RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

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Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
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Glossary

Term	Definition
Agricultural Land Classification (ALC)	Agricultural Land Classification (ALC) is a grading system used to assess and compare the quality of agricultural land in England and Wales. A combination of climate, topography and soil characteristics and their unique interaction determines the grade of the land. The grades range from 1 to 5. Grade 1 being excellent, Grade 2 very good, Grade 3a and 3b good to moderate (no subdivide), Grade 4 poor and Grade 5 very poor.
Concurrent Scenario	A potential construction scenario for the Projects where DBS East and DBS West are both constructed at the same time.
Detailed CoCP(s)	The version of the Code of Construction Practice (CoCP) which the Applicants will be required to submit to East Riding of Yorkshire Council (ERYC) for approval, as relevant planning authority, under a requirement of the DCO
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Development Scenario	Description of how the DBS East and/or DBS West Projects would be constructed either in-isolation, sequentially or concurrently.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Haul Road	The track along the Onshore Export Cable Corridor used by traffic to access different sections of the onshore export cable route for construction.
Horizontal Directional Drill (HDD)	HDD is a trenchless technique to bring the offshore cables ashore at the landfall and can be used for crossing other obstacles such as roads, railways and watercourses onshore.
In Isolation Scenario	A potential construction scenario for one Project which includes either the DBS East or DBS West array, associated offshore and onshore cabling and only the eastern Onshore Converter Station within the Onshore Substation Zone and only the northern route of the onward cable route to the proposed Birkhill Wood National Grid Substation.

Term	Definition
Jointing Bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point on the coastline at which the Offshore Export Cables are brought onshore, connecting to the onshore export cables at the Transition Joint Bay (TJB) above mean high water.
Landfall Zone	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) and the Transition Joint Bays (TJBs) inclusive of all construction works, including the landfall compounds, Onshore Export Cable Corridor and intertidal working area including the Offshore Export Cables.
Link Boxes	An underground metal box placed within a concrete pit where the metal sheaths between adjacent export cable sections are connected and earthed, installed with a ground level manhole to allow access to the link box for regular maintenance or fault-finding purposes.
Main River	Main Rivers are usually large rivers or stream drainages that are designated under the Water Resources Act (1991) and are shown on the statutory Main River Map. They are managed by the Environment Agency, who carry out construction, maintenance and improvement works to manage flood risk.
Management Measures	Comprise legislative requirements, current standards and best practice, in addition to primary, tertiary and secondary commitments identified as part of the DBS offshore wind farms Environmental Statement (ES) process. They include strategies, control measures and monitoring procedures for managing the potential impacts of constructing DBS offshore wind farms and limiting disturbance from construction activities as far as reasonably practicable.
Mean High Water Springs (MHWS)	MHWS is the average of the heights of two successive high waters during a 24 hour period.
Mean Low Water Springs (MLWS)	MLWS is the average of the heights of two successive low waters during a 24 hour period.
Mineral Safeguarding Area	Areas of known mineral resources that are of sufficient value (economically or of conservation value) to warrant protection.

Term	Definition
Ministry of Agriculture, Fisheries and Food	Predecessor of DEFRA
Onshore Converter Stations	A compound containing electrical equipment required to transform HVDC and stabilise electricity generated by the Projects so that it can be connected to the electricity transmission network as HVAC. There will be one Onshore Converter Station for each Project.
Onshore Development Area	The Onshore Development Area for ES is the boundary within which all onshore infrastructure required for the Projects would be located including Landfall Zone, Onshore Export Cable Corridor, accesses, Temporary Construction Compounds and Onshore Converter Stations
Onshore Export Cable Corridor	This is the area which includes cable trenches, haul roads, spoil storage areas, and limits of deviation for micro-siting. For assessment purposes, the cable corridor does not include the Onshore Converter Stations, Transition Joint Bays or temporary access routes; but includes Temporary Construction Compounds (purely for the cable route).
Onshore Export Cables	Onshore Export Cables take the electric from the Transition Joint Bay to the Onshore Converter Stations.
Onshore Substation Zone	Parcel of land within the Onshore Development Area where the Onshore Converter Station infrastructure (including the haul roads, Temporary Construction Compounds and associated cable routeing) would be located.
Ordinary watercourse	Rivers which are not Main Rivers are called 'ordinary watercourses'. Lead local flood authorities, district councils and internal drainage boards carry out flood risk management work on ordinary watercourses.
Other trenchless techniques	Other techniques (aside from HDD) for installation of ducts or cables where trenching may not be suitable such as micro tunnelling or auger boring.

Term	Definition
Principal Contractor	A contractor appointed under Regulation 5(1) (b) of the Construction (Design and Management) Regulations 2015. They have control over the construction phase of a project with several contractors.
Sequential Scenario	A potential construction scenario for the Projects where DBS East and DBS West are constructed with a lag between the commencement of construction activities. Either Project could be built first.
Source Protection Zone 1 (SPZ1)	Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50 metres
Source Protection Zone 2 (SPZ2)	Outer protection zone - defined by a 400-day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the abstraction source, depending on the size of the abstraction.
Surface water flooding	Surface water flooding occurs when rainwater does not drain away through normal drainage systems or soak into the ground but lies on or flows over the ground instead.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Transition Joint Bay (TJB)	The Transition Joint Bay (TJB) is an underground structure at the landfall that houses the joints between the Offshore Export Cables and the Onshore Export Cables.
Trenching	Open cut method for cable or duct installation.

Acronyms

Term	Definition
AIA	Arboriculture Impact Assessment
ALC	Agricultural Land Classification
ALO	Agricultural Liaison Officer
BNG	Biodiversity Net Gain
CCS	Considerate Contractors' Scheme
CDM	Construction Design and Management
CLO	Community Liaison Officer
COSHH	Control of Substances Hazardous to Health
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
TMCo	Construction Traffic Management Plan Coordinator
DBS	Dogger Bank South
DCO	Development Consent Order
DEFRA	Department of Environment, Food & Rural Affairs
DLL	District Level Licence
DPF	Diesel Particulate Filters
EA	Environment Agency
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment

Term	Definition
EMF	Electro Magnetic Field
EMS	Environmental Management System
EPS	European Protected Species
ERP	Emergency Response Procedure
ERP	Emergency Response Plan
ERYC	East Riding of Yorkshire Council
ES	Environmental Statement
EU	European Union
EWC	European Waste Classification
FRA	Flood Risk Assessment
GCN	Great Crested Newts
GPP	Guidance for Pollution Prevention
GPS	Global Positioning System
HCC	Hull City Council
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle(s)
IAQM	Institute of Air Quality Management
ILE	Institute of Lighting Engineers
IDB	Internal Drainage Board
INNS	Invasive Non-Native Species

Term	Definition
IPMP	In-Principal Monitoring Plan
JK	Japanese Knotweed
kV	kilovolt
LED	Low energy LED type automatically switched, i.e. via
LEMP	Landscape and Ecology Management Plan
LLC	Local Liaison Committee
LLFA	Lead Local Flood Authority
LPL	Lower Plastic Limit
MAFF	Ministry of Agriculture, Fisheries and Food
MIIA	Mineral Infrastructure Impact Assessment
MMO	Marine Management Organisation
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MPA	Mineral Protection Area
MRA	Mineral Resource Assessment
MSA	Mineral Safeguarding Areas
NE	Natural England
NVZ	Nitrate Vulnerable Zones
NRMM	Non-Road Mobile Machinery
OCoCP	Outline Code of Construction Practice

Term	Definition
OCPRP	Outline Communications and Public Relations Procedure
OCTMP	Outline Construction Traffic Management Plan
OEMP	Outline Ecology Management Plan
OLMP	Outline Landscape Management Plan
OPPP	Outline Pollution Prevention Plan
OSMP	Outline Soil Management Plan
OSWMP	Outline Site Waste Management Plan
OPRoWMP	Outline Public Rights of Way Management Plan
OWSI	Outline Written Scheme of Investigation
PEMP	Project Environmental Plan
PIR	Passive Infrared Sensor
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PPP	Pollution Prevention Plan
PRoW	Public Rights of Way
PSD	Particle Size Distribution
SAC	Special Area of Conservation
SIC	Standard Industry Classification (Code)
SMP	Soil Management Plan
SNCBs	Statutory Nature Conservation Bodies

Term	Definition
SPL	Slowly Permeable Layer
SPZ	Source Protection Zone
SSSI	Special Site of Scientific Interest
SUDs	Sustainable Drainage System
SWMP	Site Waste Management Plan
TBT	Toolbox Talks
TCC	Temporary Construction Compound(s)
TJB	Transition Joint Bay
TMCo	Traffic Management Coordinator
UK	United Kingdom
UXO	Unexploded Ordnance
WEEE	Waste electrical and electronic equipment
WSI	Written Scheme (of) Investigation

1 Introduction

1.1 Project Background

1. This Outline Code of Construction Practice (OCoCP) has been prepared to accompany the Environmental Statement (ES) for the Dogger Bank South (DBS) East and DBS West Offshore Wind Farms, collectively known as DBS Offshore Wind Farms (herein 'the Projects'). This OCoCP relates to the onshore elements of the Projects, landward of Mean Low Water Springs (MLWS). This document does not relate to offshore works seaward of MLW. Further details of the onshore activities and infrastructure to which this OCoCP relates are set out in the project description provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**.

1.2 Purpose and Scope of this OCoCP

2. The principles and controls within this OCoCP relate to the management of construction impacts to mitigate the potential environmental impacts of onshore construction of the Projects. Strategies comprise of legislative requirements, current standards and best practice, in addition to commitments identified as part of the Projects' **Commitments Register (Volume 8, application ref: 8.6)** and Environmental Impact Assessment (EIA) Process (**Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)**). These measures will limit the disturbance from onshore construction activities such as site preparation, material delivery and removal, works activities and site reinstatement as far as is reasonably practicable.

3. The OCoCP aims to provide clear and appropriate means of monitoring and ensuring compliance with a wide range of good practice measures, and sets out a series of measures and standards of work, which will be applied throughout the construction period by the Principal Contractor(s) to:

   - Provide effective planning, management and control during construction to manage and mitigate potential impacts on people, businesses and the natural and historic environments; and
   - Provide a framework for engaging with the local community and its representatives throughout the construction period.

4. A detailed Code of Construction Practice (CoCP) will be prepared and agreed with the relevant planning authority prior to construction following the principles established in this OCoCP. This is secured by Requirement 19 of the **Draft Development Consent Order (DCO) (Volume 3, application ref: 3.1)** which states:

- "*19.- (1) No phase of the onshore works may commence until a code of construction practice (which must accord with the outline code of construction practice) for that phase has been submitted to and approved by the relevant planning authority following consultation as appropriate with the Environment Agency, Natural England and, if applicable, the MMO.*

  (2) Any code of construction practice submitted under sub-paragraph (1) may cover one or more phase of the onshore works.

  (3) All construction works for each phase must be undertaken in accordance with the relevant approved code of construction practice.

  (4) Pre-commencement screening and fencing works must only take place in accordance with a specific plan for such pre-commencement works which must accord with the relevant details for screening and fencing security set out in the outline code of construction practice, and which has been submitted to and approved by the relevant planning authority."

5. The term 'Construction' in this OCoCP includes all onshore physical works undertaken to implement the Projects, including demolition, waste disposal, but excluding "pre-commencement works", as defined in the **Draft DCO (Volume 3, application ref: 3.1)**.

6. This OCoCP relates to the key onshore components which comprise:

   - Landfall and intertidal works between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS) and associated Transition Joint Bays (TJBs);
   - Onshore Export Cables installed underground from the Transition Joint Bays (TJBs) to the Onshore Converter Stations and associated Jointing Bays and Link Boxes;
   - Onshore Converter Stations;
   - Onward 400 kilovolt (kV) connection to the proposed Birkhill Wood National Grid Substation;
   - Trenchless crossing locations (e.g. Horizontal Directional Drilling (HDD));
   - Construction and operational accesses; and
   - Temporary Construction Compounds (TCCs).

2 Implementation of this OCoCP

2.1 Outline and Detailed CoCPs

7. The production of an OCoCP fulfils DCO requirement 19 and is detailed in the **Commitments Register (Volume 8, application ref: 8.6)**. Following the granting of consent for the Projects, detailed CoCP(s) will be prepared prior to commencement of the relevant stage of the construction works and will follow the principles established in the OCoCP. The Applicants and all appointed contractors will be responsible for the implementation of the detailed CoCP(s).

8. **Table 2-1** details the roles / responsibilities known pre-consent. All final roles /responsibilities will be detailed in the detailed CoCP(s) prior to the start of construction and will be fulfilled by the Principal Contractor(s), the Applicants and/or others. This shall be determined via contractual negotiations and the final responsibilities communicated within this plan and to East Riding of Yorkshire Council (ERYC). The detailed CoCP(s) will be approved by the relevant planning authority, ERYC, prior to construction. Any responsibilities set out in this OCoCP are therefore subject to change.

9. The Projects may adopt a staged approach to the approval of DCO Requirements enabling requirements to be approved in part or in whole prior to the commencement of the relevant stage of construction. This approach will be governed by the inclusion of Requirement 8 within the **Draft DCO (Volume 3, application ref: 3.1)** which requires a written scheme setting out the phases of construction works to be submitted and approved by the relevant planning authority prior to the commencement of the authorised development.

10. **Table 3-1** sets out the documents which have been appended to the OCoCP. **Table 3-2** sets out those documents that will form appendices to the detailed CoCP(s) and that will be prepared on appointment of the Principal Contractor(s), for approval prior to the relevant stage of the construction works. The Construction Phasing Scheme (refer to **Table 3-2**) must be approved by the relevant planning authority in respect of the onshore works).**Table 3-3** sets out other relevant plans which are stand alone to the OCoCP and detailed CoCP(s) and have been submitted as an outline with the DCO application.

2.2 Roles and Responsibilities

11. Whilst the key roles for the Principal Contractor(s) Onshore Project Management Team will not be assigned until post consent, the anticipated roles required to implement the OCoCP are set out in

12. **Table 2-1**. The responsibility for the appointment of various roles (whether by the Principal Contractor(s) or the Applicants) and the number of individuals responsible for each role associated with construction phase for the Projects will be determined as part of the detailed CoCP(s).

Table 2-1 Construction Roles and Responsibilities

Role	Responsibility
Primary Management	
The Applicants Onshore Project Management Team	Responsible for coordinating onshore construction activities for the Projects on behalf of the Applicants.
The Principal Contractor(s) Onshore Project Management Team	Responsible for coordinating the construction of the Projects for the works within each Principal Contractor(s) respective contracts.
Secondary Management	
Roles to be specified as part of the detailed CoCP(s)	The secondary management team will comprise Quality, Health, Safety and Environment management, Site Manager(s) and Environment Manager(s), with a range of responsibilities between the Applicant and the Principal Contractor(s). The secondary management team will be responsible for maintaining the detailed CoCP document(s) and systems; ensuring environmental standards are adhered to and monitoring compliance during construction; carrying out regular monitoring and inspections of construction work activities for their relevant package of works; and undertaking staff induction courses on environmental issues. Responsibilities will also include managing the interface between the environmental specialists and engineers. They will have the primary responsibility for discharging the relevant DCO Requirements and licence conditions, managing environmental

Role	Responsibility
	issues through construction and post-construction monitoring and for obtaining relevant licences and consents
Technical Roles	
Ecological Clerk of Works (ECoW)	The ECoW will be appointed by the Applicants and will report on ecological matters and will be responsible for undertaking pre-construction surveys and monitoring throughout the construction period, where and when appropriate. The ECoW will also be responsible for ensuring all ecological commitments are met and compliance with the conditions of any protected species licences. It is anticipated that the ECoW will report to the Applicants' Environment Manager(s) (see secondary management above). This role is specified in the **Volume 7, Chapter 18 Terrestrial Ecology and Ornithology (application ref: 7.18)**.
Agricultural Liaison Officer (ALO)	The ALO will be appointed by the Applicants prior to the commencement of onshore site preparation works and will be the prime contact for ongoing engagement about practical matters with landowners, occupiers and their agents before and during the construction process. There may be more than one ALO if required. The ALO will have relevant experience of working with landowners and agricultural businesses and will have knowledge of the compulsory acquisition process (if required) and working on a linear infrastructure project. The ALO (or their company) will be contactable within the core working hours (see section 5.2) during the construction phase to landowners, agents and occupiers and will provide 24-hour team or company contact details for use in the event of emergency. Post-construction the ALO will remain appointed for up to one year in order to manage remediation issues. The ALO will have responsibility for liaising with landowners, agents and occupiers, including the following examples: • Coordinating remaining drainage surveys and sharing pre and postconstruction drainage schemes with landowners or occupiers in advance for their consideration;

Role	Responsibility
	• Coordinating the provision of a detailed pre-construction condition survey (where necessary pre-application, accounting for surveys undertaken pre-application) to include a soil survey as detailed in the Outline Soil Management Plan (OSMP) (Appendix A); • Advising on risks relating to the translocation of soil diseases, where necessary, and ensuring appropriate protective provisions are implemented; • Undertaking pre-construction liaison with affected parties to minimise disruption, where possible, to existing farming regimes and timings of activities; • Arranging quarterly meetings with landowners or their agent representatives, where considered necessary; • Undertaking site inspections during construction to monitor working practices and ensure landowners' and occupiers' reasonable requirements are fulfilled; • Discussing and agreeing reinstatement measures following completion of the works. As identified in the OSMP (Appendix A), a soil specialist will be appointed by the Applicants (as part of the ALO role or in addition); and • This role is specified in **Volume 7, Chapter 21 Land Use (application ref: 7.21)**.
Construction Traffic Management Coordinator (TMco)	Responsible for (further detail provided in the **Outline Construction Traffic Management Plan (Volume 8, application ref: 8.13) (OCTMP)**: • Managing the implementation of the approved CTMP; • Collating monitoring data and preparing a monitoring report (as outlined in section 5); • Acting as a point of contact for the local community; • Regular liaison and reporting to the Applicants; • Sharing information with emergency and healthcare services, e.g. dates of any road closures, abnormal load movements, etc; • Supporting the Applicants with highway stakeholder engagement; and • Acting as a point of contact for construction workers and sub-contractors.

Role	Responsibility
	• This role is specified in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**.
Archaeological Coordinator	The archaeological coordinators and contractor's role is specified and detailed within **Outline Onshore Written Scheme of Investigation (Volume 8, application reference: 8.14) (OWSI)** and **Volume 7, Chapter 22 Onshore Archaeology and Cultural Heritage (application ref: 7.22.22.1)**.
Community Liaison Officer (CLO)	The CLO will be appointed by the Applicants and will be responsible for community outreach for the Projects during construction. The CLO will attend public meetings including liaison with community groups and will manage all contact with local residents, local groups, schools, emergency services and local businesses with regard to general construction works matters in accordance with the parameters established in the Outline Communications and Public Relations Procedure (OCPRP) **(Appendix B)**.

3 Accompanying plans to the CoCP

13. **Plate 3-1** details all construction documents referenced in the OCoCP and how they relate to each other. This OCoCP also references the following documents that will be secured through **Draft DCO (Volume 3, application ref: 3.1)**:

- **Table 3-1** details the outline documents that form appendices to the OCoCP. At the point of submission of the DCO application these documents are outline plans. On appointment of the Principal Contractor(s) these outline documents will be updated and approved ahead of construction;
- **Table 3-2** set outs those documents that will form appendices to the detailed CoCP(s) and that will be prepared on appointment of the Principal Contractor(s), for approval prior to the relevant stage of the construction works; and
- **Table 3-3** details the plans and strategies that are standalone documents. Outline versions of these documents have been prepared to support the DCO application. On appointment of the Principal Contractor(s) these outline documents will be updated ahead of construction.

Plate 3-1 All construction documents and their relation to each other and the draft DCO

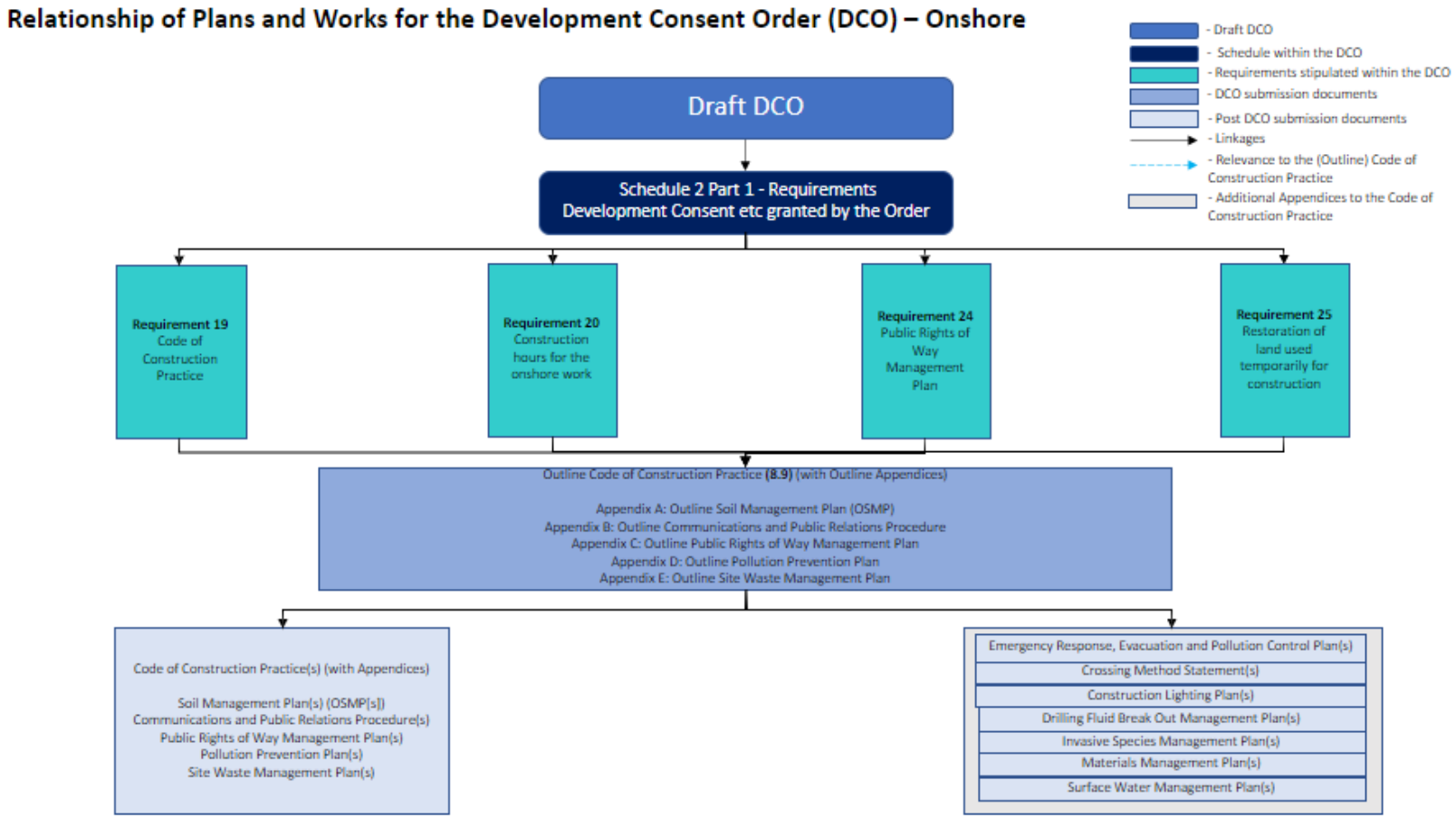

Table 3-1 Documents to form Outline appendices to the OCoCP

Document and Purpose	Status	Approval Body
Outline Soil Management Plan (OSMP) Sets out the approach to retain soil condition and quality and effective re-instatement in line with best practice.	An OSMP is provided in **Appendix A** and will be refined as part of the detailed CoCP(s) approved under DCO requirement 19, upon appointment of a Principal Contractor(s) and ALO.	ERYC in consultation with the Environment Agency if necessary.
Outline Communications and Public Relations Procedure Sets out the effective and open communication measures which may be implemented during the construction of the onshore works and supporting programme of activity to keep all onshore associated stakeholders notified of advanced works, including members of the public.	An Outline Communications and Public Relations Procedure (OCPRP) is provided in **Appendix B** and will be refined as part of the detailed CoCP(s) approved under DCO Requirement 19, upon appointment of a Principal Contractor(s) and CLO.	ERYC
Outline Public Rights of Way Management Plan Sets out the public rights of way (PRoW) which may be impacted during the construction of the onshore works and proposed control and mitigation measures.	An Outline PRoW Management Plan (OPRoWMP) is provided in **Appendix C** and will be refined as part of the detailed CoCP(s) approved under DCO Requirement 24, upon appointment of a Principal Contractor(s).	ERYC

Document and Purpose	Status	Approval Body
Outline Pollution Prevention Plan Sets out details of measures to manage pollution prevention onshore during construction.	An Outline Pollution Prevention Plan (OPPP) is provided in **Appendix D** and will be refined as part of the detailed CoCP(s) approved under DCO Requirement 19, upon appointment of a Principal Contractor(s).	ERYC
Outline Site Waste Management Plan Sets out the proper waste handling measures and protocols for implementation during construction to deal with any generated wastes.	An Outline Site Waste Management Plan (OSWMP) is provided in **Appendix E** and will be refined as part of the detailed CoCP(s) approved under DCO Requirement 19, upon appointment of a Principal Contractor(s).	ERYC

Table 3-2 Documents to form part of the detailed CoCP (on appointment of Principal Contractor)

Document and Purpose	Status	Approval Body
Emergency Response, Evacuation and Pollution Control Plan Sets out details of the anticipated hazards and conditions at each work site and emergency procedures in cases of spillages or leaks during construction and the measures for flood evacuation.	An Emergency Response, Evacuation and Pollution Control Plan will be developed post-consent as part of the detailed CoCP(s) approved under DCO Requirement 19, upon appointment of a Principal Contractor(s). This document includes measures for flood evacuation and as set out in the **Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4)** and **Outline Drainage Strategy (Volume 8, application ref: 8.12).**	ERYC in consultation with the Environment Agency (EA), the relevant Statutory Nature Conservation Bodies (SNCBs) and, if applicable the MMO.

Document and Purpose	Status	Approval Body
Crossing Method Statements Sets out the construction operations to be undertaken (including construction methods and types of plant required) and the associated environmental and health and safety issues for certain crossings where an increased risk is identified. The method statements will include details of crossing techniques to be deployed at crossings, including sensitive environmental crossings (such as main rivers). These will be developed with the relevant asset owner or key stakeholder such as the Environment Agency or Internal Drainage Board (IDB).	A full list of crossings associated with the Onshore Export Cable Corridor is included in **Volume 7, Appendix 5.2 Obstacle Crossing Register (application ref: 7.5.5.2),** Generic and specific Crossing Method Statements will be created in line with information provided in section 5.15.	ERYC as the Lead Local Flood Authority (LLFA) in consultation with the relevant SNCBs, Environment Agency and the IDB, where appropriate
Construction Lighting Plan This will describe the lighting details for relevant stages of the construction works.	A Construction Lighting Plan will be developed post-consent as part of the detailed CoCP(s) upon appointment of a Principal Contractor(s).	The plan will be developed in line with information provided in section 5.11.
Drilling Fluid Break Out Management Plan This will describe the procedure and measures for dealing with drilling fluid from trenchless crossings (e.g. Horizontal Directional Drilling (HDD).	A Drilling Fluid Break Out Management Plan will be developed post-consent as part of the detailed CoCP(s) approved under DCO Requirement 19, upon appointment of a Principal Contractor(s).	ERYC in consultation with the Environment Agency, and if applicable the MMO.

Document and Purpose	Status	Approval Body
Invasive Species Management Plan Sets out management measures for biosecurity risks, including invasive non-native species, diseases and pathogens during construction.	An Invasives Species Management Plan will be provided post-consent as part of the detailed CoCP(s), approved under DCO Requirement 19 upon appointment of a Principal Contractor(s) and ECoW.	ERYC, in consultation with the Environment Agency (where required).
Materials Management Plan Sets out how any materials (such as contaminated or uncontaminated soil, Made Ground and other material in earthworks) will be re-used during construction).	A Materials Management Plan will be developed post-consent as part of the detailed CoCP(s), approved under DCO Requirement 19 upon appointment of a Principal Contractor.	ERYC, in consultation with the Environment Agency
Surface Water Management Plan Sets out the requirements for temporary surface water drainage during construction should any temporary dewatering be required.	A Surface Water Management Plan will be developed post-consent as part of the detailed CoCP(s), approved under DCO Requirement 19 upon appointment of a Principal Contractor(s).	ERYC

14. In addition to the above plans and in advance of the CoCP, the Applicants may need to prepare and submit for approval to the relevant planning authority the following:

- A Contaminated Land and Groundwater scheme as per Requirement 29 - Sets out any contamination and any remedial measures which may be required to be implemented during construction;
- A Permanent Fencing and Enclosure plan as per Requirement 13 - Sets out the permanent fencing measures to be installed on site to minimise the opportunity for unauthorised entry; and

15. A Construction Phasing Scheme as per Requirement 8 - Sets out the phases of construction and the timing of approval of relevant DCO Requirements with respect to the relevant construction stages identified within the scheme. The OCoCP will be further informed by the findings of pre-construction site investigations. The detailed CoCP(s) would be adhered to throughout construction by all personnel working on the Projects and will be regularly reviewed and updated post consent, prior to and during the construction period.

Table 3-3 Plans to form stand-alone documents

Document and Purpose	Status	Relevant DCO requirement	Approval Body
Outline Ecological Management Plan (Onshore) (OEMP) Sets out the actions that are proposed to avoid or mitigate ecological impacts during construction, operation and decommissioning.	An outline version is provided in **Outline Ecological Management Plan (Volume 8, application ref: 8.10) (OEMP)**	12	ERYC, in consultation with the relevant SNCBs and Environment Agency where appropriate.
Outline Landscape Management Plan (OLMP) Sets out the measures and requirements for managing landscape during construction and operation.	An outline version is provided in **Outline Landscape Management Plan, (Volume 8, application ref: 8.11) (OLMP)**	10	EYRC.
Outline Drainage Strategy	An outline version is provided in **Outline Drainage Strategy (Volume 8, application ref: 8.12).**	16	ERYC as the Lead Local Flood Authority (LLFA), in consultation with the relevant sewerage and drainage authorities, IDB and the Environment Agency.

Document and Purpose	Status	Relevant DCO requirement	Approval Body
Sets out the outline (construction and operational) drainage strategy for the Onshore Converter Station(s) and the onward transmission connection between onshore converter Station(s) to the National Grid Birkhill Wood Substation and the pre and post construction land drainage, located within the Onshore Development Area.			
Outline Construction Traffic Management Plan (OCTMP) Sets out the measures for managing construction traffic during construction.	An outline version is provided in **Volume 8, Outline Construction Traffic Management Plan (application ref: 8.13).** The detailed CTMP will form a separate submission prior to commencement of the relevant stage of the construction works.	14	Relevant Highway Authorities
Outline Onshore Written Scheme of Investigation (OWSI) Sets out the archaeological strategy, proposed programmes of survey and evaluation to be completed post-consent/ahead of construction necessary to identify site specific	An outline version is provided in **Outline Onshore Written Scheme of Investigation (Volume 8, application ref: 8.14) (OWSI)** An OWSI will be refined as per DCO Requirement 18, and	18	ERYC in consultation with HAP (and Historic England as necessary)

Document and Purpose	Status	Relevant DCO requirement	Approval Body
mitigation required during construction.	the final OWSI will be agreed with the relevant planning authorities prior to construction.		

3.1 Structure of this OCoCP

16. The remainder of this OCoCP follows the structure below:

- Section 4 – General Principles;
- Section 5 – General Site Operations;
- Section 6 – Management of Onshore Issues;
- Section 7 – Environmental Compliance and Inspections; and
- Section 8 – Operational Management and Monitoring Commitments.

4 General Principles

4.1 Introduction

17. The general management of the construction site is important in controlling environmental impacts from construction activities. This section sets out the over-arching principles being proposed for the OCoCP which is submitted with the DCO application and used during construction.

4.2 Construction Principles

18. The Projects will be constructed in an environmentally sensitive manner and will meet the requirements of all relevant legislation, codes of practice and standards identified in the Environmental Statement (ES).

4.2.1 Environmental Management Principles

19. The Projects will be built, in accordance with best practices or standards adopted at the time of construction for minimising the adverse effects of construction on the local environment and community as far as reasonably practicable.

20. The Applicants Onshore Project Management Team (see **Table 2-1**) will review the environmental performance of the Principal Contractor(s) as part of the tender selection process and review their performance during construction.

21. The Principal Contractor(s) and subcontractors will comply with the detailed CoCP(s) which will accord with the OCoCP submitted with the DCO application.

4.2.2 Commitments

22. Through the EIA process, the Projects have identified Commitments which seek to eliminate or reduce impacts or adopt best practice guidance as part of the Projects and are recorded within **Commitments Register (Volume 8, application ref: 8.6).** Where relevant, all commitments in relation to environmental management are detailed within subsequent sections of this OCoCP and its Appendices.

4.3 Environmental Management Systems

23. Principal Contractor(s) will each operate an Environmental Management System (EMS) based on the requirements of the British Standard (BS) EN ISO 14001. The EMS will provide the process for which environmental management is undertaken to ensure that the relevant mitigation and commitments identified in the ES are addressed during the construction phase. The EMS will set out the:

- Procedures to be implemented to monitor compliance with environmental legislation and other relevant requirements;
- Key environmental aspects of the construction works and how they will be managed;
- Staff competence and training requirements;
- Record-keeping arrangements; and
- Monitoring compliance and the effectiveness of the measures included within the detailed CoCP(s).

24. Principal Contractor(s) and their Contractors will be required to plan their works in advance to ensure that (without significant implication on health and safety procedures), measures to reduce environmental effects and ensure that any commitments documented in the DCO, the principles established in the detailed CoCP(s), and commitments made in the ES are complied with.

25. Compliance with this OCoCP and the detailed CoCP(s) will not absolve the Principal Contactor(s) or subcontractors from the obligation of compliance with all legislation and bylaws relating to their construction activities.

4.4 Health and Safety Principles

26. Appropriate industry standards will be adopted and implemented for the health, safety and welfare of the construction staff on the Projects and arrangements will be in place for the discharge of duties under the Construction (Design and Management) Regulations 2015 (CDM Regulations 2015).

27. The Principal Contractor(s) for the onshore works will develop a Construction Phase Plan which will address the safety of construction workers, visitors to the site and the general public for the works. The Construction Phase Plan will set out how health and safety risks are identified and managed in accordance with legal requirements and current best practice for each stage of the onshore works.

4.5 Local Community Liaison

28. The Projects will manage relations with the local community that may be affected by traffic, noise or other aspects of disruption caused by the onshore construction works.

29. The CLO will manage and respond to any questions and complaints and keep a robust record of all correspondence. A system for dealing with enquiries or complaints will be established by the Projects and the Principal Contractor(s).

30. The Outline Communications and Public Relations Procedure (OCPRP) is provided in **Appendix B** (see **Table 3-1**) and will be developed and implemented throughout construction to ensure that all onshore associated stakeholders including local residents, parish and town councils and businesses are kept informed of construction activities.

31. At relevant milestones, information on the programme of works and associated activity will be communicated through a variety of methods to ensure people are informed on what they can expect to see and experience through the construction. These might include newsletters, website updates and information events.

5 General Site Operations

5.1 Introduction

32. This section sets out the general requirements for the major stages of the onshore construction works with respect to working hours, general site layout and appearance, and security.

5.2 Working Hours

33. Core working hours for construction of the onshore components are governed by DCO Requirement 20 'Construction hours for the onshore works. Core working hours will be 0700 hours to 1900 hours Monday to Saturday, apart from specific circumstances for which further details are provided within this OCoCP. Construction and construction related traffic movements would generally be within these hours but there would be some vehicle movements outside these hours on the public highway for vehicles travelling to and from site relating to mobilisation.

34. No activity where significant noise is audible beyond the Onshore Development Area will take place outside of these hours including Sundays, public holidays or bank holidays apart from under the following circumstances:

- Where continuous periods of operation are required, such as concrete pouring and trenchless crossings;
- For internal fitting out works associated with the Onshore Converter Station(s);
- For the delivery of abnormal loads to the construction works, which may otherwise cause congestion on the local road network;
- The testing or commissioning of any electrical plant installed as part of the Onshore Converter Station(s);
- Security monitoring;
- Activity necessary in the instance of an emergency where there is a risk to persons, the environment, delivery of electricity or property; and
- As otherwise agreed in writing with the relevant authorities.

35. In this OCoCP, the term mobilisation refers to time within core working hours where preparatory activities are undertaken before the main activities as planned for the day commence. During the mobilisation period, the Principal Contractor(s) and their Contractors may undertake the following activities:

- Arrival and departure of the workforce at the site and movement to and from areas across the Projects;

- Site inspections and safety checks; site meetings (briefings and quiet inspections/walkovers);
- Site clean-up (site housekeeping that does not require the use of plant); and
- Low-key maintenance, safety checking of plant and machinery (provided this does not require or cause hammering or banging).

36. Mobilisation does not include heavy goods vehicle (HGV) movements into and out of the construction areas (i.e. HGV movements should only occur at the construction areas during the core working hours unless otherwise agreed) but suppliers can make use of the wider highway network outside these hours to travel.

37. Activities carried out during mobilisation and maintenance will not generate significant noise levels (such as piling, or other such noisy activities).

5.2.1 Continuous Working Hours

38. In certain circumstances, specific works may have to be undertaken on a continuous working basis (00:00 to 00:00 Monday to Sunday) (e.g. for trenchless crossings).

39. Save for emergency works, full details must be agreed with the relevant planning authority in writing in advance and must be carried out within the agreed time. The following details would need to be provided as set out in Requirement 20 of the **Draft DCO (Volume 3, application ref: 3.1):**

- Type of activity;
- Vehicle movements and type; and
- Timing and duration and any proposed mitigation, of all essential construction activities

40. Outside of the specified construction hours, some activities may be undertaken on a continuous cycle in agreement with the relevant planning authority.

41. In the event of an emergency, notification of the emergency will be given to the relevant planning authority and the relevant highway authority as soon as reasonably practicable.

42. The following activities that may require continuous working hours and for which approval will be sought from the relevant planning authority:

- Trenchless crossing operations. These activities may require 24-hour machinery operation, dependent on the ground conditions;
- Onshore Converter Station(s) component installation;

- Concrete Pouring;
- Oil filling of transformers at the Onshore Converter Station(s);
- Cable Pulling; and
- Jointing operations along the Onshore Export Cable Corridor.

5.2.2 Activities Outside of the Core Working Hours

43. In addition, it may be beneficial to carry out several activities outside of the standard working hours to utilise periods such as abnormal loads/construction plant delivery, works within the highway/footpaths, or works affecting operational railways.

44. Activities outside of the standard working hours will be agreed with the relevant local authority in consultation with relevant stakeholders (e.g. third-party asset owner) as required.

5.3 General Site Layout and Temporary Construction Compounds

45. Temporary Construction Compounds (TCCs) are required to support the construction of the onshore works. Further details in relation to the TCCs are outlined in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**.

46. A landfall TCC and TJB compound will be required within the Landfall Zone, on the onshore side of the cliff. The purpose of these compounds will be to support the trenchless crossing works.

47. Up to two main TCCs would be built as a focal hub for the Principal Contractor(s), sub-contractors and the Applicants for the duration of the works. The main TCCs will operate as hubs for the onshore construction works and would house the central offices, welfare facilities, and stores, as well as acting as staging posts and secure storage for equipment and component deliveries. It may be necessary to retain part of the compound during the commissioning stages of the Projects. The main TCCs would potentially include:

- Office accommodation, including all desks, seating, office storage, welfare etc. to accommodate all staff;
- Meeting Rooms;
- All relevant utility services, power, water, heating, lighting telecommunications, internet and Wi-Fi connections;
- Electrical generators (if required);
- Car parking for all project staff;
- Canteen facilities, if required;

- Drying, storage and changing facilities for Personal Protective Equipment;
- Material storage;
- Waste storage;
- Cable drum storage and logistics;
- Security fencing;
- Security; and (subject to site suitability)
- Cement bound sand (CBS) or concrete batching plants.

48. Up to fifteen satellite compounds are also to be located strategically along the Onshore Export Cable Corridor to support onshore construction activities. These may be used for storage of construction equipment/vehicles, materials including cable drums and ducts and waste, dependant on construction programme and methodology. They would also be securely fenced.

49. In establishing and operating the TCCs, the Principal Contractor(s) will:

- Ensure any crossing points over existing local services will be installed in a manner agreed with the asset owner;
- Ensure surface runoff is managed appropriately, as per the Surface Water Management Plan (see **Table 3-2**);
- Ensure any temporary services necessary to support the logistics compounds will be installed in a manner agreed with the landowner and service provider;
- Use external lighting only during periods of poor visibility due to weather conditions or low light levels (see section 5.11 for further details on construction lighting);
- Use low levels of security lighting where required, i.e. at the perimeter of the site, at the entrance to the site and office facilities; and
- Ensure access and egress to the logistics compounds are suitable for their location with appropriate access gates and signage.
- Where CBS or concrete batching plants are proposed, ensure noise and dust emissions are minimised and plants only remain on site for the duration of activities requiring the use of CBS or concrete

50. The trenchless crossing TCCs, described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** will be provided with suitable surfacing, with some constructed from stone in a similar way to the haul roads for the main cable laying activities. The TCCs will be secured by fencing (see section 5.10) and provided with lockable gates to control access where necessary. Appropriate drainage and sediment control measures will be implemented to control surface run-off from the compound where required.

5.4 Welfare

51. On appointment of a Principal Contractor(s), all management controls required to ensure the safe welfare of all personnel working on the Projects will be detailed in the detailed CoCP(s). Measures will include appropriate communicable disease prevention measures to safeguard the project workforce and the public in line with Government guidance of the day and commitment to appropriate occupational health services. The TCCs shall be serviced by temporary construction offices and necessary welfare facilities, plus for mobile construction teams in teams in compliance with the CDM 2015.

52. The Principal Contractor(s) will be required to ensure that compound set up takes account for any sensitive receptors, to consider resource efficiency and to ensure that any discharges from site are appropriately managed.

53. The Projects will ensure that adequate welfare facilities are provided for construction staff. Refer to section 5.3 for more detail on TCCs.

5.5 Good Housekeeping

54. A good housekeeping policy will be applied to the construction areas and TCCs at all times. As far as reasonably practicable the following principles may be applied:

- Working areas to be kept in a clean and tidy condition;
- The site will be secured to prevent unauthorised access;
- Open fires and the burning of rubbish will be prohibited at all times;
- All necessary measures will be taken to minimise the risk of fire (e.g smoking areas) and the Principal Contractor(s) and subcontractors will comply with the requirements of the local fire authority;
- Waste from the construction areas will be stored securely to prevent wind blow;
- Waste will be removed at frequent intervals;

- All reasonable steps will be taken to ensure mud, silty water and other loose material does not encroach onto the public highway, and if it does steps will be taken to address the concern; and
- Where used, wheel washing facilities will be cleaned frequently.

