
6.	Maintenance and monitoring activities	29
6.1.	Monitoring	29
6.2.	Records	29
	References	31

Table of Tables

Table 1-1	Construction specific management plans to support the DCO application	2
Table 2-1	Proposed Access Points	6
Table 4-1	Summary of the mitigation and management measures for construction – Climate change	14
Table 4-2	Summary of the mitigation and management measures for construction – Biodiversity	16
Table 4-3	- Summary of the mitigation and management measures for construction – Landscape and visual	19
Table 4-4	- Summary of the mitigation and management measures for construction – Cultural heritage and archaeology	19
Table 4-5	- Summary of the mitigation and management measures for construction – Land use and socioeconomics	20
Table 4-6	- Summary of the mitigation and management measures for construction – Hydrology and flood risk	21
Table 4-7	- Summary of the mitigation and management measures for construction - Noise and vibration	24
Table 4-8	- Summary of the mitigation and management measures for construction - Traffic and transport	25

1. Introduction

1.1. Purpose of the report

- 1.1.1. This document provides the Outline Construction Environmental Management Plan (CEMP) for the construction of Byers Gill Solar (the Proposed Development). RWE (the Applicant) has prepared this document as part of an application for a Development Consent Order (DCO) for the construction, operation and decommissioning of the Proposed Development. It demonstrates how the mitigation measures and monitoring requirements identified in the Environmental Impact Assessment (EIA) process will be implemented during construction and has been prepared with the objective of compliance with the relevant legislation.
- 1.1.2. An EIA has been undertaken for the Proposed Development and an Environmental Statement (ES) (Volume 6 of the DCO application) has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). 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 construction of the Proposed Development and describes proposed mitigation measures.
- 1.1.3. Prior to commencing construction, a CEMP will be produced by the Principal Contractor (PC) for the Proposed Development. The CEMP will be prepared in accordance with the Outline CEMP (under requirement 4 of the DCO) and any relevant engagement undertaken with stakeholders.
- 1.1.4. This Outline CEMP provides the outline structure of the CEMP and mitigation measures which may be included within the CEMP as a minimum to deliver the construction phase of the Proposed Development. This Outline CEMP also sets out the monitoring activities designed to ensure that such mitigation measures are carried out, and that they are effective.
- 1.1.5. A number of complementary plans have also been produced to support the construction of the Proposed Development and these are listed in Table 1-1. These will be further updated and developed alongside the CEMP and cross referenced where appropriate. This document does not address operational or decommissioning activities, which are subject to separate environmental management plans and procedures as outlined in Table 1-1.

Table 1-1 Construction specific management plans to support the DCO application

Management Plan	Purpose	Document reference
Outline Construction Environmental Management Plan (CEMP)	Sets out how negative environmental impacts will be minimised during construction.	ES Appendix 2.6 (Document Reference 6.4.2.6)
Outline Construction Traffic Management Plan (CTMP)	Sets out how construction traffic and staff vehicles will be managed during construction.	ES Appendix 2.8 (Document Reference 6.4.2.8)
Outline Pollution and Spillage Response Plan	Sets out methods to manage pollution and spillage incidents on site during construction.	ES Appendix 2.9 (Document Reference 6.4.2.10)
Outline Materials Management Plan (MMP)	Sets out how excavated materials that will be generated in the course of constructing the Proposed Development will be re-used in a manner that is compatible with the Waste Framework Directive and associated regulations.	ES Appendix 2.10 (Document Reference 6.4.2.10)
Outline Site Waste Management Plan (SWMP)	Sets out how the Proposed Development will manage resources efficiently, and measures to prevent and minimise waste.	ES Appendix 2.11 (Document Reference 6.4.2.11)
Outline Soil Resources Management Plan	Sets out the overall approach to managing soil resources affected by the Proposed Development.	ES Appendix 2.12 (Document Reference 6.4.2.12)
Archaeological Management Strategy (AMS)	Sets out the management of archaeological remains, both known and currently unknown, during construction.	ES Appendix 8.5 (Document Reference 6.4.8.5)
Landscape and Ecological Management Plan (LEMP)	Sets out the management of the landscape and ecological features of the Proposed Development.	ES Appendix 2.14 (Document Reference 6.4.2.14)
Outline Public Rights of Way (PRoW) Management Plan	Sets out how PRoWs would be managed to ensure they remain safe to use, and disruption to users of the PRoW is minimised.	ES Appendix 2.15 (Document Reference 6.4.2.15)
Arboricultural Impact Assessment (AIA)	Sets out the protection measures to be implemented during the construction phase, including activity supervision by a suitably qualified arboriculturist where appropriate.	ES Appendix 7.5 (Document Reference 6.4.7.5)

1.2. Structure of the Outline CEMP

1.2.1. The Outline CEMP is structured as follows:

- Introduction: This section provides an introduction and overview to this document.
- The Proposed Development: this section provides a summary of the Proposed Development, including likely construction activities, programme and standard management measures.

- Project team roles and responsibilities: this section defines the roles which the PC will identify within the CEMP to deliver the environmental management and mitigation measures and stakeholders to be engaged;
- Management and mitigation measures: this section identifies the environmental mitigation and management measures required to address the environmental effects of the works during construction and how these will feed into the CEMP; and
- Maintenance and monitoring activities: this section provides procedures for monitoring and reviewing compliance with the CEMP and procedures for rectification of breaching or failings of CEMP measures.

2. The Proposed Development

2.1. Description of the Proposed Development

- 2.1.1. The Proposed Development is a renewable energy scheme, covering an area of approximately 490 hectares (ha), and comprising solar photovoltaic (PV) panels, on-site Battery Energy Storage Systems (BESS), associated infrastructure as well as underground cable connections between Panel Areas and to connect to the existing National Grid Substation at Norton. The Proposed Development will have the capacity to generate over 50 Megawatts (MW) of electricity. The Proposed Development is located in the north-east of England.
- 2.1.2. A full description of the Proposed Development and a detailed description of the design and environmental mitigation is provided in ES Chapter 2 The Proposed Development (Document Reference 6.2.2).

2.2. Proposed Development Location

- 2.2.1. The majority of the Proposed Development is located within the administrative boundary of Darlington Borough Council, with a section of the cable route situated within the administrative boundary of Stockton-on-Tees Borough Council. A very small section of the Order Limits is within the administrative boundary of Durham County Council.
- 2.2.2. The Order Limits and surroundings comprise of agricultural fields, interspersed with individual trees, hedgerows, farm access tracks, woodlands and local farmholdings. There are several local villages located within close proximity to the Proposed Development, including Brafferton, Newton Ketton, Great Stainton, Bishopton and Old Stillington village to the north.
- 2.2.3. The Order Limits for the Proposed Development are shown in ES Figure 1.1 Location Plan (Document Reference 6.3.1.1).

2.3. Control of construction activities

- 2.3.1. The activities that are likely to be required for the construction of the Proposed Development are outlined below and it is anticipated that these activities would take place over several key phases:
- Enabling / Preparatory works: preparatory works would be the first phase of construction and includes activities to enable and prepare the site for the construction of the Proposed Development;
 - Construction works: this would include solar panel and cable installation;
 - Commissioning: the Proposed Development would go through a stage of testing prior to being commissioned and the first electricity generated and supplied to the

National Grid. This is likely to involve mechanical and visual inspection of the Proposed Development, as well as electrical and equipment testing; and

- Landscape and habitat creation: a programme of landscape and habitat reinstatement and creation will commence during the construction phase.

Construction compounds

- 2.3.2. Temporary construction compounds will be established for the construction phase, with one construction compound established in each Panel Area. Access tracks will be established to facilitate access to all parts of the Panel Area, and these are detailed in Table 2-1. This would mean that construction activities are limited in each Panel Area and temporary land take for the construction compound is reduced and kept to a shorter period of time.
- 2.3.3. Compounds would typically measure 60m in length and 30m in width. A ‘Durabase Mat System’ or a similar non-ground penetrating mat system would be used within the compounds.
- 2.3.4. The temporary construction compounds would contain construction worker welfare facilities, a site office, limited parking, wheel wash area, plant and machinery storage, Heavy Goods Vehicle (HGV) / delivery turning area and waste storage areas.
- 2.3.5. For security and safety purposes, any live construction areas would be closed to the public throughout the construction phase. Site security staff would patrol the Panel Areas in addition to hazard warning signs and CCTV.

Plant and site access

- 2.3.6. Principal plant to install the solar PV modules would include:
- excavator;
 - mobile crane;
 - crawled Dozer;
 - push press piling rig;
 - power generator;
 - telehandler;
 - truck; and
 - vibrating roller.
- 2.3.7. Access into each of the Panel Areas would be required to facilitate construction, as well as allowing ongoing maintenance access from the local highway network. Access points are proposed from existing accesses wherever possible and summarised in Table 2-1.

Table 2-1 Proposed Access Points

Panel Areas	Access Points
Panel Area A: Brafferton	High House Lane Unnamed farm tracks off Brafferton Lane
Panel Area B: Hauxley Farm	Unnamed farm tracks off Lodge Lane
Panel Area C: Byers Gill Wood	Bishopton Lane / Elstob Lane
Panel Area D: Great Stainton	Elstob Lane Unnamed road off The Green
Panel Area E: West of Bishopton	Unnamed road off The Green
Panel Area F: North of Bishopton	Unnamed road off Green Lane and existing farm tracks
Norton Substation	Existing access from Letch Lane
Underground cables	To be accessed from within Panel Areas and work undertaken along the cable route. Ongoing access would only be required should a problem occur.