55. TCCs will be required for the storage of materials and equipment, assembly of large items and parking of mobile plant and vehicles. Within these areas material and plant storage will be located to limit adverse environmental effects where possible.

5.6 Site (Environmental) Induction

56. A general site induction will be developed to introduce all site personnel to the environmental issues and important environmental controls associated with the day-to-day operation of the Projects. A full register of induction attendance will be maintained on site.

57. The Principal Contractor(s) will ensure that personnel working on and accessing the construction areas are made aware of the content of this OCoCP and any topic specific management plans relevant to their work via a site induction on any personnel's first visit to the construction works areas. This will include an introduction to all health and safety measures applicable on site, site rules (e.g speed limits, working hours), as well as any relevant environmental considerations. Inductees will be briefed on the identification of environmental risks, sensitive receptors and controls associated with the onshore works specific to the work that they are undertaking. As a minimum, the following information will be provided to all inductees:

- Species and / or habitat protection requirements relating to protected species and key wildlife on site;
- Measures for minimising the risk of spreading invasive species;
- Protocol for archaeological discoveries;
- Watercourse crossing works and working within or in proximity to watercourses;
- Pollution prevention and response (e.g. silt mitigation and protection of the water environment);
- Emergency Response Procedures;
- Noise and dust control measures;
- Resource (and carbon) efficiency;
- Soil management practices;
- Protocol for encountering contaminated land; and

- Waste management practices.

5.7 Training, Competence, Tool Box Talks, Method Statements

58. The OCoCP as certified by the Secretary of State will be incorporated into the contracts for the Principal Contractor(s) of the onshore and intertidal works authorised by the DCO. All Principal Contractor(s), Subcontractors and their suppliers will be required to observe the relevant procedures of the OCoCP and provide evidence on how they will ensure its requirements are implemented and monitored.

59. Compliance with this OCoCP and the detailed CoCP(s) will not absolve the Principal Contactor(s) or subcontractors from the obligation of compliance with all legislation and byelaws relating to their construction activities.

60. All onshore and intertidal construction staff employed on the Projects will receive training on their responsibilities for minimising the risk to the environment and implementing the measures set out in this OCoCP and any subsequently approved detailed CoCP(s).

61. The Principal Contractor(s) will ensure that contractors employ an appropriately qualified and experienced workforce and will be responsible for identifying the training needs of their personnel.

62. During construction, in order to provide on-going reinforcement and awareness training, site briefings and Toolbox Talks (TBTs) will be given as necessary to equip the workforce with the relevant knowledge on health, safety and environmental issues. TBTs and training are arranged by the Principal Contractor(s) or relevant subcontractor and delivered by specialist personnel on site as required, in advance of the issue being encountered or in response to the findings of an inspection. This will minimise the risk to the environment and implementing the measures set out in this OCoCP and any subsequently approved detailed CoCP(s).

63. A full register of TBTs and method statement briefing attendance will be maintained on site.

64. All training records will be maintained and filed on-site. The records will include the content of the courses (induction and TBT training), record of attendance and schedule of review.

5.8 Site Waste Management and Materials

5.8.1 Waste

65. Waste will be managed in line with the Outline Site Waste Management Plan (OSWMP) **(Appendix A)** (see **Table 3-2)**. The OSWMP will be refined as part of the detailed CoCP(s) approved upon appointment of a Principal Contractor(s) and details measures for ensuring compliant and best practice management of waste on site during construction.

5.8.2 Materials Management

66. A Materials Management Plan would be drafted in advance of any construction works as detailed in **Table 3-2**. This would include chemical screening criteria in order to ensure that imported and / or reused materials are chemically suitable for use. If materials identified as containing asbestos are identified, then a specialist subcontractor should be employed to aid in its removal from site, in line with current legislation. The Materials Management Plan would form part of the detailed CoCP(s) to be submitted for approval ahead of construction.

67. All Material Management Plans must be reviewed by a Code of Practice Qualified Person and receive final sign-off by the relevant regulator.

68. Adoption of a Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Code of Construction Practice (DoWCoP) to manage the re-use and disposal of excavated soils on site would also be incorporated. This would aid in maximising sustainability and provide an audit trail to demonstrate the appropriate use of materials.

5.9 Site Inspections

69. Regular inspections of the onshore construction works will be undertaken by the Principal Contractor(s) (or appropriately trained member of the construction staff) during construction at a frequency appropriate to the construction activity underway at the time. These will highlight evidence of good practices and recommend remedial actions where issues are identified.

5.10 Site Screening and Fencing

70. Further details of proposed fencing and screening will be included within the detailed CoCP(s), dependant on the approach pre-construction.

71. TCCs will be secured with temporary fencing with lockable gates to minimise the opportunity for unauthorised entry. Temporary fencing up to 2.4m will be installed along the Onshore Export Cable Corridor to define the Projects' work areas and will be provided as appropriate with allowances for private land access and relevant ecological constraints. The type of fencing to be used will be dependent on the land use where the easement crosses it. Appropriate fencing will be selected to suit the location and purpose. Fencing may consist of:

- Post and rope for arable land;
- Post and rail for horse fields; and
- Post mesh and wire/barb for cattle and sheep.

72. All boundaries, fencing and screens will be maintained in a tidy condition and will be fit for purpose.

73. All temporary screening and fencing will be removed as soon as reasonably practicable following completion of the works.

74. Where possible, access to construction areas will be limited to specified entry points and all personnel entries/exits will be recorded for security and health and safety purposes.

75. Where the haul road meets a public highway, it will be gated or otherwise secured, where feasible and necessary, to prevent unauthorised access.

76. During construction, trees, hedgerows and other vegetation will be retained where possible and all clearance kept to a minimum. Retained trees and other vegetation will be protected during the works in accordance with British Standard BS 5837:2012.

5.11 Construction Site Lighting

77. A Construction Lighting Plan (see **Table 3-2**) will either be appended to the detailed CoCP(s), or detailed text included within the main detailed CoCP(s), dependant on the approach pre-construction. Site lighting will be provided to ensure the safety of work and to maintain security on the construction sites.

78. Construction site lighting will be designed in accordance with latest relevant available guidance and legislation and the details of the location, height, design and luminance of lighting to be used will be detailed within the detailed CoCP. Lighting design will ensure that any artificial light emitted from premises will not be prejudicial to health or be a nuisance as required by the Environmental Protection Act 1990.

79. In respect to TCCs, low levels of security lighting may be required at night during construction, at the entrance to the sites and office facilities as well as around the perimeter of the TCCs.

80. External lighting of the construction site will be designed and positioned to:

- Provide the necessary levels for safe working;
- Minimise light spillage or pollution; and
- Minimise light spill to adjoining residents, occupiers and identified ecological receptors (if relevant).

81. Construction works will typically not require night-time working. However, in winter, some temporary lighting may be required in the early morning and evening. Illuminations may also be needed for occasional activities which require continuous working during night-time. This may occur where continuous working is necessary for matters such as concrete pours and Trenchless crossing techniques.

82. The following controls will be implemented as a minimum by the Principal Contractor(s) or relevant subcontractors to minimise potential nuisance from site lighting. Site lighting will:

- Only operate when required and will be positioned and directed to avoid unnecessary illumination to residential properties, sensitive ecological receptors, footpath users, and minimise glare to users of adjoining public highways;
- Be directed towards working areas and away from habitats of value to protected or notable species (e.g bat roosts). Any security lighting would be motion activated on short timers;
- Use hoods and cowls; and

- Low energy LED type automatically switched, i.e. via dawn to dusk sensor, timer or passive infrared sensor (PIR).

83. Where possible, power to temporary lighting shall be taken from mains supplies, however the majority of TCCs power requirements will be provided from portable generators. Where portable generators are used, industry best practice will be followed to minimise noise and pollution from generators.

84. Construction lighting requirements in relation to ecology is detailed in the **OEMP (Volume 8, application ref: 8.10)** and the **Design and Access Statement (Volume 8, application ref: 8.8).** Measures would be adopted to minimise disturbance on identified breeding birds, such as visual screening (e.g. opaque fencing) where necessary. All lighting shall be designed to minimise light scatter (kept near or below the horizontal) and would be designed in accordance with the BCT Guidance Note on Bats and Artificial Lighting (ILP and BCT, 2023). Any changes to lighting requirements would need to be discussed and approved in advance with the ECoW. Lighting will be kept to a minimum, where it is located within 30 m of an active badger sett and up to approximately 100 m from otter holts or other identified resting places for otter. Night lighting of the construction site must be minimised during specific periods of the year as detailed in the **OEMP (Volume 8, application ref: 8.10)**.

5.12 Pollution Prevention

85. A Pollution Prevention Plan (PPP) (as part of the detailed CoCP(s)) will be developed based on the Outline Pollution Prevention Plan (OPPP) **located** in **Appendix D,** which recognises the risk of pollution from the onshore construction activities and presents pro-active management measures to ensure that any pollution that may occur is prevented where possible.

86. In addition, an Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2**) will be developed as part of the detailed CoCP(s) which will set out details of the emergency procedures in cases of spillages or leaks during construction and the measures for flood evacuation.

5.13 Site Security

87. Adequate security of the TCCs will minimise the opportunity for unauthorised entry, protect the public, and prevent theft from the works areas. Site gates will be secured when there is no site activity and appropriate security measures will be implemented. Where possible, access to construction areas will be limited to specified entry points and all personnel entries / exits will be recorded for security and health and safety purposes.

5.14 Pest Control

88. The risk of pest / vermin infestation will be reduced by ensuring any decayable waste is stored appropriately and regularly collected from construction areas, and effective preventative pest control measures are implemented. Any pest infestation will be dealt with promptly and if required, the services of a specialist subcontractor will be sought.

5.15 Crossing Method Statements

89. Prior to commencing specific activities, such as the crossing of a watercourse or other infrastructure such as a Strategic Road or railway, the Principal Contractor(s) will be required to prepare a Crossing Method Statement(s). The Crossing Method Statement(s) will set out construction operations to be undertaken (including construction methods and types of plant required) and the associated environmental and health and safety issues for certain crossings where an increased risk is identified. The method statements will include details of crossing techniques to be deployed at crossings, including sensitive environmental crossings (such as Main Rivers). These will be developed with the relevant asset owner or key stakeholder such as the Environment Agency, Internal Drainage Board (IDB), Network Rail or the relevant planning authority.

90. The activities requiring a method statement will be identified using a risk-based approach pre-construction. A generic method statement will be prepared for trenchless crossings and open cut crossings of watercourses, with specific Crossing Method Statements for particularly sensitive locations. The Crossing Method Statements and the crossing design will be developed during the pre-construction design stage and provided as an appendix for approval prior to the relevant stage of works as part of the detailed CoCP(s) as set out in **Table 3-2**.

91. A full list of crossings associated with the Onshore Export Cable Corridor is included in **Volume 7, Appendix 5.2 Obstacle Crossing Register (application ref: 7.5.5.2).**

92. Further detail on Crossing Method Statements required for watercourse crossings is detailed in section 4.2.4 of the OPPP **(Appendix D).**

5.16 Utilities

93. Construction works taking place within close proximity to existing utilities, or with the potential to affect existing pipelines, cables, drains, sewers or chambers will be agreed with the relevant statutory undertaker.

94. Utility crossings will be undertaken in line with industry standard practice and guidance as agreed with the relevant utility owners.

95. Construction works will be undertaken in line with Health and Safety Executive (HSE) guidance in relation to working safely near to utility apparatus such as HSE's Guidance Note GS 6 "Avoidance of Danger from Overhead Electric Lines, and HS(G) 47 "Avoiding Danger from Underground Services.

5.17 Clearance of site on completion

96. Following completion of construction, all logistics compounds, temporary accesses, plant, temporary buildings or vehicles will be removed and land within the working area will be restored to its original condition.

97. Following completion of the Onshore Export Cable Corridor, the working area will be reinstated to a state commensurate with condition prior to the commencement of works (or subject to landowner agreement, improved, according with details set out in the **OLMP, (Volume 8, application ref: 8.11)** (see **Table 3-3**). This will include works between jointing bays, where ducts are installed which would be reinstated within two years, as detailed in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** and **Volume 7, Appendix 18-10 Biodiversity Net Gain Strategy (application ref: 7.18.18.10):**

- Reinstatement of topsoil and subsoil, including loosening or ripping of compacted soil;
- Reinstatement of land drainage systems, where necessary post construction drains may be installed, typically parallel to the Onshore Export Cable Corridor;
- Reseeding of any fields of grassland, grass margins and ditch banks as detailed in the detailed Ecological Management Plan, approved by the relevant planning authority and in accordance with the principles established in the **OEMP (Volume 8, application ref: 8.10)**;
- Reconstruction of any drains or ditches crossed using an open cut method;

- Replanting of any hedgerows or felled shrubs as detailed in the Landscape Management Plan, approved by the local planning authority and in accordance with the principles established in the **OLMP (Volume 8, application ref: 8.11)**;
- Restoration or repair of fences, gates, tracks or hard standing; and
- Reinstatement of PRoW where temporary diversions have been put in place during construction.

5.18 Emergency Planning and Procedures

98. Emergency procedures will be developed for the onshore elements of the Projects. This will set out the details of the anticipated hazards and conditions at each work site and emergency procedures for dealing with emergencies which may arise during the onshore works (such as spillages or leaks). Such procedures will be documented in an Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2**) which will include appropriate procedures such as for emergency flood or fire evacuation and emergency pollution control measures.

99. The Emergency Response, Evacuation and Pollution Control Plan will be developed by the Principal Contractor(s) following their appointment. Principal Contractor(s) and subcontractors will work in accordance with this plan. This plan will be stored in the health and safety folder.

100. The Emergency Response, Evacuation and Pollution Control Plan will also contain emergency phone numbers and the method of notifying the relevant local and statutory authorities. The procedures will be displayed at the work site and all staff will be required to follow them.

101. The Emergency Response, Evacuation and Pollution Control Plan shall include practical steps for protecting construction personnel, set out clear roles and responsibilities and where additional support may be required during a flood event. The plan would include the following information as a minimum:

- Emergency pollution and flood control measures based on Environment Agency guidelines;
- Fire safety;
- An extreme weather protocol;
- Site evacuation, safe access and egress routes;
- Spill prevention, location of spill kits and control procedures;
- Location of first aid facilities;

- Contain emergency contact details of relevant local and statutory authorities, and any notification requirements;
- A list of important contacts, including Floodline, utilities companies and insurance providers;
- A description or map showing locations of service shut off points; and
- Basic strategies for protecting property / machinery / materials, including moving assets to safety where possible, turning off / isolating services and moving to safety.

102. The procedures will be displayed at the works areas and all site staff will be required to follow them.

103. Should an incident involving injury or damage to vehicles or plant take place, the Site should be left undisturbed as far as is reasonably practicable (in accordance with personal health and safety) until suitable investigations have been conducted. Where it is necessary to move equipment, materials or people to prevent or reduce environmental impact, photographs will be taken, wherever reasonably practicable (in accordance with personal health and safety), to allow easy reconstruction of the incident layout for any required investigative purposes.

5.18.1 Flood Management Emergency Measures

104. The Emergency Response, Evacuation and Pollution Control Plan will also detail management measures for the risk of flooding during construction, and will likely include the following measures:

- The Principal Contractor(s) will sign up to the Environment Agency Flood Alerts and 'Floodline' flood warning services;
- In areas not covered by the EA's flood alerts, site workers and users will be required to independently monitor local weather forecasts and ensure there is an evacuation route in place in the event that either fluvial or surface water flooding takes place;
- Site-- Specific flood warning and evacuation plans will be produced during construction of the Onshore Export Cable Corridor specifically relating to works at watercourse crossings where personnel or materials may be located in Flood Zone 2 or 3;
- All personnel should be made aware of any access routes which are located within Flood Zone 2 or 3 and any flood warning issued for those areas should result in the relevant access routes being cleared of all project personnel and, where possible, all project plant / materials;

- Visual checks on flood defences, watercourses and drainage culverts will be carried out both pre-construction and also during construction following a flood event within the working area after any significant weather event. Any signs of degradation will be reported to the EA, relevant landowner or Principal Contractor(s) immediately;
- Debris will be safely contained, reducing the risk of large items entering the flood flow;
- Where soil storage is in Flood Zones 2 and 3 is unavoidable, spoil storage areas will be located such that they don't block or divert existing surface water flow paths;
- Monitoring of construction drainage sediment traps (visual inspection) with increased monitoring during inclement weather. If required these traps can be pumped via settling tanks to remove sediment, based on a pre-defined level / depth of sediment;
- All control measures installed will be regularly inspected and maintained by the Principal Contractor(s) as required and checked for appropriateness during phases of construction; and
- Uncontrolled runoff from offsite areas within proximity to the site will be recorded, with dates and photographs collected by the Principal Contractor(s) for any regulator challenges.

105. As detailed in the **Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4)** while construction work is taking place, site workers and users will be required to monitor local weather forecasts and ensure there is an evacuation route in place in the event such as either fluvial or surface water flooding takes place during the construction stages of the development. This will also need to include any works being undertaken at the landfall, in the area at risk from tidal flooding. In the event of extreme weather with the risk of flooding, contractors and management should liaise with the LLFA and Environment Agency so they are aware of any forecast related to heavy rainfall events. A flood warning can then be issued when necessary to allow work to stop, especially in areas in close proximity to key watercourses.

5.18.2 Severe Weather Protocol

106. As detailed in **Volume 7, Chapter 30 Climate Change (application ref: 7.30**) the final COCP will incorporate a severe weather protocol. This will account for exposure of site workers and construction plant to extreme weather events and ensure appropriate preparation and response measures are in place to minimise their impacts. The protocol will assign clear responsibilities in the event of an extreme weather emergency. Measures include, but are not limited to, the following:

- Scheduling construction activities based on seasonality and timely weather forecasts;
- Monitoring of on-site weather conditions and severe weather alert services;
- Provision of a comprehensive flood warning and evacuation plan;
- Requirement for contractors to include additional provisions in their management plans based on weather conditions at the time of works such as additional rest breaks during heatwaves, securing stored equipment and material during high wind events and specifying de-icing equipment during cold spells.

5.19 Unexploded Ordnance

107. The UXO Risk Assessment will be completed for the Projects and a Risk Management Protocol will be provided.

108. The Contractor must comply with the approved Risk Mitigation Protocol and UXO Risk Zone Management Procedures relevant for the Projects.

5.20 Carbon and Resource Efficiency

109. As detailed in **Volume 7, Chapter 30 Climate Change (application ref: 7.30)** during construction the Principal Contractor(s) will be required to have strategies in place that reduce resource consumption and associated GHG emissions over the life cycle of the Projects.

110. Following appointment of the Principal Contractor(s), further details will be added to the detailed CoCP(s) on the management of carbon and resource efficiency during construction. The following measures are proposed, drawing upon the recommendations within **Volume 7, Chapter 30 Climate Change (application ref: 7.30):**

- Optimise the efficiency of construction activities to reduce fuel and material consumption and promote resource efficiency, inclusion of delivery and transport coordination requirements in a Vessel Management Plan, adoption of waste hierarchy in construction management plans.
- Explore opportunities to reduce embodied carbon and other construction emissions by developing carbon-focused procurement criteria and incentive mechanisms for material suppliers and project partners, such as low carbon and recycled materials, circular construction methods and performance benchmarking.
- Review and include PAS 2080's key principles and requirements with respect to carbon management in the relevant project documents which may include:
    - Establish and communicate carbon management goals, roles and responsibilities, requirements and procedures to parties involved in the delivery of the DBS East or DBS West in Isolation.
    - Practice the GHG mitigation hierarchy over the Projects' lifetime.
    - Set carbon reduction targets for the Projects against a clear baseline which is aligned to the UK's net zero targets and develop the associated Key Performance Indicators and monitoring and reporting arrangements to keep track of the carbon performance of the Projects.
    - Promote collaboration and information sharing across the value chain to encourage whole life carbon reductions and continual improvement.
    - Provide training and raise awareness among the project team and partners on key carbon emission sources and low carbon solutions.

6 Management of Onshore Environmental Issues

111. The following sections provide outline measures in relation to the management of onshore environmental issues during construction. These measures are based upon the EIA undertaken in **Volume 7** of the Projects DCO Application, in addition to the relevant commitments the Projects have identified through the EIA process which are fully detailed within the **Commitments Register (see Volume 8, Commitments Register (application ref: 8.6))** and this OCoCP.

112. These measures and commitments will be further developed within the detailed CoCP(s) required under Requirement 19 of the DCO. The topic areas detailed below align with all chapters of the onshore ES (**Volume 7 Chapters 18 -30) (application ref: 7.18.0 to 7.30.0))**.

6.1 Ecology and Nature Conservation

6.1.1 Objective

113. To minimise the impact of construction works on protected species and designated sites and to minimise the loss of nature conservation features such as hedgerows and mature trees.

6.1.2 Management measures

114. Further details regarding management measures are provided in the **OEMP (Volume 8, application ref: 8.10)**. The OEMP includes but is not limited to pre-construction, construction, and post-mitigation measures relating to habitats, hedgerows, birds, bats, badgers, otters, water voles, reptiles, Great Crested Newt, terrestrial invertebrates, and other protected or notable species where relevant. The EMP will include details of any long-term mitigation and management measures relevant to terrestrial ecology and ornithology and nature conservation. The OEMP and detailed EMP will be developed in consultation with the relevant stakeholders.

115. Other management measures relating to this topic that should be considered alongside those topic-specific management measures (detailed within this section) comprise the following:

- Outline Pollution Prevention Plan (refer to section 5.12);
- Crossing Method Statements (refer to section 5.15);
- Contaminated Land and Groundwater Scheme (refer to section 6.2.1);
- Drilling fluid breakout management plan (refer to section 6.3.2.1);
- Outline Drainage Strategy (refer to section 6.3.2.3);

- Watercourse Crossings – Main Rivers and Ordinary Watercourses (refer to section 6.3.2.6); and
- Soil Management (refer to section 6.6.2.2).

6.1.2.1 General

116. General measures to protect ecology and nature conservation, are summarised below with full detail provided in the **OEMP (Volume 8, application ref: 8.10)**:

- An ECoW (see **Table 2-1**) will be employed to oversee construction work and minimise risks to important ecological features and will ensure the implementation of all measures in the **OEMP (Volume 8, application ref: 8.10)**;
- Prior to the commencement of construction activities, pre-construction surveys will be undertaken by the ECoW where necessary in accordance with the **OEMP (Volume 8, application ref: 8.10)** to update the ecology baseline and determine potential impacts at the time of construction. Should any new protected or notable species be identified ahead of construction the OEMP and will be updated with relevant control measures;
- Protective fencing will be installed and sign-posted around retained habitats of importance;
- Vegetation clearance will be kept to a minimum and, where possible, avoid key seasonal constraints for identified receptors as detailed in the **OEMP (Volume 8, application ref: 8.10)**;
- Vehicle speeds will be restricted within the working corridor to reduce the likelihood of injury to species on site;
- Best practice pollution prevention guidelines will be followed through the construction phase as per the OPPP **(Appendix D);**
- An Arboriculture Impact Assessment (AIA) and Tree Protection Plans (TPPs) will be implemented where appropriate as detailed in the **OEMP (Volume 8, application ref: 8.10)**;

117. The **OLMP (Volume 8, application ref: 8.11)** (see **Table 3-3**) will be submitted as part of the DCO application and will set out the principles that will be followed when finalising landscape and ecology mitigation, compensation and enhancement measures for the Projects. All habitats will be reinstated as soon as possible after construction. Refer to the **OLMP (Volume 8, application ref: 8.11)** for reinstatement requirements.

6.1.2.2 Biodiversity Net Gain (BNG)

118. A **Biodiversity Net Gain (BNG) Strategy report** (**Volume 7, Appendix 18-10 (application ref: 7.18.18.10)** has been prepared for the Projects which sets out the strategy for assessing and securing BNG for the onshore elements of the projects. This will be updated and agreed with the relevant planning authority prior to construction.

119. The BNG Strategy sets out the Projects' approach to deliver no net loss with a commitment to reinstate a significant proportion of habitats, within two years of the commencement of works within the Onshore Development Area

6.1.2.3 Biosecurity and Invasive Non-Native Species

120. Invasive Non-Native Species (INNS) are animals and plants that grow in an area in which they do not naturally occur and that have the ability to spread rapidly causing environmental, economic or health impacts.

121. Under the Wildlife and Countryside Act 1981 it is an offence to plant or otherwise cause to grow in the wild any such species listed in Schedule 9, Part I (animals) or Part II (plants) of Section 62 of the Wildlife and Countryside Act 1981.

122. Injurious weeds are native plants that are considered a problem for farming. Under the Weeds Act 1959 occupiers should take action to prevent the spread of the following five species of injurious weeds (spear thistle, creeping / field thistle, curled dock, broad-leaved dock and ragwort) and any others as may be prescribed under the regulations.

123. As detailed in the **OEMP (Volume 8, application ref: 8.10)**, an Invasives Species Management Plan will be provided as part of the detailed CoCP(s) upon appointment of a Principal Contractor(s) and ECoW (see **Table 3-2**) if deemed necessary. The Invasives Species Management Plan would be developed for approval by the relevant stakeholders prior to the commencement of construction works and would be implemented to minimise the risk of spreading INNS. Refer to the **OEMP (Volume 8, application ref: 8.10)** for further detail of the measures that would appear in the Invasive Species Management Plan. The protocol accounts for the management of any Invasives Species (INNS) that are found to be present on site and measures to limit their transference.

124. The locations and extent of INNS and injurious weeds will be recorded by the ECoW and personnel will be made aware of their locations and any required mitigation in advance of construction activity in the vicinity. The ECoW will assist in the identification of these species and in the delivery of TBTs on the subject.

125. In instances where INNS have been identified, to avoid biological contamination, adherence to Defra (2003) for best practice measures is required. These measures may include but are not limited to:

- Agreeing access arrangements with landowners and occupiers in advance of any construction works taking place;
- Minimising where possible the movements of people, vehicles or equipment into areas where farm animals are kept; and
- Cleaning equipment upon arrival and departure.

126. The potential spread of INNS will need to be monitored in areas affected by INNS. In the worst case scenario if the Projects are concluded to have resulted in the spread of INNS (e.g. Himalayan Balsam to a previously unaffected watercourse), remedial action would be required in the form of an eradication effort.

6.1.2.3.1 Japanese Knotweed

127. It should be noted that if Japanese knotweed is present on site where works are required, a strategy for its removal will need to be identified by the Principal Contractor(s) which may include clearance and either off-site disposal or on-site burial.

6.1.2.3.2 Himalayan Balsam

128. Where any Himalayan Balsam may need to be cleared within the site boundary then this should be conducted in a sensitive manner to prevent harm to people carrying out the works for the Projects. Risks of clearing Himalayan Balsam will be delivered to personnel as part of site induction, TBTs and other specific task briefings.

6.2 Geology and Land Quality

6.2.1 Objective

129. To protect receptors relevant to Geology and Land Quality, including the underlying secondary and principal aquifers in terms of groundwater quality and flow.

130. Also, of particular relevance, DCO Requirement 29 (Contaminated land and groundwater scheme) requires a Contaminated Land and Groundwater Scheme to be prepared to identify any contamination and any remedial measures which may be required. The scheme will be developed in line with Land Contamination: Risk Management Framework (Environment Agency, 2021) (or latest available guidance) which sets out the contaminated land framework and outlines the process of desk study through to remediation verification and the different stages of risk assessment. See **Table 3-3** for detail of the Contaminated Land and Groundwater scheme.

6.2.2 Management measures

131. Other management measures relating to this topic that should be considered alongside those topic-specific management measures (detailed within this section) comprise the following:

- Outline Pollution Prevention Plan (refer to section 5.12);
- Crossing Method Statements (refer to section 5.15);
- Contaminated Land and Groundwater Scheme (refer to section 6.2.1);
- Piling Risk Assessment (refer to section 6.2.2.1).
- Hydrogeological risk assessments (refer to section 6.2.2.2);
- Drilling fluid breakout management plan (refer to section 6.3.2.1);
- Outline Drainage Strategy (refer to section 6.3.2.3);
- Watercourse Crossings – Main Rivers and Ordinary Watercourses (refer to section 6.3.2.6); and
- Soil Management (refer to section 6.6.2.2).

6.2.2.1 Piling Risk Assessment

132. As detailed in **Volume 7, Chapter 19 Geology and Land Quality (application ref: 7.19)** a Piling risk assessment would be undertaken if piles are to be used for the construction of the Onshore Converter Station(s) in line with the Environment Agency's Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (Environment Agency, 2001).

133. The Projects will be designed to avoid impact of drilling activities upon this aquifer, where possible. Relevant controls as required will be added to the detailed CoCP(s) and are specified in the OPPP **(Appendix D)**.

6.2.2.2 Hydrogeological Risk Assessment

134. In advance of construction, ground investigations and a hydrogeological risk assessment (completed in adherence with Environment Agency's approach to groundwater protection requirements (Environment Agency, 2018)) would be completed at each trenchless crossings to understand the potential risk upon groundwater of construction activities proposed at each site location. Results of this study will inform further ground water mitigation required during construction and would be included within the detailed CoCP(s).

135. Hydrogeological risk assessments would also be undertaken where earthworks / excavations are within 50m (or 250m dependent upon volume abstracted) of private potable groundwater abstractions pose a potential risk from either existing or potentially introduced contamination.

136. Further hydrogeological risk assessments will be undertaken where earthworks / excavations are within influencing distance of abstractions whereby they may interrupt flow pathways due to dewatering or other associated activities.

137. The risk assessment, which would be desk-based, follows a tiered approach with more detailed assessments carried out in areas considered to be a potentially greater risk to groundwater.

138. The production of the hydrogeological risk assessment would be undertaken prior to the commencement of construction works (should one be deemed necessary) and meet the requirements of Environment Agency's Approach to Groundwater Protection 2018 Framework. They may detail the requirement for groundwater monitoring.

139. The OPPP **(Appendix D)** provides management controls in relation to water abstraction.

6.2.2.3 Known Contamination

140. As detailed in the **Volume 7, Appendix 19-2 Geo-Environmental Desk Study and Preliminary Risk Assessment Report (application ref: 7.19.19.2)** (PRA) pre-construction ground investigation works have confirmed that there is a known historical landfill (according to Environment Agency records) located adjacent to the Onshore Export Cable Corridor (adjacent to Catfoss Lane). Following the completion of the targeted pre-construction ground investigations, a generic quantitative risk assessment will be undertaken to assess the potential risks to human health and controlled waters receptors from the Projects. The assessment will also include recommendations for further works should they be deemed necessary.

141. Where areas of potential contamination must undergo excavation, targeted ground investigations will be completed ahead of construction as part of the contaminated land and groundwater scheme, detailed in section 6.2.1, above to determine the extent and source of contamination and to identify any remediation requirements or specific controls.

6.2.2.4 Unexpected Contamination

142. Localised areas within the Onshore Development Area may be at risk of potential contamination from previous historical land uses specifically at now infilled mineral extraction sites and ponds. Where these features are identified the Principal Contractor(s) will review the potential risk of contamination in advance of construction to identify any further investigation requirements, as part of the contaminated land and groundwater scheme, detailed in section 6.2.1, above.

143. Where areas of potential contamination must undergo excavation, targeted ground investigations will be completed ahead of construction to determine the extent and source of contamination and to identify any remediation requirements or specific management controls.

144. The following measures would be included in the detailed CoCP and may be implemented in the event that unexpected contamination is encountered:

- Any visual / olfactory signs of contamination encountered during excavation would be reported to the Principal Contractor(s) and investigated;
- Areas where unexpected contamination is encountered or suspected will be photographed and annotated on a site drawing;
- Necessary works at the location where signs of contamination are suspected / encountered will cease until the contamination has been assessed by a suitably qualified Environmental Consultant in accordance with the Contaminated Land (England) Regulations 2006; and
- Personnel will be trained to identify contamination (i.e. asbestos awareness) and trained on the procedure for risk of encountering unexpected contamination.

145. As detailed in the OPPP **(Appendix D),** mitigation measures following the EA's good practice Pollution Prevention Guidance (PPG) will be followed.

146. The CoCP will be further informed by the findings of the contaminated land and groundwater scheme, detailed in section 6.2.1, above. Pre-construction site investigations in relation to land quality and will include an assessment of the potential risks to human health and controlled waters receptors. Based on the results of this risk assessment, appropriate working methods would be developed to avoid, minimise or mitigate impacts relating to construction and any additional controls would be incorporated within the CoCP. Potential controls would include but not be limited to the following:

- Appropriate PPE for personnel would be required;
- Soil (vapour/ groundwater) samples would be collected and analysed as required. The risks associated with contamination would be assessed. If required, a remediation strategy would be designed and agreed with the Relevant Authorities before implementation;
- If a significant source of ground gas / vapour generating material is encountered during construction further consideration will be required and appropriate mitigation such as PPE identified;
- Provision of welfare facilities will be designed to account for potential presence of contamination. Where contamination is encountered, welfare provision will be reassessed to check for suitability (i.e. sufficient cleaning resources for washing contaminated PPE, sufficient new, clean PPE);
- Implementation of relevant good working practices applied including stockpile management and dust suppression activities to reduce the risk relating to the creation and inhalation of wind-blown dusts. Refer to best practice measures detailed further within section 6.9 of this OCoCP; and
- Monitoring of works including air quality and odour would take place as required.

6.2.2.5 Managing Risk to Workers Arising from Existing Contamination

147. Potential risks to construction and maintenance workers arising from contamination within soil and groundwater during the construction phases of the Projects would be controlled through:

- The Construction (Design and Management) Regulations 2015 (CDM), Health and Safety at Work Act 1974, and Control of Substances Hazardous to Health Regulations 2002 (COSHH);
- The requirement to work in accordance with best practice and statutory guidance; and
- The requirement for PPE as standard working practice.

148. PPE requirements will be defined by risk assessment and may include nitrile gloves, or another specification as deemed required, protective overalls, safety goggles and appropriately fitting face masks especially by those workers who are likely to be coming into contact with soil or water, such as those carrying out hand digging activities.

149. A safe system of work for any workers coming into contact with any contaminated substances would be adopted by the Principal Contractor(s) and its subcontractors and where possible, activities involving contaminated soils/land will minimise personnel contact.

6.2.2.6 Managing Risk to the Public Arising from Existing Contamination

150. To avoid and minimise dust generation from any contaminated stockpiles, stock-piles will be covered where possible and labelled. Refer to the controls detailed in the OSMP **(Appendix A)** and section 6.9.

6.2.2.7 Monitoring

151. Groundwater monitoring and ground gas monitoring may be required as part of the targeted ground investigations undertaken as part of the Contaminated Land and Groundwater Scheme (refer to section 6.2.1) or Hydrogeological Risk Assessments (see section 6.2.2.2).

152. The monitoring would aid in the identification of potential risks to human health, groundwater and surface water receptors identified within the **Volume 7, Chapter 19 Geology and Ground Conditions application (ref: 7.19.1)**

6.2.2.8 Mining and Mineral Resource Extraction

153. As detailed in the **Geo-Environmental Desk Study and Preliminary Risk Assessment Report (PRA) (Volume 7, Appendix 19-1 (application ref: 7.19.19.2)** Mineral Safeguarding Areas (MSAs), Areas of Search and Preferred areas are present within the Onshore Development Area as follows:

- Isolated Mineral Safeguarding Areas (MSAs) are present throughout the Onshore Development Area;
- Sand and gravel preferred areas are located within the Onshore Export Cable Corridor between Riston Road and A165, Catwick; and
- Sand and gravel areas of search are also located within the Onshore Export Cable Corridor to the north west of Sigglesthorne, between Riston Road and A165, Catwick and to the east and west of Whitecross Road.

154. Any mineral extraction during construction will require advanced consultation with the planning authority, the relevant planning authority regarding the practicality and viability of extraction of the mineral resource.

155. Prior to construction the following assessments may also be deemed required:

- Further ground investigation to determine the depth, quality and accessibility of the mineral resource and amount of mineral that may be sterilised. Pre-construction extraction should be considered to minimise sterilisation risk to the material;
- Mineral Resource Assessment (MRA) to provide an indication of the likely quality and extent of the mineral resource, the commercial viability of extraction and environmental impact. This may also aid in determining whether it is reasonably practical for the resource to extracted prior to the commencement of construction works and therefore, reduce the area that may be potentially sterilised; and
- Mineral Infrastructure Impact Assessment (MIIA) to identify and discuss the potential impacts associated with the construction phase on mineral infrastructure already present. This would be undertaken in consultation with East Riding of Yorkshire Council. As with the MRA, this would be undertaken post consent and prior to the commencement of construction works.

156. If it is determined that extraction of the resource was reasonably practical, it may be extracted prior to the commencement of construction works and therefore reduce the area that may be potentially sterilised.

6.3 Hydrology and Flood Risk

6.3.1 Objective

157. To minimise the risk of surface water flooding during the construction phase, to prevent pollution of surface watercourses and to minimise the impact on local surface water features.

158. As detailed in section 6.2.1, DCO Requirement 29 (Contaminated land and groundwater scheme) requires a Contaminated Land and Groundwater Scheme to be prepared to identify any contamination and any remedial measures which may be required. The scheme will be developed in line with Land Contamination: Risk Management Framework (Environment Agency, 2021) (or latest available guidance) which sets out the contaminated land framework and outlines the process of desk study through to remediation verification and the different stages of risk assessment. See **Table 3-3** for detail of the Contaminated Land and Groundwater scheme.

6.3.2 Management Measures

159. Other management measures relating to this topic that should be considered alongside those topic-specific management measures (detailed within this section) comprise the following:

- Outline Pollution Prevention Plan (refer to section 5.12);
- Crossing Method Statements (refer to section 5.15);
- Contaminated Land and Groundwater Scheme (refer to section 6.2.1);
- Piling Risk Assessment (refer to section 6.2.2.1).
- Hydrogeological risk assessments (refer to section 6.2.2.2);
- Drilling fluid breakout management plan (refer to section 6.3.2.1);
- Outline Drainage Strategy (refer to section 6.3.2.3);
- Watercourse Crossings – Main Rivers and Ordinary Watercourses (refer to section 6.3.2.6); and
- Soil Management (refer to section 6.6.2.2).

160. Appropriate environmental best practice will be followed to minimise impacts on watercourses and local surface water features. This will include but is not limited to:

- CIRIA C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (Masters-Williams 2001);
- CIRIA C648 Control of Water Pollution from Linear Construction Projects (Murnane, Heap, and Swain 2006); and
- CIRIA – SuDS Manual (CIRIA 2015).

161. As per the **Volume 7, Appendix 20-3 Water Environment Regulations Compliance Assessment (application ref: 7.20.20.3)** the Onshore Development Area passes through the following Nitrate Vulnerable Zones (NVZ):

- River Hull from Arram Beck to Humber NVZ;
- Barmston Sea Drain from Skipsea Drain to N Sea NVZ;
- Holderness Drain from Foredyke Stream to Humber NVZ; and
- Yorkshire Chalk.

162. The construction site drainage and construction activities (ie: discharge, runoff) must ensure that any site discharges do not result in increased nitrate volumes entering the surface drainage networks. Adherence to control measures as detailed in this section of the OCoCP and the OPPP **(Appendix D)** will ensure no increased nitrate volumes entering the surface water drainage networks.

163. It will be ensured that any culverts are adequately sized and have sufficient capacity to avoid impounding flows and are installed below the active bed of the watercourse, ensuring that a suitable flow rate is maintained so that sediment continuity and the movement of fish and aquatic invertebrates can be maintained as in CIRIA's C786 Culverts, screen and outfall manual (CIRIA 2019). A suitable flow rate will be maintained whilst crossings are installed through the use of pumps, flumes or equivalent, so that the temporary works remain safe and operational in times of flood.

164. A number of management measures have been identified in the OPPP **(Appendix D)** which are relevant to Hydrology and Flood Risk. A PPP (as part of the detailed CoCP(s) will be developed based on the OPPP **(Appendix D)** which recognises the risk of pollution from the onshore construction activities and presents pro-active management measures to ensure that any pollution that may occur is prevented where possible.

6.3.2.1 Drilling Fluid Break Out Management Plan

165. As referenced in **Volume 7, Chapter 20 Flood Risk and Hydrology (application ref: 7.20)**, a Drilling Fluid Break Out Management Plan (See **Table 3-2**) will be developed on appointment of a Principal Contractor(s).

166. Bentonite or another inert clay-based material (indicatively comprising 95% water and 5% clay) would be used as a lubricant at the drill head for trenchless crossing techniques.

167. If there is a fracture in the location of the drill path, the pressure could cause the bentonite slurry to travel along the 'path of least resistance' to the surface. This is more likely to occur at each end of the trenchless crossing where the drill path is closest to the surface. This process is referred to as a bentonite break out or 'frac-out' i.e. the unintentional return of drilling fluid to the surface.

168. The Drilling Fluid Break Out Management Plan will be completed upon appointment of a Principal Contractor(s) as part of the detailed CoCP(s). The Drilling Fluid Break Out Management Plan will be agreed with the Environment Agency prior to commencement of construction activities. The purpose of a Drilling Fluid Break Out Management Plan is to minimise the potential for a breakout, ensure early detection, protect areas that are considered environmentally sensitive and set out a response plan should a breakout occur.

- Measures to contain the breakout, for example sandbags, to minimise the extent of any smothering; and
- Measures to remove the released bentonite or other inert drilling fluid if a significant volume of material is contained – for example pumped back to the drilling fluid lagoon within the trenchless crossing compound, or pumped to the interceptor drains, or pumped to the mobile settling tanks that will be used for managing sediment traps.

169. The exact specification for the contingency plan will be informed by further ground investigation and the specific design of the trenchless crossing and selected construction methodology.

170. The Drilling Fluid Break Out Management Plan will outline the design protocols that will be implemented to minimise the risk of a 'break out,' for example, there would be a design protocol for the protection of sensitive ecological receptors. These measures may include but are not limited to, walkover surveys, onsite briefings, barriers to be erected between bore site and the nearby sensitive resources prior to drilling where appropriate, the presence of an on-site Ecological Clerk of Works (ECoW) where necessary and maintaining necessary response equipment on-site or at a readily accessible location in good working order.

171. The **Flood Risk Assessment (Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4))** details that during construction, there will be an emergency access route along the beach to the north of Skipsea, to provide emergency access to the beach front for workers or if there was a drilling fluid breakout.

172. As to be detailed in the Drilling Fluid Break Out Management Plan, the potential for release of drilling fluids as a result of breakout will be reduced by:

- Undertaking appropriate ground investigation / desk study to inform drilling parameters such as drilling pressures;

- Monitoring of drilling fluid properties (i.e. mud weight, viscosity, gel strength, volume and pressure) during drilling to prevent breakouts
- Stopping drilling if unexpected variations or trends are observed and investigating the cause;
- Having breakout contingency plans and response equipment such as sand bags and clean-up equipment in place; and
- Regular inspections should also be conducted along the drill path during pilot hole drilling.

6.3.2.2 Emergency Response Evacuation and Pollution Control Plan

173. In addition, an Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2**) will be developed as part of the detailed CoCP(s) which will set out details of the emergency procedures in cases of spillages or leaks during construction and will include measures for flood evacuation as set out in **Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4)** and **Outline Drainage Strategy (Volume 8, application ref: 8.12).**

6.3.2.3 Outline Drainage Strategy

174. **Outline Drainage Strategy (Volume 8, application ref: 8.12)** has been developed which gives details of the outline drainage strategy for the Onshore Converter Station(s) and the pre and post construction land drainage, located within the Onshore Development Area. The **Outline Drainage Strategy (Volume 8, application ref: 8.12)** will form the basis of the detailed drainage scheme and would be submitted to the LLFA at ERYC for approval prior to the commencement of construction of the Projects, in consultation with the Environment Agency, IDBs and the relevant sewerage and drainage authorities.

175. **Outline Drainage Strategy (Volume 8, application ref: 8.12)** will ensure that existing run-off rates to the surrounding water environment are maintained at pre-development rates.

176. The Projects have commissioned a detailed drainage survey, which would be completed prior to construction to establish the existing land drainage baseline environment. To fully understand the drainage a suitably qualified land drainage expert with experience of working in the local area has been enlisted to carry out the baseline surveys and to consult with landowners. They would also ensure local, site-specific, and landowner knowledge is effectively captured prior to construction commencing. A detailed drainage scheme would be drafted based on the results of the detailed drainage survey. The drainage scheme (see **Table 3-3**) would be developed in consultation with landowners, the LLFA at ERYC, the Environment Agency and relevant IDB(s).

177. Where the Projects intercept land drainage, pre-construction drainage would be installed at the edge(s) of the Onshore Export Cable route corridor. This permanent drainage would intercept existing field drains and ensure the integrity of the existing land drainage is maintained during construction and operation of the Projects. All drains and outfalls would be risk assessed and appropriate control measures used prior to discharge into any watercourses at a controlled rate. Temporary attenuation / storage would be provided, where necessary.

178. Particular care will be taken to ensure that the existing land drainage system is not compromised as a result of construction. Land drainage systems will be maintained during construction and reinstated on completion. Refer to section 1.2 of **Outline Drainage Strategy (Volume 8, application ref: 8.12)** for further information on pre and post- construction land drainage.

179. At the Onshore Converter Stations, located within the Onshore Substation Zone a construction drainage system (see **Table 3-3**) would also be implemented at the beginning of the construction phase. This would cover the drainage requirements for both the temporary and permanent working areas and ensure any land drainage has suitable pollution prevention measures implemented, including filter trenches and fuel interceptors.

180. Prior to discharge to watercourses, water from temporary discharge will be passed through a treatment system such as a silt interceptor (refer to OPPP **(Appendix D)**).

181. Appropriate licences relating to dewatering (and abstraction if required) will be obtained from the relevant bodies (Environment Agency, LLFA, IDB). **Other Consents and Licenses (Volume 8, application ref: 8.3)** includes details of other consent and licences relevant to the Projects that may need to be sought.

6.3.2.4 Surface Water Management Plan

182. In addition to the pre and post construction land drainage scheme, a Surface Water Management Plan (see **Table 3-2**) will be developed as part of the detailed CoCP(s) on appointment of a Principal Contractor(s) which will set out the requirements for temporary surface water drainage during construction should any temporary dewatering be required.

183. Construction drainage would be developed and implemented to minimise water within the Onshore Export Cable Corridor / trench and ensure ongoing drainage of surrounding land. During construction, the onshore cable installation would be designed such that it will be bounded by parallel drainage channels (one on each side), as described in section 6.3.2.3, above to intercept land drainage. Any water entering cable trenches during cable route installation from surface runoff or groundwater seepage would be pumped via settling tanks, sediment basins or mobile treatment facilities to remove sediment, before being discharged into local ditches or drains via temporary interceptor drains. Water would be discharged at a controlled rate into the existing drainage network using local ditches or drains. Further information will be detailed in the Surface Water Management Plan.

184. If perched groundwater were to be encountered during construction, it would need to be mitigated by appropriate construction techniques and in accordance with an appropriate method statement. Further detail on this risk will be detailed in the Surface Water Management Plan (refer to **Table 3-2**).

6.3.2.5 Flood Management

185. Environment Agency mapping shows that some areas of the Onshore Development Area are located within Flood Zones 2 and 3. Any works in a floodplain will incorporate measures to minimise possible obstruction or deviation of floodwater. For example, this will include leaving gaps in soil stockpiles, minimising the height of possible raised structures (e.g. access tracks and working areas).

186. As detailed in **Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4)** where TCCs and the Onshore Export Cable Corridor are located in Flood Zone 2 and 3 temporary spoil storage would be located to avoid blocking or diverting surface water flow paths. Topsoil and subsoil will be stored in separate stockpiles in line with best practice guidance as detailed in the OSMP **(Appendix A)**. Once the stockpile has been completed the area should be cordoned off with secure fencing to prevent any disturbance or contamination by other construction activities. If the soil is to be stockpiled for more than six months, the surface of the stockpiles should be seeded with a grass/clover mix to minimise soil erosion.

6.3.2.6 Watercourse Crossings – Main Rivers and Ordinary Watercourses

187. Trenchless techniques will be used for Main River crossings as confirmed and agreed with the Environment Agency, LLFA and IDB there will be no impact on flood risk during the construction works. The cable entry and exit pits will be at least 20m from any 'Main River,' or from the nearest toe of any flood defences and would be installed at a depth to minimise potential interaction with current, or any planned, infrastructure (e.g., sheet piles), at least 2m below the channel bed. Further management measures in relation to Cable Crossings beneath Main Rivers is detailed in the OPPP **(Appendix D).**

188. Ordinary watercourses may be undertaken by open cut trenching methods. In such cases, temporary measures will be employed to maintain flow of water along the watercourse. The proposed crossing methodology for all water courses is set out in the **Volume 7, Appendix 5-2 Obstacle crossing register (application ref: 7.5.5.2).** Where a trenchless crossing methodology (e.g. HDD) is selected entry and exit points will be located at least 9 m away from IDB and Ordinary surface watercourses to ensure the ongoing maintenance of drains.

189. A 6m wide strip from the outside edge of any pipe which is forming a culverted IDB watercourse will be maintained during both construction and once it is located in situ to enable access and to prevent damage.

190. Temporary bridges (e.g. Bailey bridges or similar) may be used as options to traverse watercourses where direct access is not readily available from both sides. Selection of cable crossing technique for all watercourses (including Internal Drainage Board (IDB) drains) will be dependent on local site conditions and may include the use of temporary culverts. In line with Environment Agency consultation, where possible clear span crossings would be used at crossing points.

191. At these locations, a site-specific investigation will be carried out at detailed design stage to identify the local ground and groundwater conditions, enable a site-specific risk assessment to be undertaken and to understand the potential impact of any works on flows along the watercourse and flood risk in the local area. Refer to the OPPP **(Appendix D)** for specific detail on working distances and requirements in relation to main or ordinary watercourses.

192. Where temporary dams are used:

- The Onshore Export Cables will be set below the channel bed at a depth dependent on local geology and geomorphological risks. This would avoid exposure during periods of higher energy flow when the bed could be mobilised. This depth takes into consideration anticipated climate-change related changes in fluvial flows and erosion that will occur over time;
- The amount of time that temporary dams or flumes are in place will be kept to a minimum;
- Flumes or pumps would be adequately sized to ensure that flows downstream are maintained whilst minimising upstream impoundment;
- Scour protection would also be used to protect the river bed downstream of the dam from high energy flow at the outlets of flumes and pumps;
- If a diversion channel is required, geotextiles or similar techniques will be used to line the channel and prevent sediment entering the watercourse;
- Vegetation would not be removed from the banks unless necessary to undertake the works, in which case removal would be restricted to the smallest practicable footprint;
- Channel bed and banks would be sympathetically reinstated (e.g. by replacing re-sectioned banks with more natural profiles that are typical of the natural geomorphology of the watercourse); and
- Prior to dewatering the area between the temporary dams, a fish rescue would be undertaken.

193. As detailed in **Volume 7, Chapter 20 Flood Risk and Hydrology (application ref: 7.20)** and section 5.15, crossing methodology will be agreed with the relevant asset owner prior to construction and Crossing Method Statements will be produced that will set out construction operations to be undertaken (including construction methods and types of plant required) and the associated environmental and health and safety issues for certain crossings where an increased risk is identified. The method statements will include details of crossing techniques to be deployed at crossings, including sensitive environmental crossings (such as Main Rivers). These will be developed with the relevant asset owner or key stakeholder such as the Environment Agency, IDB or ERYC. In addition, appropriate consent will be sought for watercourse crossings either through the relevant regulator or through the Protective Provisions as set out in the **Draft DCO (Volume 3, application ref: 3.1)**. Refer to **Other Consents and Licenses (Volume 8, application ref: 8.3)** for further detail of consent requirements for the Projects.

194. Refer to the OPPP **(Appendix D**) for further details of the management controls for watercourse crossings to prevent pollution and flood risk.

6.3.2.7 Flood Defence Monitoring

195. As detailed in **Volume 7, Chapter 20 Flood Risk and Hydrology (application ref: 7.20.0)**, where the cable is crossing Environment Agency flood defences this will likely require monitoring to ensure there is no detrimental impact to defences (i.e. no settlement occurs as a result of trenchless techniques). This is to ensure that the standard of protection of defences is maintained and would be agreed with the Environment Agency prior to construction.

6.4 Traffic and Transport

6.4.1 Objectives

196. To carry out construction works in such a way that maintains highway safety and avoids or minimises adverse effects on local communities and highway users.

6.4.2 Management Measures

197. **Outline Construction Traffic Management Plan (Volume 8, application ref: 8.13)** has been developed as a standalone document to the DCO (see **Table 3-3**) and is submitted with the DCO application. The OCTMP contains the control measures and monitoring procedures for managing the potential traffic and transport impacts of constructing the Projects. The detailed CTMP(s) will be developed in accordance with the OCTMP and on appointment of the Principal Contractor(s).

198. As detailed in **Outline Construction Traffic Management Plan (Volume 8, application ref: 8.13),** the OCTMP will form the basis for a detailed Construction Traffic Management Plan (CTMP) for each phase of the Projects' onshore works, which would be prepared and submitted prior to the commencement of construction of the relevant phase for approval by ERYC in consultation with their own highways team, Hull City Council and National Highways.

199. All construction traffic will follow the measures set out in the detailed CTMP during construction to minimise traffic impact upon the public network.

200. Private accesses will be maintained, wherever reasonably practicable, between highway and private property to avoid disruption to transport users. This would be via agreed diversion routes or temporary access tracks within the DCO order limits. Further details are detailed in the **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9)** submitted as part of the DCO application.

6.5 Landscape and Visual

6.5.1 Objectives

201. To ensure construction works are carried out in such a way to minimise disturbance to relevant landscapes and visual onshore receptors.

6.5.2 Management Measures

202. Other management measures relating to this topic that should be considered alongside those topic-specific management measures (detailed within this section) comprise the following:

- Construction lighting (refer to see section 5.12);
- Soil Management (refer to section 6.6.2.2);
- Watercourse Crossings – Main Rivers and Ordinary Watercourses (refer to section 6.3.2.6); and

- Outline Public Rights of Way Management Plan (Appendix C of this OCoCP);

203. The **OLMP (Volume 8, application ref: 8.11**) has been produced, which will inform a detailed version to be submitted to and approved by the EYRC prior to the commencement of the relevant stage of the construction works. The detailed Landscape Management Plan will set out details of:

- Surveys, assessment and method statements as guided by BS 5837;
- Location, number, species, size and planting density of any proposed planting;
- Cultivation, importing of materials and other operations to ensure plant establishment; and
- Implementation timetables for all landscaping works.

204. The mitigation scheme also seeks to deliver landscape and biodiversity enhancements as outlined within the **OLMP (Volume 8, application ref: 8.11).** It also seeks to enable continued farming activity in line with the existing landscape character of the area. The following landscape mitigation principles were established:

- Seek to provide screening along the northern and southern boundaries of the substation zone, where the closest visual receptors are located;
- Integrate new landscape structure planting with existing woodland plantations at Johnson's Pit, Eleven Acre Plantation and Bentley Moor Wood, to utilise existing screening;
- Consider wider views of the Onshore Converter Station(s) and the potential appearance of mitigation planting on the skyline in these views;
- Seek to provide biodiversity connections or green corridors between these existing woodlands and remnant hedgerows within the Onshore Substation Zone; and
- Identify useable land parcels that can be retained as, or returned to, agricultural use on completion of the works, to maintain the prevailing character of the area.

205. The **OLMP (Volume 8, application ref: 8.11)** would form the basis of a Landscape Management Plan, to be developed post-consent. It is anticipated that this would set out details of mitigation planting, including number, location, species, and details of management and maintenance of planting. Species selected would be appropriate to the local environment and of local provenance. Species would be planted in an organic layout which seeks to mimic the canopy layers found in the wider countryside.

206. Where practical, advance landscape mitigation planting would be established as early as reasonably practicable in the construction stage.

207. As detailed in Requirement 10 of the **Draft DCO (Volume 3, application ref: 3.1).** LMPs may be developed for different phases of the onshore works and would be approved by the ERYC as the relevant planning authority.

6.5.2.1 Trees and Hedgerows

208. The Onshore Export Cable Corridor has been designed to minimise loss of hedgerows by utilising existing gaps in hedgerows, where possible. This includes reducing the width of the cable route corridor at hedgerow crossings to the minimum amount required to enable construction of trenches and the haul road.

209. The width of hedgerow crossings for the worst-case (concurrent or sequential scenario) would be 24m for the Onshore Export Cable Corridor and 34m for the Onward Cable Connection to the Proposed Birkhill Wood National Grid Substation, as described in **Volume 7, Chapter 5 Project Description (application ref: 7.5).** Likewise, the Onshore Export Cable Corridor has been designed to avoid trees and woodland as far as practicably possible and would use trenchless crossings to minimise effects on existing areas of woodland.

210. The Projects are committed to replacement of all trees or hedges that are lost. New trees cannot be planted directly over the Onshore Export Cables, however, they would be replaced in locations informed by future arboricultural surveys. Replacement would take place as soon as is practicable after installation of the cables.

211. Trees and hedges which are removed would be replaced with more diverse and locally native species composition than those removed. Where appropriate, the replacement works would seek to deliver landscape and / or biodiversity enhancements. Retained trees and other vegetation would be protected during the works in accordance with British Standard BS 5837:2012, as set out in **the OLMP (Volume 8, application ref: 8.11).**

6.5.2.2 General

212. The following general measures would be required during construction:

- Fences and gates that are removed or damaged during the construction works will be replaced post construction;
- Good housekeeping will be maintained on all construction areas and secure storage will be provided for materials at risk from wind blow. At the Onshore Converter Substation(s), stockpiles will be in defined temporary storage areas; and
- Appropriate lighting will be used to reduce the incidence of visual intrusion to sensitive receptors (see section 5.12).

6.6 Land Use and Soil Management

6.6.1 Objective

213. To protect the quality and integrity of the soil resources, and to maintain farm accesses and PRoW where possible.

6.6.2 Management Measures

214. Other management measures relating to this topic that should be considered alongside those topic-specific management measures (detailed within this section) comprise the following:

- Outline Pollution Prevention Plan (refer to section 5.12);
- Crossing Method Statements (refer to section 5.15);
- Piling Risk Assessment (refer to section 6.2.2.1).
- Hydrogeological risk assessments (refer to section 6.2.2.2);
- Drilling fluid breakout management plan (refer to section 6.3.2.1);
- Outline Drainage Strategy (refer to section 6.3.2.3); and
- Watercourse Crossings – Main Rivers and Ordinary Watercourses (refer to section 6.3.2.6).

6.6.2.1 Land Use

215. Agricultural Land Classification (ALC) grades 2 and 3 are present within the Onshore Development Area. An ALC survey for the Substation Zone has been completed as detailed in the OMSP (Appendix A). The ALC survey were completed by an appointed soil specialist and results of the physical and nutrient characteristics of the existing soil profiles are detailed in the OSMP (Appendix A). Information gathered as part of these surveys will inform the reinstatement methodology following completion of the construction works to be added to a later version of the detailed SMP. An ALC survey for the Onshore Export Cable will be completed post DCO submission.

216. Soil will be stored appropriately and managed in accordance with DEFRA Construction Code of Practice for Sustainable Use of Soils on Construction Sites (Defra, 2009) or the latest relevant available guidance.

217. The identified types of topsoil and subsoil will be stripped and stored separately to avoid mixing of soil materials, which could reduce the overall quality of the soil. Topsoil and subsoil stockpiles will be maintained appropriately to avoid losses as per the management controls detailed in the OSMP **(Appendix A).**

218. Appropriate construction practices will be implemented to ensure that the potential risk for the spread of animal and plant diseases is reduced as far as practicable (see **Table 3-2**) for reference to an Invasives Species Management Plan).

219. Appropriate fencing of the Onshore Development Area will be provided as per the nature of the individual farm holding affected (refer to section 5.11 for more detail). Marker posts will be placed on the corner of manhole covers associated with link boxes to clearly demarcate their location.

220. Farm accesses will be maintained, wherever reasonably practicable, between fields within a farm holding.

221. Accesses across individual fields will be maintained where reasonably practicable, where these are severed during construction, through management measures or other means.

222. Existing water supplies and drainage systems will be maintained and reinstated wherever reasonably practicable during the construction process. The Principal Contractor(s) will ensure that effective drainage systems are used during construction. Refer to **Outline Drainage Strategy (Volume 8, application ref: 8.12)** for information on pre and post-construction drainage and section 6.3.2.3.

223. The detailed SMP will detail post-construction land reinstatement (and vegetation planting) requirements.

6.6.2.2 Soil Management

224. An **Outline Soil Management Plan (OSMP) (Appendix A)** provides details of mitigation measures and best practice techniques which Principal Contractor(s) would be obliged to comply with. The OSMP will be implemented to safeguard soil resources by ensuring their protection, conservation and appropriate reinstatement during the construction of the Projects.

225. The OSMP will be a live document and will be further updated ahead of and during construction and will become the detailed Soil Management Plan (SMP). The SMP will be adhered to by the Principal Contractor(s) and its subcontractors to minimise potential degradation impacts to soil associated with the Projects.

226. The OSMP **(Appendix A)** sets out procedures for the appropriate handling of soils during the works, including:

- Using a competent contractor for soil handling, storage and reinstatement under Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites;
- Storing soils appropriately;
- Storing topsoil adjacent to where it is stripped, wherever practicable;
- Storing excavated subsoil separately from the topsoil, with sufficient separation to ensure segregation;
- Restricting movements of heavy plant and vehicles to specified routes;
- Consideration of weather conditions where it is appropriate to work for each soil type, e.g. not working in an area of poorly draining soils following a period of heavy rain;
- Minimising the footprint of excavation works as much as reasonably possible;
- Ensuring effective drainage systems are used during construction; and
- Employing reinstatement and plant vegetation following completion of construction works.

227. Defra's (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites would be adopted. Additionally, guidance from IES (2020) Sustainable, Healthy and Resilient: Practice-Based Approaches to Land and Soil Management would also be used.

6.6.2.3 Irrigation

228. Details of the irrigation system on each land holding will be gathered during the pre-construction stage and irrigation plans will be developed to inform the management of agricultural land drainage during construction. The ALO will be responsible for consulting with each individual landowner to obtain the relevant information and to be a point of contact to report concerns regarding irrigation systems during construction. The plans will include the following information:

- Location of boreholes and water supplies used by each farmer;
- Irrigation or impoundment licence granted by the Environment Agency; and
- System of irrigation applied and the location of irrigation network for each field.

6.6.2.4 Agricultural Land Drainage

229. Detailed information regarding land drainage is included in **Outline Drainage Strategy (Volume 8, application ref: 8.12),** the OSMP **(Appendix A)** and section 6.3.2.3 of this OCoCP.

230. Land drainage channels will be installed on one or either side of the cable trenches (typically on one side, rather than on both sides, dependant on existing field drainage), within the Onshore Export Cable Corridor working width, to intercept existing field drains and ditches to maintain the integrity of the existing field-drainage system during construction. Such measures will also assist in reducing the potential for wet areas to form during the works, thereby reducing the impact on soil structure and fertility. Drainage systems however will not be installed into areas where they are not currently present, unless otherwise agreed.

231. Landowners and occupiers will be consulted and informed of the design of any pre and post-construction (i.e. operational) land drainage works required, including: pipe layout, falls, dimensions and outfalls (if required). The drainage will be reinstated in a condition that is at least as effective as the previous condition and will follow best practice for field drainage installations taking into account site specific conditions.

232. Records of any pre and post-construction (i.e. operational) land drainage installed will be maintained by the Applicants with copies provided to the Landowner and the Occupier following the completion of construction works.

6.6.2.5 Agricultural Operations

233. A qualified ALO will be employed to ensure that information on existing agricultural management and soil / land conditions is obtained, recorded and verified by way of a detailed pre-construction condition survey. A Land Agent will undertake site inspections on behalf of the Projects during construction to monitor working practices and ensure landowners' and farmers' reasonable requirements are fulfilled. The Land Agent will also retain a function with regards to agreeing reinstatement measures during construction or following completion of the works.

234. In relation to temporary land take requirements the Projects will seek to liaise with landowners to agree commercial terms with affected parties including any loss of ongoing payments or penalties relating to agri-environmental stewardship schemes.

235. Where required, Onshore Development Area crossing points will be used in suitable places in order that livestock and vehicles can cross the working width.

236. Wherever possible, general disruption impacts will be mitigated as early as possible in the construction planning process by allowing a sufficient time period between the serving of notice for entry and the commencement of on-site activities; this will allow farmers and landowners time to adapt their working practices in anticipation of the works.

237. All TCCs will be removed, and sites will be reinstated when construction has been completed.

6.6.2.6 Public Rights of Way

238. During construction, potential disruption to any recreational routes will be managed to ensure continued safe access for members of the public where possible and to minimise any closure durations. The exact management method will be agreed in advance with ERYC for that stage of works and any control measures detailed within the **Outline Public Rights of Way and Management Plan** (**Appendix C**). Refer to **Table 3-2** for further detail). Measures may include but not be limited to:

- Appropriately fenced (unmanned) crossing points;
- Manned crossing points; and
- Temporary alternative routes.

239. Prior to any temporary stopping up or localised diversion of a PRoW, the Principal Contractor(s) will undertake works in accordance with the measures established within the **Outline Public Rights of Way and Management Plan (Appendix C)**. and during construction will agree additional management measures via a detailed PRoW Management Plan to manage the interface between the works, the PRoW and its users in consultation with ERYC.

6.7 Noise and Vibration

6.7.1 Objectives

240. To control and limit noise and vibration levels during construction, so far as is reasonably practicable, to minimise disturbance to sensitive receptors.

6.7.2 Management Measures

241. This OCoCP sets out the general noise and environment management techniques which will be implemented by the Projects and its subcontractors during the construction of the onshore works. Further management controls will be included in the detailed CoCP(s).

242. Construction works will be undertaken in accordance with the best practicable means (as defined in Section 72 of the Control of Pollution Act 1974) to minimise noise and vibration effects. Noise control measures will be consistent with the recommendations of the current version of BS 5228 – Part 1: Noise and Part 2: Vibration. Principle Contractor(s) and subcontractors will carry out the works in a manner which seeks to minimise noise and vibration wherever feasible, taking account of statutory requirements and legislation. If stipulated by ERYC in advance of construction, a Section 61 (of the Control of Pollution Act 1974) consent may be obtained by the Principal Contractor(s) for certain activities.

243. Working hours will adhere to those detailed in section 5.2 of this OCoCP.

244. General noise and vibration controls measures may include, but not be limited to the following:

- Ensuring plant and machinery is turned off when not in use;
- Using modern, quiet equipment and ensuring such equipment is properly maintained and regularly inspected;
- Locating noise generating plant at a low level, as distant as possible from noise-sensitive receptors (NSRs);
- Locating site entrances and exits to prevent the need for vehicles to reverse and also minimise impacts upon NSRs;

- Consideration to be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant should be certified to meet relevant EC Directive standards;
- Close liaison with receptors, informing local receptors about the construction works, including the timing and duration of any particularly noisy elements or works that are required to be undertaken at night;
- Implementing a communication and grievance mechanism (e.g. complaint procedure) for local NSRs to direct questions or report nuisance and other issues, including contact details for a site representative during construction hours;
- Consideration of programming of noisy activities to minimise adverse effects where practicable.
- A preference for the use of plant fitted with effective silencers and noise insulation. Where possible, works will limit the use of particularly noisy plant at certain times, i.e. do not use particularly noisy plant early in the morning;
- The number of plant items in use at any one time will be minimised or sequenced, where practicable;
- Any compressors brought on to site will be silenced or sound reduced models fitted with acoustic enclosures;
- The speed of vehicle movements along site haul roads or roads within construction compounds will be limited to below 15 miles per hour (mph) unless approved with the relevant planning authority, ERYC;
- The use of broadband reversing alarms as opposed to a beep will be used where reasonably practicable to reduce the noise generated by reversing beepers on site vehicles;
- Plant that is intermittently used should be shut down in the intervening periods between work or throttled down to a minimum;
- Construction site layout designed to minimise or avoid reversing with use of banksmen where appropriate;
- All reasonable steps will be taken to limit the number of vehicles waiting to deliver materials to the proposed development;
- All construction vehicles will adhere to any stipulated routes set out in the OCTMP;
- Construction which would be closest to nearby residential receptors will be undertaken as efficiently and quickly as reasonably possible and any affected residents would be notified in advance;

- With the exception of generators, pumps and electric plant, all plant and equipment would be expected to be shut down when not in use. Low-noise generators / pumps and electrical plant would be procured as a preference;
- Principal Contractor(s) and subcontractors will adhere to the codes of practice for construction working set out in BS 5228 'Code of Practice for noise and vibration control on construction and open sites' insofar as these are reasonably practicable and applicable to the construction works;
- No audible music or radios to be played on-site;
- Construction staff training will include advice on:
- The proper use and maintenance of plant, tools and equipment;
- The avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.

245. At trenchless crossing locations, localised screening will be employed, where required and practicable, via acoustic enclosures for stationary plant and noise barriers around works area for mobile plant.

246. The following best practice measures will be applied during construction where appropriate to minimise impacts in relation to vibration:

- Choosing alternative, lower impact equipment or methods wherever possible;
- Scheduling the use of vibration-causing equipment, at the least sensitive time of day;
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible;
- Sequencing operations so that vibration-causing activities do not occur simultaneously;
- Isolating the equipment causing the vibration on resilient mounts; and,
- Keeping equipment well maintained.

247. Site specific mitigation measures will be developed as part of the detailed CoCP(s) and agreed with the local planning authority.

248. If deemed required, by the Local Authority or by the Principal Contractor(s), the Principal Contractor(s) may undertake acoustic and vibration monitoring at sensitive locations to ensure no exceedance of acceptable noise or vibration thresholds. Construction noise and vibration monitoring will be monitored in line with the detailed CoCP(s) which will also detail the procedure for dealing with complaints and managing potential exceedances of relevant noise and vibration criteria.

6.8 Air Quality and Dust

6.8.1 Objective

249. To minimise the generation of dusts near sensitive receptors during construction and to facilitate community engagement and a proactive approach to complaints regarding nuisance dusts.

6.8.2 Management Measures

250. Site-specific control / mitigation measures have been divided into general measures applicable to all site works, and measures specific to demolition, earthworks, construction and the movement of dust and dirt from a construction site onto the public road network (referred to as trackout). Best practice mitigation measures will adhere to the latest Institute of Air Quality Management (IAQM) guidance.

251. Control measures as detailed in this OCoCP will be implemented throughout the full duration of construction as required.

252. During construction, Temporary Construction Compounds will need to consider their distance from sensitive receptors, such as ecologically designated sites and residential areas and ensure that appropriate controls are in place.

253. No air quality monitoring is anticipated as being required during construction, however see section 6.8.2.1 below on dust site management and monitoring.

6.8.2.1 Dust Management Measures

254. When undertaking general works the following dust control measures may be implemented as required:

- 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 boundary. This may be the environment manager/engineer or the site manager
- Display the head or regional office contact information.

- Dust Management:
  - Develop and implement a Dust Management Plan (DMP) (this will form part of the Outline CoCP), which may include measures to control other emissions, approved by the local authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site
  - 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
  - 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
  - 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 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.

- Manage stockpiles to prevent wind whipping
- 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
- 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 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
- Avoid bonfires and burning of waste materials.
- Construction:
    - Ensure sand and other aggregates are stored in appropriate manner to minimise dust generation for example the use of bunded areas
- 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
    - 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 where practicable, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned

- 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
- Locate access gates at least 10 m from receptors where possible.

6.8.2.2 Non-Road Mobile Machinery

255. All Non Road Mobile Machinery (NRMM) and plant should be well maintained. If any emissions of dark smoke occur, then the relevant machinery should cease operation immediately, and any problem rectified. In addition, the following controls should apply to all NRMM:

- All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004) where practicable;
- All NRMM should comply with the appropriate NRMM regulations;
- All NRMM would be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting);
- The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks; and
- Fuel conservation measures should be implemented, including instructions to (i) throttle down or switch off idle construction equipment; (ii) switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded and (iii) ensure equipment is properly maintained to ensure efficient fuel consumption.

256. Consideration would also be given to the siting of NRMM within the working area. Where practicable, locating generators and plant at the greatest distance from receptors will reduce the potential for air quality effects.

6.8.2.3 Site Management and Monitoring

257. The Principal Contractor(s) will undertake the following monitoring controls as a minimum during construction:

- Develop and implement the OCPRP (refer to **Table 3-1**) prior to construction and undertake community engagement;
- Display the contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the Environment Manager, ECoW, an engineer or the Site Manager. Contact information for the head or regional office will also be displayed;

- 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 Relevant Authorities when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on-site or off-site, and the action taken to resolve the situation in the log book;
- Hold regular liaison meetings with other high risk construction sites within 500m of the Project's construction works area(s), 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;
- Undertake regular on-site and off-site visual dust inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the relevant planning authority when asked. Relevant control /remedial measures would be implemented accordingly in line with this OCoCP where an issue is identified; and
- 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.

6.9 Archaeology and Cultural Heritage

6.9.1 Objective

258. To minimise the impact of construction works on buried archaeology, heritage assets and their setting.

6.9.2 Management Measures

259. **The OWSI** (**Volume 8, application ref: 8.14)** will be submitted as part of the DCO application and will detail the onshore archaeological strategy for the Projects (see **Table 3-3**) within the Onshore Development Area.

260. The OWSI sets out the proposed approaches and commitments to archaeological survey and investigation to be undertaken post-consent. This includes both initial informative survey stages of mitigation work and subsequent additional mitigation measures, where required. This forms part of an overarching mitigation strategy to be undertaken within the Onshore Development Area.

261. It is anticipated that the initial informative survey stages of mitigation would take place as part of the wider pre-construction programme and activities, followed by further and additional bespoke mitigation requirements on a case-by-case basis, as required, in ongoing consultation and engagement with HAP, ERYC and HE.

262. Other management measures relating to this topic that should be considered alongside those topic-specific measures (detailed within the OWSI) comprise the following:

- **OEMP (Volume 8, application ref: 8.10)**
- **OLMP (Volume 8, application ref: 8.11)**
- Trees and hedgerows (refer to section 6.5.2.1)
- Unexploded Ordnance (refer to section 5.19)

7 Environmental Compliance and Inspections

263. As part of the ongoing process for ensuring that impacts due to the construction of the onshore works are minimised, a monitoring strategy will be set out by the Projects. All Principal Contractor(s) and subcontractors will be required to comply with the detailed CoCP(s), to monitor compliance and report breaches.

264. Project contact details will be made available to members of the public so that the general public can raise queries or complaints to a representative of the Projects.

8 Operational Management and Monitoring Commitments

265. Management measures to be implemented during the operational phases of the Projects will be set out in an Onshore Operational Monitoring Plan, as per DCO Requirement 33, to be developed by the Applicants /Principal Contractor(s). The Principal Contractor(s) will be responsible for the operational management of the Projects following/during construction up until final handover of the Projects to the Operator(s).

9 Decommissioning Plan

266. An Onshore Decommissioning Plan will be developed prior to decommissioning. The Onshore Decommissioning Plan will include provisions for the removal of all onshore above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk, pollution prevention and avoidance of ground disturbance. The Onshore Decommissioning Plan will be drawn in line with the latest relevant available guidance and legislation.

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RWE Renewables UK Dogger Bank South (West) Limited

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Windmill Hill Business Park
Whitehill Way
Swindon
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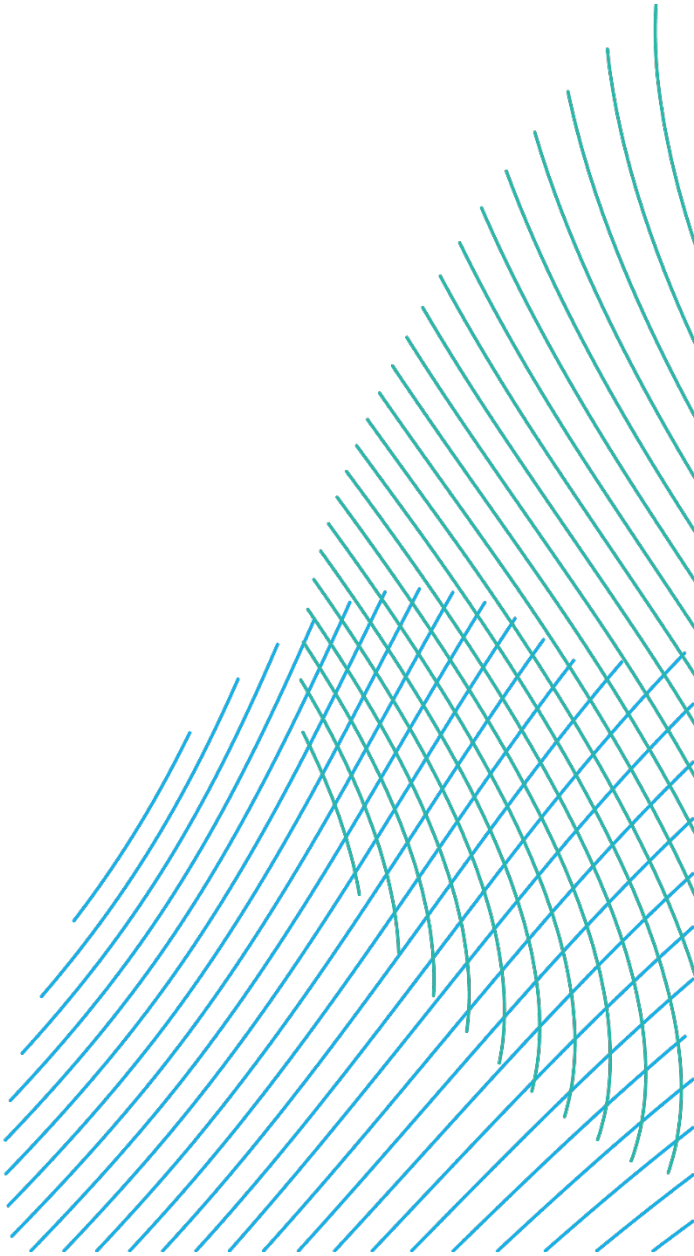

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Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

Appendix A - Outline Soil Management Plan

June 2024

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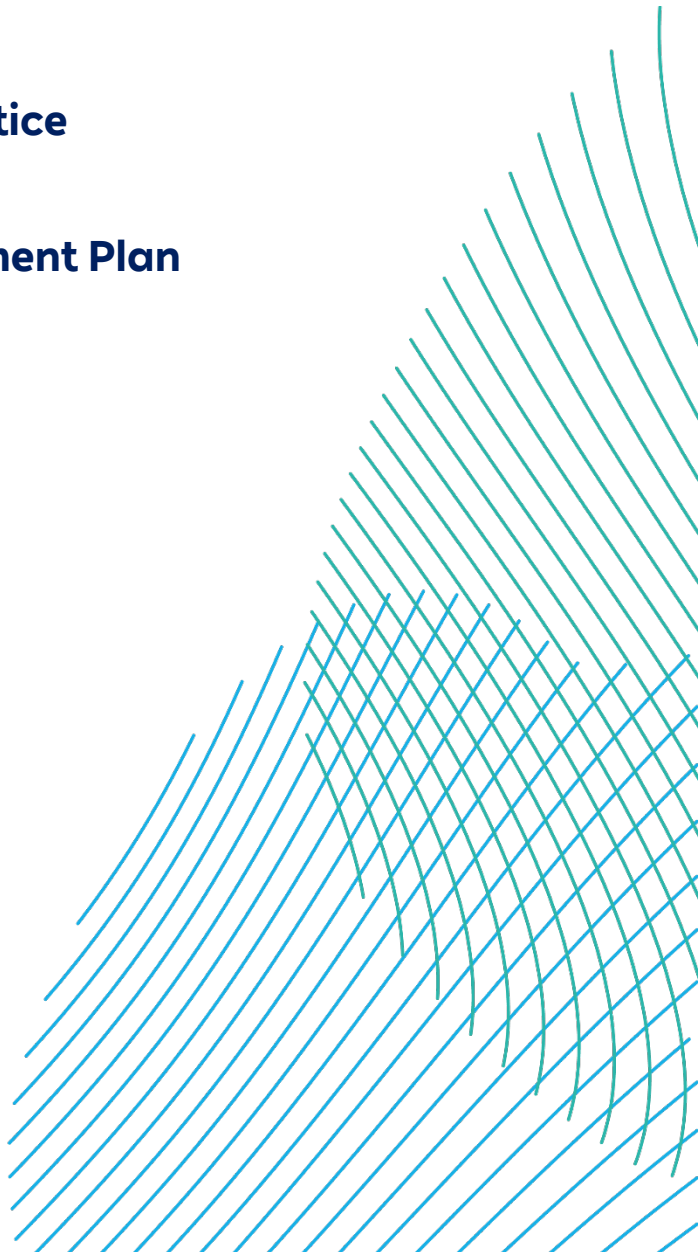

Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project / Package:	**Consents**
Document Title or Description:	Appendix A - Outline Soil Management Plan		
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01	June 2024	Final for DCO Application	RWE	RWE	RWE

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1 Introduction

1.1 Project Background

1. The Outline Soil Management Plan (OSMP) for the Dogger Bank South Offshore Wind Farms (the Projects) forms **Appendix A** of the **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9)**. The OSMP forms part of the application to the Planning Inspectorate for the **Draft Development Consent Order (Volume 3, application ref: 3.1) (DCO)**.
2. The details of the activities and infrastructure that comprise the project description for the Projects is provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** of the Environmental Statement (ES).
3. This Outline Soil Management Plan (OSMP) refers to the onshore element of the Projects including: the Substation Zone, where the Onshore Converter Stations(s) are located, Onshore Export Cable Corridor and Landfall Zone.
4. Soil resource surveys for the Projects are ongoing, at time of reporting 85% of the Onshore Development Area has been surveyed, inclusive of the entirety of the Onshore Substation Zone. Surveys are expected to be completed by May 2024 following flood water abating. On completion, results are to be published and used to inform the development of a detailed Soil Management Plan (SMP) to be prepared on appointment of the Principal Contractor(s) and implemented during the construction phase.
5. The Onshore Development Area is occupied by predominantly agricultural land of arable combinable crops, root vegetable and permanent grassland, bounded by mature hedgerows and fences. The route crosses several roads, agricultural ditches and water courses.
6. An overview of the onshore elements of the Projects sees the construction of 33km of Onshore Cables and Converter Station(s) at Creyke Beck. It is proposed that topsoil be stripped and stored from an approximate 75m wide working width which will be widened locally to accommodate compounds, trenchless crossing working areas, splay and cross points. Duct bound cables will be laid in trench(es), to be backfilled, loosening and topsoil reinstated before being returned to agricultural production. The land surrounding the converter stations is also to be reinstated to agriculture, bounded by proposed native woodland and an area of Sustainable Urban Drainage system (SUDs). Further details are provided in **Outline Landscape Management Plan (Volume 8, application ref: 8.11)**.

1.2 Purpose and Scope

7. This OSMP provides an outline of the matters which will be addressed within the detailed Soil Management Plan (SMP) for the Projects, including: the Substation Zone, Onshore Export Cable Corridor and Landfall Zone. This OSMP should be read in conjunction with the OCoCP (see **OCoCP (Volume 8, application ref: 8.9)**) and the supporting Appendices (see **Volume 8, Appendix A-E (Volume 8, application ref: 8.9)**). The scope of this OSMP is to:

   - Provide guidance for soil management and monitoring;
   - Outline proposals for stripping, storage and re-instatement of soil resources;
   - Outline recommendations for soil stripping, storage and re-instatement of soil resources; and
   - Outline proposals to retain soil function after re-instatement through an appropriate scheme of management.

8. This OSMP includes consideration of the soil resources that are available within the areas affected by permanent and temporary construction. It reflects the findings outlined in the ongoing soil resource assessment by the specialist soil contractor. Surveys of the Onshore Substation Zone have been completed in full, however as detailed in section 1.1, the soil resource assessment for the Onshore Export Cable Corridor and Landfall Zone are ongoing and will be completed in Spring and Summer 2024.

9. An assessment of permanent land take has been undertaken in **Volume 7, Chapter 21 Land Use (application ref: 7.21)**.

10. ALC assessments are ongoing in-line with the soil resource survey, results are to be published on completion of the surveys. However interim findings have found the route to be occupied by both Best and Most Versatile (BMV) agricultural land and non-BMV land. Surveys completed on the Substation Zone resolved that the area is not occupied by any Best and Most Versatile (BMV) agricultural land as detailed in section 3.2.1.1. However non-BMV land does not obviate the need for careful management of soils handling and restoration practice to facilitate soil structural recovery, leading to normal soil drainage; a return to an equivalent land quality and crop yields in restored agricultural land and to provide suitable soil profiles on which to develop the proposed landscape masterplan.

11. The OSMP is a live document and, as construction detail evolves, it will continue to be reviewed and updated.

12. Requirement 19 of the draft **DCO (Volume 3, application ref: 3.1)** states the Code of Construction Practice (CoCP) and its supporting appendices must be submitted for each stage of works permitted by the Order (refer to section 3 of the OcoCP (**OCoCP (Volume 8, application ref: 8.9)**). This OSMP will therefore be adapted for each stage of works and submitted separately as part of each revision of the CoCP. Some stages of works may not require all appendices to the CoCP, and in those cases the undertaker will agree with ERYC, as the relevant planning authority, which of the appendices are not required. It is considered likely that a SMP may be provided for all stage of works.