Construction programme

- 2.3.8. It would take approximately 12-18 months to construct the Proposed Development all at once, or 18-24 months to undertake the construction of each Panel Area in phases following the DCO being made.
- 2.3.9. The final programme will be dependent on the detailed layout design and any potential environmental constraints that impact on the timing of construction activities.
- 2.3.10. The installation of solar PV modules does not involve any complex construction process or practices and therefore risk of delay beyond the programme is to be included within the ES and would largely be driven by adverse weather conditions. Many component parts of the Proposed Development would arrive on-site ready to be installed. As identified in ES Chapter 12 Traffic and Transport (Document Reference 6.2.12), two Abnormal Indivisible Loads (AILs) would be required to enable construction.

Working hours

- 2.3.11. Working hours during the construction phase would be between 08.00-18.00 Monday to Friday, 08.00-14.00 Saturday with no activities on Sunday or Bank/Public Holidays. Compliance with these working hours is secured via requirement 15 of the draft DCO (Document Reference 3.1).
- 2.3.12. Where on-site works are to be conducted outside the core working hours, under the exceptions that are specified in requirement 15, they will comply with the limits and controls detailed in the CEMP, and any other restrictions agreed with the relevant planning authorities.

Traffic management

- 2.3.13. Construction impacts from traffic and transport will be minimised through the use of a CTMP. ES Appendix 2.8 Outline CTMP (Document Reference 6.4.2.8) includes details on construction logistics and construction worker travel that includes information to guide the delivery of material, plant, equipment and staff during the construction phase. The CTMP would be submitted to and approved by the relevant planning authority pre-construction. This will be secured via requirement 6 of the draft DCO (Document Reference 3.1).

Control of noise

- 2.3.14. Measures to control noise as defined in Annex B of BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise' [1] and measures to control vibration as defined in Section 8 of BS 5228:2009+A1:2014 'Part 2: Vibration' [2] will be adopted where reasonably practicable. These measures represent 'Best Practicable Means' (BPM) (as defined by section 72 of the Control of Pollution Act 1974) (COPA) [3] to manage noise and vibration emissions from construction activities.
- 2.3.15. Applications for Section 61 consents, variations and dispensations under the COPA will be submitted to the relevant local planning authority for construction activities, if required.

Control of light

- 2.3.16. Temporary site lighting, in the form of mobile lighting towers will be required in areas where natural lighting is unable to reach (sheltered/confined areas) and during core working hours within winter months. Artificial lighting would be provided to maintain sufficient security and health and safety for the construction areas, whilst adopting mitigation principles to avoid excessive glare and minimise spill of light to nearby receptors (including ecology and residential properties).
- 2.3.17. All construction lighting will be deployed in accordance with the following recommendations to prevent or reduce the impact on human and ecological receptors:
- Lighting will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species during construction and operation.
 - the use of lighting will be minimised to that required for safe site operations. Infrared, movement sensor security lighting would be used at night. Lighting would be available for emergencies;
 - lighting will utilise directional fittings to minimise outward light spill and glare (e.g. via the use of light hoods/cowls which direct light below the horizontal plane, preferably at an angle greater than 20° from horizontal); and

- lighting will be directed towards the middle of the construction area rather than towards the boundaries.

Control of dust

- 2.3.18. Construction impacts from dust generating activities will be minimised through the use of best practice measures, as detailed in this document and ES Appendix 2.4 Construction Dust Assessment (Document Reference 6.4.2.4). This includes following the high-risk mitigation measures outlined in IAQM guidance 'Guidance on the assessment of dust from demolition of construction' 2023.

Waste management

- 2.3.19. The Waste (England and Wales) Regulations 2011 place a duty on all persons who produce, keep or manage waste to apply the 'Waste Hierarchy' in order to minimise waste production at every stage of the development.
- 2.3.20. The Waste Hierarchy is a concept which requires anyone managing waste to consider first waste prevention, preparing for reuse and recycling, followed by waste recovery methods e.g., energy recovery and, lastly, waste disposal.
- 2.3.21. In order to control the waste generated onsite during the construction phase, the PC will separate the main waste streams onsite, prior to transport to an approved, licensed third party waste facility for recycling and disposal.
- 2.3.22. All reasonable actions will be taken by the contractor to minimise the volume of waste produced as a result of the construction of the Proposed Development. This can be through reducing consumption, reuse, using resources efficiently, and designing for longevity. Waste segregation will be undertaken where possible to maximise the opportunities for reuse and recycling.
- 2.3.23. In addition, as outlined in ES Appendix 2.3 Assessment of Likely Waste Arisings (Document Reference 6.4.2.3), the following measures will be implemented:
- Agreements with material suppliers to reduce the amount of packaging through a take-back scheme.
 - Implementation of just-in-time material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste.
 - Attention to material quantity requirements to avoid over-ordering and generation of waste materials due to surplus.
 - Segregation of waste at source where practical.
 - Re-use of materials within construction for example. Re-use of pavement planning in subbase in footpaths.
- 2.3.24. Re-use and recycling off-site where re-use on-site is not practical. ES Appendix 2.11 Outline SWMP (Document Reference 6.4.2.11) has been produced as part of the DCO

application which specifies the waste streams to be estimated and monitored and goals set with regards to the waste produced. The SWMP will be prepared by the PC and finalised with specific measures to be implemented prior to the start of construction. This will be secured via DCO requirement 9 (Document Reference 3.1).