1.3 Objectives

13. This OSMP sets out the overarching principles that the Projects will adopt to protect and conserve soils resources and to minimise losses, in turn maximising reuse wherever possible. These include:

- Conserve soil resources;
- Avoid damage to soil structure;
- Maintain soil drainage during construction; and
- Outline key principles of mitigation to facilitate a successful outcome for soils impacted by construction.

14. The OSMP draws on recognised best practice guidance with regards to soil handling including removal and replacement of topsoil and subsoil, decompaction and management that will be undertaken in accordance with best practice. This OSMP has been prepared with regard to the following guidance:

- Good practice guide for handling soils (MAFF, 2000);
- The Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009) (included in Appendix 7);
- Construction best practice for underground cable installation (National Grid, 2021);
- MPS1, a 'Practice Guide' (Department for Communities and Local Government, 2006);
- 'Guidance for Successful Restoration of Mineral and Waste Sites' (Defra 2004);
- MPG7 'The Reclamation of Mineral Workings' (Department of the Environment, 1996);

- Code of Good Agricultural Practice for the Protection of Soil (MAFF 1998);
- Protecting our Water Soil and Air (Defra, 2009);
- Safeguarding our Soils, A Strategy for England (Defra, 2009);
- Agricultural Land Classification: protecting the best and most versatile land, TIN049 (Defra, 2011);
- Agricultural Land Classification of England and Wales. Revised guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF, 1988);
- Agricultural Land Classification: protecting the best and most versatile agricultural land: Technical Information Note TIN049, (Natural England, 2012);
- Guide to Assessing Development Proposals on Agricultural Land (Natural England, 2018);
- Soil Texture: Technical Information Note TIN037 (Natural England, 2008);
- The Nutrient Management Guide (ADHB/Defra, 2017);
- BS 3882: Specification for Topsoil (BSI, 2015);
- BS8601: Specification for Subsoil (BSI,2013);
- The Sludge (Use in Agriculture) Regulations (As amended) (DoE, 1989);
- Safeguarding our Soils, A Strategy for England (Defra, 2009); and
- Construction Design and Management Regulations (CDM, 2015 as amended).

15. The latest available guidance will be incorporated into the detailed SMP.

1.4 Soil Management Plan Governance

16. The responsibility for ensuring that measures set out in this OSMP are delivered rests with the Principal Contractor(s) and Agricultural Liaison Officer (ALO) (refer to **Table 2-1** of the **OCoCP (Volume 8, application ref: 8.9)**) appointed as part of the detailed CoCP(s) to carry out the works; with ERYC as the enforcing agency.

17. This OSMP will be a live document through the development and construction phase and will be updated with site-specific data to become the detailed SMP. During the detailed design stage, the OSMP plan will be developed to include seeding, planting and landscaping arrangements (if required) and the results of soil surveys across the Onshore Export Cable Corridor. As it forms part of the CoCP, the detailed SMP will be agreed with ERYC and will be implemented during the construction and aftercare phases of the Projects on agricultural land.

1.5 Accompanying Plans

18. The OSMP is be supported by several accompanying plans and documents, described in detail in the **OCoCP (Volume 8, application ref: 8.9)**:

- The Outline Drainage Strategy (**Outline Drainage Strategy (Volume 8, application ref: 8.12)**) sets out the outline drainage strategy for the Onshore Converter Station(s) and the pre and post construction land drainage, located within the Onshore Development Area. This strategy will form the basis of the detailed drainage scheme that would be submitted to the Lead Local Flood Authority (LLFA) at the ERYC for approval prior to the commencement of construction of the Projects, in consultation with the Environment Agency, IDB, landowners and the relevant sewerage and drainage authorities;
- A Surface Water Management Plan (see **Table 3-2** of the **OCoCP (Volume 8, application ref: 8.9)**) will be completed upon appointment of the Principal Contractor(s) and will set out the management controls required to be implemented during construction to appropriately manage temporary surface water drainage and pre-construction drainage to ensure there is no increase in flood risk or pollution incidents; and
- An Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2** of the **OCoCP (Volume 8, application ref: 8.9)**).

1.6 Soil Management Plan Commitment

19. All Commitments identified for the Projects are detailed within the Commitments Register (**Commitments Register (Volume 8, application reference 8.6)**).

2 Management of Soil Handling Process

20. The following supervision measures relevant to soil management and handling of soils will be undertaken:

- A person will be responsible on-site for soil management and appropriate resources will be provided by the Principal Contractor(s) to supervise soil management throughout the construction period (in accordance with Defra 2009);
- Liaison with landowners and their agents undertaken during the preparation of the DCO application will continue throughout the construction period (via the ALO) to maintain consistent dialogue;
- A soil specialist will be appointed by the Applicants (in addition to the ALO) to monitor soil handling during construction on a call out basis for specialist consultancy (refer to **Table 2-1** of the **OCoCP (Volume 8, application ref: 8.9)**); and
- A programme of monitoring and reporting will be implemented to ensure soil handling processes are being appropriately implemented, with additional visits during the initial soil strip and store of soil materials.

3 Baseline Conditions – Soil Resources

3.1 Pre-Construction Soil Survey Methodology

21. It is noted that a soil resource assessment has been completed across the Substation Zone, which will inform the pre-construction condition assessment. The soil physical characteristics identified during pre-construction will remain broadly consistent into the construction phase in respect of soil descriptions and in such instances, it will be unnecessary to re-survey land. However, as mentioned in section 1.1, a soil resource assessment has not yet been completed for the Onshore Export Cable Corridor and Landfall Zone, these will be completed in early summer 2024 by a competent person (e.g. a soil scientist) to inform the detailed SMP. Specific soil resource topsoil and subsoil unit plans and restoration specifications will be prepared for areas of agricultural land within individual land holdings that will be occupied by the Projects construction works. These surveys will form the basis of the pre-construction condition assessments of the land and will be used to monitor the progress of soil handling and restoration operations.

22. The soil survey is being undertaken by surveyors with demonstrable experience of undertaking ALC and SRSs, meeting the minimum competencies set out in Document 1 (foundation skills) and Document 2 (ALC) of *Working with Soil – Professional Competency in Soil Science 3.*

23. The methodology of the survey has been developed from the ALC 1988 guidelines and the consultation of the Natural England Guide to assessing development proposal on agricultural land. This involves completed auger borings at approximately 100m intervals (or 1 per hectare) to a maximum depth of 1.20m at points predetermined by the Ordnance Survey (OS) National Grid and located in the field using a handheld GPS. Borings may also offset from the 100m OS Grid to further define soil boundaries. Small inspection pits are to be dug by hand to a minimum depth of 1m in each main soil type and ALC grade observed on the route to provide supplementary information of soil structure to the auger boring information. Observations of physical soil characteristics are made in accordance with the Soil Survey Handbook (Cranfield 2022) and include (not limited to) the following:

    - Existing Cropping regimes;
    - Relief;
    - Topsoil and subsoil horizon depths and texture;

- Soil colour, with reference to the Munsell soil colour system (2009);
- Stone content and size, estimated from auguring, confirmed by soil pit excavation/and or sample analysis;
- Presence and characteristics of mottling and gleying, a soil wetness indicator;
- Calcium carbonate presence
- Identification of slowly permeable layers; and
- Identification of impenetrable rock layers.

24. Topsoil samples will be collected from each agricultural enclosure using procedures outlined in Defra's Nutrient Management Guide (RB209, 2021) and also Natural England Technical Information Note: Soil sampling for habitat recreation and restoration, TIN035, February 2008.

25. Topsoil samples are collected using a 25mm Dutch auger from each numbered enclosure to a depth of 0-150mm for plots in arable use and 0-75mm for grassland. Samples are taken on a W pattern within the extent of the proposed development area at a sample density of not less than 10 cores per field, with individual cores bulked to form a composite sample from each enclosure.

26. Samples for each plot are tested to determine pH, available phosphorus, potassium and magnesium, organic matter status (Loss on Ignition) and topsoil texture (Laser PSD).

27. Samples are analysed at a suitably accredited laboratory (NRM Ltd) which is UKAS accredited for soil, sludge and sediment analyses. NRM participate in numerous proficiency testing schemes including CONTEST (contaminated land soils and leachates), MCERTS, Aquacheck (waters, soils and sludges), FAPAS (nitrate in leafy vegetables) and WEPAL (nutrients in agricultural soils).

3.2 Pre-Construction Soil Survey Results

3.2.1 Detailed Soil Description

28. Field survey information and analytical data will be used to characterise the soils across the Onshore Development Area according to the characteristics that impact on their likely behaviour when disturbed by stripping, storage, replacement and recovery.

29. These characteristics include soil texture, drainage characteristics, stone content and erosion risk.

30. For the purpose of this project soils will be classified into the following categories.

- Light textured
- Light to medium textured
- Medium textured
- Medium to heavy textured
- Heavy textured
- Organic
- Disturbed

31. Surveys of the Substation Zone identified a single and relatively uniform soil type across the entire substation zone as described below. Further detail is provided in **Appendices A-3** of this OSMP.

3.2.1.1 Soil Type 1: Medium to Heavy Textured Soils

32. This soil type occupied all of the Substation Zone and is mapped in mid-brown at **Appendix A-1** of this OSMP. Soil profiles were typical of this geographical area and representative of the Holderness Soil Association.

33. These soils are characterised by a relatively uniform medium to heavy clay loam topsoil with a mean depth of 28cm (range 19-35cm). Topsoil stone content was generally low (1-5%) with isolated stonier profiles containing common to many (5-`0%) sandstones, flints and chalk.

34. Topsoil overlaid a strongly mottled and gleyed yellowish brown heavy clay loam upper subsoil transitioning into an abundantly mottled lower subsoil of reddish brown clay to depth. Subsoil stone content was similar to, or slightly less, than the topsoil, comprising sandstone and flints. Chalk rich subsoils were frequently encountered within 60-80cm of the surface.

3.2.2 Agricultural Land Classification (ALC)

35. Soil survey information will be combined with other site information, e.g., climate, relief, flood and/or erosion risk to grade the quality of the land in accordance with the method described in "*Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*" (MAFF 1988).

36. The principle physical factors influencing land quality and agricultural production are climate, particularly temperature and rainfall; site, including gradient; micro relief; flood risk and soil characteristics such as texture, structure, depth, stoniness and erosion potential.

37. At the time of reporting (April 2024), as stated in section 1.1, ALC surveys were ongoing. On completion of surveys ALC mapping will be presented alongside Soil resource information to inform the Land Use Chapter of the EIA.

38. Details of the specific limitations of the land on the Projects will be discussed in the ALC and Soil resource assessment report.

39. Surveys of the Substation Zone identified slowly permeable layers almost immediately below the topsoil and normally within 35cm, resulting in a soil Wetness Class of IV. At the time of survey, following a wet winter, water was often observed to be sitting at the topsoil/subsoil boundary reflective of their slowly permeable subsoils. The combination of heavy topsoil texture and moderate field capacity days resulted in moderate quality agricultural land of Agricultural Land Classification (ALC) subgrade 3b.

40. Land within subgrade 3b is of moderate quality and suited to a relatively narrow range of mainly winter sown combinable crops and grassland. Crops are likely to suffer damage from flooding or topsoil wetness leading to increased production costs and decreasing yields/margin in some years. The yield and quality of combinable crops are likely to be good in most years.

3.2.3 Topsoil Analysis Results

41. Laboratory reporting of topsoil samples from every enclosure, occupied by permanently or temporarily by the Projects will be collated. Results will be used to inform the agronomic baseline record of pre-condition and confirm field observations.

42. The following topsoil analysis results for the Substation Zone are detailed in **Appendix A-1 and A-4** of this OSMP:

- Topsoil pH (7.20-7.40) was near neutral to slightly alkaline and above the recommended optimum of pH 6.50 for arable use and pH 6.00 for grassland use. There are currently no requirements for lime and longer-term planting mixes will need to take into consideration the medium to heavy texture, the propensity for soils to be cohesive and wet in the longer term. The medium to heavy textured topsoil on site is likely to be well buffered against longer term acidity and species selection tailored to the pH in evidence. Concentrations of available Phosphorus (P) were slightly low to satisfactory and ranged from 16-22 mg/l (index 2). The topsoil is at the minimum target index recommended as a minimum for arable cropping.

- Levels of available Potassium (K) were slightly deficient, ranging from 134-175 mg/l (Index 2-) in all samples.
- Concentrations of available Magnesium (Mg) were satisfactory (index 2) and reflect the superficial boulder clay in which the soils have developed.
- The Organic Matter status (4.30-4.60%) of the topsoil is satisfactory and at, or around, the optimum for a medium to heavy textured topsoil in arable use.
- The texture of the topsoil in the substation zone was sandy or medium clay loam and confirmed hand textures completed in the field survey.

3.2.4 Conclusions

43. Levels of available P, K and Mg were low to satisfactory in the topsoil at the site and in the lower quartile of their respective indices of 2 and 2- and are typical of a moderate intensity arable rotation. High levels of available P (> index 2) can be detrimental in landscaping applications, particularly for wildflower and tree establishment as it can promote the growth of more competitive grass and broadleaves in a seed mix which then compete and antagonise wildflower or tree growth. The British Standard for Topsoil BS 3882, 2015, recommends that a low fertility topsoil should contain ≤20 mg/l of available phosphorus. The topsoil at this site (16-22 mg/l P) lies broadly at this recommended level. Available K results were slightly low (index 2-) and also more suited to a low nutrient status classification. Available Mg is satisfactory (index 2) and will have only a limited effect on potential grass growth as Mg does not actively promote grass growth and is a non-critical nutrient.

44. Overall, the topsoil analysis at the site is around the optimum fertility recommended for either low intensity agricultural or landscaping use including wildflowers, tree planting and amenity seed mixes. Maintaining fertility at low soil indices (< index 2) in the longer term is likely to be the ecological optimum for landscaped areas and this can be best achieved by omitting fertiliser and manures before the site is reseeded.

4 Measures for Protection of Soil During Construction

4.1 Planning the Work

45. The evolving construction design for the Substation Zone, Onshore Export Cable Corridor and Landfall Zone will take a holistic approach and consider the nature of soils likely to be impacted.

46. The construction site layout and working method will consider the need for soils removal and replacement from all areas of permanent and temporary hardstanding and is to be carefully planned from the outset. The need for topsoil stripping and subsoil excavation will be carefully designed and planned to ensure soil storage and replacement are optimised.

47. Planning and design will take account of the proposed land take for different construction activities and the need to strip, store and replace soils to a detailed SMP to ensure that land returned to soft end uses will be provided with suitable and sustainable soil profiles for the land use types proposed. This will include a full topographical survey and volumetric assessment of soil displaced and replaced by substation construction.

48. Given the largely cohesive nature of the soils across the Onshore Development Area a detailed construction based SMP will be implemented to a design programme of works in which bulk soil movements are phased to drier periods of the year. Where granular soils are identified on the route, winter construction may remain feasible provided that bulk soil movements of topsoil stripping and site re-instatement are phased to drier periods of the year.

49. The following recommendations in section 4 can be used to inform the SMP.

4.1.1 Land Drainage

50. The **Outline Drainage Strategy (Volume 8, application ref: 8.12)** has been developed which sets out the outline drainage strategy for the Onshore Converter Station(s) and the pre and post construction land drainage (ie. field drainage) measures, located within the Onshore Development Area for the Projects.

51. Land across the Onshore Development Area contain agricultural drainage systems, that may include old, piped ditch systems in relic field boundaries. It will be important to ensure that any water conveyed by these systems is provided with a suitable outfall before site establishment.

52. The installation of pre and post construction drainage will ease soil drying, dewatering and the functionality of existing land drainage schemes and in turn this will improve conditions for handling.

53. A scheme specific pre and post construction land drainage design will be prepared by a suitably qualified land drainage specialist in consultation with affected landowners. The design will be installed by an experienced local drainage contractor to mitigate potential construction impacts and will provide effective drainage during the construction period and into aftercare.

54. Refer to the Outline Drainage Strategy (**Outline Drainage Strategy (Volume 8, application ref: 8.12)**) and section 6 of the **OCoCP (Volume 8, application ref: 8.9)** for further information in relation to land drainage.

4.1.2 Biosecurity

55. As detailed in the **Table 3-2** of the **OCoCP (Volume 8, application ref: 8.9)**, an Invasives Species Management Plan will be provided post-consent as part of the detailed CoCP(s), upon appointment of a Principal Contractor(s) and an Ecological Clerk of Works (ECoW) (refer to **Table 2-1** of the **OCoCP (Volume 8, application ref: 8.9)**). The Invasive Species Management Plan will set out management measures for biosecurity risks, including invasive non-native species, diseases and pathogens during construction (refer to section 6 of the **OCoCP (Volume 8, application ref: 8.9)** for further information on management of invasive species).

56. The Principal Contractor(s) must ensure that Defra's Animal and Plant Health Agency (APHA) are consulted on the presence of any animal burial pits, disease controls in place and the presence of notifiable plant disease at least three months prior to accessing the land.

57. Any restrictions recommended by Defra, in terms of animal or plant health orders, must be addressed in the Invasive Species Management Plan (refer to **Table 3-2** of the **OCoCP (Volume 8, application ref: 8.9)**) and in the detailed SMP. A bio-security policy will be implemented as per the Invasive Species Management Plan and will take account of the need for appropriate cleaning and/or disinfection of machinery before delivery to site and on completion of each phase of soils handling for each landowner to mitigate the risk of spreading disease or transfer of weeds between holdings. Any restrictions recommended by consultations with APHA will be followed. The Principal Contractor(s) will maintain a record of these activities.

58. Typical guidance provided by APHA for construction in the countryside is shown at Precautions to Prevent the Spread of Animal & Poultry & Preventing the spread of Plant & Animal Diseases (MAFF, 1991)

4.1.3 Monitoring of Site and Soil Conditions

59. Monitoring of prevailing weather and ground conditions will be clearly understood by all site personnel and conveyed to them by a programme of toolbox talks by the advising soil scientist prior to commencement of site work.

4.1.4 Weather

60. Local weather forecasts will be monitored closely during the Projects, a minimum of once daily in dry conditions and twice daily during wetter periods. In addition, long range forecasts, the Environment Agency's flood risk alerts and surface water flood risk maps, showing the impact from rainfall, will be consulted as detailed in the Outline Pollution Prevention Management Plan (OPPP) (see **Appendix D** and in section 6 of the **OCoCP (Volume 8, application ref: 8.9)**).

61. An on-site rainfall gauge will be installed at the proposed site construction compound to collect data on daily rainfall.

62. In certain weather conditions, the handling of topsoil and subsoil must be effectively managed to prevent damage. Topsoil and subsoil conditions will be assessed by professional judgement of the Principal Contractor(s) / Site Management / appointed soil specialist through applying the following criteria:

- Soil handling will cease if the ground is covered in snow or there is ponding of water on the surface;
- During drizzle and/or intermittent light rain, handling can continue for up to four hours unless the soils are at or nearing their lower plastic limit (LPL);
- If there is heavy rain forecast (e.g. heavy showers, slow moving depressions), handling must stop or not restart if soils appear to be nearing or likely to reach their LPL;
- If there is sustained heavy rainfall of more than 10 mm in 24 hours, soil handling will be suspended and not restarted until the ground has had at least a full day to dry, or an agreed soil moisture limit can be met as agreed with the project team; and

- Soil shall not be handled or trafficked over/driven on immediately after a heavy rainfall (or snow/hail) in a waterlogged condition, or when there are standing pools of water on the soil surface.

4.1.5 Soil Conditions and Field Assessment

63. Soils should not be handled when in a plastic state, this is when moisture content exceeds their lower plastic limit and, as a general rule should, should be as dry as reasonably practicable when handled.

64. Handling soils in a plastic state may, exceptionally, be necessary, for instance in areas of high groundwater or permanent waterlogging. Where this is the case works are likely to be able to continue and must comply with best practice accepting that soil moisture conditions may not be at an optimum and dewatering or drainage might be required.

65. A field soil moisture test should first be carried out as per **Table 4-1** of this OSMP.

Table 4-1 Field Testing of Soil Moisture

Assessment Test	Suitability for handling
If soil sample is wet, films of water are visible on the surfaces of grains and aggregates; or If soil sample readily deforms into a cohesive 'ball' when squeezed.	Soils should not be handled.
Soil peds break up/crumble readily when squeezed in the hand. Sample does not form a cohesive ball.	Soils can be handled.
If the sample is moist, there is a slight dampness when squeezed between the fingers, but it does not significantly change colour (darken) on further wetting.	No handling by dozers but may be handled by excavators if the consistency test is passed.
Sample is dry and brittle. Sample looks dry and changes colour (darkens) on wetting	Soils can be handled if the consistency test is passed.
Test to be completed daily during soil stripping operations and the results recorded.	

66. The assessment of soil suitability for handling will use a staged methodology as outlined in **Table 4-1** of this OSMP and **Table 4-2** of this OSMP to determine whether soils are suitable for handling. Stage 1 (**Table 4-1** of this OSMP) comprises a field moisture test and Stage 2 (**Table 4-2** of this OSMP) a consistency test based on an assessment of lower plastic limit. This will be supported by the decision support checklist shown at **Appendix A-5** of this OSMP.

67. Where required, and as per **Table 4-1** of this OSMP, samples should be further tested for consistency as per **Table 4-2** of this OSMP:

Table 4-2 Field Testing of Soil Consistency

STEP A. Attempt to roll sample into a ball by hand	**Suitability for handling**
It is impossible because the soil is too hard (dry)	Soils can be handled
It is impossible because the soil is too loose (dry)	Soils can be handled
It is impossible because the soil is too loose (wet)	Soils should not be handled
It is impossible because the soil is too loose (wet)	Soils should not be handled
STEP B. Lower plastic limit (LPL) **Attempt to roll sample into a thread of 3 mm diameter by 75mm length on a flat non-adhesive surface (e.g. ceramic or glass tile) using light pressure from the flat of a hand, avoiding drying the sample with the hand**	
It is impossible as the soil crumbles or disintegrates.	Soils can be handled
It is possible to roll a 3 mm diameter thread.	Soils should not be handled
Test to be completed daily during soil stripping operations and the results recorded.	

4.2 Site preparation

4.2.1 Fencing

68. All areas proposed for construction will be secured with a suitably robust fence prior to work commencing to remove the risk of accessibility from livestock or of accidental trespass onto the construction site. Fencing will adhere to the requirements detailed in either the Fencing and Enclosures Plan, to be appended to the detailed CoCP(s) or detailed text within the main detailed CoCP(S) (refer to **Table 3-2** of the **OCoCP (Volume 8, application ref: 8.9)**). Examples of the fencing to be used will include post and wire stock proof fence for grassland, post and wire for arable and Heras or Palisade for intensively used areas.

69. Site operations prior to topsoil removal, e.g. fencing and drainage will be undertaken within or directly adjacent to the working area using low ground pressure equipment and in suitable conditions.

70. All crops in excess of 15cm (6 inches) in height will be removed or sprayed off prior to topsoil stripping. This will ensure accuracy of stripping depth and help to prevent the formation of anaerobic conditions in the stored soils. This may be important during late spring and summer if crops have reached an advanced growth stage.

71. The timing of crop removal will be sequenced to allow crops to continue to remove moisture via evapotranspiration which will facilitate drying in advance of stripping. Removal of green crop cover will ensure accuracy of stripping depth and help to prevent the formation of anaerobic conditions in the stored soils due to decomposing vegetation. This will be particularly important for any advanced crops such as silage or cereals during spring and summer. The landowner will be encouraged to maximise the removal of grass for silage and/or hay and advanced cereals for wholecrop or digestion prior to topsoil stripping.

4.2.2 Management of Unstripped Land

72. Any areas of land that have been fenced but which remain unstripped and undisturbed by construction, such as those occupied by existing utilities, will be managed by the Principal Contractor(s) during the construction phase. The minimum requirement for management will be periodic flail topping or spraying of herbicide for weed control (as required).

4.3 Soil Handling

73. Where required, and as per **Table 4-1** of this OSMP, samples should be further tested for consistency as per **Table 4-2** of this OSMP. Soils should only be moved under the driest practicable conditions, and this must take account of prevailing weather conditions and as set out in section 4.3. This will ensure that soil smearing, and compaction are minimised and enable soils resources to be recovered and replaced both accurately and in their entirety.

74. Soil stripping will be required across the Onshore Development Area for temporary working areas (e.g. haul road, compounds) and the permanent works.

75. The movement, storage and reinstatement of the cohesive soils in the substation zone will inevitably result in at least a temporary degradation in soil physical characteristics during construction. Potential impacts to be considered and mitigated are:

- Topsoil losses during handling;
- Topsoil and subsoil compaction due to trafficking;
- Loss of soil horizons/layers during excavation and replacement;
- Changes in soil drainage status and infiltration capacity;
- Increases in profile stone content;
- Topsoil and subsoil mixing due to separation issues;
- Topsoil and subsoil surpluses from permanent development footprints;cables/bedding and surcharge from foundations and footings;
- Risk of incidental physical contamination with construction materials, in particular stone, wood, metal and/or plastic;
- Dilution of plant nutrients and/or soil organic matter;
- Changes in soil wetness and workability and timeliness of access;
- Variable topsoil depths due to inaccurate levelling or replacement;
- Soil erosion due to compaction and/or inappropriate handling;
- Surface water pollution;
- Biosecurity - plant and animal health issues; and
- Changes in weed type, extent and number.

76. The Onshore Development Area has moderate to good quality soils and soil handling techniques will need to ensure the best practicable re-instatement. The Soil Handling Strategy should follow the recommendations detailed in DEFRA's Code of Construction Practice for Sustainable Use of Soils on Construction Sites (2009).

77. Details of soils movement will be recorded as part of the daily record/site diary by the Principal Contractor(s) (e.g. material movements / stockpiling, soil sampling/testing, etc.). These records will by the Principal Contractor(s) checked on a weekly basis for compliance with the detailed SMP, and these details recorded.

78. All site operatives who will be involved in the excavation or movement of soils will be briefed on the detailed SMP as part of the initial site induction process or as part of Tool Box Talks briefings, and all site personnel will sign copies of the appropriate method statements held within the site register to confirm acknowledgement of this information.

79. Communication and understanding of the information relating to the detailed SMP will be assessed as part of regular review and site audits by the Principal Contractor(s).

80. If required, regular inspections by a soil specialist (refer to **Table 2-1** of the **OCoCP (Volume 8, application ref: 8.9)**) may be completed to ensure soil is being managed in line with the detailed SMP and to monitor compliance. The detailed SMP will include further details of roles and responsibilities of individuals and third party inspection requirements.

81. Before commencing work on site, where soils are to be disturbed, the Principal Contractor(s) will be required to ensure that the construction plant proposed for use is appropriate to the size of the site, the volume of soil and haul distances. The selection of appropriate equipment and work practices is important as mishandling of soil can have an adverse effect on its fertility, permeability, ecological diversity, and the performance and visual quality of vegetated areas. Mishandling can also increase the risk of flooding and off-site discharges. Multiple handling of soil materials are to be minimised.

4.4 Timing

82. Soils within the Onshore Development Area are predominantly cohesive and clayey and, when exceeding their LPL, prone to structural damage, smearing and compaction resulting in impeded drainage and soil horizon mixing.

83. When combined with moderately high levels of excess winter rainfall (673 mm/yr.) this means that soil stripping and re-instatement of agricultural land will be restricted to the drier periods of the year when the land is not at Field Capacity, notionally March-October inclusive, unless agreed in writing and in full consultation with the Applicants and ERYC**.**

4.5 Soil Stripping

84. Soil stripping will be required in areas that will temporarily support the construction of the onshore elements of the Projects. Soils will be stripped from the full width of the working areas, with the exception of those areas used to for topsoil storage or are to remain completely undisturbed.

85. The areas where soil stripping will be required are:

- Temporary Construction Compounds (TCCs);
- Temporary access roads; and
- Temporary and permanent works associated with the construction of the Onshore Export Cable Corridor.

4.5.1 Topsoil Strip

86. Topsoil is defined as the layer of darker, more organic material, this is typically between 20-40cm, which has been subject to agricultural husbandry. Within the Substation Zone this occurs at a depth of 21-35cm. The depth of topsoil at each pre-entry auger boring position within the Onshore Substation Zone is shown at **Appendix 1** of this OSMP. Topsoil depths across each enclosure will be determined for the full Onshore Development Area following completion of the soil resource survey.

87. Topsoil will usually be clearly defined from a less organic, more variably and lighter coloured subsoil. Topsoil depths, texture and colour are reasonably uniform on this site. In the event of doubt as to the depth and nature of topsoil, confirmation on stripping depths should be sought from the appointed site engineer or advising soil scientist.

88. Where land is to be reinstated to agricultural use, topsoil should be stripped, stored and replaced in the same field from which it was removed. This will enable topsoil to be replaced to its original location and, importantly the same land ownership, this will be particularly relevant for the grassland enclosures. Where possible, movement of topsoil across landowner boundaries is to be avoided in line with biosecurity efforts.

89. Topsoil removed from ditch crossings, hedges and woodland is to be stripped and stored separately from adjacent agricultural topsoil and stored separately as a second topsoil unit (T2). This should be stored and replaced to its original location and depth.

90. Haul routes to and from the stripping zones will be clear and established in advance, to ensure that excessive trafficking of subsoils is reduced. Topsoil stripping should be undertaken from a subsoil base layer and dumpers may be required to move soils to designated remote stockpiles. Working to phased manageable areas is recommended to avoid excessive topsoil and subsoil trafficking and haulage distance. Dumpers should only traverse dedicated haulage routes trafficking subsoil and/or overburden only.

91. Topsoil stripping should be undertaken under the supervision of a competent banksman/engineer and take account of any archaeological requirements. A soil stripping log will be maintained by the Principal Contractor(s) for each agricultural enclosure which includes a topsoil depth assessment, and any variability will be recorded by the banksman monitoring stripping works.

92. Trafficking of the topsoil with construction machinery prior to stripping will be kept to an absolute minimum. Trafficking following topsoil stripping should be on subsoil only and to designated haul routes.

93. Where topsoils are stripped best practice guidance and methods will be followed in accordance with the guidance documents mentioned in section 1.3 or the latest available guidance. The initial topsoil strip will be subject to monitoring to ensure that the handling method outlined in the detailed SMP is implemented correctly. Haul routes to and from the stripping zones will be clear and established in advance, to ensure that excessive trafficking of subsoils is reduced.

4.5.1.1 Topsoil Stripping of the Substation Zone

94. The topsoil across the ubstation Zone is sufficiently uniform to be treated as single topsoil unit (T1) for stripping, storage and reinstatement.

95. Construction of the Substation Zone will include both permanent and temporary land take. Topsoil is to be stripped from the whole of the site except for those areas which are to be used for designated topsoil storage mounds or are to remain completely undisturbed.

96. Topsoil stripped from areas of permanent development (e.g. Onshore Converter Station(s)) should be beneficially recovered within the site for re-use in landscaping or elsewhere on the onshore cable route. Subject to consultation with the Projects and any necessary regulatory approval.

4.5.2 Subsoil Strip

97. Subsoil should only be stripped when it is below its plastic limit.

98. Careful monitoring of subsoil characteristics will be undertaken at all stages of soil stripping. Significant variability in texture, stone content or moisture status with depth may necessitate separate storage of different materials if they are encountered.

99. Subsoil is not to be stripped from topsoil and subsoil storage areas or from temporary haul roads and compounds.

100. Subsoil will be stripped using a backacter working from a previously stripped basal layer and moved using dumper. Works will be completed in manageable areas as per the agreed methodology and machinery should only traverse dedicated haulage routes trafficking subsoil/overburden only.

101. Subsoil stripping will be to a maximum depth of 120cm below ground level which is line with that recommended by Defra for mineral extraction sites (COGAP Soil, 1998).

4.5.2.1 Subsoil Stripping of the Onshore Substation Zone

102. The entirety of the subsoil is heavy, poorly drainage heavy clay loam or clay. Subsoils on the site are sufficiently uniform in terms of texture, drainage, handling and re-instatement characteristics to be treated as a single subsoil unit (S1).

4.6 Soil Storage

103. Soil storage will be undertaken for the following components of the Projects:

- TCCs - soils will be moved directly from the area being stripped to areas that have been identified as topsoil and subsoil (where required) storage locations;
- Onshore Export Cable Corridor – topsoil stored parallel on the high side of the permanent cable corridor, within the Projects Order Limits, and stripped subsoil horizons stored separately alongside the cable trenches; and
- Temporary access tracks – topsoil stored alongside the access roads.

104. Soil will be stored and managed in accordance with the Defra Construction Code of Practice for Sustainable Use of Soils on Construction Sites (Defra 2009) or the latest available guidance.

105. The duration of subsoil storage should be minimised and, where possible immediate restoration maximised. The method of storage mound construction will be established in in the detailed SMP in agreement with the Applicant and Principal contractor.

106. The contractor and subcontractors must ensure soils are protected from damage and remain suitable for re-use.

107. It is essential that the locations of soil storage mounds are planned in advance to ensure that the potential for damage to the soil storage mounds and/or contamination of the mounds with foreign construction materials is limited, as far as possible. Soil storage mounds will be located away from surface watercourses where reasonably practical, and measures to control runoff will be implemented as set out in the detailed CoCP(s). Refer to the OPPP (**Appendix D**) for further information on pollution control in relation to soil storage). All storage mounds intended to remain in situ for more than six months or over the winter period will be seeded (unless otherwise requested by the landowner or occupier) with weed control and other necessary maintenance (e.g. mowing and reseeding) carried out as discussed and agreed with landowners and agents. A record of soil stockpiles and their size, origin, location and content is be maintained electronically and with GPS coordination by the Principal Contractor(s).

108. Materials from individual topsoil and subsoil units and within individual land holdings will be stored separately.

4.6.1.1 Subsoil Stripping of the Substation zone

109. Topsoil and subsoil stockpiling associated with the Substation Zone will avoid the floodplain as it is located in Flood Zone 1 on the Environment Agency Flood Map (Environment Agency, 2022). Topsoil and subsoil stockpiling associated with the Onshore Export Cable Corridor will not avoid the floodplain due to the areas of land associated with Flood Zone 2 and 3; gaps in stockpiles to allow water flow across the floodplain will be required, to avoid causing any increased flood risk, as detailed in the Flood Risk Assessment (see **Volume 7, Appendix 20-4 Flood Risk Assessment (application ref: 7.20.20.4)**).

110. If material is stored in a groundwater Source Protection Zone (SPZ), it will be necessary to determine whether this poses an additional contamination risk. If it could pose a risk, then the material should be checked, covered and bunded for storage.

4.6.2 Topsoil Storage

111. Soil stockpile locations will be allocated within the Onshore Development Area and ensure that excavated soils are stockpiled to appropriate heights, and they will not be double handled once stripped. Topsoil and subsoil are to be stored separately, with dry footings and in areas where the risk of additional movement or double handling is minimised.

112. Topsoil storage mounds should be carefully sited and take account of the proximity (>10m) of ditches/watercourses and other features such as slope, hedges/fences/tree roots and overhead power lines. The location of the heaps in relation to the construction area and levels, both outside and within the working area, should be carefully planned to avoid excessive trafficking and diversion of surface water flows to low areas. It is good practice to store topsoil in mounds over the pre-construction header drains (where installed) on the high side of the working area to protect the drains during construction.

113. Topsoil and subsoil should be stored separately to avoid cross contamination and mixing of soils materials. If soil storage capacity is limited there may be a requirement to designate soil storage 'areas'. In the event of subsoil or excavation arisings, for example from deeper excavations or trenchless works, being stored adjacent to, or on, topsoil the period of subsoil storage should be minimised and an appropriate geotextile separator used.

114. Topsoil mounds should be kept as shallow as practicable (<3m) to maximise aeration of the stored soils. Storage mound batters should have gradients (1:1.75 or 30°), which minimise the risk of slumping, and where adjacent subsoil storage may occur, the outer flanks of the mound should be appropriately shaped to avoid soil mixing.

115. Topsoil mounds should be kept weed free through an appropriate herbicide spraying or cutting programme to control the weed budget during storage and minimise the effects of off-site seed dispersal through wind blow. All soil mounds should be sprayed off at least two weeks prior to topsoil replacement. This will be very important where weed budgets and seed banks are high or where black grass is an ongoing issue. All work must be carried out by a suitably qualified (e.g. BASIS) and registered spray contractor and issues such as organic status fully considered before herbicide use, which might necessitate cutting or manual weeding.

116. If topsoil is to be stored for more than one winter, seeding of the storage mounds is recommended. This will assist with weed control, maximise aeration of the stored soils, reduce soil erosion through grass rooting, speed up drying of the topsoil and improve the aesthetics of the site. If this is considered the grass mix etc. should be chosen with care and discussed fully with the landowner/occupier and/or his representatives.

4.6.3 Subsoil Storage

117. The duration of subsoil storage should be minimised and, wherever possible, immediate restoration maximised i.e. material replaced into the excavation trench as soon as reasonably practicable following cable or duct installation.

118. In the event that excavated subsoils are to be stored for a period of more than one winter the outer batters of the excavated trench arisings should be shaped and lightly consolidated using an excavator bucket to provide stability and minimise rainwater ingress into the excavated soils.

119. If subsoil or superficial arisings, from deeper excavations, are stored adjacent to, or on, topsoil or subsoil the period of storage should be minimised and an appropriate heavy duty geotextile separator used.

120. Trench excavations should not be moved between ownership boundaries and only be removed from the site if this is set out in the scheme of working.

4.6.4 Surplus Soils

121. It is likely that a surplus of both topsoil and subsoil will be generated from the construction of permanent developments e.g. Onshore Substation Zone. These soils should be recovered or re-used in landscaping schemes/screening bunds within the substation zone.

122. Subject to landowners, ALO, the Applicants and regulatory approval there may be potential for surplus soils to be re-used elsewhere on the Project(s) and, where this is the case, a testing regime should be prepared to demonstrate a "like-for-like" comparator for donor and receptor soils.

4.7 Soil Re-Instatement

4.7.1 General

123. The medium to heavy soils combined with moderate to high rainfall mean that re-instatement of soils should be restricted of the drier periods of the year, notionally April-October. Opportunities for re-instatement outside of this period will need to be given careful consideration and only be undertaken following discussion and agreement with the Applicants and the landowner.

4.7.2 Site Clearance and Ground Preparation

124. Topsoil mounds should be sprayed off using a total kill or broad-spectrum herbicide at least 2 weeks prior to topsoil replacement. This will be very important where weed budgets and seed banks in the topsoil mounds are high. Spraying must be carried out by a suitably qualified (e.g. BASIS) and registered spray contractor. Issues such as organic status and herbicide type/use should be discussed with the Applicants and the landowner prior to spraying.

125. Areas of standing water should be drained to a suitable outfall, using surface water grips or pumps with siltation control, prior to re-instatement.

126. Temporary haul roads should be retained until such time as all construction activity has ceased and no further vehicular access is required.

127. Permeable fill for re-instatement drainage should be imported and stockpiled at suitable locations before the haul road(s) are removed. This will minimise trafficking by drainage machinery when installing post construction drainage.

128. Prior to re-instatement all extraneous materials such as geotextile, hardstanding's, and timber or construction debris should be removed from site.

129. Subsoils relocated during construction should be replaced in their original location and to the required depth and level detailed in the landscaping masterplan.

130. Haul road and/or temporary hardstanding removal will normally commence working back from the furthermost point to the section access and all stone recovery is recommended to be made from the stone surface.

131. Haul road excavation should be undertaken using 360° excavator with appropriate bucket size and shape for the layer being stripped. In some circumstances, haul roads may be removed using specialist planning equipment. Full clearance of stone and terram, from the advance face of the haul road may need to be supported by hand work (e.g. spade and brush) as required. The peeling back of terram (anchored to the excavator) to aid stone recovery is recommended.

132. Rutting and compaction, or depressions below the hardstanding, should be levelled into an even surface following subsoil clearance using either 360° excavator or other appropriate low ground pressure machinery. Soils which are wet should be avoided accordingly until such a time that they are suitable for trafficking and/or an appropriate weather window exists. The need for additional cultivations and/or incremental soil loosening to facilitate drying should be assessed at restoration stage.

133. Levelling should take full account of topsoil re-instatement depths and on the fall of land across the working width. It will be very important to ensure that subsoil levels are married in with the existing and returned to their pre-entry landform across the corridor and to avoid creating a step on the outer edge(s). This will be important in areas with significant slopes and/or crossfall.

4.7.3 Stone-Picking

134. Following loosening the subsoil may have to be manually stonepicked. Large stones and very large stones, greater 150mm in any dimension, unrepresentative of those occurring naturally in the upper layers of the subsoil, should be removed. In the case of naturally stony subsoils the site engineer should be consulted. This will be relevant to the northeast of the substation zone.

4.7.4 Subsoil Loosening

135. All subsoil subject to trafficking and compaction will be loosened using a winged tine assembly to a maximum depth of 500mm operating at a tine spacing of one and a half times the depth of working (i.e. 750mm).

136. The exact depth of loosening will be determined by soil moisture status, depth of compaction, degree of trafficking during mineral extraction and re-instatement and the presence of shallow services/drains at restoration stage.

137. The moisture content of the subsoil during the ripping operation is crucial to its success. If the soil is excessively wet and the subsoil is plastic in consistency, then there will be a very limited beneficial effect. If the subsoil is too dry, then the operation will cause excessive ground heave and surface disruption.

138. It is recommended that all subsoil layers be loosened at each phase of subsoil placement.

139. Due to the site-specific nature of this operation, the exact procedure should be decided at restoration stage by a competent land reinstatement specialist.

4.7.5 Subsoil Grading

140. In the event of an uneven subsoil surface following stonepicking the subsoil surface should be lightly graded, but not over-consolidated, to provide an even surface for topsoil placement and any wheeling's or surface compaction removed by loosening (section 4.7.4 refers).

141. It will be important to ensure drainage stone is visible and clean before spreading the topsoil.

4.7.6 Subsoil Trafficking

142. Trafficking of the ripped, drained and stonepicked subsoil with anything other than topsoiling machinery is to be avoided.

143. Trafficking of the subsoil for access prior to topsoiling should be to dedicated routes and any wheeling's decompacted using an excavator bucket or subsoiler either before or during topsoil replacement.

4.7.7 Subsoil Approval

144. Appropriate subsoil preparation is critical to the success of the re-instatement. It is good practice to assess and approve the suitability of the subsoil surface, prior to topsoil replacement, with the landowner, occupier or their representatives and to make a photographic record of its condition prior to topsoil being replaced.

4.7.8 Restoration Underdrainage

145. Soil stripping, storage and re-instatement will damage the structure of the soils at the site and reduce their natural hydraulic conductivity. Restoration will be to a combination of agriculture and low intensity uses and the heavy textured subsoils on this site may necessitate installation of some surface water features, swales and piped underdrainage for agricultural areas to encourage drainage and soil structural recovery.

146. Post construction underdrainage should be installed into subsoil as the final operation prior to topsoil re-instatement. This should be undertaken in one pass (where feasible) to minimise tracking of the exposed subsoil. Recommendations for post construction underdrainage will be detailed separately.

147. Surcharge from drain excavations should be re-spread evenly across the full working width and care taken to avoid contaminating the permeable fill over the drains. Vehicular access to the drained area should be restricted thereafter.

4.7.9 Topsoil Re-Instatement

148. Topsoil will be replaced at the Onshore Substation Zone to the depths detailed in the pre-entry soil survey shown at **Appendix A-1** of this OSMP. Profiling pegs will be set out across the working width to the depths identified by this survey. In the event of doubt as to topsoil depths these can be further assessed in undisturbed adjacent land or using the pre-entry stripping log.

149. Topsoil will be removed for stockpiles in a single operation and prevent compaction of original topsoil at the base of the mound.

150. Topsoil will be replaced using a 360° tracked excavator with a wide ditching bucket assisted by low ground pressure dozer and/or dumper (if required). The operation will be completed where possible in one pass working from one access and exiting via a separate access to avoid trafficking of the newly laid topsoil. Topsoil will be spread evenly to 'feather' into existing levels at the edges of the working area and ensure no 'step' is created between the stripped area and undisturbed soils to either side. A written and photographic record of re-instated topsoil depth is to be made in all enclosures.

4.7.10 Secondary Loosening

151. Following drainage and topsoil replacement all soils should be subsoiled using a winged tine subsoiler to below the topsoil/subsoil interface (400-500mm from surface) and at an oblique angle to the underdrains and initial subsoiling pass. This will relieve residual subsoil compaction caused during topsoiling and provide interconnectivity between the topsoil, ripped subsoil and permeable fill over the drains.

152. The precise depth, tine spacing and subsoiler configuration should be decided at restoration stage.

4.7.11 Cultivation and Seeding

153. The re-instated topsoil should be cultivated using agricultural equipment and a crop established at the earliest opportunity. The type of cultivations required will be determined by soil and weather conditions during re-instatement and are likely to include a combination of:

- Plough
- Disc
- Power Harrow
- Combination drill
- Roll

154. Topsoil structure is likely to be weak and multiple passes of cultivators is not recommended. If the re-instated topsoil is cloddy then it may be appropriate to compensate by increasing the seed rate rather than over-cultivating.

155. In certain circumstances, and subject to engineer approval, cultivations and seeding may be completed by the landowner.

4.8 Cropping and Aftercare

156. Early cropping of the restored areas should be encouraged to help bind the soils and start the process of soil structural regeneration through crop rooting.

157. In some situations, a 'sacrificial' crop may be appropriate as opposed to no crop. Bare soils should be avoided for any extended periods especially over-winter or on sloping ground when susceptibility to damage and erosion is potentially greater. Spring root crops (e.g. potatoes or fodder beet) are not recommended to be planted in the first season after re-instatement.

158. The landowner(s) are to be advised and encouraged to manage the land sympathetically and, for the first two-three years after re-instatement, should be aware that re-instated land will farm differently to adjacent areas. The soils are likely to remain wetter for longer in spring and are likely to wet up earlier in autumn. Timeliness of access for arable cultivations, irrigation, fertilising and spraying will be essential to facilitate soil structural recovery.

159. The use of organic manures is recommended, though not in the first 12 months after re-instatement, to build up soil matter reserves lost during temporary soil storage. An aftercare programme should be formulated by the contractor to a fertiliser and cropping plan which is agreed with landowner. The need for subsoiling should be regularly assessed, on arable enclosures.

160. There a three small grass paddocks to the east of the substation zone. It will be important to discuss when and where stock can be introduced onto the restored area. Overwintering of horses/cattle/pigs in restored fields is not recommended in the first 12-24 months after re-instatement and fences should not be removed too early from grassland. Restored land is susceptible to damage by livestock, and particularly by horses and dairy cattle. It will be very important to keep stock out of restored enclosures until soil structure has recovered to a degree that the soils can carry the animals. Future husbandry will require careful ongoing management of both the soils and of landowner expectation.

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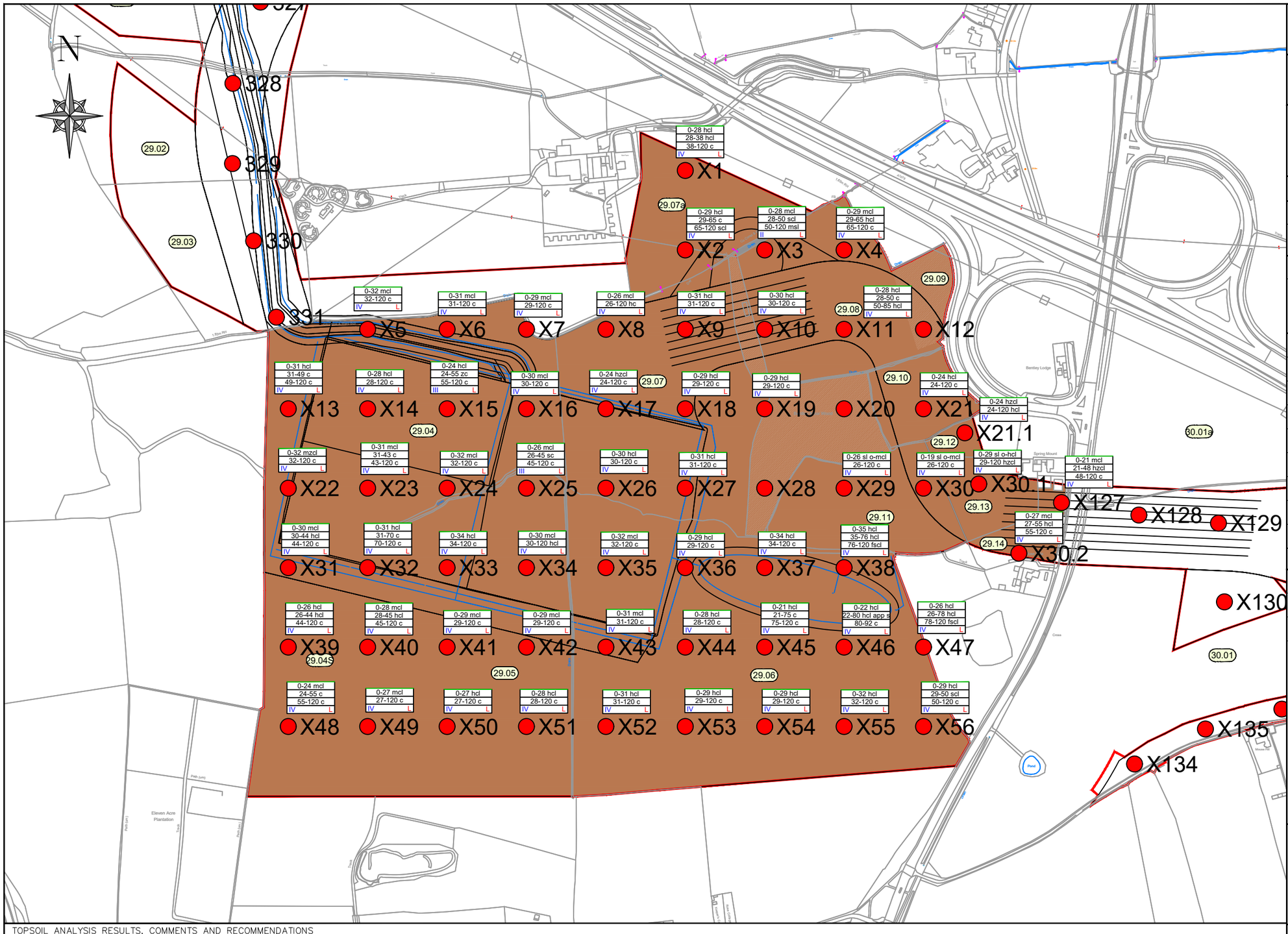
Dogger Bank South Offshore Wind Farms

Appendices A1-A5

Unrestricted

005028830



PROJECT:
Dogger Bank South - Substation Zone

TITLE:
Appendix 1: Distribution of Soil Types &Soil Analysis Results

CLIENT:
RWE

PLAN NUMBER	1

CONSTRUCTION DETAIL

RED LINE BOUNDARY	
WORKING AREA	

SOIL SURVEY

AUGER BORING LOCATION	0
TRIAL PIT LOCATION	TP
FIELD NUMBER	00.00

SOIL TYPE CLASSIFICATION

SOIL TYPE 1: LIGHT	
SOIL TYPE 2: LIGHT-MEDIUM	
SOIL TYPE 3: MEDIUM	
SOIL TYPE 4: MEDIUM-HEAVY	
SOIL TYPE 4: MEDIUM-HEAVY(WOODLAND)	
SOIL TYPE 5: HEAVY	
SOIL TYPE 6: ORGANIC	
SOIL TYPE 7: DISTURBED	
NO SOIL RESOURCE	

OTHER

WETNESS CLASS	I / II / III / IV
EROSION RISK	L M H

RECOMMENDATIONS
Soils should be stripped, stored and re-instated in suitably dry conditions according to a construction based Soil Management Plan (SMP). Soils should be stripped to the depths specified taking account of any localised variability in topsoil depth and be replaced, with suitable decompaction, in the reverse order of extraction to original profile, depth and level.
Temporary hardstanding and/or access roads should make use of an appropriate geotextile separator and be removed on completion avoiding mixing of stone with in situ soils.
A minimum profile depth of 1.20m is recommended for all land re-instated to agriculture and/or landscaping.
For deeper excavations the following stripped depths are recommended:
T1: Topsoil from Soil Type 4: Medium and heavy loams 21-35cm
S1: Subsoil from Soil Type 4: Heavy loams 21-120cm
Any soils excavated from woodland should be handled separately and according to a woodland specific SMP.

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TOPSOIL ANALYSIS RESULTS, COMMENTS AND RECOMMENDATIONS

Field	pH	Available P		Available K		Available Mg		OM	Sand	Silt	Clay	Texture	Topsoil Depth (cm)		
		mg/l	Index	mg/l	Index	mg/l	Index	%	%	%	%	Description	Maximum	Minimum	Mean
29.04	7.30	21	2	147	2-	100	2	4.6	48	28	24	Clay Loam	32	24	30
29.04S	7.30	16	2	143	2-	72	2	4.3	42	32	26	Clay Loam	31	24	27.7
29.05	7.40	22	2	175	2-	92	2	4.3	48	29	23	Clay Loam	34	27	29.5
29.06	7.20	19	2	134	2-	122	3	3.3	54	26	20	Sandy Clay Loam	35	21	29.2
29.07															
29.07a															
29.08															

Comments

Recommendation

METRES
50m 0m 50m 100m

REV	AMENDMENT	DATE
A	For Survey Use Only	21/02/2024
B	For Soils Report and Outline SMP	26/02/2024

SCALE	1:5,000	ORIG. SIZE	A3	SHEET	1
DRAWN	NS	CHECKED	AM	APPROVED	--
REVISION	B	DATE	26/02/2024		
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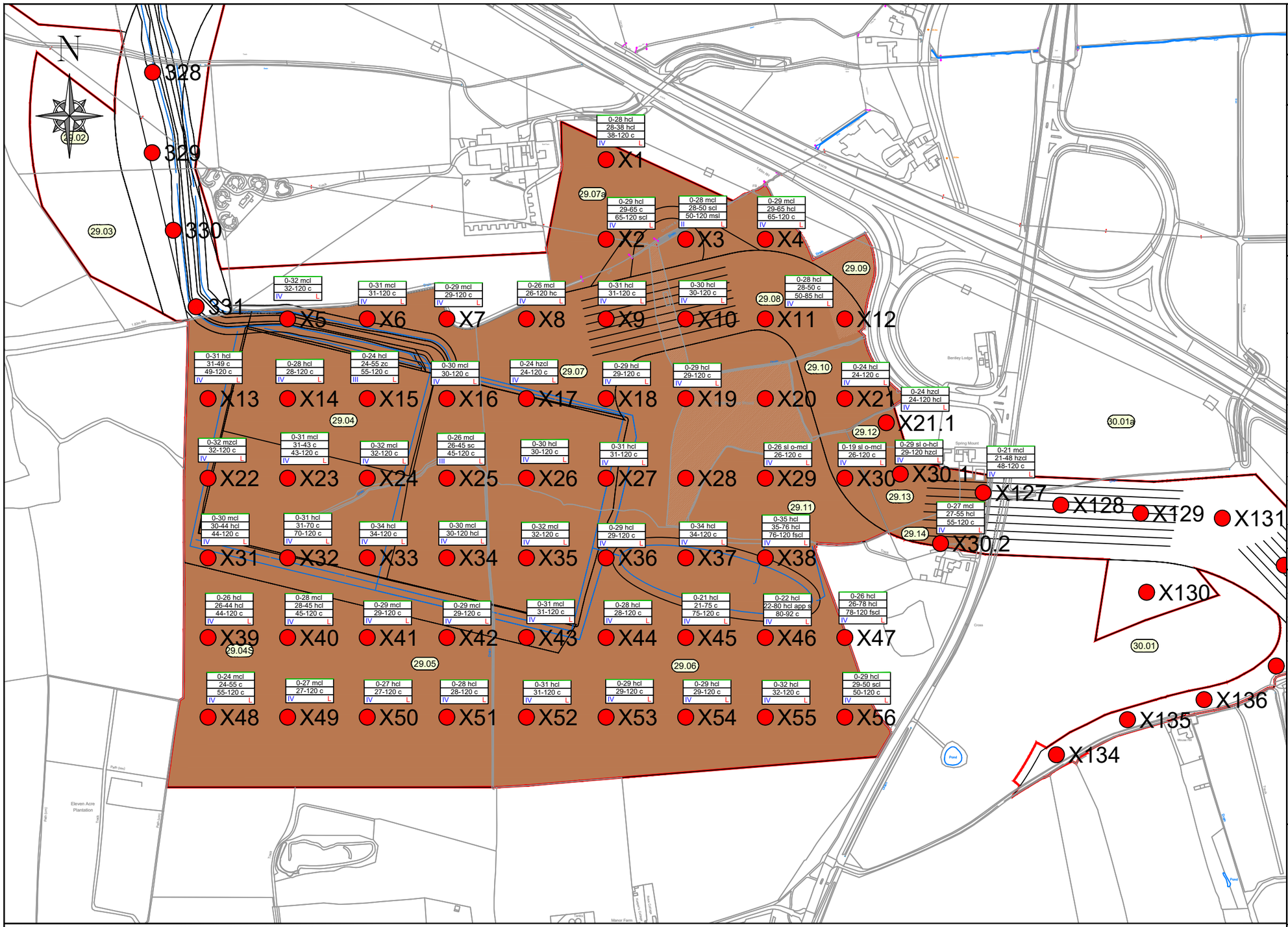

PROJECT:
Dogger Bank South - Substation Zone

TITLE: Appendix 1a: Distribution of Soil Types and Soil Analysis Result

CLIENT: RWE

PLAN NUMBER 2

CONSTRUCTION DETAIL

RED LINE BOUNDARY	
WORKING AREA	

SOIL SURVEY

AUGER BORING LOCATION	0
TRIAL PIT LOCATION	TP
FIELD NUMBER	00.00

SOIL TYPE CLASSIFICATION

SOIL TYPE 1: LIGHT	
SOIL TYPE 2: LIGHT-MEDIUM	
SOIL TYPE 3: MEDIUM	
SOIL TYPE 4: MEDIUM-HEAVY	
SOIL TYPE 4: MEDIUM-HEAVY(WOODLAND)	
SOIL TYPE 5: HEAVY	
SOIL TYPE 6: ORGANIC	
SOIL TYPE 7: DISTURBED	
NO SOIL RESOURCE	

OTHER

WETNESS CLASS	I / II / III / IV
EROSION RISK	L M H

RECOMMENDATIONS

Soils should be stripped, stored and re-instated in suitably dry conditions according to a construction based Soil Management Plan (SMP). Soils should be stripped to the depths specified taking account of any localised variability in topsoil depth and be replaced, with suitable decompaction, in the reverse order of extraction to original profile, depth and level.
Temporary hardstanding and/or access roads should make use of an appropriate geotextile separator and be removed on completion avoiding mixing of stone with in situ soils.
A minimum profile depth of 1.20m is recommended for all land re-instated to agriculture and/or landscaping.
For deeper excavations the following stripped depths are recommended:
T1: Topsoil from Soil Type 4: Heavy Clay loam 0 to 28cm
S1: Subsoil from Soil Type 4: Heavy loams to 28-120cm
Any soils excavated from woodland should be handled separately and according to a woodland specific SMP.

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TOPSOIL ANALYSIS RESULTS, COMMENTS AND RECOMMENDATIONS

Field	pH	Available P		Available K		Available Mg		OM	Sand	Silt	Clay	Texture	Topsoil Depth (cm)		
		mg/l	Index	mg/l	Index	mg/l	Index	%	%	%	%	Description	Maximum	Minimum	Mean
29.08															
29.09															
29.1															
29.11															
29.12															
29.13															

Comments

Recommendation

METRES
50m 0m 50m 100m

REV	AMENDMENT	DATE
A	For Survey Use Only	21/02/2024
B	For Soils Report and Outline SMP	26/02/2024

SCALE	1:5,000	ORIG. SIZE	A3	SHEET	2
DRAWN	NS	CHECKED	AM	APPROVED	--
REVISION	B	DATE	26/02/2024		
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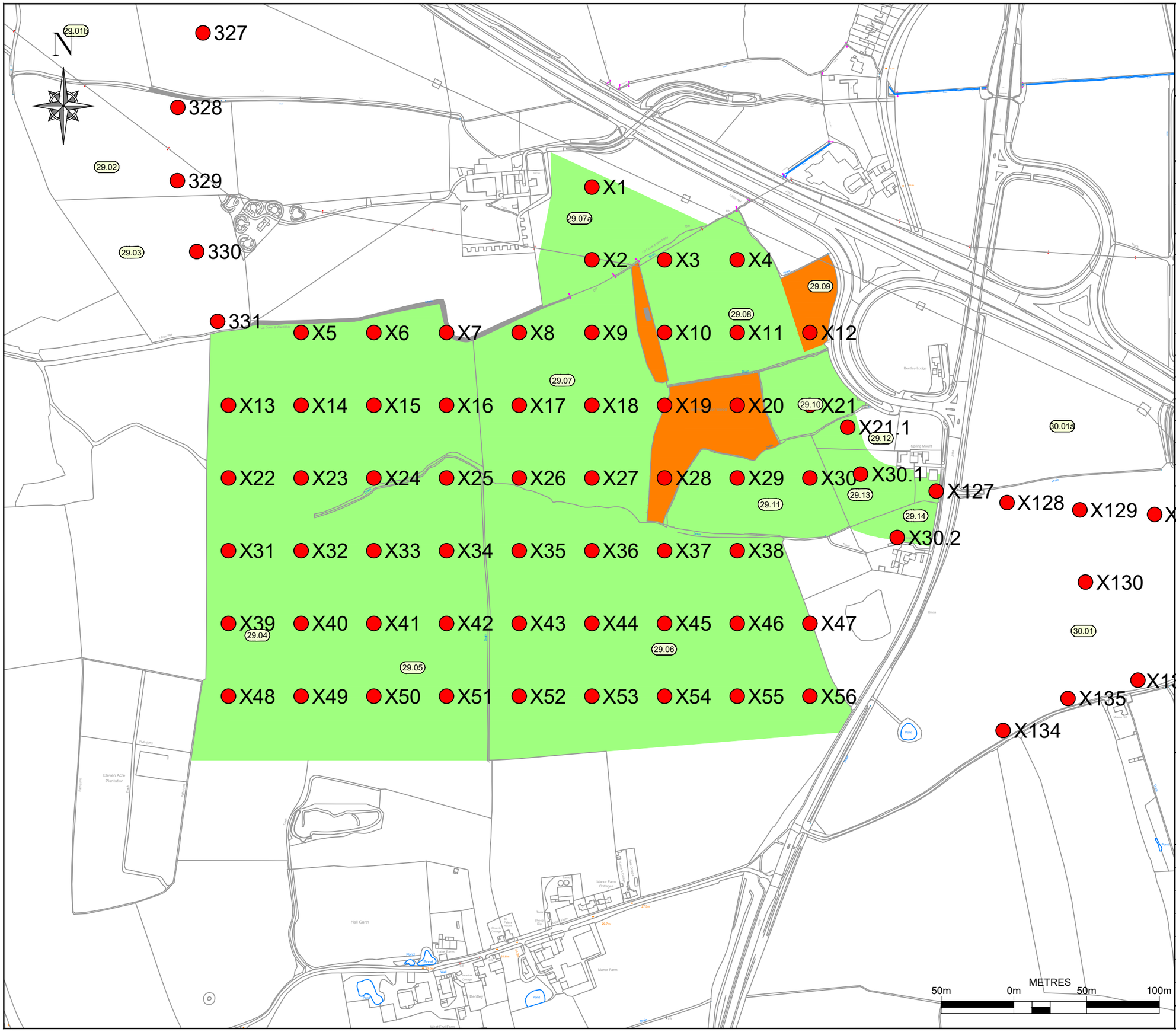

PROJECT:
Dogger Bank South - Substation Zone

TITLE: Appendix 2: Distribution of Agricultural Land Classification Grades

CLIENT:
RWE

PLAN NUMBER	1

CONSTRUCTION DETAIL	
RED LINE BOUNDARY	
WORKING AREA	

SOIL SURVEY	
AUGER BORING LOCATION	0
TRIAL PIT LOCATION	
FIELD NUMBER	00.00

AGRICULTUAL LAND CLASSIFICATION	
GRADE 1	
GRADE 2	
SUBGRADE 3a	
SUBGRADE 3b	
GRADE 4	
NON-AGRICULTURAL	

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REV	AMENDMENT	DATE
A	For Survey Use Only	26/02/2024
B	For Soils Report & Outline SMP	

SCALE	1:5,000	ORIG. SIZE	A3	SHEET	1
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REVISION	B	DATE	26/02/2024		
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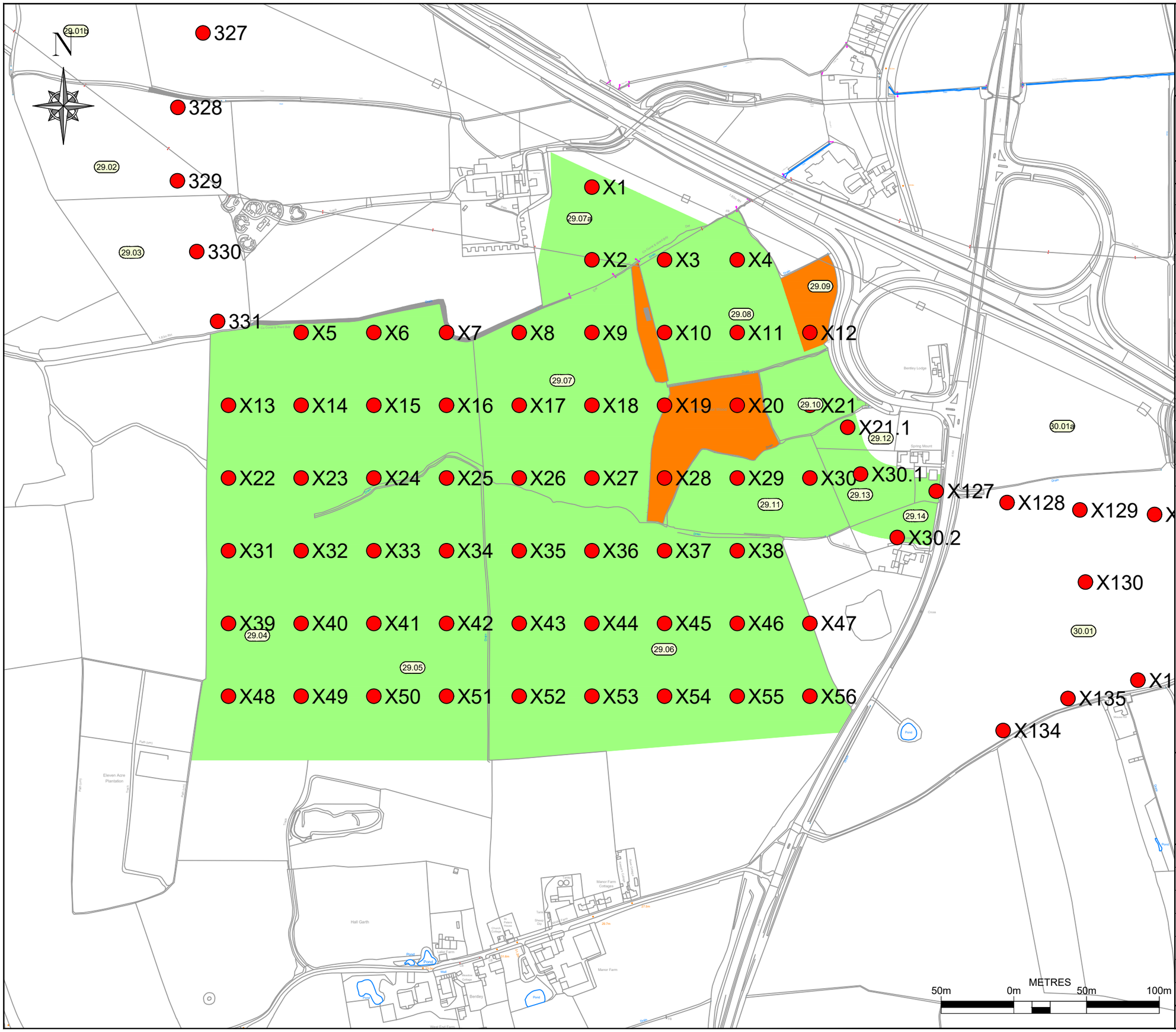

PROJECT:
Dogger Bank South - Substation Zone

TITLE:
Appendix 1b: Distribution of ALC Grades

CLIENT:
RWE

PLAN NUMBER	1 (2)

CONSTRUCTION DETAIL	
RED LINE BOUNDARY	
WORKING AREA	

SOIL SURVEY	
AUGER BORING LOCATION	0
TRIAL PIT LOCATION	
FIELD NUMBER	00.00

AGRICULTUAL LAND CLASSIFICATION	
GRADE 1	
GRADE 2	
SUBGRADE 3a	
SUBGRADE 3b	
GRADE 4	
NON-AGRICULTURAL	

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REV	AMENDMENT	DATE
A	For Survey Use Only	26/02/2024
B	For Soils Report & Outline SMP	

SCALE	1:5,000	ORIG. SIZE	A3	SHEET	1 (2)
DRAWN	NS	CHECKED	AM	APPROVED	--
REVISION	B	DATE	26/02/2024		
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Dogger Bank South Offshore Wind Farm: Substation Zone
Description of Individual Soil Auger Borings

Appendix 3

LDC Land Drainage Consultancy Ltd

BORE NO.	OS GRID REF	LAND USE	DEPTH (cm)	TEXTURE	SOIL COLOUR	MOTTLES		STONES		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	ALC limitation	SOIL TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	Type							
X1	502100, 437000	PGR	28	hcl	dg br			1-2	sst	35	35	IV	3b	WETNESS	Heavy	Reddish brown >r 70cm.
			38	hcl	y br	o, gr	cm	1-2	sst							
			120	c	gr	o, gr, mn	ab	1-2	sst							
X2	502100, 436900	PGR	29	hcl	dg br			<1	sst	29	35	IV	3b	WETNESS	Heavy	5cm mixed intermediary TS/SS. Sandy lenses/ weathered SS.
			65	c	gr	o, gr, mn	ab	<1	sst							
			120	scl	gr br	o, gr	cm	<1	sst							
X3	502200, 436900	WW	28	mcl	dg br			3-5	sst, f, chk	28	No clear SPL	II	2	WETNESS	Medium-Heavy	Borderline msl.. 4-7° slope. TS contains glass, pottery & clinker - nightsoil.
			50	scl	br	o, mn	cm	1-2	sst							
			120	msl	y br	o, gr, mn	m	1-2	sst							
X4	502300, 436900	WW	29	mcl	dg br			5-10	sst, f, chk	29	35	IV	3b	WETNESS	Medium-Heavy	alc > 90cm
			65	hcl	y br	o, gr, mn	cm	1-2	sst							
			120	c	rd br	o, gr, mn, y	ab	1-2	sst							
X5	501700, 436800	STB	32	mcl	10YR 4/2			5-10	hdsst, chk	32	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 4/4	o, p gr, mn, rd	ab	1-2	hdsst							
X6	501800, 436800	STB	31	mcl	10YR 4/2	mn	r	1-2	sst, chk	31	35	IV	3b	WETNESS	Medium-Heavy	Water sitting on TS/SS interface.
			120	c	10YR 4/4	o, mn, p gr	ab	<1	sst, chk							
X7	501900, 436800	STB	29	mcl	10YR 4/2			1-2	sst, chk	29	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 4/4	o, m, p gr	ab	<1	sst							
X8	502000, 436800	WW	26	mcl	dg br			3-5	sst, f, chk	26	35	IV	3b	WETNESS	Medium-Heavy	Marginally hrsvy TS texture. Offset 15m south to avoid flooding 20% SS contamination in TS. Reddish >60cm. Calc > 70cm
			120	c	y br	o, gr, mn	ab	1-2	sst							
X9	502100, 436800	WW	31	hcl	dg br			5-10	sst	31	35	IV	3b	WETNESS	Heavy	Marginal TS texture. Reddish> 60cm. Calc > 80cm
			120	c	y br	o, gr, mn	ab	1-2	sst							
X10	502200, 436800	WW	30	hcl	dg br			3-5	sst, f, chk	30	35	IV	3b	WETNESS	Heavy	Marginal TS texture. Reddish br and Mn >60cm. Calc > 80cm.
			120	c	og br	o, gr	ab	<1								
X11	502300, 436800	WW	28	hcl	dg br			3-5	sst, chk	28	35	IV	3b	WETNESS	Heavy	Marginal TS texture.
			50	c	y br	o, gr	ab	3-5	sst, chk							
			85	hcl	og br	o, gr	ab	1-2	sst							
X12	502400, 436800	Woodland, AB discarded as non-agricultural														
X13	501600, 436700	STB W/ VOLUNTEERS	31	hcl	10YR 4/2			3-5	hdsst, chk	31	35	IV	3b	WETNESS	Heavy	AB located next to archeology pit which is full of water and on headland. Saturated throughout.
			49	c	10YR 6/4	o, p gr, mn	ab	1-2	hdsst							
			120	c	10YR 4/4	o, p gr, mn, y	ab	1-2	hdsst							
X14	501700, 436700	STB	28	hcl	10YR 4/2			3-5	hdsst, chk	28	35	IV	3b	WETNESS	Heavy	AB located next to archeology pit which is full of water.
			120	c	10YR 4/4	o, p gr, mn, y	ab	1-2	hdsst							
X15	501800, 436700	STB	24	hcl	10YR 4/2			1-2	sst	24	55	III	3b	WETNESS	Medium-Heavy	
			55	zc	10YR 5/4	p gr	m	<1	sst							
			120	c	10YR 4/4	o, p gr, mn	ab	<1	sst							
X16	501900, 436700	STB	30	mcl	10YR 4/2			1-2	chk, sst	30	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 4/4	o, mn, p gr, rd	ab	<1	chk							
X17	502000, 436700	WW	24	hzcl	dg br			5-10	sst, f, q	24	35	IV	3b	WETNESS	Heavy	10% SS inclusions in TS.
			120	c	gr	o, gr, mn	ab	1-2	sst							
X18	502100, 436700	WW	29	hcl	dg br			3-5	sst, q	29	35	IV	3b	WETNESS	Heavy	
			120	c	gr br	o, gr, mn	ab	1-2	sst							

Dogger Bank South Offshore Wind Farm: Substation Zone
Description of Individual Soil Auger Borings

Appendix 3

LDC Land Drainage Consultancy Ltd

BORE NO.	OS GRID REF	LAND USE	DEPTH (cm)	TEXTURE	SOIL COLOUR	MOTTLES		STONES		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	ALC limitation	SOIL TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	Type							
X19	502200, 436700	Woodland Edge	24	mcl	dg br	o	cm	1-2	sst	24	35	IV	non ag	WETNESS	Heavy	Offset to edge of woodland. Reddish at 45cm. Chalk below 80cm.
			120	c	y br	o, gr	ab	<1	sst							
X20	502300, 436700	Woodland, AB discarded as non-agricultural														
X21.1		PGR horses	24	hzcl	dgbr	o	fw	<1	sst	24	35	IV	3b	WETNESS	Heavy	
			120	hcl->c	dg	o, gr, mn	ab	<1	sst							
X21	502400, 436700	PGR horses	24	hcl	dgbr			<1	sst	24	35	IV	3b	WETNESS	Heavy	
			120	c	dybr	o, p gr, dk gr, mn	ab	1-2	wthd sst							
X22	501600, 436600	STB	32	mzcl	10YR 4/2	mn	cm	1-2	hdsst, chk	32	35	IV	3b	WETNESS	Medium-Heavy	AB located next to archeology pit which is full of water.
			120	c	10YR 4/4	o, p gr, mn, rd	ab	1-2	chk							
X23	501700, 436600	STB	31	mcl	10YR 4/2	mn	cm	1-2	hdsst, chk, pottery glass	31	35	IV	3b	WETNESS	Medium-Heavy	
			43	c	10YR 5/4	o, p gr, mn, pink	ab	1-2	hdsst							
			120	c	10YR 4/4	o, p gr, mn, pink	ab	1-2	wthd chk							
X24	501800, 436600	STB	32	mcl	10YR 4/2			3-5	sst, chk	32	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 3/4	o, mn, p gr, rd	ab	<1	sst							
X25	501900, 436600	STB	26	mcl	10YR 4/2			5-10	sst, f	26	45	III	3a	WETNESS	Medium-Heavy	Sandy pockets in SS.
			45	sc	10YR 4/4	o, mn	cm	5-10	sst							
			120	c	10YR 3/4	o, p gr, mn, rd	ab	3-5	sst							
X26	502000, 436600	WW	30	hcl	dg br			3-5	sst, chk, q	31	35	IV	3b	WETNESS	Heavy	Water on TS/SS interface.
			120	c	rd br	Mn	cm	1-2	sst							
X27	502100, 436600	WW	31	hcl	dg br			3-5	sst, f, q	30	35	IV	3b	WETNESS	Heavy	Water on TS/SS interface. Severe gleying around previous crop residue localised sandy lenses below 80cm
			120	c	og br	o, gr, mn	ab	1-2	f							
X28	502200, 436600	Woodland, AB discarded, non-agricultural														
X29	502300, 436600	PGR horse	26	mcl (sl o)	dbr	mn	fw	<1	sst	26	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	dybr	p gr, dk gr, mn	ab	<1	sst							
X30	502400, 436600	PGR horse	19	mcl (sl o)	dbr	mn	fw	<1	sst	19	35	IV	3b	WETNESS	Heavy	
			120	c	dybr	o, p gr, dk gr, mn	ab	<1	sst							
X30.1	502469, 436605	PGR horse	29	hcl (sl o)	vdbr			1-2	sst	29	35	IV	3b	WETNESS	Heavy	
			120	hzcl	dybr	o, gr, mn	ab	1-2	chk sst							
X30.2	502520, 436518	PGR horse	27	mcl	vdgbr			<1	sst	27	57	III	3b/3a	WETNESS	Medium-Heavy	Poached by horses.
			55	hcl	ybr	gr, mn		<1	sst							
			120	c				1-2	sst							
X31	501600, 436500	STB	30	mcl	10YR 4/2			1-2	hdsst, chk	30	35	IV	3b	WETNESS	Medium-Heavy	AB located next to filled in archaeology pit.
			44	hcl	10YR 5/4	o, mn, p gr	ab	1-2	hdst							
			120	c	10YR 4/4	o, mn, p gr	ab	1-2	ssst, hdsst, b							
X32	501700, 436500	STB	31	hcl	10YR 4/2			1-2	hdsst chk	31	35	IV	3b	WETNESS	Heavy	AB located next to filled in archaeology pit.
			70	c	10YR 5/4	o, mn, p gr	ab	1-2	hdsst							
			120	c	10YR 4/4	o, mn, p gr	ab	1-2	ssst, hdsst							
X33	501800, 436500	STB	34	hcl	10YR 4/2			3-5	sst, f	34	35	IV	3b	WETNESS	Heavy	Saturated TS/SS interface.
			120	c	10YR 4/4	o, mn, p gr, rd	ab	<1	sst							
X34	501900, 436500	STB	30	mcl	10YR 4/2			3-5	sst	30	35	IV	3b	WETNESS	Medium-Heavy	
			120	hcl	10YR 4/4	mn, p gr, o, rd	ab	3-5	sst							
X35	502000, 436500	STB	32	mcl	10YR 4/2			1-2	sst	28	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 4/4	o, mn, p gr	ab	<1	sst							

Dogger Bank South Offshore Wind Farm: Substation Zone
Description of Individual Soil Auger Borings

Appendix 3

LDC Land Drainage Consultancy Ltd

BORE NO.	OS GRID REF	LAND USE	DEPTH (cm)	TEXTURE	SOIL COLOUR	MOTTLES		STONES		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	ALC limitation	SOIL TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	Type							
X36	502114, 436491	STB	29	hcl	10YR 4/2			1-2	sst	29	35	IV	3b	WETNESS	Heavy	Pockets of weathered sandstone in the subsoil. AB moved away from archeological pit.
			120	c	10YR 4/3	o, mn, p gr	ab	<1	wthd sst							
X37	502200, 436500	STB	34	hcl	10YR 4/2			1-2	sst, f, chk	34	35	IV	3b	WETNESS	Heavy	Wet at TS/SS boundary.
			120	c	10YR 5/4	o, mn, p gr, rd	ab	<1	chk							
X38	502300, 436500	STB	35	hcl	10YR 5/2			1-2	f, chk, sst, g	35	35	IV	3b	WETNESS	Medium-Heavy	Headland.
			76	hcl	10YR 5/4	o, p gr	ab fw mn	<1	sst							
			120	fscl	10YR 5/2	o, mn, p gr, y	ab	<1	sst							
X39	501600, 436400	STB	26	hcl	10YR 5/2			1-2	hdsst, chk, f	26	35	IV	3b	WETNESS	Heavy	
			44	hcl	10YR 5/2	o, mn, p gr, y	ab	1-2	hdsst							
			120	c	10YR 4/4	o, mn, p gr, y	ab	1-2	ssst, hdsst							
X40	501700, 436400	STB	28	mcl	10YR 4/2			1-2	hdsst, chk, f	28	35	IV	3b	WETNESS	Medium-Heavy	
			45	hcl	10YR 5/2	o, mn, p gr, y	ab	1-2	hdst							
			120	c	10YR 4/4	o, mn, p gr, y	ab	1-2	ssst, hdsst							
X41	501800, 436400	STB	29	mcl	10YR 4/2			1-2	sst	29	35	IV	3b	WETNESS	Medium-Heavy	Water sitting on TS/SS interface.
			120	c	10YR 4/4	o, mn, p gr	ab	<1	sst							
X42	501900, 436400	STB	29	mcl	10YR 4/2			1-2	sst	29	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 4/4	o, mn, p gr	ab	<1	sst							
X43	502000, 436400	STB	31	mcl	10YR 4/2			1-2	sst	31	35	IV	3b	WETNESS	Medium-Heavy	
			120	c	10YR 5/3	o, mn, p gr	ab	<1	sst							
X44	502100, 436400	STB	28	hcl	10YR 4/2			1-2	sst	28	35	IV	3b	WETNESS	Heavy	
			120	c	10YR 5/3	o, mn, p gr	ab	3-5	chk							
X45	502200, 436400	STB	21	hcl	10YR 5/2	mn	r	3-5	hdsst, f, chk	21	35	IV	3b	WETNESS	Heavy	
			75	c	10YR 4/4	o, mn, p gr, rd	ab	1-2	hdsst							
			120	c	10YR 4/4	o, mn, p gr, rd	ab	3-5	wthd chk							
X46	502300, 436400	STB	22	hcl	10YR 5/2			3-5	hdsst, f, chk	22	35	IV	3b	WETNESS	Heavy	Wet at 20cm. Impenetrable at 92cm due to stone.
			80	hcl app s	10YR 5/4	gr, mn	ab	1-2	chk							
			92	c	10YR 5/2	o, mn	cm	3-5	chk							
X47	502400, 436400	STB	26	hcl	10YR 5/2			<1	chk, sst	26	35	IV	3b	WETNESS	Heavy	Field headland
			78	hcl	10YR 5/4	o, p gr	ab	<1	sst							
			120	fscl	10YR 5/2	o, gr, mn	cm	<1	sst							
X48	501600, 436300	STB	24	mcl	10YR 4/2			1-2	hdsst, chk, f	24	35	IV	3b	WETNESS	Medium-Heavy	4-11° slope.
			55	c	10YR 5/3	mn	fw	1-2	hdsst							
			120	c	10YR 4/3	o, mn, p gr, y		3-5	wthd sst							
X49	501700, 436300	STB	27	mcl	10YR 4/2			1-2	hdsst, chk, f	27	35	IV	3b	WETNESS	Medium-Heavy	AB located on field headland. Top of slope.
			120	c	10YR 5/2	o, mn, p gr, y	ab	1-2	hdsst							

Dogger Bank South Offshore Wind Farm: Substation Zone
Description of Individual Soil Auger Borings

Appendix 3

LDC Land Drainage Consultancy Ltd

BORE NO.	OS GRID REF	LAND USE	DEPTH (cm)	TEXTURE	SOIL COLOUR	MOTTLES		STONES		DEPTH TO GLEYING (cm)	DEPTH TO SPL (cm)	WETNESS CLASS	ALC	ALC limitation	SOIL TYPE	COMMENTS
					Munsell	Munsell	Ab.	Total	Type							
X50	501800, 436300	STB	27	hcl	10YR 4/2			3-5	sst, chk	27	35	IV	3b	WETNESS	Medium-Heavy	Chalk increases below 90cm.
			120	c	7.5YR 5/8	o, mn, p gr	ab	3-5	chk, ssst							
X51	501900, 436300	STB	28	hcl	10YR 4/2			3-5	sst	28	35	IV	3b	WETNESS	Heavy	
			120	c	7.5YR 5/8	o, mn, p gr	ab	<1	sst							
X52	502000, 436300	STB	31	hcl	10YR 4/2			1-2	sst, chk	31	35	IV	3b	WETNESS	Heavy	
			120	c	7.5YR 5/6	o, mn, p gr	ab	<1	sst, chk							
X53	502100, 436300	STB	29	hcl	10YR 4/2			1-2	sst	29	35	IV	3b	WETNESS	Heavy	AB located near tree in field.
			120	c	7.5YR 5/6	o, mn, p gr	m	<1	sst							
X54	502200, 436300	STB	29	hcl	10YR 4/2			1-2	sst	29	35	IV	3b	WETNESS	Heavy	
			120	c	7.5YR 5/6	o, mn, p gr	m	1-2	sst, chk							
X55	502300, 436300	STB	32	hcl	10YR 4/2	mn	r	3-5	f, chk, p	32	35	IV	3b	WETNESS	Heavy	
			120	c	10YR 5/2	o, mn, gr	m	1-2	chk							
X56	502400, 436300	STB	29	hcl	10YR 4/2			3-5	f, sst	29	35	IV	3b	WETNESS	Medium-Heavy	Indistinct TS/SS boundary.
			50	scl	10YR 4/2	o, mn, pink	cm	1-2	sst							
			120	c	10YR 5/2	o, gr, mn	ab	1-2	hdsst, chk							

Key to soil auger boring abbreviations

Topsoil and Subsoil Texture			Soil Colour/Mottles		
zc	-	silty clay	bl	-	black
c	-	clay	br	-	brown
hcl	-	heavy clay loam	bg	-	bluish grey
hzcl	-	heavy silty clay loam	g/pg	-	grey/pale grey
mcl	-	medium clay loam	lt	-	light
mzcl	-	medium silty clay loam	mn	-	manganese concretions
scl	-	sandy clay loam	o	-	ochrous
msl	-	medium sandy loam	ol	-	olive
mszl	-	medium sandy silt loam	p	-	pale
scl	-	sandy clay loam	r	-	red
csl	-	coarse sandy loam	sb	-	strong brown
msl	-	medium sandy loam	y/py	-	yellow/pale yellow
mszl	-	medium sandy silt loam	**Abundance (Mottles)**		
fsl	-	fine sandy loam	r	-	rare
fszl	-	fine sandy silt loam	f	-	few
zl	-	silt loam	c	-	common
lcs	-	loamy coarse sand	m	-	many
lms	-	loamy medium sand	ab	-	abundant
lfs	-	loamy fine sand	**Cropping/Land Use**		
cs	-	coarse sand			
ms	-	medium sand	A	-	arable (unspecified)
fs	-	fine sand	CULT	-	cultivated (awaiting drilling)
o	-	prefix 'o' = organic. Sl - slight	F	-	fallow
pl	-	peaty loam	CER	-	cereals
p	-	peat	Mz	-	Maize
Stone Type			NON AG	-	non agricultural
br	-	brick	POT	-	Potatoes
chk	-	chalk	PLO	-	ploughed
c	-	coal	PGR	-	permanent grassland
g	-	glass	STB	-	stubble
f	-	flint	WB	-	winter barley
grvl	-	gravel	WW	-	winter wheat
hdsst	-	hard sandstones	**Other**		
mdst	-	mudstone			
p	-	pottery	Impen	-	impenetrable to auger
peb	-	pebbles	pok	-	pockets
q	-	quartzite pebbles	occ	-	occasional
ssst	-	soft/weathered sandstones	OB	-	overburden
t	-	tile fragments	PV	-	pattern variability
slst	-	soft limestone	SPL	-	slowly permeable layer
zst	-	siltstone	W	-	wetness

ANALYSIS REPORT

Appendix 1e: Soil Analysis

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J143

Please quote the above code for all enquiries

Client : DBS
TOPSOIL 0-20MM
30-01-2024

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 64404/24

Date Received 07-Feb-24
Date Reported 16-Feb-24

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
349813/24	1	**FLD 29.04 0-15CM** *Into Winter Wheat*	**7.3**	**2**	**2-**	**2**	**21.0**	**147**	**100**
349814/24	2	**FD 29.04S 0-15CM** *Into Other Crop*	**7.3**	**2**	**2-**	**2**	**16.0**	**143**	**72**
349815/24	3	**FLD 29.05 0-15CM** *Into Other Crop*	**7.4**	**2**	**2-**	**2**	**22.2**	**175**	**92**
349816/24	4	**FLD 29.06 0-15CM** *Into Other Crop*	**7.2**	**2**	**2-**	**3**	**19.2**	**134**	**122**

If general fertiliser and lime recommendations have been requested, these are given on the following sheets.
The analytical methods used are as described in DEFRA Reference Book 427
The index values are determined from the AHDB Fertiliser Recommendations RB209 9th Edition.