- 2.3.25. During site clearance and construction re-use of materials wherever feasible e.g. re-use of excavated soil for earthwork embankments and landscaping. The materials would be sorted or processed and where necessary, treated. Where materials excavated on-site are initially unable to meet the re-use criteria, they would either be treated to make them suitable for use or, as a last resort, disposed off-site as waste. Reuse of excavated material within the site, will be undertaken in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice. ES Appendix 2.10 MMP (Document Reference 6.4.2.10) is submitted with the DCO application and sets out the framework of how excavated materials will be managed in accordance with the waste hierarchy and good practice measures for managing waste in construction. This will be secured via DCO requirement 8 (Document Reference 3.1).
- 2.3.26. All waste to be removed from the Order Limits will be undertaken by fully licensed waste carriers and taken to licensed waste facilities.

Site security

- 2.3.27. Site security during construction will be managed by the PC. 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 PC.
- 2.3.28. There will be designated security staff during construction who will manage the Order Limits and patrol the perimeter.

Emergency preparedness

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

Best practice measures

- 2.3.31. The Considerate Constructors Scheme (CSS) [5] will be adopted to assist in reducing pollution and nuisance from the Proposed Development, by employing best practice measures which go beyond statutory compliance.

Surface water management

- 2.3.32. As identified in ES Chapter 10 Hydrology and Flood Risk (Document Reference 6.2.10), a Construction Surface Water Management Plan (CSWMP) would be produced prior to construction. This document would ensure site wide management of rainfall runoff, site drainage, surface water and groundwater including monitoring requirements during construction.

Invasive non-native plant species

- 2.3.33. An invasive non-native plant species (INNS) method statement will be produced to inform the management of invasive plant species found within the Proposed Development, in particular to minimise the risk of spreading Himalayan balsam along Bishopton Beck.

Utilities management

- 2.3.34. Engagement with utilities companies will be undertaken to identify utilities and agree safe methods of working around existing utilities.
- 2.3.35. Offsets around major utilities will be implemented to avoid impacts, including 20m zones above major gas pipelines where no solar farm infrastructure is placed.
- 2.3.36. No construction plant or infrastructure will come within 5.3m of high-voltage cables.

3. Project team roles and responsibilities

3.1. Site roles and responsibilities

3.1.1. 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 onsite and will be based onsite full time.
- Construction Project Manager - overall responsibility for ensuring all elements in the DCO, 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 Environment Manager will oversee environmental monitoring on-site and carry out regular environmental site inspections, reporting and responding to any incidents or non-compliance. The Environmental Manager will liaise with relevant environmental bodies and other third parties as appropriate.
- Environmental Clerk of Works – 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 - management of the risks to biodiversity on construction sites, advising protecting valued biodiversity features and providing practical solutions.
- Flood Warden – there will be a dedicated responsibility to be prepared for, and manage, the response to flood incidents.
- Health and Safety Manager – responsible for the monitoring and controlling of health and safety compliance and related rules and regulations on-site.
- Community Liaison Officer – a Community Liaison Group will be set up in accordance with the relevant DCO requirement prior to construction and will continue through until final commissioning of the Proposed Development as a formal forum for local issues to be raised. A Community Liaison Officer will be appointed to lead discussions with local communities, and also act as the primary point of contact should there be any queries or complaints.

3.1.2. These roles and responsibilities are indicative and will be confirmed in the CEMP. It is noted that ultimate responsibility for the implementation of the CEMP under the DCO rests with the undertaker.

Stakeholders

3.1.3. There are several key stakeholders who will be engaged prior to and during construction of the Proposed Development. These include:

- Darlington Borough Council, Stockton-on-Tees Borough Council and Durham County Council;
- Environment Agency;
- Historic England; and
- Natural England.

4. Management and mitigation measures

- 4.1.1. The outline mitigation and management measures to be included as a minimum within the CEMP are set out within the following tables using information presented in the ES and recommended as good practice environmental management for each topic included in the EIA. The measures are secured via the DCO and must be integrated into the CEMP prior to construction by the PC.