Released by Katie Dunn On behalf of NRM Date 16/02/24

ANALYSIS REPORT

DATE **16th February 2024**

SAMPLES FROM **DBS, TOPSOIL 0-20MM, 30-01-2024**

Report Reference: 64404/24

DAVID ROYLE
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Lab Ref.	Field Details		Soil Organic Matter [LOI%] Result
	No.	Field Name or Reference	
349813	1	FLD 29.04 0-15CM	4.6
349814	2	FD 29.04S 0-15CM	4.3
349815	3	FLD 29.05 0-15CM	4.3
349816	4	FLD 29.06 0-15CM	3.3

Your Organic Matter Results Interpretation

Land use	Rainfall	Soil type	Very Low	Low	Target	High
Arable	Low <650mm	Light	<=1.0	1.1-2.1	2.2-3.2	>=3.3
		Medium	<=1.7	1.8-3.3	3.4-5.0	>=5.1
		Heavy	<=2.2	2.3-4.4	4.5-6.5	>=6.6
	Moderate 650-800mm	Light	<=1.0	1.1-3.0	3.1-4.5	>=4.6
		Medium	<=1.9	2.0-4.0	4.1-6.0	>=6.1
		Heavy	<= 2.7	2.8-5.2	5.3-7.6	>=7.7
	High 800-1100mm	Light	<=1.3	1.4-3.7	3.8-6.1	>=6.2
		Medium	<=2.5	2.6-5.0	5.1-7.5	>=7.6
		Heavy	<=3.6	3.7-6.2	6.3-8.8	>=8.9
Grassland (Lowland)	All	Light	<=2.1	2.2-4.9	5.0-7.9	8.0-14.9
		Medium	<=3.4	3.5-6.4	6.5-9.3	9.3-19.9
		Heavy	<=4.6	4.7-7.6	7.7-10.5	10.6-19.9

ANALYSIS REPORT

DATE **16th February 2024**

SAMPLES FROM **DBS, TOPSOIL 0-20MM, 30-01-2024**

Report Reference: 64404/24

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Explanatory Note: Cropping

High	Above average and associated with crop residues returns and regular OM inputs, including ley-arable rotations. Organic and conservation agricultural systems would appear in this group.	On target --- **Continue Rotational Monitoring**
Typical	Typical levels and is associated with crop residue returns and regular OM inputs, such as cover crops, compost or FYM.	
Low	Lower than average associated with intensive cropping & few organic matter inputs. Plan to add OM inputs and retain crop residues in the field. **Be aware: changes in SOM as a result of a change in practice can take a long time.**	Lower than average --- **Review**
Very Low	Very low associated with very intensive cropping and very few organic matter returns. Plan to regularly add OM inputs and retain crop residues in the field. **Be aware: changes in SOM as a result of a change in practice can take a long time.**	Very Low --- **Investigate**

Explanatory Note: Grassland Fields [Lowland]

High	Above average for the climate and soil type. Well drained, near neutral pH, well managed returns through grazing and inputs. Be aware that high levels could suggest an accumulation of undecomposed SOM near the soil surface due to a deteriorating pH and drainage, for example due to compaction.	On target --- **Continue Rotational Monitoring**
Typical	Typical for the climate and soil type. Associated with well drained near neutral pH, well managed returns through grazing and inputs.	
Low	Lower than average for the climate and soil type, intensively managed or recently reseeded and/or low OM inputs. If the soil is compacted and regularly poached by livestock, then OM soil incorporation by biological activity will have been reduced.	Lower than average --- **Review**
Very Low	Very low for climate/soil type. Intensively managed or recently reseeded and/or very low OM inputs. If the soil is compact and regularly poached by livestock, then OM incorporation by biological activity will have been reduced. Add more OM inputs to build SOM levels.	Very Low --- **Investigate**

Traffic light system: These advisory categories only apply to mineral soils. The benchmarks **are not appropriate for peats/ organic soils, i.e. soils with >20% organic matter to 40cm depth.**

In grassland situations only: SOM results >=15% on light & >=20% on med/heavy soil types suggest accumulation at the soil surface often indicating poor biological activity due to soil acidity or wetness on mineral soils.

Cropping & grassland: There is no defined **critical SOM value to aim for,** feeding the soil with organic inputs is more important than reaching an absolute target value.

Please note: A different set of benchmarks would also be required for upland grass and semi-natural systems.

OM = Organic Matter, **SOM** = Soil Organic Matter

Reference: ADHB-BBRO Soil Biology & Soil Health Partnership protocol and benchmarking document July 2022. Rainfall categories for the SOM benchmarks in AHDB report:91140002 final report 02.pdf (windows.net) see pages 7-11, based on work originally in Defra project SP0310

MICRO NUTRIENT REPORT

DATE **16th February 2024**

SAMPLES FROM **DBS, TOPSOIL 0-20MM, 30-01-2024**

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Reference: **64404/349813/24**	Field Name: **FLD 29.04 0-15CM**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		48	
Silt (0.063 - 0.002mm) %		28	
Clay (< 0.002mm) %		24	
Textural Classification		Clay Loam	1

Reference: **64404/349814/24**	Field Name: **FD 29.04S 0-15CM**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		42	
Silt (0.063 - 0.002mm) %		32	
Clay (< 0.002mm) %		26	
Textural Classification		Clay Loam	1

Reference: **64404/349815/24**	Field Name: **FLD 29.05 0-15CM**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		48	
Silt (0.063 - 0.002mm) %		29	
Clay (< 0.002mm) %		23	
Textural Classification		Clay Loam	1

Reference: **64404/349816/24**	Field Name: **FLD 29.06 0-15CM**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		54	
Silt (0.063 - 0.002mm) %		26	
Clay (< 0.002mm) %		20	
Textural Classification		Sandy Clay Loam	1

Notes (*)

(1) In calcareous soils the sand, silt and clay sized fractions are likely to contain particles of carbonate which may result in the incorrect classification of soil type.

ANALYSIS REPORT

DATE 16th February 2024
SAMPLES FROM DBS, TOPSOIL 0-20MM, 30-01-2024

SAMPLED BY

Report reference 64404/24

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Fertiliser Recommendations

The phosphate and potash recommendations shown below, are those required to replace the offtake and maintain target soil indices. The larger recommended applications for soils below target index will allow the soil to build up to this target index over a number of years. Not applying fertiliser to soils which are above target index will allow the soil to run down over a number of years to the target index.
The recommendation should be increased or decreased where yields are substantially more or less than that specified. The amount to apply can be calculated using the expected yield and values for the offtake of phosphate and potash per tonne of yield given in the RB209 9th edition.
All recommendations are given for the mid-point of each Index.
Where a soil analysis value (as given by the laboratory) is close to the range of an adjacent Index, the recommendation may be reduced or increased slightly taking account of the recommendation given for the adjacent Index. Small adjustments of less than 10 kg/ha are generally not justified.
Efficient use of P and K is most likely to be achieved on soils that are well structured and enable good rooting.
For visual evaluation of soil structure (VESS), a score on 1 or 2 would be considered adequate.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 9th edition or seek advice from an FACTS qualified adviser.
Target Indices:
Arable, Forage, Grassland and Potato Crops: P Index 2, K Index 2-
(In rotations where most crops are Autumn-sown, soils are in good condition and P is applied annually, high index 1 can be an adequate target.)
Vegetables and Bulbs: P Index 3, K Index 2+
(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
Fruit Vines and Hops: P Index 2, K Index 2, Mg Index 2
(Note: Cider apples respond to K Index 3, Mg Index 3)
A lime recommendation is usually for a 20cm depth of cultivated soil or a 15cm depth of grassland soil. Where soil is acid below 20 cm and soils are ploughed for arable crops, a proportionately larger quantity of lime should be applied. However, if more than 10 t/ha is needed, half should be deeply cultivated into the soil and ploughed down, with the remainder applied to the surface and worked in.
For established grassland or other situations where there is no, or only minimal soil cultivation, no more than 7.5 t/ha of lime should be applied in one application.
In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.
For Vegetables and Bulbs:
There are instances where small amounts of phosphate fertiliser placed beneath seedlings or transplants can improve establishment, early growth and subsequent use of nutrients. The use of thses techniques is encouraged but the amount in any starter close applied should be deducted from the total application required.
Some vegetable crops are susceptible to magnesium deficiency and may show yield responses to magnesium fertiliser on soils at Mg Index 0 and 1. Magnesium recommendations for all field vegetable crops are for 150kg MgO/ha at Index 0 and 100kg MgO/ha at Index 1.
There is evidence that Brassica crops respond to Sulphur. Where sulphur deficiency has been recognised or is expected in vegetable Brassicas, apply 50-75 kg/ha SO3. For other vegetable crops there have been no UK trials, but because of the decline in atmospheric sulphur emissions a yield response is possible. Where sulphur deficiency has been recognised or is expected in other vegetable crops, apply 25 kg/ha SO3. Sulphur should be applied as a sulphate-containing fertiliser at or soon after planting. Crops are most at risk of sulphur deficiency where they are grown on light sandy soils, soils with a low organic matter content, and in high rainfall areas.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*		*Lime*
FLD 29.04 0-15CM	**Not Given / W Wheat**	*Units/Acre*	**44**	**68**		*T/Ac*	**0**
349813 / Medium	**(Yield: 8 t/ha) / Straw Removed**	*Kg/Ha*	**55**	**85**		*Te/Ha*	**0**

At Index 2, phosphate and potash can be applied when convenient during the year but at Index 0 and 1, they should be applied and worked into the seedbed.
At Mg Index 0, magnesium fertiliser should be applied every 3-4 years at 50 to 100 kg MgO/ha.
Monitoring sulphur requirements of crops is advisable because the risk of deficiency is increasing, as atmospheric deposition of sulphur declines. Not all cereal crops will require sulphur and the responsiveness of a crop to the application of sulphur is dependant on soil texture and winter rainfall. Where deficiency has been recognised or is expected in winter or spring-sown cereals, apply 25-50 kg SO3/ha as a sulphate-containing fertiliser in early March to end of April for all cereals, taking into account the drilling date.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*		*Lime*
FD 29.04S 0-15CM	**Not Given / Other Crop**	*Units/Acre*				*T/Ac*	**0**
349814 / Medium		*Kg/Ha*				*Te/Ha*	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*		*Lime*
FLD 29.05 0-15CM	**Not Given / Other Crop**	*Units/Acre*				*T/Ac*	**0**
349815 / Medium		*Kg/Ha*				*Te/Ha*	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
NRM is a UKAS accredited laboratory to ISO/IEC 17025

Report continued.....

ANALYSIS REPORT

DATE 16th February 2024
SAMPLES FROM DBS, TOPSOIL 0-20MM, 30-01-2024

SAMPLED BY

Report reference 64404/24

DAVID ROYLE
LDCL
COWSLIP OFFICES
FIMBER
DRIFFIELD
EAST YORKSHIRE
Tel: 01977 555869
Fax:

Fertiliser Recommendations

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*		*Lime*
FLD 29.06 0-15CM	**Not Given / Other Crop**	*Units/Acre*				*T/Ac*	**0**
349816 / Medium		*Kg/Ha*				*Te/Ha*	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
NRM is a UKAS accredited laboratory to ISO/IEC 17025

ANALYSIS REPORT

Contact : DAVID ROYLE
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DRIFFIELD
EAST YORKSHIRE
YO25 9LY
Tel. : 01377 236010

J143

Please quote the above code for all enquiries

Client : DBS RWE TOPSOIL 0-15

Sample Matrix : Agricultural Soil

Laboratory Reference

Card Number 65150/24

Date Received 23-Feb-24
Date Reported 06-Mar-24

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
353128/24	1	**DBS RWE 29.07 TS** *No cropping details given*	**6.7**	**1**	**1**	**3**	**10.4**	**99**	**151**
353129/24	2	**DBS RWE 29.07ATS** *No cropping details given*	**6.6**	**0**	**1**	**2**	**9.0**	**65**	**76**

If general fertiliser and lime recommendations have been requested, these are given on the following sheets.
The analytical methods used are as described in DEFRA Reference Book 427
The index values are determined from the AHDB Fertiliser Recommendations RB209 9th Edition.

Released by Sandy Cameron On behalf of NRM Date 06/03/24

ANALYSIS REPORT

DATE **6th March 2024**

SAMPLES FROM **DBS RWE TOPSOIL 0-15**

Report Reference: 65150/24

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Lab Ref.	Field Details		Soil Organic Matter [LOI%] Result
	No.	Field Name or Reference	
353128	1	DBS RWE 29.07 TS	5.0
353129	2	DBS RWE 29.07ATS	4.1

Your Organic Matter Results Interpretation

Land use	Rainfall	Soil type	Very Low	Low	Target	High
Arable	Low <650mm	Light	<=1.0	1.1-2.1	2.2-3.2	>=3.3
		Medium	<=1.7	1.8-3.3	3.4-5.0	>=5.1
		Heavy	<=2.2	2.3-4.4	4.5-6.5	>=6.6
	Moderate 650-800mm	Light	<=1.0	1.1-3.0	3.1-4.5	>=4.6
		Medium	<=1.9	2.0-4.0	4.1-6.0	>=6.1
		Heavy	<= 2.7	2.8-5.2	5.3-7.6	>=7.7
	High 800-1100mm	Light	<=1.3	1.4-3.7	3.8-6.1	>=6.2
		Medium	<=2.5	2.6-5.0	5.1-7.5	>=7.6
		Heavy	<=3.6	3.7-6.2	6.3-8.8	>=8.9
Grassland (Lowland)	All	Light	<=2.1	2.2-4.9	5.0-7.9	8.0-14.9
		Medium	<=3.4	3.5-6.4	6.5-9.3	9.3-19.9
		Heavy	<=4.6	4.7-7.6	7.7-10.5	10.6-19.9

ANALYSIS REPORT

DATE **6th March 2024**

SAMPLES FROM **DBS RWE TOPSOIL 0-15**

Report Reference: 65150/24

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Explanatory Note: Cropping

High	Above average and associated with crop residues returns and regular OM inputs, including ley-arable rotations. Organic and conservation agricultural systems would appear in this group.	On target --- **Continue Rotational Monitoring**
Typical	Typical levels and is associated with crop residue returns and regular OM inputs, such as cover crops, compost or FYM.	
Low	Lower than average associated with intensive cropping & few organic matter inputs. Plan to add OM inputs and retain crop residues in the field. **Be aware: changes in SOM as a result of a change in practice can take a long time.**	Lower than average --- **Review**
Very Low	Very low associated with very intensive cropping and very few organic matter returns. Plan to regularly add OM inputs and retain crop residues in the field. **Be aware: changes in SOM as a result of a change in practice can take a long time.**	Very Low --- **Investigate**

Explanatory Note: Grassland Fields [Lowland]

High	Above average for the climate and soil type. Well drained, near neutral pH, well managed returns through grazing and inputs. Be aware that high levels could suggest an accumulation of undecomposed SOM near the soil surface due to a deteriorating pH and drainage, for example due to compaction.	On target --- **Continue Rotational Monitoring**
Typical	Typical for the climate and soil type. Associated with well drained near neutral pH, well managed returns through grazing and inputs.	
Low	Lower than average for the climate and soil type, intensively managed or recently reseeded and/or low OM inputs. If the soil is compacted and regularly poached by livestock, then OM soil incorporation by biological activity will have been reduced.	Lower than average --- **Review**
Very Low	Very low for climate/soil type. Intensively managed or recently reseeded and/or very low OM inputs. If the soil is compact and regularly poached by livestock, then OM incorporation by biological activity will have been reduced. Add more OM inputs to build SOM levels.	Very Low --- **Investigate**

Traffic light system: These advisory categories only apply to mineral soils. The benchmarks **are not appropriate for peats/ organic soils, i.e. soils with >20% organic matter to 40cm depth.**

In grassland situations only: SOM results >=15% on light & >=20% on med/heavy soil types suggest accumulation at the soil surface often indicating poor biological activity due to soil acidity or wetness on mineral soils.

Cropping & grassland: There is no defined **critical SOM value to aim for,** feeding the soil with organic inputs is more important than reaching an absolute target value.

Please note: A different set of benchmarks would also be required for upland grass and semi-natural systems.

OM = Organic Matter, **SOM** = Soil Organic Matter

Reference: ADHB-BBRO Soil Biology & Soil Health Partnership protocol and benchmarking document July 2022. Rainfall categories for the SOM benchmarks in AHDB report:91140002 final report 02.pdf (windows.net) see pages 7-11, based on work originally in Defra project SP0310

MICRO NUTRIENT REPORT

DATE **6th March 2024**

SAMPLES FROM **DBS RWE TOPSOIL 0-15**

DAVID ROYLE
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Reference: **65150/353128/24**	Field Name: **DBS RWE 29.07 TS**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		47	
Silt (0.063 - 0.002mm) %		29	
Clay (< 0.002mm) %		24	
Textural Classification		Clay Loam	**1**

Reference: **65150/353129/24**	Field Name: **DBS RWE 29.07ATS**	**Result**	**(*)**
Sand (2.00 - 0.063mm) %		48	
Silt (0.063 - 0.002mm) %		28	
Clay (< 0.002mm) %		24	
Textural Classification		Clay Loam	**1**

Notes (*)

(1) In calcareous soils the sand, silt and clay sized fractions are likely to contain particles of carbonate which may result in the incorrect classification of soil type.

ANALYSIS REPORT

DATE	6th March 2024
SAMPLES FROM	DBS RWE TOPSOIL 0-15
SAMPLED BY	
Report reference	65150/24

DAVID ROYLE
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FIMBER
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EAST YORKSHIRE
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Fax:

Fertiliser Recommendations

The phosphate and potash recommendations shown below, are those required to replace the offtake and maintain target soil indices. The larger recommended applications for soils below target index will allow the soil to build up to this target index over a number of years. Not applying fertiliser to soils which are above target index will allow the soil to run down over a number of years to the target index.
The recommendation should be increased or decreased where yields are substantially more or less than that specified. The amount to apply can be calculated using the expected yield and values for the offtake of phosphate and potash per tonne of yield given in the RB209 9th edition.
All recommendations are given for the mid-point of each Index.
Where a soil analysis value (as given by the laboratory) is close to the range of an adjacent Index, the recommendation may be reduced or increased slightly taking account of the recommendation given for the adjacent Index. Small adjustments of less than 10 kg/ha are generally not justified.
Efficient use of P and K is most likely to be achieved on soils that are well structured and enable good rooting.
For visual evaluation of soil structure (VESS), a score on 1 or 2 would be considered adequate.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 9th edition or seek advice from an FACTS qualified adviser.
Target Indices:
Arable, Forage, Grassland and Potato Crops: P Index 2, K Index 2-
(In rotations where most crops are Autumn-sown, soils are in good condition and P is applied annually, high index 1 can be an adequate target.)
Vegetables and Bulbs: P Index 3, K Index 2+
(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
Fruit Vines and Hops: P Index 2, K Index 2, Mg Index 2
(Note: Cider apples respond to K Index 3, Mg Index 3)
A lime recommendation is usually for a 20cm depth of cultivated soil or a 15cm depth of grassland soil. Where soil is acid below 20 cm and soils are ploughed for arable crops, a proportionately larger quantity of lime should be applied. However, if more than 10 t/ha is needed, half should be deeply cultivated into the soil and ploughed down, with the remainder applied to the surface and worked in.
For established grassland or other situations where there is no, or only minimal soil cultivation, no more than 7.5 t/ha of lime should be applied in one application.
In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
DBS RWE 29.07 TS	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
353128 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
DBS RWE 29.07ATS	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
353129 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
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Appendix 5

Dogger Bank South Offshore Wind Farm: Substation Zone
Assessing the Suitability of Topsoil and Subsoil for Stripping
Decision Support Checklist Explanatory Notes

1.0 Background

1.1 LDC has developed a flow diagram as an aid to on site decision making when assessing the suitability of topsoil and subsoil for stripping.

1.2 The flow diagram has been developed in response to the use and interpretation of the soil stripping conditions contained in many Soil Handling Protocols and Management Plans. Specifically that soil should not be stripped when:

- It is above its lower plastic limit

and/or

- >10mm Rainfall has fallen in the previous 24 hrs

and/or

- Surface water is standing/pooling at the field surface.

1.3 A SMP provides a framework in which to strip soils but, as discussed below, conditions tend to be open to interpretation, qualitative and somewhat arbitrary. The purpose of the flow diagram is to support the SMP and aid site decision making to a structure that staff can follow in the field.

2.0 Decision Support Diagram

2.1 The diagram is shown in Figure 1 and should be read in conjunction with the following notes. It has been designed as a support tool for staff in making decisions in the field. Initially it is recommended it be trialled and refined based on the feedback of staff, contractor's and consultees/stakeholders.

2.2 The diagram will not cover every eventuality as site decisions are usually multifactorial, often straightforward but sometimes more complex. There will be instances where further judgement and risk assessment will be included in the final decision whether or not to proceed with topsoil stripping.

2.3 The diagram uses a number of yes/no questions to guide the user through a process of assessing the suitability of a given topsoil for stripping. The notes below provide additional guidance for each of the questions

Has 10mm of Rainfall Fallen in Previous 24 hrs?

2.4 This is a link to the Defra Code condition and an indicator that if >10mm of rainfall has fallen in the previous 24 hours then the assessor will need to ensure that a detailed examination be undertaken. A period of less than 24hrs drying (e.g. overnight) may be acceptable on certain soil types (e.g. sands or shallow chalk soils); if rainfall has been less intensive; if soils are dry; if crop growth is vigorous or at certain times of year e.g. post-harvest.

2.5 Stripping works should be suspended if rainfall is ongoing. An answer of **yes** means that the flow diagram should be used.

2.6 If the answer is **no**, there has been no rainfall and field conditions are dry, as determined by an assessment of moisture content and plastic limit, then a decision **to proceed** is recommended.

What is the general condition of the field/land?

2.7 This should include a consideration of the time of year, recent weather, soil type (see soil report for route) and its moisture status, the type of crop, slope, whether the field has been affected by pre-entry access works e.g. fencing/drainage, whether the field has been affected by the farmer e.g. compacted, cultivated, livestock poaching, flooding etc.

2.8 Supporting information at this stage might include whether land work is ongoing in the area i.e. is the farmer able to cultivate the land adjacent; has pre-entry work led to rutting (>75mm), compaction or smearing; can the topsoil be trafficked; is the topsoil sticking to boots/vehicle tracks/tyres; is water standing/pooling everywhere, in specific areas or in ruts/gateways or on running tracks. As soil moisture is one of the critical factors three responses have been chosen for this question as to whether the field is wet, moist or dry.

2.9 If the soil is dry and <plastic limit a decision **to proceed** is recommended.

2.10 If the soil is moist and <plastic limit a decision **to proceed** is recommended.

2.11 If the soil is wet (i.e. beyond its plastic limit), saturated or flooded to full depth a decision **not to proceed** is recommended. In this instance a further review will be made by the project team to examine whether the risks can be mitigated (e.g. by draining or gripping off water, bog matting/soil protection), careful topsoil stripping, allowing a period of drying or leaving until later in the year. Areas which are permanently waterlogged/wet are likely to require a site specific management plan.

2.12 If the soil is moist but the field has water standing **a further investigation** is recommended using trial holes to assess the nature and extent of any standing water and soil conditions below.

Is water penetrating more than 10% of the depth of topsoil?

2.13 If < 25mm of water is standing at the surface and water has not penetrated to more than 25mm it is recommended that a plastic limit assessment be made of the remaining *c.* 90% of the soil profile.

2.14 A further review of how the soil will lift, strip and store should also be made when excavating the trial pits.

2.15 This may necessitate site specific mitigation such as stripping and storing the wet upper layers separately, cultivating the area prior to stripping, allowing a period of further drying or stripping the soils subject to separate agreement or plan.

2.16 A decision **to proceed** will only be made on reviewing the trial pit information and according to an agreed plan for the fields/areas in question. This assessment should be documented in the Project SMP.

The use of Lower Plastic Limit (LPL) in the suitability assessment

2.17 Attempts have been made over the years in many industries affecting agricultural land (e.g. mineral extractive industries, development sites, pipelines and cable routes) to provide an objective technique that determines a critical threshold when soils are, or are not, at a suitable moisture content to strip, store and re-instate. To date, a robust and flexible model has yet been developed and this can provide significant issues at a site level.

2.18 Generic comments such as dry and friable, moist, or wet can be subjective in the field and may not take account of the wider risks associated with soil movements such as potential for erosion and water pollution. Decision making is particularly difficult when conditions are increasingly marginal, either when the soils are approaching their plastic limit in autumn or emerging from the winter period in spring. Decisions can be supported in the laboratory but analysis invariably yields results several days after the field assessment is made and are therefore are of less value in supporting field decisions. Laboratory analysis can be used to validate field assessment in more contentious periods of decision making.

2.19 Assessing whether topsoil or subsoil has exceeded its lower plastic limit (LPL) has been used as a field based test in many projects and provides an objective tool to determine when a topsoil/subsoil is suitable for handling. The LPL is the moisture content at which the soil begins to deform, become structurally less stable and increasingly prone to damage when it is handled.

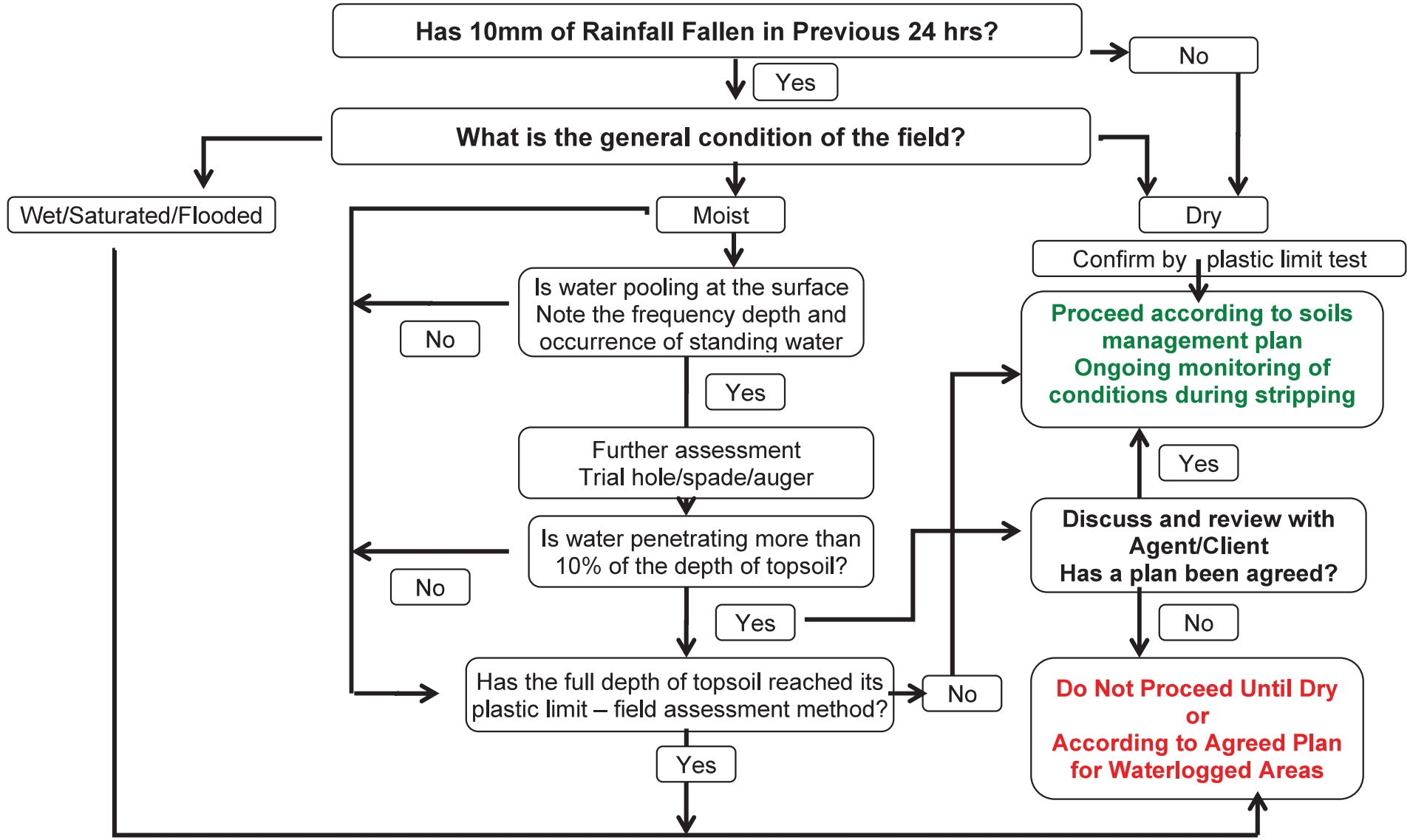
2.20 The LPL is determined by rolling out a thread of the fine portion of a soil on a flat, non-porous surface. The procedure is defined in ASTM Standard D 4318. If the soil is at a moisture content where its behaviour is plastic, a 3.2mm thread of topsoil will retain its shape down to a very narrow diameter. The plastic limit is defined as the moisture content where the thread breaks apart at a diameter of 3.2 mm (about 1/8 inch). A soil is considered non-plastic if a thread cannot be rolled out down to 3.2 mm at any moisture.

2.21 In the field a representative sample of soil should be collected from a depth of 50-150mm from the layer to be stripped. The assessment should be made by attempting to roll a ball of soil into a thread on the surface of a clean plain glazed tile (or plate glass square) using light pressure from the flat of the hand. If a long thread (75-100mm) of less than 3mm diameter can be formed, the soil is wetter than the lower plastic limit and soil moving should not take place until the soils have dried out. If the soil crumbles or the thread breaks before a long thread of 3mm diameter can be formed, then the soil is dry enough to move. This assessment can be carried out on representative samples from each field as required. The test can be undertaken by an individual or validated in pairs/groups (e.g. for ALO's). Supporting photographs can be taken for reference.

2.22 Whilst LPL is a useful field assessment it should be recognised that certain soil types, e.g. sands, organic soils or very chalky medium loams may never reach their LPL in the field and the test may provide a false positive i.e. soils will always be fit to move/handle using this test alone. In this instance, a degree of professional judgement or external support may need to be employed if soil conditions are considered marginal.

2.23 The decision support diagram is a tool that will evolve and is project specific and will probably generate anomalies but is dynamic and should be reviewed in use. It is LDC opinion that it will provide clarity when assessing the condition in which soils are to be stripped or handled. This will support the SMP, provide confidence to key stakeholders and facilitate the successful management and re-instatement of soils in the longer term.

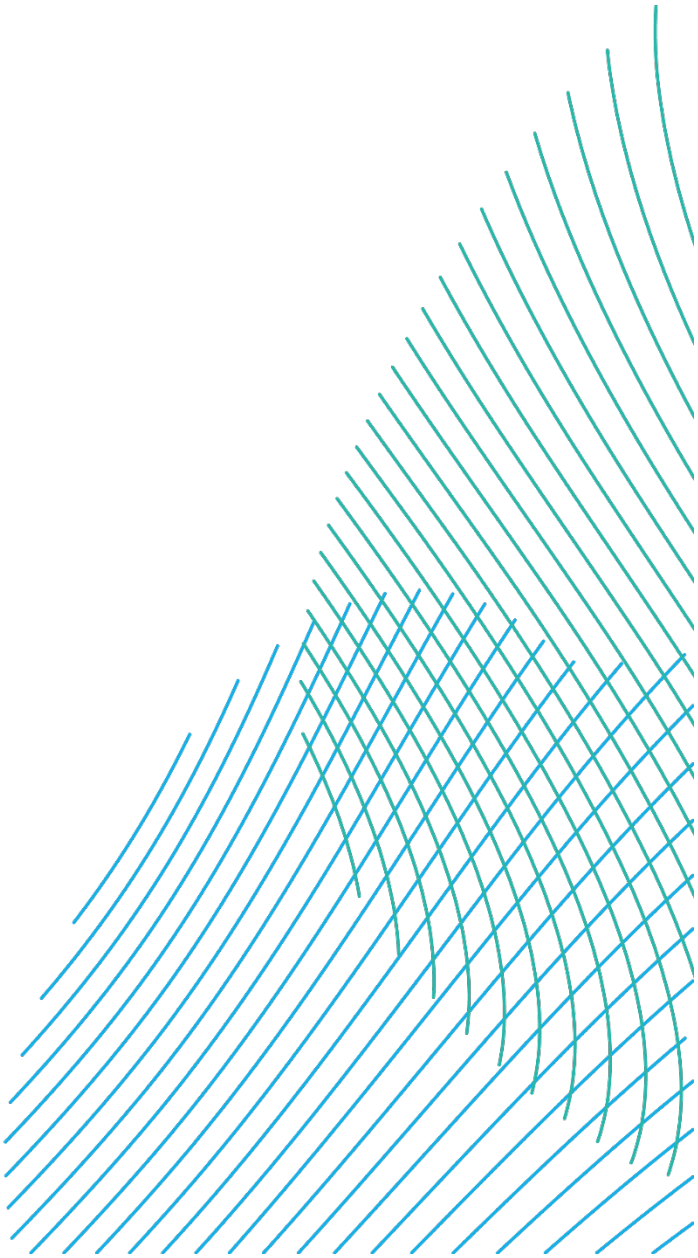
Decision Support Flowchart for Assessing the Suitability of Soil for Stripping



RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire, SN5 6PB



RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

Appendix B - Outline Communications & Public Relations Procedure

June 2024

Application Reference: 8.9

APFP Regulation: 5(2)(q)

Revision: 01

Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project / Package:	**Consents**
Document Title or Description:	Appendix B - Outline Communications & Public Relations Procedure		
Document Number:	005028831-01	Contractor Reference Number:	N/A until construction phase

Rev No.	Date	Status / Reason for Issue	Author	Checked by	Approved by
01	June 2024	Final for DCO Application	RWE	RWE	RWE

Contents

1 Introduction

1.1 Project Background

1. This Outline Communications & Public Relations Procedure (OCPRP) is provided as an Appendix to **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9)** which forms part of the application to the Planning Inspectorate for a Development Consent Order (DCO) for the Dogger Bank South (DBS) East and DBS West Offshore Wind Farm projects (the Projects), hereinafter referred to as the OCoCP. Details of the activities and infrastructure that comprise the project description for the Projects is provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** of the Environmental Statement (ES).

1.2 Purpose and Scope

2. This OCPRP will inform the development of a detailed OCPRP (to be appended to the detailed CoCP) secured via Requirement 19 of the **Draft Development Consent Order (Volume 3, application ref: 3.1) (DCO)** which will be agreed with East Riding of Yorkshire Council (ERYC) in relation to onshore authorised works landward of Mean High Water Spring (MHWS)) prior to commencement of the relevant stage of the connection works.

3. The purpose of this OCPRP is to set out the effective and open communication measures which may be implemented by the Applicants and its Principal Contractor(s) during the construction of the Projects and supporting programme of activity to keep all onshore associated stakeholders notified of advanced works, including members of the public. The OCPRP should be read in conjunction with the OCoCP and all of its supporting appendices.

4. The OCPRP will ensure a proactive approach to communication with local stakeholders and will include a complaints procedure to be implemented during the construction process. Through measures detailed in the OCPRP the Principal Contractor(s) will keep the local community informed of information about types and timings of works, transport routes, likely hours of traffic movements and traffic management measures that will be carried out. Paying particular attention to potential activities taking place outside of the core working hours and where activities occur in close proximity to residences. The means of notification will be finalised as the OCPRP is developed on appointment of the Principal Contractor(s) as part of the detailed CoCP(s).

5. Requirement 19 of the draft DCO states the CoCP and its supporting appendices must be submitted for each stage of works permitted by the Order. This OCPRP will therefore be adapted for each stage of works and submitted separately as part of each revision of the CoCP. Some stages of works may not require all appendices to the CoCP, and in those cases the undertaker will agree with ERYC, as the relevant planning authority, which of the appendices are not required. Consequently, a CPRP may not be provided for some stage of works.

6. This OCPRP relates to the onshore elements of the Projects, landward of Mean Low Water (MLW). This document does not relate to offshore works seaward of MLW, or any works above MLW that are principally marine activities.

1.3 Objectives

7. The following objectives will govern communications with the local community and interested parties during construction of the Projects:

- Communicate effectively and to all relevant parties that works will be taking place, when, where and for how long;
- Inform local communities, businesses, leisure and other organisations of any impact our works will have on them;
- Inform local communities, businesses, leisure and other organisations how the Projects will maximise positive impacts (contract awards etc.) and minimise any potential disruptive impacts;
- Provide a means of contact for people with questions about the Projects' construction activities; and
- Provide regular updates on activity via letters, newsletters, media coverage or drop-in sessions.

1.4 Communication and Public Relations Governance

8. The responsibility for ensuring that measures set out in the OCPRP are delivered rests with the Applicants and Principal Contractor(s) appointed to carry out the works and with ERYC as the enforcing agency.

9. Construction works will be constructed to relevant statutory guidance. Consultation with ERYC will be ongoing throughout the construction period to promote best practice and to implement proposed mitigation measures.

1.5 Accompanying Plans

10. This OCPRP is be supported by several accompanying plans and documents, described in detail in the OCoCP:

- **Outline Construction Traffic Management Plan (Volume 8, application ref: 8.13)** sets out the measures for managing construction traffic during construction to minimise disturbance to any onshore associated stakeholders including the local community (see **Table 3-3**).
- An Outline Public Rights of Way (PRoW) Management Plan **(Appendix C)** of the OCoCP (see **Table 3-1**) has been produced that sets out PRoW which may be implemented during the construction of the onshore works and supporting programme of activity. The local community will be notified of any closure or changes to existing PRoW during construction in adherence with this OCPRP.

1.6 Communications and Public Relations Commitment

11. All Commitments identified for the Projects are detailed within the **Commitments Register (Volume 8, application ref: 8.6)**.

2 Communications & Public Relations Procedure

2.1 Management Measures

12. As detailed in **Table 2-1** of the OCoCP, a Community Liaison Officer (CLO) will be appointed by the Applicants and will be responsible for community outreach for the Projects during construction. The CLO will be responsible for communicating with all onshore associated stakeholders (including local residents, businesses, local councils and highways authorities). The CLO will attend public meetings including liaison with community groups and will manage all contact with local residents, local groups, schools, emergency services and local businesses with regard to general construction works matters, implementing an effective and proactive communications strategy in accordance with the parameters established in this OCPRP.

13. The CLO will assess, redirect and respond to the enquiries and complaints, in coordination with other members of the on-site team as appropriate – with the action dependent on the nature of the complaint. Complaints will be investigated and where required and available, mitigation will be implemented if possible. All calls will be logged and the response will be recorded.

14. In addition, a Local Liaison Committee (LLC) has been established comprising representatives of the local community and members of the DBS team. Regular meetings will discuss pending activity and arrange appropriate means and timescales to communicate information to the wider community. Drop-in sessions will be arranged ahead of construction activity to keep local communities informed of proposed activity. These will be repeated at intervals if required. There will be an Information Line with a single point of contact and, similarly, DBS will have a dedicated email address. Both the telephone and email will be widely communicated through newsletters, press releases and signage along the cable route in advance of and throughout construction activity.

15. Non-technical information about Electro-Magnetic Fields (EMF) will be shared with communities (particularly those in south Beverley close to the Onshore Converter Stations). The information will confirm the negligible EMF risks from the Projects and explain how the Projects adhere to relevant EMF regulatory standards. Information regarding HVDC electrical technology used by the Projects will be included. It is anticipated that the EMF information sharing could be via a website and/or posted leaflets.

16. These measures will ensure that there is ongoing liaison with statutory and non-statutory consultees, stakeholders and the general public.

17. The CLO will work closely with the Traffic Management Coordinator (TMCo) (refer to **Table 2-1** of the OCoCP) to ensure that the public are notified of traffic management measures in line with **Outline Construction Traffic Management Plan (Volume 8, application ref: 8.13)**. All enquiries relating to onshore works should be directed to the CLO initially who will then respond or escalate as needed. A dedicated project email address and phone number will be available during construction for public enquiries and complaints to be raised to the Principal Contractor(s).

2.2 Emergency Planning and Procedures

18. As per **Table 3-2** of the OCoCP an Emergency Response, Evacuation and Pollution Control Plan will be developed that will set out details of the anticipated hazards and conditions at each work site and emergency procedures in cases of spillages or leaks and the measures for site evacuation (i.e. from floods or fire) during construction. Refer to section 5.19 of the OCoCP for further information.

2.3 Local Diversions

19. We will work with the ERYC and other consultees to agree how to manage PRoW during construction. PRoW will be managed in line with the Outline PRoW Management Plan **(Appendix C).**

20. If PRoW closures or diversions are required, we will communicate with ERYC and other relevant organisations, including Parish Councils. Information will include the duration and proposed alternative routes.

21. Businesses, including nearby caravan parks, chalet sites etc. will be informed of construction activities which may affect their usual operations and activities, such as access, opening hours, and planned events; information will include the duration and proposed alternative routes.

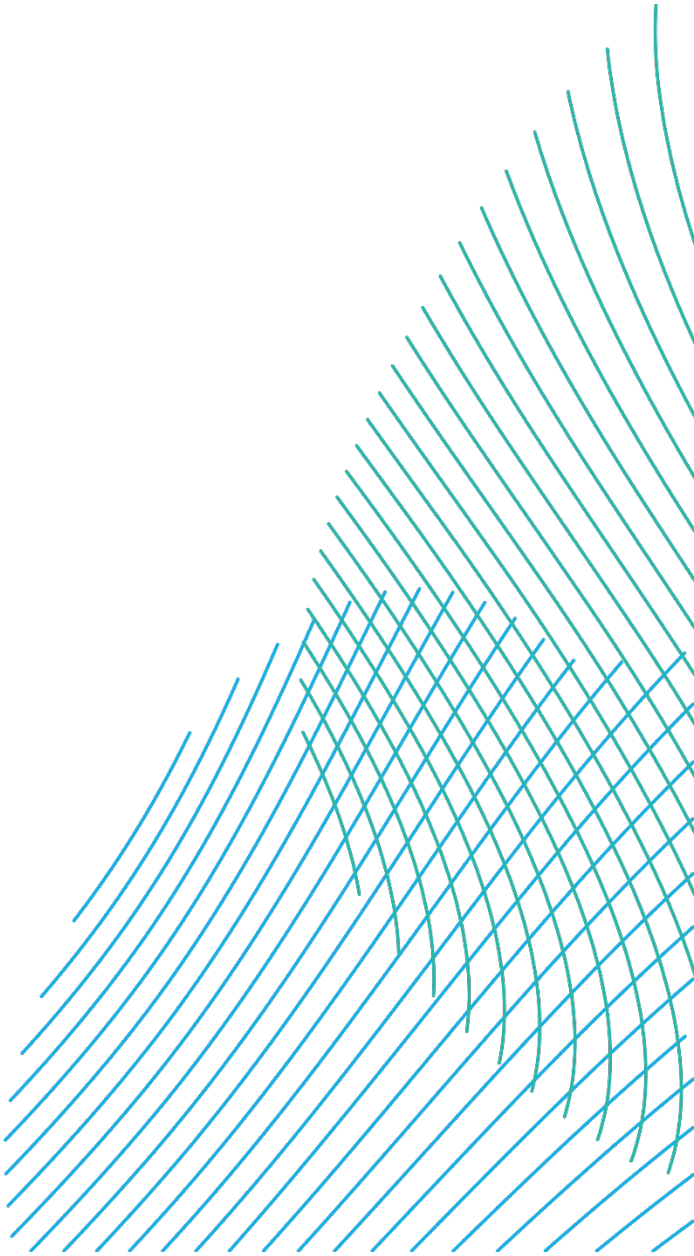
2.4 Local Employment Opportunities

22. Local employers and suppliers will be informed of the proposed construction works. Local and regional companies will be encouraged to participate in the tendering process

RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire, SN5 6PB



RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

Appendix C - Outline Public Rights of Way Management Plan

June 2024

Application Reference: 8.9

APFP Regulation: 5(2)(q)

Revision: 01

Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project/Package:	**Consents**
Document Title or Description:	Appendix C - Outline Public Rights of Way Management Plan		
Document Number:	005007999-01	Contractor Reference Number:	N/A

Rev No.	Date	Status/Reason for Issue	Author	Checked by	Approved by
01	June 2024	Final for DCO Application	RWE	RWE	RWE

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Appendices

1 Project Background

1. This document comprises the Outline Public Right of Way Management Plan for the Dogger Bank South (DBS) Offshore Wind Farms (herein referred to as the Projects) and forms **Appendix C** of the **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9)**. It sets out the Applicants' proposed commitments to managing the Public Right of Way (PRoW) and cycle routes within the Onshore Development Area. A full description of the Projects and works during the construction phase are provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**.

2. There are 22 locations, set out in **Table 4-1** where the Onshore Development Area intersects PRoWs and a further 17 locations where roads designated as cycle routes are crossed, as identified within **Volume 7, Appendix 5-2 Onshore Obstacle Crossing Register (OCR) (application ref: 7.5.5.2)**. These PRoWs and cycle routes are located at the landfall, along the Onshore Export Cable Corridor, within the Onshore Substation Zone and along the Onward 400 kV Cable Connection to the new National Grid Substation (Birkhill Wood).

3. This Outline PRoW Management Plan also supports the assessment and conclusions provided in **Volume 7, Chapter 21 Land Use (application ref: 7.21)**. All PRoWs that interact with the Projects are also identified on **Figure 1, Public Rights of Way and Cycle Routes**, appended to this Management Plan and the **Public Rights of Way Plan (Volume 2, application ref: 2.11)**, submitted with the **Draft Development Consent Order (Volume 3, application ref: 3.1) (DCO).**

2 Purpose of the Outline PRoW Management Plan

4. This Outline PRoW Management Plan will inform the development of a detailed PRoW Management Plan, as detailed in the **OCoCP (Volume 8, application ref: 8.9)**, secured in the draft DCO) (**Draft DCO (Volume 3, application ref: 3.1)**.) This document will be agreed with East Riding of Yorkshire Council (ERYC) prior to the construction of the Projects. It will include details on the measures set out in this document that require confirmation in relation to impact avoidance, short-term measures to ensure minimal disturbance to PRoW users and maintenance of appropriate safety standards.

5. There are no proposals to permanently close any PRoW or cycleway as a result of the construction or operation of the Projects. Once constructed, Onshore Export Cables would be located below ground level and all affected PRoW would be fully reinstated. Operation and maintenance would be limited to infrequent works at link boxes located every 750m to 1500m along the onshore export cable route. Therefore, measures affecting PRoW are temporary and will occur in almost all instances during construction, with the exception of Walkington Footpath No. 4, which crosses the permanent Substation Zone access road and is discussed further in section 5, below.

3 PRoW Management Plan Governance

6. The responsibility for ensuring measures set out in the detailed PRoW Management Plan are delivered rests with the Principal Contractor appointed to carry out the works and with ERYC as the enforcing agency.

4 Temporary Control Measures

4.1 Overview

7. PRoW and cycleways within the Onshore Development Area will interact with the construction of the Projects on a temporary basis and will require temporary control measures to be put in place (as listed in **Table 4-1**). There is one PRoW which interacts with the permanent access road for the Onshore Substation Zone (Walkington Footpath No. 4). When construction is complete, pedestrians will be able to continue to use this footpath, however they would need to cross the access road, which may require a change in level. Following a meeting with the ERYC on the 14th December 2023, it was agreed that steps would not be acceptable, and a ramp should be considered at the detailed design stage. A short diversion to accommodate a ramp is therefore proposed in **Table 4-1** and its indicative location is shown on **Plate 5-2**. Details of the PRoW and Access Environmental Technical Group (ETG) meeting held on the 14th December 2023 are included in **Volume 7, Chapter 21 Land Use (application ref: 7.21)**.

8. Final details for the management of each PRoW, including the specification of any temporary diversions or suggested alternative routes during construction works will be agreed with ERYC through consultation on the final PRoW Management Plan.

4.2 Temporary Management Principles

9. During construction, temporary disruption to any PRoW will be managed by the Applicant and durations of disruption will be kept to a minimum.

10. Temporary management measures would include:

- No Management Required;
- Short-Term Temporary Stopping-Up;
- Appropriately fenced (unmanned) crossing points;
- Manned crossing points; and
- Temporary closures with short PRoW diversions.

4.3 No Management Required

11. In some cases where PRoWs and cycleways are crossed by the Onshore Development Area, public access to the PRoW will be maintained through the use of trenchless techniques and therefore no management measures are required. Trenchless techniques include Horizontal Directional Drilling (HDD), which allows ducts to be installed under the PRoW without breaking open the ground and digging a trench. It is acknowledged however that the requirement for a Haul Road may still impact such crossings (where Haul Road crossings are relevant) and as such short-term stopping up and management measures, described in sections 4.4 to 4.6 may be required on all such PRoWs.

4.4 Short-Term Temporary Stopping-Up

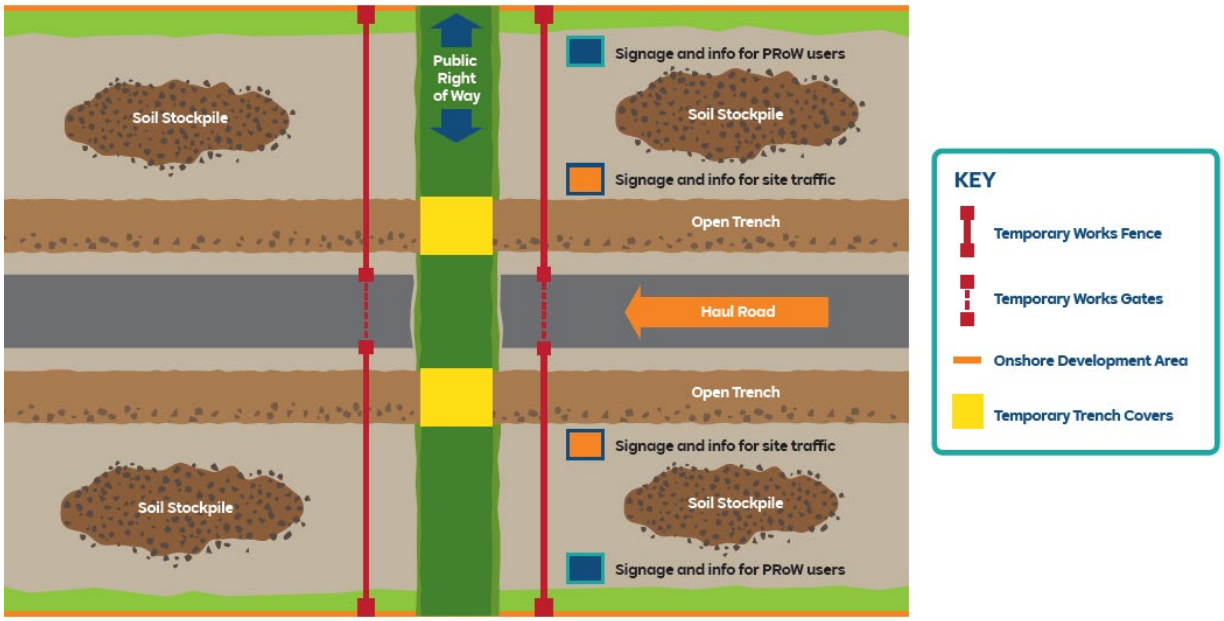
12. Certain PRoW and cycleways, identified in **Table 4-1** will require short-term periods of stopping-up within the construction phase, when construction activities are taking place nearby and while a crossing of the Onshore Development Area or temporary diversion are constructed (see sections 4.5 and 4.6, below). Short-term relates to a period no longer than three months at any one time.

4.5 Unmanned or Manned Crossings

13. Where feasible, PRoW that cross the Onshore Development Area will be kept open with either an unmanned or manned crossing, following a period of short-term temporary stopping up, as described in section 4.4 above. The PRoW that are proposed to be kept open during construction are identified in **Table 4-1**.

14. An indicative arrangement of where a PRoW or cycleway is kept open without a diversion is shown on **Plate 4-1**.

Plate 4-1 Indicative schematic of the management of a PRoW crossing the Onshore Export Cable Corridor during construction, without a diversion.



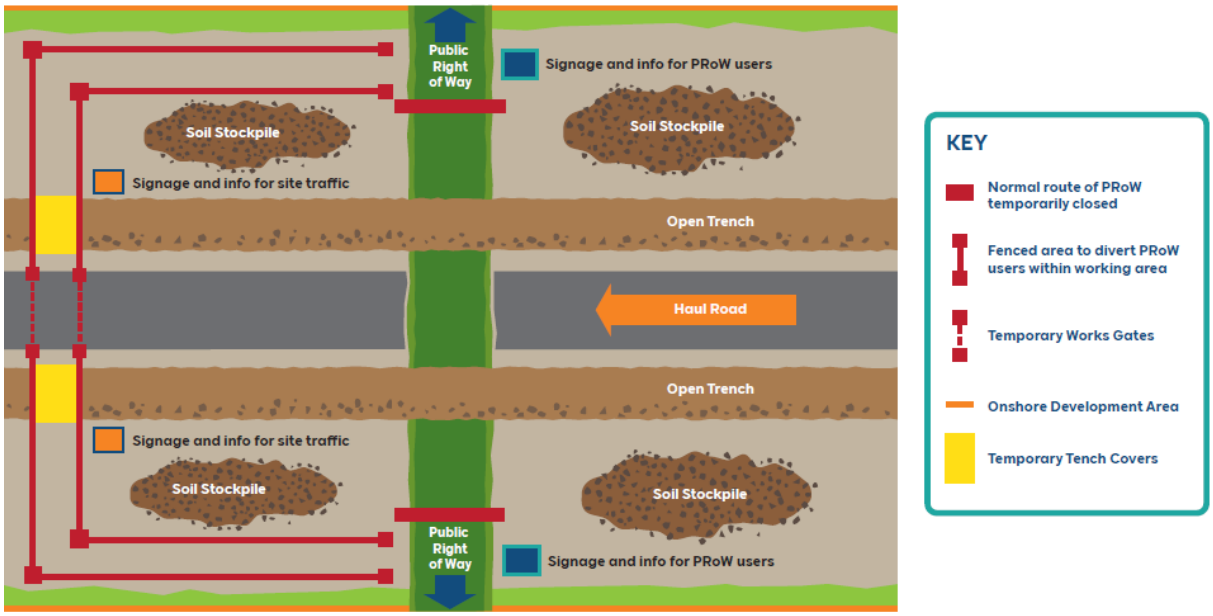
4.6 Temporary Closure with a Short PRoW Diversion

15. For those PRoW that cross the Onshore Development Area, it may be necessary to temporarily divert the PRoW for discrete periods during construction.

16. The diversions for each PRoW would be within the Onshore Development Area, the length determined by the physical constraints and construction activity taking place. The diversion will be fenced to provide a secure area for the public, with consideration given to the appropriate controls at the interface between the PRoW and the Haul Road. The width of the fenced diversion will depend on its usage – but it is expected to be between two to five metres with the greater width in place for bridleways and byways. The exact route of each PRoW diversion within the Onshore Development Area will be determined and agreed with ERYC prior to construction.

17. **Plate 4-2** provides an indicative schematic of how diversions could be arranged.

Plate 4-2 Indicative management of a short diversion to a PRoW crossing the export cable corridor during construction.



18. The final PRoW Management Plan will include a plan(s) showing the confirmed control measures for each PRoW and cycleway and also identify the specific length of the PRoW that is affected.

19. Any temporary diversions of bridleways listed in **Table 4-1** will be designed to consider equestrian, pedestrian and cycle users, where relevant and limit the requirement for access gates or riders to dismount, wherever possible. Should access gates be required, for safety reasons they would be designed to meet British Standard (BS) 5709:2018 and be easily operable from horseback by all riders. The British Horse Society guidance on '*diverting a public bridleway*' (2022) and '*gate and gate installations*' (2023) would be considered in the detailed PRoW and cycleway Management Plan, agreed with ERYC prior to construction. Should a short temporary diversion be required, a surface suitable for horses would be selected. The proposed route would be carefully chosen to avoid surfaces detrimental to use by horses such as tarmac or concrete and a non-slip trench cover suitable for horses would also be selected, if required. Suitable signage would be provided for equestrian users prior to any diversion, if dismounting blocks were considered necessary, they could also be provided considering BHS guidance (2024) on mounting blocks to ensure suitable space is provided for the rider to mount or dismount their horse. King Charles III England Coastal Access

20. The proposed King Charles III England Coastal Path (KCIIIECP) and National Trail will be located within the Landfall Zone and is listed in **Table 4-1** and shown on **Figure 1**. The KCIIIECP is not a cliff top PRoW but will create an access strip from the alignment of the trail to the sea referred to as 'Spreading room' in Natural England's approved Coastal Access Scheme, 2013. This will allow the users of the KCIIIEP to roam freely anywhere on the seaward side of the trail. The Scheme also includes provision for 'roll back', which will allow the path to adapt to change in areas of significant coastal erosion. If the cliff located within the Onshore Development Area erodes significantly the trail would be 'rolled back' inland to a safe location. If that erosion continues and it is not possible to keep moving the path to align with the cliff then a more significant inland diversion of the trail may be planned, e.g. to avoid a cliff top caravan park. The Onshore Development Area is located along the proposed Easington to Filey Brigg section of the KCIIIEP. Full consideration of the National Trail, 'spreading room' and 'roll back' will be considered when designing the temporary construction compounds for the trenchless crossing techniques to ensure access can be safely maintained for all users. Further details of the compounds can be found in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. Further consultation will also be undertaken with the KCIIIEP Coastal Path officer at the ERYC to confirm the agreed location of the route prior to construction and agree suitable mitigation, if required.

Table 4-1 Proposed Temporary PRoW and Cycleway Control Measures

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-001D	Ulrome Footpath No.6	Footpath	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
PAT-001C	King Charles Third England Coastal Access	Future National Trail	No management required. Although located within the Landfall Zone. Temporary Construction Compounds would be fenced off and set back from the coastline (proposed route is assumed to be adjacent to the coastline) If any works were required closer to the edge of the cliff, a safe temporary diversion within the Onshore Development Area would be agreed with the KCIIIEP Coastal Path officer at the ERYC.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-001	Skipsea Footpath No. 6	Footpath	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
RX-003	Bewholme Lane	Holderness Cycle Route	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow trenching and cable installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**. However, access would be maintained for pedestrians and cyclists.
RX-004	Dunnington Lane	Holderness Cycle Route	
RX-008	Billings Lane	Holderness Cycle Route	Haul Road crossing only. Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closures with short diversions for pedestrians and cyclists required to allow Haul Road installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**.
RX-009	Catfoss Road (Cycleway located along temporary construction access only)	Holderness Cycle Route	The cycle route is located along a short section of temporary access track required for the Projects, the road would remain open for cyclists. Suitable signage would be provided to warn cyclists and construction vehicle drivers of shared use, construction traffic using the Haul Road would give way to cyclists travelling on the road.
RX-011	Harsell Lane	Holderness Cycle Route	Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closures with short diversions for pedestrians and cyclists required to allow trenching and cable installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**. However, access would be maintained for pedestrians and cyclists.
PAT-003	Seaton Footpath No. 10	Footpath	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
RX-012	Catwick Heads/ Catfoss Lane (Cycleway located along temporary construction access only)	Holderness Cycle Route	The cycle route is located along a short section of temporary access track required for the Projects, the road would remain open for cyclists.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Suitable signage would be provided to warn cyclists and construction vehicle drivers of shared use, construction traffic using the Haul Road would give way to cyclists travelling on the road.
PAT-006	Catwick Footpath No. 8	Footpath	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
PAT-006A	Proposed Bridleway in the parishes of Catwick and Leven	Bridleway	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
RX-015	Catwick Heads Lane	Holderness Cycle Route	Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closures with short diversions for pedestrians and cyclists required to allow trenching and cable installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**.
RX-015A	Catwick Heads Lane	Holderness Cycle Route	Haul Road crossing only. Unmanned /Manned crossing when Haul Road in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow Haul Road installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**.
PAT-007	Riston Footpath No. 2	Footpath	Haul Road crossing only. Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closure with short diversion required to allow trenching and cable installation.
RX -020	Meaux Lane	Beverley Cycle Route	Haul Road crossing only. Unmanned /Manned crossing when Haul Road in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow Haul Road installation. The road may be closed longer with suitable road diversions put in place for other vehicular access, as described further in **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**.
PAT-008C	A1035	Beverley Cycle Route and National Cycle Route No.164 (traffic free cycle route adjacent to the A1035)	No management required (trenchless crossing and no Haul Road crossing).

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-008D	A1035	Beverley Cycle Route and National Cycle Route No.164 (traffic free cycle route adjacent to the A1035)	Temporary construction access crossing only. Unmanned /Manned crossing access in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow access installation.
RX-026	A0135	Beverley Cycle Route	The cycle route crosses construction access off the A1035 to a Temporary Construction Compound (TCC), the cycleway would remain open for cyclists, however management measures would need to be put in place and cyclist may have to give way to vehicles turning into the TCC.
PAT-010	Tickton Footpath No. 1	Footpath	No management required (trenchless crossing and no Haul Road crossing).
PAT-011	Leconfield Footpath No. 33	Footpath	No management required (trenchless crossing and no Haul Road crossing).

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-012	Leconfield Bridleway No. 27	Bridleway	No management required (trenchless crossing and no Haul Road crossing).
PRX-008A	Molescroft Footpath No. 5 and Minster Way Footpath (East Riding Heritage Way)	Footpath/Marked Way and access track to private housing	Access to be maintained at all times. Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
PAT-018	Molescroft Footpath No. 3	Footpath	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
PAT-019	Molescroft Footpath No. 6/ Wilberforce Way (disused railway line)	Footpath	No management required (trenchless crossing and no Haul Road crossing).

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-019C	A1035 Constitution Hill	Beverley Cycle Route and National Cycle Route No.1 (traffic free cycle route adjacent to the A1035)	No management required (trenchless crossing and no Haul Road crossing).
PAT-019D	A1035 Constitution Hill	Beverley Cycle Route and National Cycle Route No.1 (traffic free cycle route adjacent to the A1035)	Haul Road crossing only. Unmanned /Manned crossing when Haul Road in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow Haul Road installation.
RX-031	Newbald Rd	Beverley Cycle Route	No management required (trenchless crossing and no Haul Road crossing).
PAT-020	Walkington Footpath No. 6 (Beverly 20 Footpath / East Riding Heritage Way)	Footpath	Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closure with short diversion required to allow trenching and cable installation.
PAT-020A	B1230 Broadgate	Beverley Cycle Route and National Cycle Route No.164 (traffic free cycle route adjacent to the A1230)	Temporary construction access crossing only. Unmanned /Manned crossing access in use. Short duration temporary closures with short diversions for pedestrians and cyclists required to allow access installation.
PAT-027 / PAT-028	Walkington Footpath No. 4	Footpath	Unmanned /Manned crossing when access road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Temporary closure with short diversion required to allow trenching, cable and installation and access road to Substation Zone to be constructed. When works are complete the PRoW will cross the permanent substation access road. A permanent culvert and embankment would be installed for the access road to cross a drain, running parallel to the PRoW. This may require the PRoW to be reinstated to reach the level of the new access road. The crossing design, and any associated change in gradient would be agreed with ERYC prior to construction. Following a meeting with the ERYC on the 14th December 2023, it was agreed that a ramp, with a suitable gradient should be installed rather than steps, to allow access for all users. In order to achieve a suitable gradient for a ramp(s), an indicative permanent diversion is proposed, further detail and a prosed indicative realignment is shown in section 5 and **Plate 5-1** and **Plate 5-2**.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			During operation, traffic flows would be limited to a small number of vehicles for maintenance works and the crossing would be unmanned. However, it would be used as a construction access for the Substation Zone for the duration of the construction works, therefore during peak periods of construction traffic management measures may be required to ensure safe pedestrian crossing, such as temporary pedestrian traffic lights or a banksman.
RX-043	A164	Beverley Cycle Route	No management required (trenchless crossing and no Haul Road crossing).
PAT-028A	Walkington Footpath No. 9/ (Beverly 20 Footpath / East Riding Heritage Way)	Footpath	No management required, would be located along the edge of a fenced temporary construction compound.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
PAT-25 and RX-046A	Rowley Bridleway No. 13 (Beverly 20 Footpath / East Riding Heritage Way)	Bridleway	The PRoW would be located parallel to a temporary construction access from the new Jocks Lodge Junction at RX-046A and then cross the Onshore Development Area at PAT- 025. See section 6, below for further details. Measures are to be put in place along the temporary construction access to allow continued use of the Bridleway during construction. Unmanned /Manned crossing when Haul Road in use at PAT-25. Short duration temporary closure at PAT-25 with short diversion required to allow trenching and cable installation.
PAT-29	Rowley Bridleway No. 13 (Beverly 20 Footpath / East Riding Heritage Way)	Bridleway	This PRoW is being permanently diverted by the Hornsea Project Four Offshore Windfarm to allow for its permanent access road. See section 6 below for further details.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow for temporary construction access.
PAT-30	Woodmansey Bridleway No. 30 (Beverly 20 Footpath / East Riding Heritage Way)	Bridleway	Unmanned /Manned crossing when Haul Road in use. Short duration temporary closure with short diversion required to allow trenching and cable installation.
PRX-011 / PRX-011A / PRX-012	Woodmansey Bridleway No. 6 (Park Lane)	Bridleway/ Private access to farm buildings and National Cycle Route No.66 (on road) and Beverley Cycle Route.	Access to be maintained at all times at the three points which the Projects cross Woodmansey Bridleway No. 6 (PRX-011, PRX-011A and PRX-012). Unmanned /Manned crossing when Haul Road in use.

Obstacle Crossing Register ID	PRoW/Cycleway	Designation	Proposed Control Measure
			Short duration temporary closure with short diversion (within Onshore Development Area) required to allow trenching and cable installation into the new National Grid Substation (Birkhill Wood). The crossing at PRX-012 is located adjacent to the proposed the new National Grid Substation (Birkhill Wood), a review of the current plans of the substation suggests Woodmansey Bridleway No. 6 (Park Lane) would not be permanently diverted by the National Grid works, however this would be confirmed in a separate planning application.

5 Permanent PRoW Diversion - Walkington Footpath No. 4

21. As described in **Table 4-1**, Walkington Footpath No. 4 may require a permanent diversion. The current location of the PRoW is shown on **Plate 5-1,** an indicative route of the permanent diversion is included on **Plate 5-2**, below. This could include two slopes, designed at a suitable gradient to divert Walkington Footpath No. 4 from its current route to cross the access road, accounting for any change in level. Prior to construction the detailed design of the diversion including the gradient of the slopes and permanent signage would be agreed with ERYC, all current proposals are indicative. Once the DCO is approved the Applicants will need to agree the final permanent diversion with the ERYC Definitive Map team to ensure the PRoW is legally diverted.

Plate 5-1 Current location of Walkington Footpath No. 4

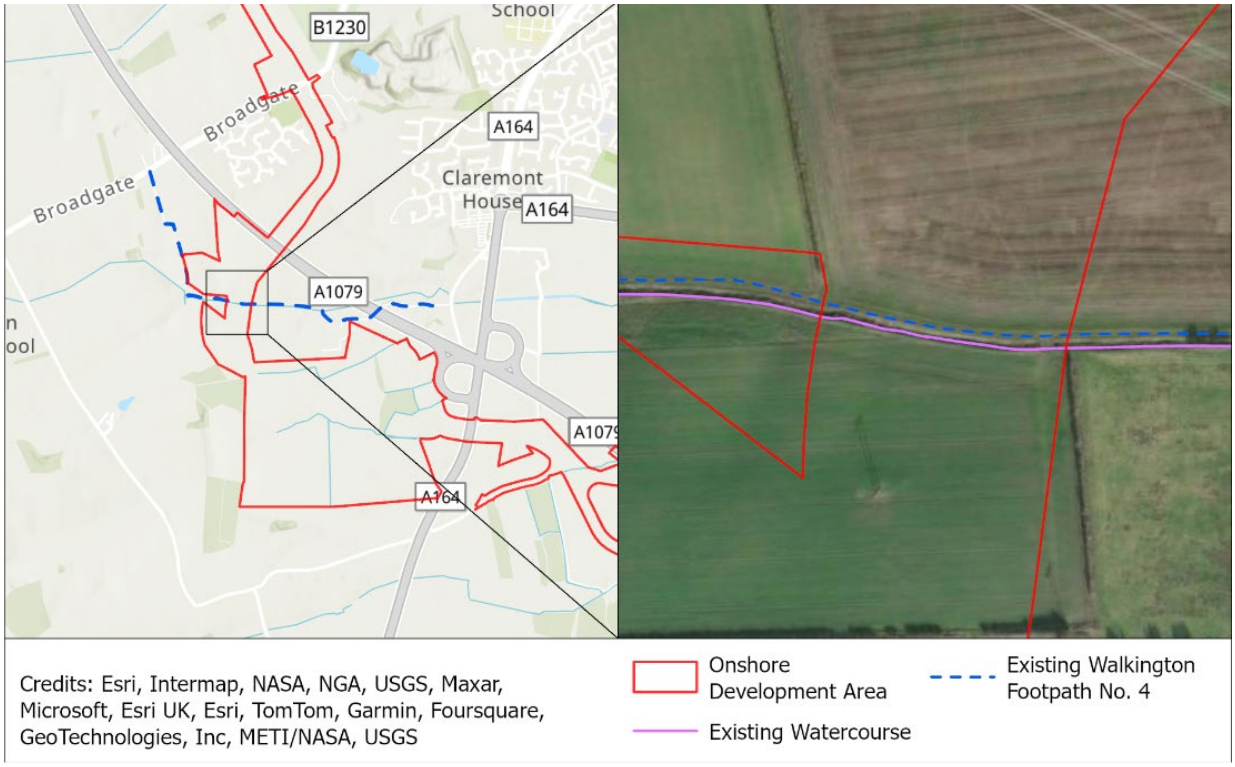
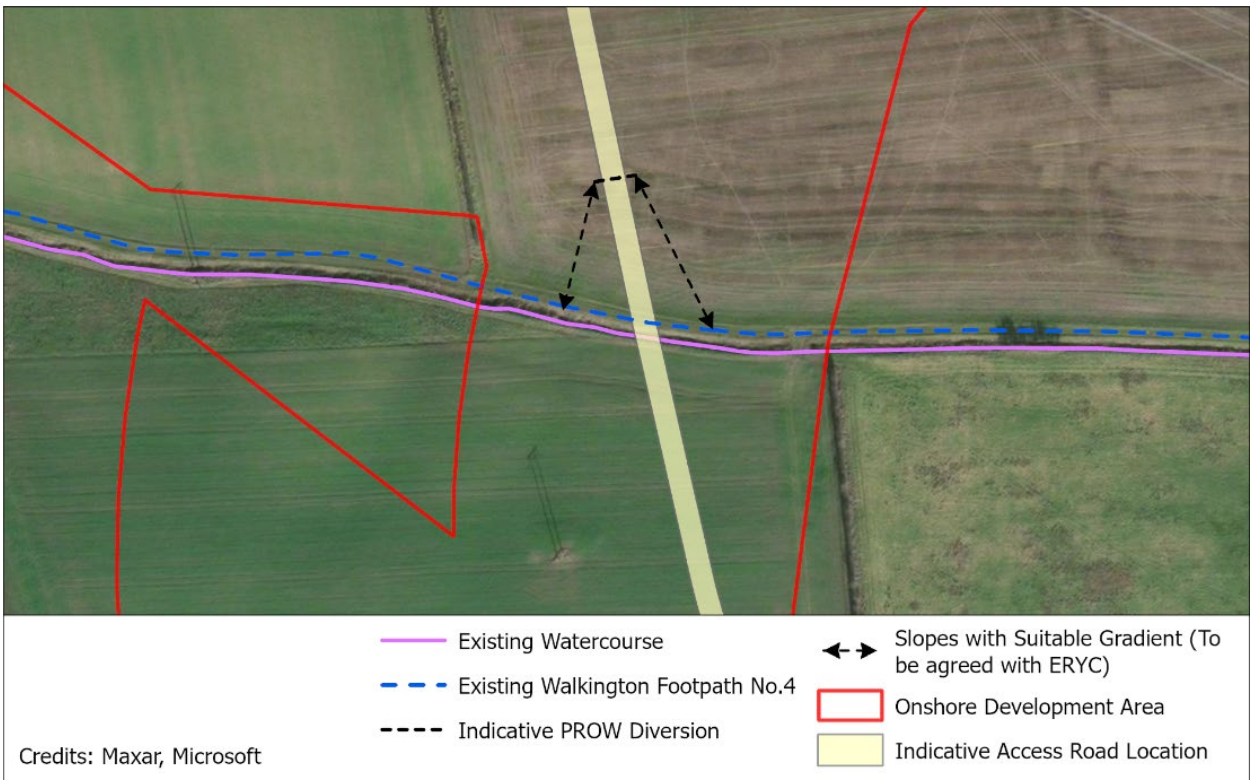


Plate 5-2 Proposed indicative diversion of Walkington Footpath No. 4



6 Permanent PRoW Diversions by Neighbouring Developments

6.1 Developments Identified

22. The Hornsea Project Four Offshore Wind Farm (HOWF4) and the A164 Jocks Lodge Junction Improvement Scheme directly interface with the Projects and are described in sections 6.2 and 6.3, below. Both projects have permanent diversions which impact the Projects.

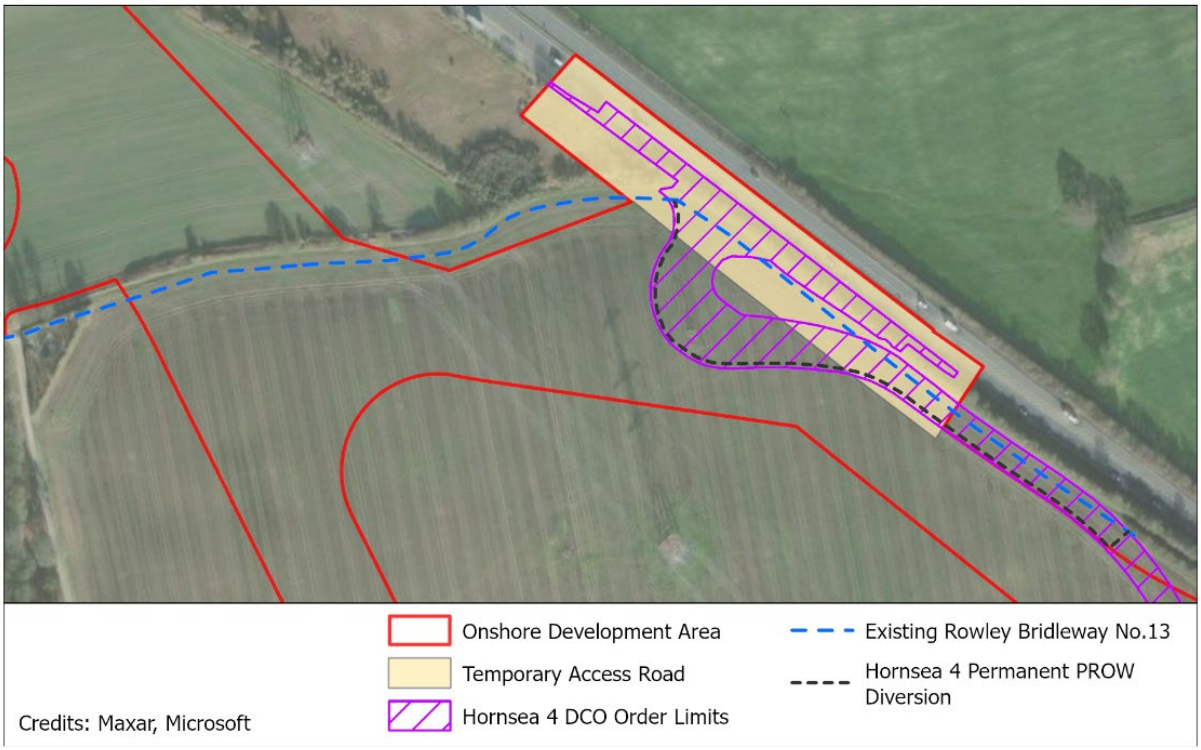
23. The Projects will connect to the proposed new National Grid Birkhill Wood Substation, being developed by National Grid. Details of any PRoW diversions associated with the new National Grid Birkhill Wood Substation are not yet know, however the Applicants will work with National Grid should there be any locations where a permanent diversion is proposed.

24. The Dogger Bank A and B Offshore Wind Farm development does not require any permanent diversion and construction will be complete prior to the start of construction works for the Projects. Therefore, there would be no interaction.

6.2 Hornsea Project Four Offshore Wind Farm

25. HOWF4 will be permanently diverting Rowley Bridleway No.13 located at crossing RX-029 located on the **Volume 7**, **Appendix 5-2 Onshore Obstacle Crossing Register (OCR) (application ref: 7.5.5.2)** along the edge of their permanent access road. The Applicant will be working with HOWF4 to share this access off the A1079 during construction, as currently the construction programmes for both Projects overlap. Should the permanent diversion of Rowley Bridleway No.13 be completed prior to the commencement of construction for the Projects, a temporary crossing of the diverted PRoW would be agreed with ERYC and HOWF4, as detailed in **Table 4-1**. Further details of the HOWF4 permanent diversion are included in Appendix C of the HOWF4 Outline Code of Construction Practice (F2.2)[1] and are also shown on **Plate 6-1**. No other permanent diversions proposed by HOWF4 are located within the Onshore Development Area.

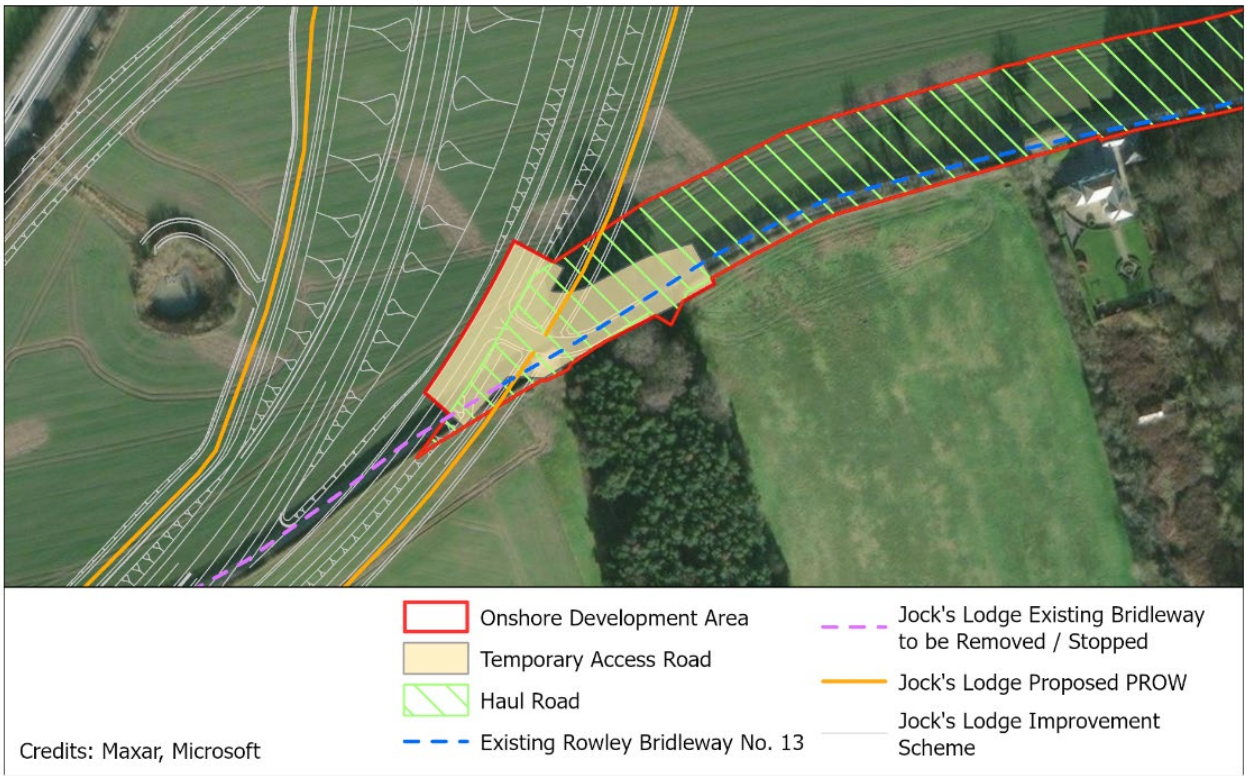
Plate 6-1 HOWF4 permanent diversion of Rowley Bridleway No.13



6.3 Jocks Lodge Junction Improvement Scheme

26. The Jocks Lodge Junction Improvement Scheme are proposing the permanent removal of Rowley Bridleway No.13 where it crosses the junction improvement scheme, as shown on **Plate 5-2**. However, a number of new PRoW for pedestrian, cycle and equestrian users are proposed to replace the bridleway that has been stopped up by the Scheme and provide connectivity to existing footpaths on the other side of the junction, as set out in the Planning Application Drawing in **Appendix A**. The proposed temporary construction access and Haul Road for the Projects located at crossing RX-046A located on the **Volume 7, Appendix 5-2 Onshore Obstacle Crossing Register (OCR) (application ref: 7.5.5.2)** and **Figure 1** will allow access directly from the Jocks Lodge Junction Improvement Scheme to the Onshore Development Area. Where the construction access runs parallel to the Rowley Bridleway No.13, measures will be put in place to allow the continued use of the bridleway. These could include fencing to separate PRoW users from construction traffic. The access points will be constructed in line with ERYC requirements and any relevant appropriate standards. **Plate 6-2** shows the Jocks Lodge permanent diversion in relation to the Projects. Regular consultation with the Jocks Lodge Scheme will be undertaken during the construction period.

Plate 6-2 Jocks Lodge permanent diversion of Rowley Bridleway No.13



7 Temporary Management Measures

7.1 Prior to the Start of Construction

27. The following short-term and temporary measures will be consulted on with ERYC and specified within the detailed PRoW Management Plan.