Table 4-1 Summary of the mitigation and management measures for construction – Climate change

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Release of GHG emissions during construction	CC1 - CEMP	Increasing recyclability by segregating construction waste to be re-used and recycled where reasonably practicable.	ES Chapter 2 The Proposed Development Section 2.6 / Chapter 5 Climate Change Section 5.9	Regularly record compliance via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	The overall responsibility will be with the Principal Contractor (PC). Specific responsibilities will be confirmed in the CEMP, expected to include the Environmental Manager, Flood Warden, Site Manager and Construction Project Manager.
	CC2 - CEMP	Adopting the Considerate Constructors Scheme (CCS) to assist in reducing pollution, including GHGs, from the Proposed Development by employing good industry practice measures.			
	CC3 - CEMP	Designing, constructing and implementing the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible.			
	CC4 - CEMP	Reusing suitable infrastructure and resources already available in the Order Limits where possible to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements or storing, preserving and restoring top soil).			
	CC5 - CEMP	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 Proposed Development to all construction staff and providing			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
		appropriate facilities for the safe storage of cycles.			
	CC6 - CEMP	Liaising with construction personnel for the potential to implement staff minibuses and car sharing options.			
	CC7 - CEMP	Implementing a Travel Plan to reduce the volume of construction staff and employee trips to the Proposed Development.			
	CC8 - CEMP	Switching vehicles and plant off when not in use and ensuring construction vehicles conform to current EU emissions standards.			
	CC9 - CEMP	Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency.			
Impact of climate change on construction works, materials and workers	CC10 - CEMP	The Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions.			
	CC11 - CEMP	Using equipment's cooling systems where necessary/adapting working practices and equipment used based on current weather conditions.			
	CC12 - CEMP	Monitoring weather forecasts and the news for Environment Agency flood warnings, relevant weather warnings, and water levels of the local waterways			

Table 4-2 Summary of the mitigation and management measures for construction – Biodiversity

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Direct and indirect impacts upon ecological features, including disturbance and damage / loss	BD1 - CEMP	Ecological Clerk of Works to be appointed to advise on protecting valued biodiversity features and provide practical, site-specific and proportionate advice on how to achieve compliance with environmental legislation.	ES Chapter 2 The Proposed	Appropriate survey/s undertaken,	The overall responsibility will be with the PC.
	BD2 - CEMP	Ecological Clerk of Works to complete a pre-construction survey in advance of construction to reconfirm the ecological baseline conditions to identify any new ecological risk. The walkover will be completed sufficiently in advance of the construction works to allow for the completion of any additional seasonal surveys (e.g., surveys in support of protected species licences) and implementation of mitigation measures.			
	BD3 - CEMP	A Species Protection Plan (SPP) to be implemented during construction of the Proposed Development with full details outlined in the CEMP. The SPP will be a live document subject to review and updating and will assist site personnel in the protection of species during construction, under the guidance of an ecological clerk of works.			
	BD4 - CEMP	Best practice measures to be implemented to control noise, light, vibration, and airborne and waterborne pollutants, as set out in their relevant topics.			
	BD5 - CEMP	Any tree to be felled will be subject to a pre-construction check to determine its current bat roost potential and if found to have potential to support roosting bats will be subject to suitable surveys, as described in good practice survey guidelines.			
Spread of invasive non-native plant species	BD6 - CEMP	Pre-construction surveys will be undertaken to provide an update on the presence and location of any invasive species.			
	BD7 - CEMP	An invasive non-native plant species (INNPS) method statement should be created, detailing measures to minimise the risk of spreading invasive non-native plant species.			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Impact upon breeding birds	BD8 - CEMP	Clearance of vegetation of potential value to nesting birds will be completed outside of the bird-breeding season (considered to be between mid-February and August inclusive). However, should it not be possible to avoid this season, vegetation will be inspected/surveyed by the ECoW immediately before clearance (i.e., within 24 hours of clearance works). An active nest will be given an appropriate disturbance buffer for that species with work only allowed to take place within this buffer once the project ecologist has confirmed any young have fully fledged and left the nest.	Development Section 2.6 / ES Chapter 6 Biodiversity Section 6.9	and compliance with measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	Specific responsibilities will be confirmed in the CEMP, expected to include the Ecological Clerk of Works, Environmental Manager, Site Manager and Construction Project Manager.
Impact upon bats	BD9 - CEMP	Maintenance of appropriate buffers between Solar PV modules and trees with potential bat roost trees with potential roost features (PRF), which will be protected during development, in line with British Standard BS 5837: Trees in relation to design, demolition and construction by establishing a Construction Exclusion Zone (CEZ) around their Root Protection Areas (RPA).			
Impact upon hedgerows and trees	BD10 - CEMP	Hedgerows, tree lines, ditches and trees including the tree RPA are to be protected during construction through the use of suitable buffers and fencing. For further information on tree buffers, see ES Appendix 7.5 Arboricultural Impact Assessment (Document reference 6.4.7.5).			
Impact upon reptiles	BD11 - CEMP	Should ground clearance of habitat suitable for reptiles/amphibians be required then this should be undertaken at the right time of year to avoid the hibernation period - i.e. avoid the period: October to March. The ECoW would supervise works and relocate any reptiles/amphibians found. If clearance of hibernacula features is necessary, then this should be done in the summer months to avoid disturbing hibernating reptiles (April to September).			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Impact upon badger, and other mobile species	BD12 - CEMP	For mobile species such as badger, pre-construction surveys will be required to check the status of the setts identified and to locate any new active setts that would need to be protected.			
	BD13 - CEMP	Any setts recorded are to be protected from direct impacts by maintaining a suitable standoff distance measured from professional judgement from existing setts and micro siting equipment if required.			
	BD14 - CEMP	Any exposed trenches or holes are to be covered up when contractors are off site (i.e. at night time) or a slope provided to allow any trapped badgers a safe exit.			
	BD15 - CEMP	Perimeter security fencing will be implemented early in the construction phase. The fence design will be around individual Panel Areas, to allow the movement of large mammals such as deer through the landscape along retained hedgerow margins.			
Impact upon waterbodies, and species within these	BD16 - CEMP	All works in proximity to waterbodies/watercourses should follow standard protection measures to ensure their complete protection against pollution, silting and erosion.			
	BD17 - CEMP	It is anticipated that the majority of works will take place 10m away from watercourses/waterbodies. A small number of small tributaries will be crossed by the proposed cable route corridor. At these watercourse crossings HDD will be used.			
	BD18 - CEMP	No nighttime work is to take place within 30m of watercourses/waterbodies (the period when otters are most active).			

Table 4-3 - Summary of the mitigation and management measures for construction – Landscape and visual

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Potential loss of vegetation to make way for construction activities	LV1 - CEMP	A pre-commencement survey of vegetation prior to construction should be undertaken to establish the extent to which any vegetation removal may be needed and identify required protection zones.	ES Chapter 2 The Proposed Development Section 2.6	Appropriate survey/s undertaken, and compliance with measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the Ecological Clerk of Works, Environmental Manager, Site Manager and Construction Project Manager.
Damage to trees / vegetation	LV2 - CEMP	Protect and retain existing trees and vegetation via construction exclusion zones and tree protective fencing.			
Visibility of construction activities	LV3 - CEMP	Temporary site lighting during construction required to enable safe working during hours of darkness will be designed as far as reasonably practical so as not to cause a nuisance outside of the Proposed Development. Standard best practice measures will be employed to minimise light spill, including glare.			

Table 4-4 - Summary of the mitigation and management measures for construction – Cultural heritage and archaeology

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Impact upon known and unknown archaeological remains	CH1 - CEMP	If remains of sufficient archaeological significance are identified, provision will be made to apply mitigation by design through the use of above ground foundations to remove any	ES Chapter 2 The Proposed Development Section 2.6 / ES Chapter 8 Cultural Heritage and Archaeology Section 8.9	Monitoring requirements will be set out in the WSI and compliance with measures regularly recorded via an appropriate method to be	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
		intrusive groundworks which would otherwise be required.		determined in the CEMP. The CEMP will detail the frequency.	Environmental Manager, Site Manager and Construction Project Manager.
	CH2 - CEMP	Where mitigation by design is not possible, or not warranted due to the significance of the identified or likely remains, mitigation through preservation by record will be applied via a watching brief.			

Table 4-5 - Summary of the mitigation and management measures for construction – Land use and socioeconomics

Potential impact being managed / mitigated	ID	Mitigation and/or management measure	Source reference	Requirement for monitoring	Responsibility
Impacts to local residents, businesses and community facilities	LUSE1 - CEMP	Explore employment and supply chain opportunities throughout the construction period.	ES Chapter 9 Land use and socioeconomics Section 9.9	Regularly record compliance via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the Environmental Manager, Community Liaison Officer, Site Manager and Construction Project Manager.
	LUSE2 - CEMP	Continued access will be provided to the identified recreational and community facilities in Table 9-4 of ES Chapter 9 Land use and socioeconomics.			
	LUSE3 - CEMP	An updated PRow Management Plan will be prepared and agreed with the LPA prior to the construction phase to maintain provision of diverted PRow routes as per Table 9-8 of ES Chapter 9 Land use and socioeconomics.			

Table 4-6 - Summary of the mitigation and management measures for construction – Hydrology and flood risk

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Impact upon water resources and flood risk	HFR1 - CEMP	Implementation of measures outlined in ES Appendix 10.1 Flood risk assessment (FRA) and Drainage Strategy (Document Reference 6.4.10.1). It is noted that the current EA groundwater data and groundwater contours used in these documents are for the bedrock groundwater only. As such the FRA and drainage strategy would require refinement if shallow groundwater is encountered during site construction work.	ES Chapter 2 The Proposed Development Section 2.6 / ES Chapter 10 Hydrology and Flood Risk Section 10.9	Appropriate water quality monitoring requirements to be agreed with relevant stakeholders and set out in the CEMP. Compliance with all measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the Environmental Manager, Flood Warden, Site Manager and Construction Project Manager.
	HFR2 - CEMP	A Construction Surface Water Management Plan (CSWMP) would be produced prior to construction. This document would ensure site wide management of rainfall runoff, site drainage, surface water and groundwater including monitoring requirements during construction.			
Impact upon water quality through erosion	HFR3 - CEMP	Up to date requirements set out in pollution prevention guidance (and any other relevant guidance available at the time of construction) will be provided in the CEMP.			
	HFR4 - CEMP	Sediment control measures (silt fences, settlement/attenuation ponds etc.) would be used in the vicinity of watercourses, springs or drains where natural features (e.g. hollows) do not provide adequate protection			
	HFR5 - CEMP	Trenching or excavation activities in open land would cease during periods of intense rainfall and temporary bunding would be provided as required, to reduce			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
		the risk of sediment transport to the natural drainage system.			
	HFR6 - CEMP	Permanent relocation or longer-term storage of soils would be re-instated with vegetation as soon as practicable.			
	HFR7 - CEMP	The movement of construction traffic would be controlled to minimise soil compaction and disturbance. Vehicle movements (to include HGVs and plant machinery) outside the defined tracks and hardstanding areas would be avoided where possible.			
	HFR8 - CEMP	Areas of temporary tracks would be completed as soon as possible and surfaced appropriately to protect soils from runoff. Temporary fences or markers should be used to ensure minimal disturbance of the surrounding land.			
	HFR9 - CEMP	Wheel washing would be undertaken in designated areas only and sediment control measures would be used to ensure runoff from these areas would not enter directly into water courses.			
	HFR10 - CEMP	No construction activities will take place within the watercourse buffer zones			
Impact upon water quality	HFR11 - CEMP	Equipment would be provided to contain and clean up any spills to minimise the risk of pollutants entering the watercourses or surface water features.			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
through pollution	HFR12 - CEMP	Trenching or excavation activities in open land would cease during periods of intense rainfall.			
	HFR13 - CEMP	Refuelling of vehicles and plant machinery (if required) would be confined to the designated fuelling areas and would be carefully controlled and placed away from areas with high groundwater dependency and outside watercourse buffers.			
	HFR14 - CEMP	Vehicles, plant machinery and equipment would be cleaned at designated washout areas located conveniently and within a controlled area of the Proposed Development.			
	HFR15 - CEMP	All fuel and chemicals would be stored within appropriately specified containers and within specifically designed stores / storage areas and would include appropriate measures to avoid spillages in line with the relevant legislation.			
	HFR16 - CEMP	Drip trays would be placed under standing machinery. All solid and liquid waste materials would be properly disposed of in controlled landfill sites away from the site.			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
	HFR17 - CEMP	Routine mechanical maintenance of vehicles would be carried out off-site or in a suitable designated area of the Proposed Development.			
	HFR18 - CEMP	There would be no unapproved discharge of foul or contaminated drainage from the Order Limits either to groundwater or any surface waters, whether direct or via soakaway.			
Increased flood risk	HFR19 - CEMP	Temporary land take areas (construction compound with car parking, temporary storage area, temporary laydown areas, welfare facilities etc.) within the Order Limits will be fully reinstated following construction to reduce areas of semi-impermeable surfaces. Temporary land take areas will be cleared of hardcore, re-graded with soil to a natural profile and re-vegetated.			

Table 4-7 - Summary of the mitigation and management measures for construction - Noise and vibration

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Construction traffic noise and vibration	NV1 - CEMP	A Construction Traffic Management Plan (CTMP) would be produced by the contractor and agreed with the relevant local planning authorities prior to construction.	ES Chapter 2 The Proposed Development Section 2.6 / ES Chapter 11 Noise and vibration Section 11.9	A construction noise monitoring scheme shall be developed and agreed with appropriate stakeholders and set out in the CEMP.	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the Environmental Manager, Health and safety Manager, Community
Noise and vibration from	NV2 - CEMP	Measures to control noise as defined in Annex B of BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
construction site activities		open sites - Part 1: Noise' [5] and measures to control vibration as defined in Section 8 of BS 5228:2009+A1:2014 'Part 2: Vibration' [2] will be adopted where reasonably practicable. These measures represent 'BPM' (as defined by section 72 of the Control of Pollution Act 1974) to manage noise and vibration emissions from construction activities.		Compliance with all measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	Liaison Office, Site Manager and Construction Project Manager.
	NV3 - CEMP	Additional mitigation such as noise barriers around noise sources, or selection of equipment with lower sound power levels may be required as and where agreed with the local planning authority.			

Table 4-8 - Summary of the mitigation and management measures for construction - Traffic and transport

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
Increased traffic flows and severance and intimidation associated with increased traffic	TT1 - CEMP	A CTMP will be produced as part of the construction phase to minimise any negative environmental impacts. This will include —	ES Chapter 2 The Proposed Development Section 2.6 / ES Chapter 12 Traffic and transport 12.9	Monitoring of traffic to and from the site as detailed and required in the CTMP. Compliance with all measures regularly recorded via an appropriate method to be determined in the CEMP. The CEMP will detail the frequency.	The overall responsibility will be with the PC. Specific responsibilities will be confirmed in the CEMP, expected to include the Environmental Manager, Site Manager and Construction Project Manager.
	TT2 - CEMP	The management of vehicles on-site.			
	TT3 - CEMP	The proposed access arrangements for construction traffic across the construction programme.			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
	TT4 - CEMP	The access arrangements for construction vehicles and staff.			
	TT5 - CEMP	The location of any wheel wash facilities.			
	TT6 - CEMP	Measures to ensure the transportation of construction materials and waste is managed as sustainably as possible			
	TT7 - CEMP	The scheduling of construction material and logistics traffic movements on the LRN and SRN outside of peak hours and to use designated routes into construction sites.			
	TT8 - CEMP	The consolidation of construction worker trips if possible.			
	TT9 - CEMP	Detail of cooperation with the Distribution Network Operator (DNO), during the works to enable connection at Norton Substation, to minimise potential cumulative effects of such works being carried out.			
	TT10 - CEMP	Measures to implement temporary construction compounds within each Panel Area to reduce the impact of vehicle deliveries and turning movements on the LRN.			

Potential impact being managed / mitigated	ID	Mitigation and/or management measure to be implemented	Source reference	Requirement for monitoring	Responsibility
	TT11 - CEMP	Any other mitigation required at the time to minimise the impact of construction traffic on the transport network.			

5. Implementation

5.1.1. The CEMP will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this outline CEMP, 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 Strategy.
- Procedures for monitoring, inspections and reporting of site operations.
- Document control.
- Environmental emergency procedures.

6. Maintenance and monitoring activities

6.1. Monitoring

- 6.1.1. Monitoring and reporting will be undertaken for the duration of the construction phase in order to demonstrate the effectiveness of the measures set out in the detailed CEMP and related construction controls, and allow for corrective action to be taken where necessary.
- 6.1.2. As part of the monitoring process the 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, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the CEMP as soon as possible following identification of such issues, and if required further follow up will be sought. The Environmental Manager would also act as day-to-day contact with relevant local authorities and other regulatory agencies such as the Environment Agency.
- 6.1.3. During construction, the Environmental Manager will conduct walkover surveys to ensure all requirements of the CEMP are being met. Action from these surveys will be documented, discussed with the Site Manager for programming requirements and issued weekly for actioning.
- 6.1.4. 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.
- 6.1.5. 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 complaints can be lodged. A logbook of complaints will be prepared and managed by the Site Manager.
- 6.1.6. A Community Liaison Group will be set up prior to construction and a Community Liaison Officer will be appointed to lead discussions with local communities during construction. Contact details will also be available on the display board at the site entrance should anyone wish to make contact.

6.2. Records

- 6.2.1. Records will be managed through the Quality and Safety Management Systems (QMS) and the Environmental Management System (EMS) of the PC which will be certified in line with the ISO 14001 standards.
- 6.2.2. The system would include methods for monitoring, recording, and implementing environmental management on site, and for responding to any noted areas of non-compliance. This will ensure that a high standard of environmental control is maintained

through the lifetime of the Proposed Development through the corrective action system managed by the contractor.

- 6.2.3. The contractor's Project Quality Administrator will ensure there is a central filing system in place for any checklists, reports and monitoring consistent with the Project QMS and EMS. Records of compliance with the requirements of the CEMP, derived from audits and other inspection by representatives of any internal or external audit teams.
- 6.2.4. Records will include:
- Results of routine site inspections.
 - Environmental surveys and investigations.
 - Environmental Action Schedule.
 - Environmental equipment test records.
 - Licences and approvals.
 - Corrective actions taken in response to incidents, breaches of the approved CEMP or complaints received from a third party.
- 6.2.5. The 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.

References

- [1] BSI Standards Publication, *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1: Noise*, 2014.
- [2] BSI Standards Publication, *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part2: Vibration*, 2014.
- [3] “Control of Pollution Act 1974,” [Online]. Available: <https://www.legislation.gov.uk/ukpga/1974/40>.
- [4] “Considerate Constructors Scheme,” [Online]. Available: <https://www.ccscheme.org.uk/>.
- [5] “The Waste (England and Wales) Regulations 2011,” [Online]. Available: <https://www.legislation.gov.uk/uksi/2011/988/contents/made>.