28. Prior to any temporary stopping up or localised diversion of a PRoW, the Principal Contractor will undertake works in accordance with the measures established within the detailed PRoW Management Plan, to manage the interface between the works, the PRoW and its users in consultation with ERYC.

29. An Outline Communications and Public Relations Procedure is included as part of the **OCoCP (Volume 8, application ref: 8.8)** to ensure ERYC are kept informed of when and where works will be taking place.

30. Where a PRoW requires temporary management measures, any temporary diversion will be clearly signposted.

31. A pre-and post-construction survey (including identification of surface condition and street furniture (if any)) of the PRoW affected will be undertaken. PRoW surveys will be undertaken by an experienced surveyor with the scope of coverage and methodology to be agreed with ERYC. A qualified Agricultural Liaison Officer (ALO) will be employed to ensure that information on existing land conditions is obtained, recorded and verified during the rights of way surveys.

32. ERYC, relevant Parish Councils and walking groups would be notified within a reasonable period of time (4 -6 weeks) in advance of any temporary stopping-up of a PRoW. A notice describing the temporary stoppage would be advertised two weeks in advance of the stoppage.

33. A notice describing the temporary closure would be published in the press a minimum of two weeks in advance of the closure. Consideration will also be given to publishing the temporary closures via additional alternative methods such as websites.

34. Advanced site notices (i.e. notices to members of the public warning of diversions ahead) would be posted at appropriate places to minimise likelihood of unnecessary aborted journeys. Measures would include:

    - Site notices erected in visible locations on site approximately one to two weeks in advance of temporary management measures being in place;

- Provision of a map showing the extent of the temporary closure and any temporary diversion; and
- Confirmation that the temporary diversion across land in the Applicant's control is safe and fit for public use.

7.2 Construction Phase

35. Each PRoW that crosses the Onshore Development Area (and remains open) will be risk assessed to ensure safety for all PRoW users while the crossing is open during the construction phase. The assessments will take into consideration the requirement to manage risks arising from the intersection of the PRoW and the Haul Road (taking into account type and volume of users) during construction hours and maintaining security integrity out of hours. The Principal Contractor will ensure that all employees have undergone necessary health and safety training. Depending on the frequency of use of the PRoW and the nature of construction activities being undertaken, one or more of the following control measures would be adopted where a PRoW intersects a Haul Road:

- Provision of a banksman to assist PRoW users to safely cross the construction area during construction hours;
- Provision of warning signage to raise awareness of the PRoW to approaching construction vehicles and informing PRoW users approaching a construction interface of the associated hazards;
- 'Heavy Plant Crossing' signs to warn users of construction vehicles;
- Information for users of the paths, especially at entry points to the Site, with contact details of the Applicants' liaison officer; and
- A regular review of ground condition, to ensure the surface is safe for walkers and other users, whilst the paths remain open. Action will be taken to improve ground condition if required.

36. Where a PRoW crosses the Onshore Development Area, the Principal Contractor would seek to maintain pedestrian access outside of periods of construction within the immediate area and in so far as practicable. This route would be maintained by fencing and the use of gating, to ensure that the users of the PRoW have a safe route to cross the Onshore Development Area. Any requirements for fencing and gating will be agreed in consultation with ERYC pre-construction and be designed to be suitable for equestrian users in line with the relevant guidance set out in section 4.6. The width of the crossing point will depend on its usage but, where practicable, is expected to be between 2m and 5m, with the greater width in place for bridleways and byways. All diversions would provide equivalent access to current routes (including mobility and sensory need considerations).

37. Where a PRoW runs along the side of a construction access road, management measures will be put in place during construction. These will involve fencing to separate PRoW users from construction traffic. The access points will be constructed in line with ERYC requirements and any relevant appropriate standards.

38. During construction periods where any open trench cannot be reinstated immediately or where the ground surface is uneven, the Principal Contractor will consider what measures, taking into consideration local constraints, need to be implemented to ensure suitable and safe egress of users of the PRoW. Any extensions to stoppage of a PRoW would be discussed and agreed with ERYC, with relevant updates of appropriate management documents and any required advertising.

39. Following completion of construction activities, all public access within the working area will be reinstated to a standard commensurate to that existing prior to the commencement of construction works or an improved condition. The Applicants have made a commitment to reinstatement areas between Jointing Bays with two years of the start of construction, as set out in **Volume 7, Chapter 5 Project Decsription (application ref: 7.5)**.

40. The ALO will act as the point of contact for the restoration of the PRoW between the developer, landowner, ERYC and Principal Contractor to ensure the PRoW reinstatement is in accordance with the agreed requirements and specification.

41. Following reinstatement of a PRoW located within the Onshore Development Area, for a period of up to seven years, should any settlement be identified, this could be reported to the ALO, Community Liaison Officer or ERYC Countryside Access Team by a member of the public or landowner. An inspection to identify if any repair is required would be arranged. Should any restoration works be required that are attributed to the Projects they would be agreed with ERYC and the relevant landowner and undertaken by the Applicants or, the Offshore Transmission Operator.

8 Duration of Temporary Management Measures

42. Durations of temporary PRoW management measures will be discussed in advance with ERYC and agreed via approval of the final PRoW Management Plan. Typically, PRoW along the onshore export cable route will be periodically diverted for a short period of time (a number of weeks depending on the length of PRoW being temporarily closed) to allow for the safe construction of the onshore infrastructure (including Haul Road construction and removal). This would typically be no greater than three months at any one time.

43. Where closures are required for longer period due to unforeseen circumstances encountered during construction, ERYC will be informed in writing.

References

British Standards BS5709:2018 (February, 2018). Gaps, Gates and Stiles.

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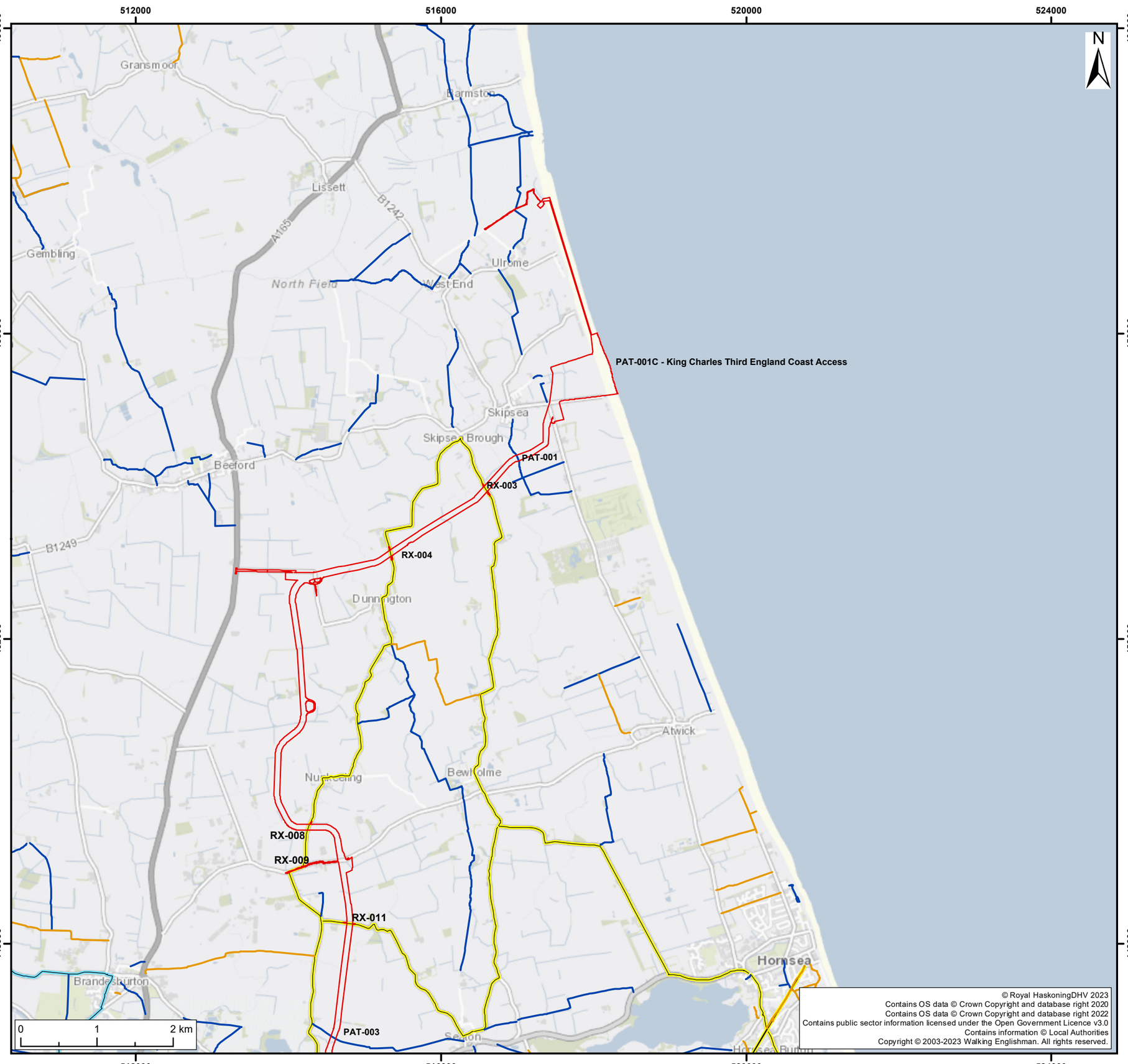
Figure 1 Public Rights of Way and Cycle Routes



Legend:

- Onshore Development Area
- Beverley Cycle Route
- Holderness Cycle Route
- Bridleway
- Footpath

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
S2	P01	13/11/2023	Suitable for Information	SB	KD	ND

Title:

Public Rights of Way and Cycle Routes

Figure: 1

Drawing No: PC2340-RHD-ON-ZZ-DR-Z-0606

Co-ordinate system: British National Grid

Page Size: A3

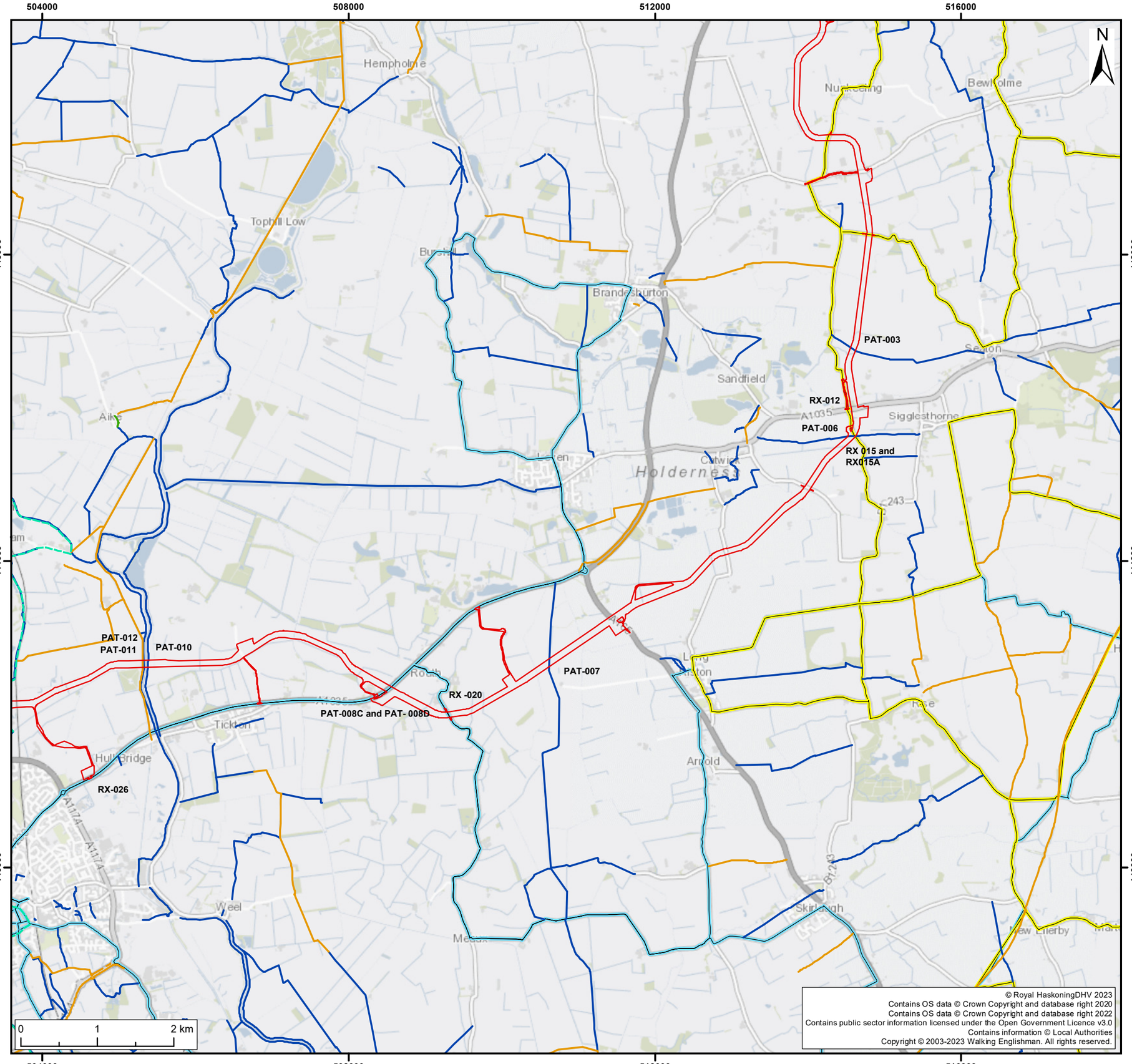
Scale: 1:50,000

Project: Dogger Bank South Offshore Wind Farms

Report: Environmental Statement

Royal HaskoningDHV
Enhancing Society Together

RWE



Legend:

- Onshore Development Area
- Beverley 20 & East Riding Heritage Way
- Beverley Cycle Route
- Holderness Cycle Route
- Byway
- Bridleway
- Footpath

S2	P01	13/11/2023	Suitable for Information	SB	KD	ND
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Public Rights of Way and Cycle Routes

Figure: 1	Drawing No: PC2340-RHD-ON-ZZ-DR-Z-0606

Co-ordinate system:	Page Size:	Scale:
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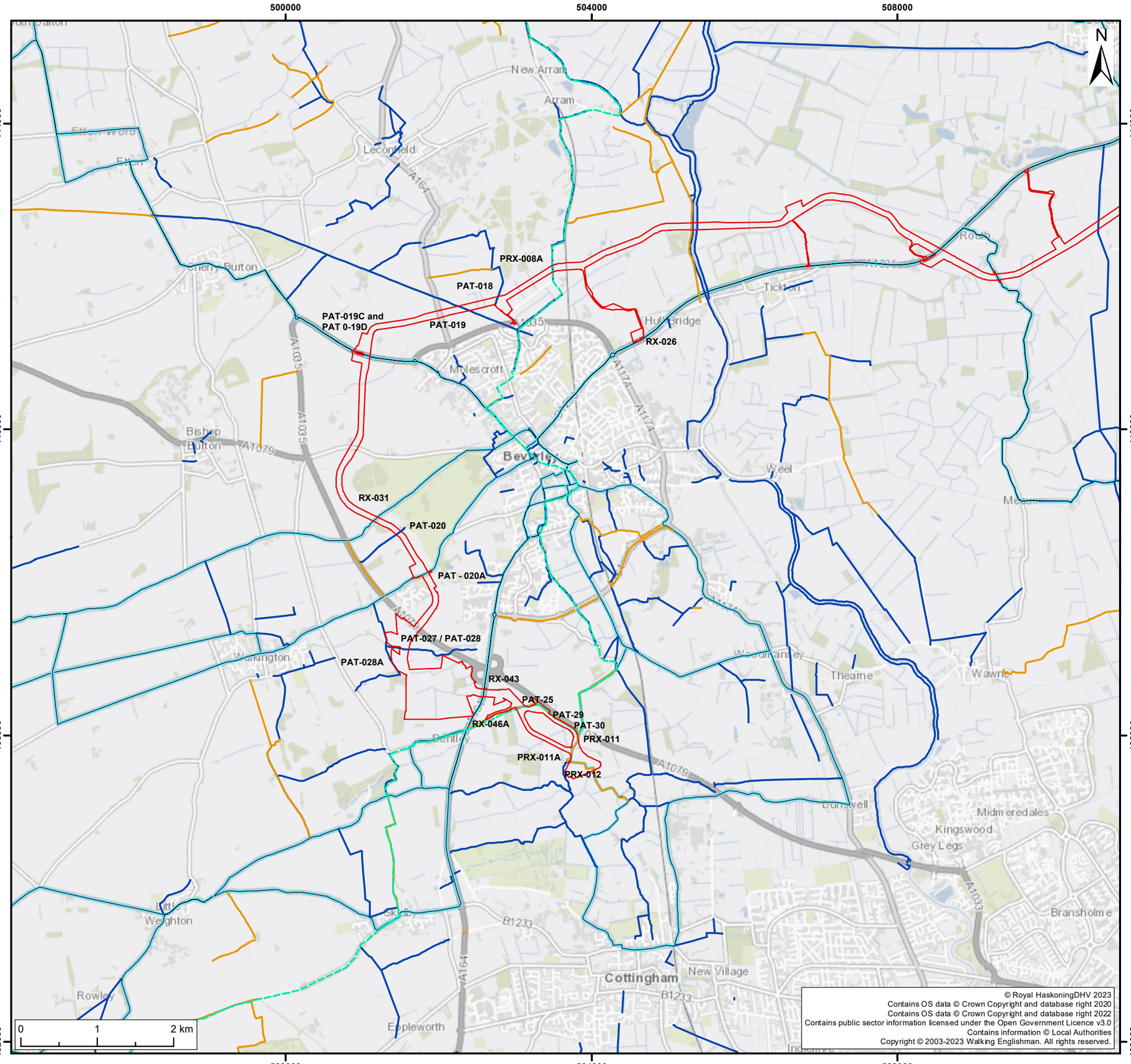
Project:	Report:
Dogger Bank South Offshore Wind Farms	Environmental Statement

Royal HaskoningDHV
Enhancing Society Together

RWE



Legend:

- Onshore Development Area
- Beverley 20 & East Riding Heritage Way
- Beverley Cycle Route
- Bridleway
- Footpath

S2	P01	13/11/2023	Suitable for Information	SB	KD	ND
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Public Rights of Way and Cycle Routes

Figure: 1	Drawing No: PC2340-RHD-ON-ZZ-DR-Z-0606

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:50,000

Project: Dogger Bank South Offshore Wind Farms	Report: Environmental Statement

Royal HaskoningDHV
Enhancing Society Together

RWE

Appendix A – Jocks Lodge Planning Drawing

SHEET 06

SHEET 06

SHEET 06

ROWLB13
Rowley
Bridleway No. 13

SHEET 04

SHEET 04

Rose Villa

Track

Cross

Mouse Hill

Drain

Drain

Drain

Rose Cottage

Cartridge

27.5m

Manor Farm

Drain

FB

Pond

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED. PLEASE DO NOT SCALE.

KEY

EXISTING PUBLIC RIGHT OF WAY

- EXISTING BRIDLEWAY
- EXISTING FOOTPATH
- EXISTING SHARED FOOTWAY / CYCLEWAY
- EXISTING BRIDLEWAY TO BE REMOVED / STOPPED
- EXISTING FOOTWAY TO BE REMOVED / STOPPED

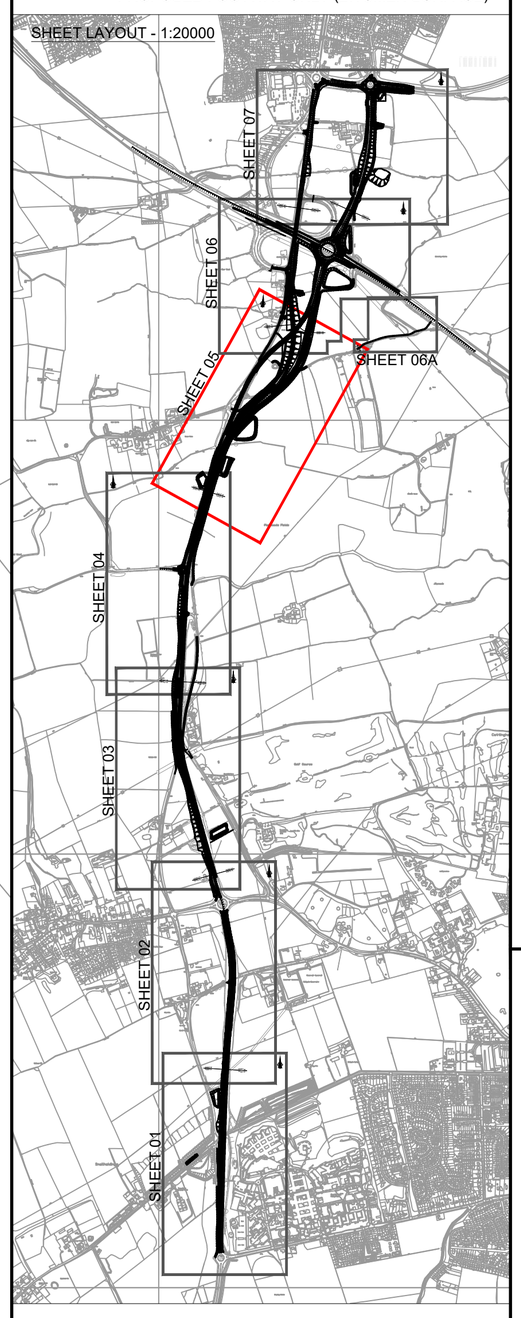
TEMPORARY PUBLIC RIGHT OF WAY

- TEMPORARY DIVERSION OF EXISTING BRIDLEWAY
- TEMPORARY DIVERSION OF EXISTING FOOTPATH
- TEMPORARY CLOSURE OF EXISTING BRIDLEWAY

PROPOSED PUBLIC RIGHT OF WAY

- PROPOSED FARM ACCESS TRACK / NMU ROUTE (EQUESTRIAN, PEDESTRIAN & CYCLE ROUTE ON UNBOUND STONE SURFACE)
- PROPOSED ACCESS ROAD / (NMU ROUTE (EQUESTRIAN, PEDESTRIAN & CYCLE ROUTE ON BITUMEN SURFACE)
- PROPOSED NMU ROUTE ON EXISTING HIGHWAY
- PROPOSED FOOTWAY / CYCLEWAY (BITUMEN SURFACE)
- PROPOSED FOOTWAY ONLY (BITUMEN SURFACE)

SHEET LAYOUT - 1:20000



REV	DESCRIPTION	DRN	CHK	APP	DATE
R1	REVISED FOLLOWING ERYC COMMENTS.	JS	IH	AL	02/20

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Client

EAST RIDING OF YORKSHIRE COUNCIL

Project

A164 & JOCK'S LODGE
JUNCTION IMPROVEMENT SCHEME

Drawing Title

PUBLIC RIGHTS OF WAY
DUNFLAT ROAD TO JOCKS LODGE
CH.3555 - CH.4450
SHEET 5 OF 7

	Name	Date
Drawn	JS	02/19
Designed	MB	02/19
Checked	IH	02/19
Approved	AL	02/19

Scale 1:1250 @ A1

File No. K_100315_H_043 - 049 - Public Rights of Way.dwg

Drawing Status INFORMATION

Drawing No. K/100315/H/047

Revision R1

10cm
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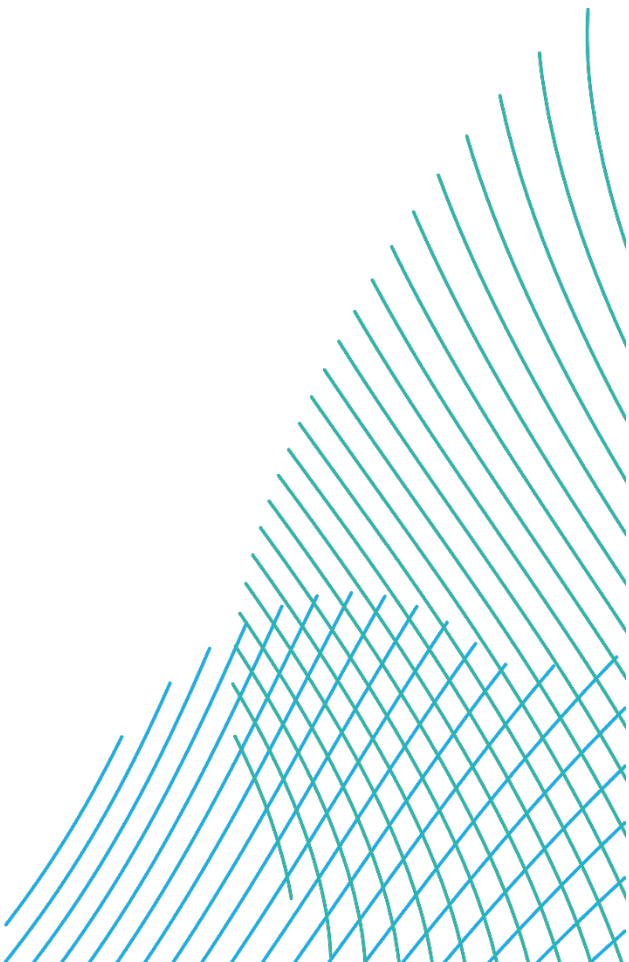
RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire, SN5 6PB



RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

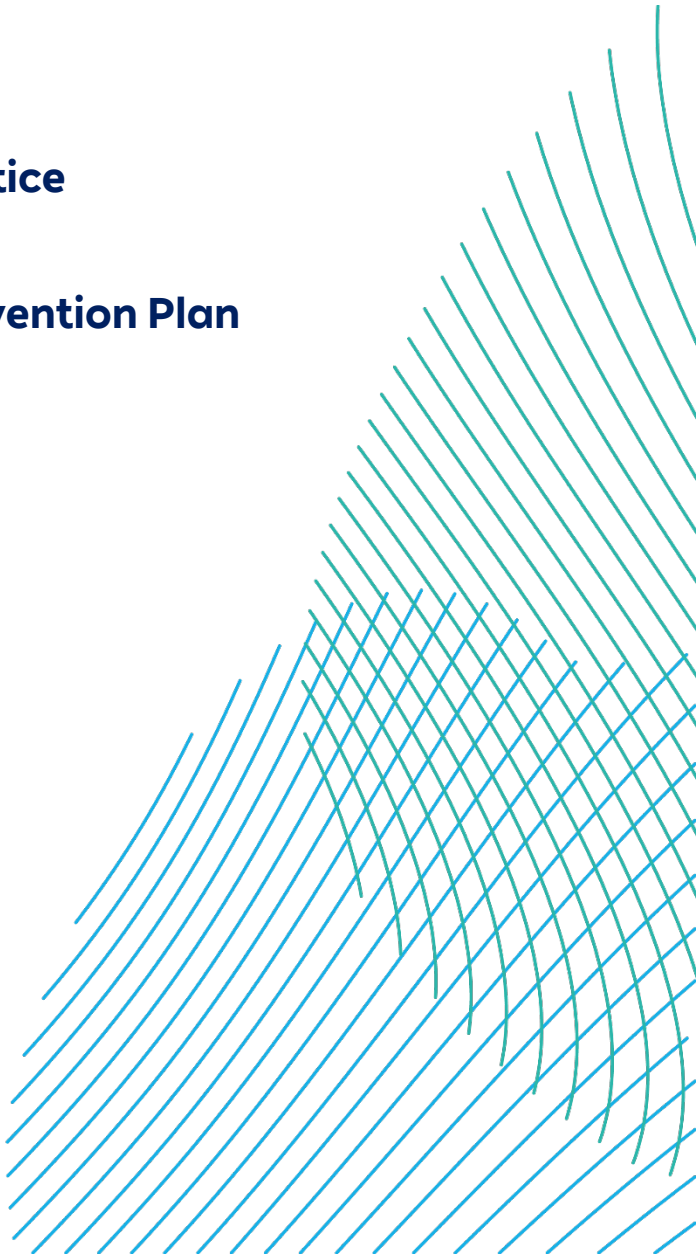
Appendix D - Outline Pollution Prevention Plan

June 2024

Application Reference: 8.9

APFP Regulation: 5(2)(q)

Revision: 01



Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project/Package:	**Consents**
Document Title or Description:	Appendix D - Outline Pollution Prevention Plan		
Document Number:	005149951-01	Contractor Reference Number:	N/A until construction phase

Rev No.	Date	Status/Reason for Issue	Author	Checked by	Approved by
01	June 2024	Final for DCO Application	RWE	RWE	RWE

Contents

1 Introduction

1.1 Project Background

1. The Outline Pollution Prevention Plan (OPPP) for the Dogger Bank South (DBS) East and DBS West Offshore Wind Farm projects (the Projects) forms **Appendix D** of **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9)**, hereinafter referred to as the OCoCP. The details of the activities and infrastructure that comprise the project description for the Projects is provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** of the Environmental Statement (ES).

1.2 Purpose and Scope

2. This OPPP will inform the development of a detailed Pollution Prevention Plan (PPP) (to be appended to the detailed CoCP, secured via Requirement 19 of **Draft Development Consent Order (Volume 3, application ref: 3.1)** which will be agreed with East Riding of Yorkshire Council (and if necessary, the Marine Management Organisation (MMO) in relation to authorised works seaward of Mean High Water Spring (MHWS)) prior to commencement of the relevant stage of the construction works.

3. The purpose of the PPP is to present pro-active management measures where there may be risk of pollution as a result of onshore and intertidal construction activities, and to ensure that any pollution that may occur is minimised, controlled, remediated and reported to the relevant parties as soon as reasonably practical and should be read in conjunction with the OCoCP and all of its supporting appendices.

4. Requirement 19 of the draft DCO states the Code of Construction Practice (CoCP) and its supporting appendices must be submitted for each stage of works permitted by the DCO (refer to section 2.1 of the OCoCP). This OPPP will therefore be adapted for each stage of works and submitted separately as part of each revision of the CoCP. Some stages of works may not require all appendices to the CoCP, and in those cases the Applicants will agree with East Riding of Yorkshire Council, as the relevant planning authority, which of the appendices are not required.

5. This PPP relates to the onshore elements of the Projects, landward of Mean Low Water (MLW). This document does not relate to offshore works seaward of MLW, or any works above MLW that are principally marine activities.

1.3 Objectives

6. The OPPP strategy follows relevant good practice guidance as detailed within the EA's Pollution Prevention Guidance (PPG), including:

- PPG01 – General guide to the prevention of water pollution;
- PPG05 – Works near or liable to affect watercourses;
- PPG06 – Working at construction and demolition sites;
- PPG08 – Storage and disposal of used oils;
- PPG21 – Pollution incident response planning; and
- PPG22 – Dealing with spills.

7. Although the PPG notes are no longer statutory guidance in England, they have been updated as Guidance for Pollution Prevention (GPP notes) for use in Scotland and Northern Ireland (NetRegs, 2022) and remain a good source of best practice.

8. The OPPP also draws on guidance for construction sites from:

- Construction Industry Research and Information Association (CIRIA) best practice (Control of water pollution from construction sites: Guidance for consultants and contractors (C532) (2001));
- CIRIA C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (Masters-Williams 2001); and
- CIRIA C648 Control of Water Pollution from Linear Construction Projects (Murnane, Heap, and Swain 2006).

1.4 Pollution Prevention Governance

9. The responsibility for ensuring that measures set out in the detailed PPP are delivered rests with the Applicants and Principal Contractor(s) appointed to carry out the works and with East Riding of Yorkshire Council as the enforcing agency.

10. Watercourse crossings will be constructed to relevant statutory guidance and approved by the Lead Local Flood Authority (LLFA), Internal Drainage Board (IDB) prior to the commencement of the relevant stage of the construction works. Consultation with the EA and Natural England (NE) will be ongoing throughout the construction period to promote best practice and to implement proposed mitigation measures. This is detailed further in section 6.4.2.6 of the OCoCP.

1.5 Accompanying Plans

11. The OPPP is be supported by several accompanying plans and documents, described in detail in the OCoCP:

- The **Outline Drainage Strategy (Volume 8, application ref: 8.12)** sets out the outline drainage strategy for the Onshore Converter Station(s) and the pre and post construction land drainage, located within the Onshore Development Area. This strategy will form the basis of the detailed drainage scheme that would be submitted to the LLFA at the East Riding of Yorkshire Council for approval prior to the commencement of construction of the Projects, in consultation with the Environment Agency, IDB and the relevant sewerage and drainage authorities.
- The detailed Drilling Fluid Breakout Plan (see **Table 3-2** of the OCoCP) will be developed in accordance with the Outline Drilling Fluid Breakout Plan as part of the detailed CoCP(s) and will describe the procedure and measures for managing a drilling fluid breakout as a result of Horizontal Directional Drilling (HDD) or use of other trenchless technologies to cross a watercourse and will be completed upon appointment of a Principal Contractor(s). The detailed Drilling Fluid Breakout Plan will be agreed with the Environment Agency prior to commencement of construction activities.
- A Surface Water Management Plan (see **Table 3-2** of the OCoCP) will be completed upon appointment of the Principal Contractor(s) and will set out the management controls required to be implemented during construction to appropriately manage temporary surface water drainage and pre-construction drainage to ensure there is no increase in flood risk or pollution incidents.
- An Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2** of the OCoCP) and section 2.2, below for further details.

1.6 Pollution Prevention Commitment

12. All Commitments identified for the Projects are detailed within the **Commitments Register** (**Volume 8, application reference 8.6).**

2 Onshore construction and Intertidal Sites

2.1 General site layout and good housekeeping

13. Layout plans of the construction areas showing sensitive areas and protective buffer zones (e.g. ecological habitats or protected species), will be prepared as part of the detailed CoCP(s), showing areas where storage of potential pollutants (e.g. fuels, oils and other chemicals) will be avoided. Further details of the management of construction on site and the good housekeeping policy can be found in section 5 of the OCoCP.

2.2 Emergency planning and procedures

14. Emergency and pollution procedures will be developed by the Principal Contractor(s) for the intertidal and onshore elements of the Projects which will take into account the anticipated hazards and conditions at each work site. Such procedures will be documented in an Emergency Response, Evacuation and Pollution Control Plan (see **Table 3-2** of the OCoCP), as part of the detailed CoCP(s). The plan will include emergency procedures and pollution control measures (based on Environment Agency guidelines where appropriate), fire, flood, site evacuation, and spill prevention control procedures and instructions to workforce. The Emergency Response and Pollution Control Plan will also contain emergency phone numbers and the method of notifying local authorities and statutory authorities. The procedures will be displayed at the work sites and all site staff will be required to follow them.

15. In the event of extreme weather with the risk of flooding, contractors and management would liaise with the LLFA and Environment Agency so they are aware of any forecast related to heavy rainfall events. A flood warning would then be issued when necessary to allow work to stop, especially in areas in close proximity to key watercourses. This Emergency Response, Evacuation and Pollution Control Plan will also identify potential sources and activities which might result in the risk of pollution from emergency events and will presents pro-active management practices to ensure that any pollution, is minimised, controlled, reported to the relevant parties and remediated.

3 Measures for protection of surface water environment during construction

3.1 Objective

16. To minimise the risk of surface water flooding during the construction phase, to prevent pollution of surface watercourses and to minimise potential impacts on local surface water features.

3.2 Management measures

17. Onshore construction activities could potentially release fine sediments and contaminants from construction machinery and materials into surface water bodies. Appropriate environmental best practice will be followed to minimise impacts on watercourses and local surface water features. This will include but is not limited to:

- CIRIA C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (Masters-Williams 2001); and
- CIRIA C648 Control of Water Pollution from Linear Construction Projects (Murnane, Heap, and Swain 2006) and CIRIA – SuDS Manual (CIRIA 2015).

18. The following mitigation measures for the protection of surface water during construction activities will be implemented:

- Management of construction works to comply with the necessary standards and consent conditions as identified by the Environment Agency (see section 1.3);
- Staff toolbox talks will be included within the site induction and given to all site personnel on pollution prevention and spill procedures highlighting the importance of water quality, the location of watercourses and water bodies, including SPZ's (see section 4.2, below) and pollution prevention measures;
- No discharge to surface watercourses will occur without permission from the Environment Agency, LLFA or relevant IDB (as agreed);
- Wheel washers and dust suppression measures to be used as appropriate, where necessary, to prevent the migration of pollutants;
- Regular cleaning of access roads of any construction waste and dirt to be carried out;

- Measures will be employed to intercept and treat run-off from the working corridor, for example by using sandbags, settlement tanks and lagoons. After treatment, discharge of any waters will be carried out so as to minimise physical impacts on channel morphology;
- Surface water flowing into the trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains. Where gradients on site are significant, cable trenches will include a hydraulic brake (bentonite or natural clay seals) to reduce flow along trenches and hence reduce local erosion;
- Areas at risk of spillage, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals) will be bunded and carefully sited to minimise the risk of hazardous substances entering the drainage system or the local watercourses;
- Ensuring that spill kits are available on site at all times as well as sand bags and stop logs for deployment on the outlets from the site drainage system in case of emergency spillages;
- Bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage / spillage. Bunds used to store fuel, oil etc. will have a 110% capacity at least to hold any leaks. Avoidance of oil storage where oil could potentially run over hard ground into a watercourse will be pursued;
- Vehicle checks will be conducted to ensure fuel storage and engine condition is satisfactory and that no fuel or chemical release will occur during site operations;
- Excavated material will be placed in such a way as to avoid any disturbance of areas near to the banks of the watercourses and spillages into the watercourses, where possible;
- Where possible, less toxic alternative materials will be used for construction, particularly for works close to watercourses;
- All plant machinery and vehicles will be routinely checked and be maintained in a good condition to reduce the risk of fuel leaks; and
- Refuelling of machinery will be undertaken within designated areas where spillages can be easily contained. Machinery will be routinely checked to ensure it is in good working condition. Any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment.

19. Measures such as the following would be implemented to minimise the risk of pollution through release of silts and sediments and particularly to limit run off directly to roads or into watercourses:

- Stockpiling of excavated materials during earthworks will be temporary and will only be permitted in designated areas. Designated stockpile areas will be located a minimum of 10m from any open watercourse features where practicable;
- Disturbance to areas close to watercourses will be reduced to the minimum necessary for the work;
- Excavated material will be placed in such a way as to avoid any disturbance of areas close to the banks of watercourses and to prevent spillage into water features;
- Use of sediment fences along watercourses when working in close proximity to prevent sediment being washed into watercourses;
- Covers will be used by lorries transporting materials to / from site to prevent releases of dust / sediment to watercourses or drains;
- Limiting the amount of time stripped ground and soil stockpiles are exposed along the onshore export cable corridor. Topsoil would be stripped from the entire width of the Onshore Export Cable Corridor for the length of the work front, then stored and capped to minimise erosion from wind and rain;
- In locations where large areas of exposed ground lie adjacent to watercourses, buffer strips of vegetation would be retained where possible to prevent runoff;
- Temporary works areas (e.g., construction compounds and trenchless crossing areas) within the site area may comprise hardstanding of permeable material, such as gravel aggregate or alternatively matting/timber or similar, underlain by geotextile or another suitable material to a minimum of 50% of the exposed area. This would minimise the area of open ground;
- Only removing vegetation from the area that needs to be exposed in the near future;
- Seeding or covering stockpiles;
- Using geotextile silt fencing at the toe of the slope, to reduce the movement of silt – this should be installed before soil stripping has begun and vehicles start tracking over the site;

- On-site retention of sediment to be maximised by routing all drainage through the site drainage system as detailed in the **Outline Drainage Strategy (Volume 8, application ref: 8.12)**;
- Monitoring of construction drainage sediment traps (visual inspection) with increased monitoring during inclement weather. If required these traps can be pumped via settling tanks to remove sediment, based on a pre-defined level / depth of sediment;
- Topsoil and sub-soil removed as part of site preparation would be stored separately within the working width and away from the open-cut trench. Both would be managed to minimise soil erosion;
- On-site retention of sediment to be maximised by routing all drainage through the site drainage system;
- Measures to intercept sediment runoff at source in the drainage system using suitable filters to remove sediment from water discharged to the surface drainage network;
- Plant and wheel washing is carried out in a designated area of hard standing at least 10m from any watercourse or surface water drain, rock outcrop (hard rock at surface) or sinkhole;
- Locating concrete and cement mixing and washing areas at least 10m away from the nearest water body. These areas will incorporate settlement and recirculation systems to allow water to be re-used. All washing out of equipment would take place in a contained area and the water collected for disposal off-site;
- Traffic movements would be restricted to minimise surface disturbance;
- Collect run-off in lagoons and allow suspended solids to settle before disposal;
- Divert clean water away from the area of construction work in order to minimise the volume of contaminated water;
- Buffer strips of vegetation will be retained where possible to prevent runoff;
- Where appropriate storage of stockpiled materials should be on an impermeable surface to prevent leaching of contaminants and covered when not in use to prevent materials being dispersed by wind or rainfall runoff; and
- Any uncontrolled runoff from offsite areas within proximity to the site will be recorded, with dates and photographs collected by the Principal Contractor(s) for any regulator challenges.

20. Post-construction, the working area would be reinstated to pre-existing condition as far as reasonably practical in line with controls detailed in the **Outline Soil Management Plan (OSMP) (Appendix A)** and the Defra 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites PB13298.

21. A contaminated land and groundwater scheme will be prepared (DCO Requirement 29) (refer to **Table 3-2** of the OCoCP) to identify any contamination and any remedial measures which may be required. For further information, an assessment of potentially contaminated land has been assessed in **Volume 7, Appendix 19.2: Geo-Environmental Desk Study and Preliminary Risk Assessment (application ref: 7.19.19.2)** and the risks considered in **Volume 7, Chapter 19 Geology and Land Quality (application ref: 7.19)**.

22. As previously mentioned in section 1.5 an Outline Drainage Strategy has been developed for the temporary construction works as detailed in **Outline Drainage Strategy (Volume 8, application ref: 8.12)**. A Surface water Management Plan will also be developed by the Principal Contractor(s) as part of the detailed CoCP, which will incorporate the measures above, where relevant.

4 Measures for the protection of groundwater during construction

4.1 Objective

23. To protect the underlying secondary and principal aquifers in terms of groundwater quality and flow throughout the construction phase.

4.2 Management Measures

24. Measures will be implemented to protect groundwater during construction, including good environmental practices based on legal responsibilities and guidance on good environmental management in:

- CIRIA C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (2001); and
- CIRIA C648 Control of Water Pollution from Linear Construction Projects (2006).

25. A Contaminated Land and Groundwater Scheme will be prepared (refer to **Table 3-2** of the outline OCoCP) to identify any contamination and any remedial measures which may be required.

26. The presence of any known sensitive groundwater features comprising aquifers, private and public water supplies/abstractions, drainage and Source Protection Zones (SPZ) will be identified and marked on a site plan by the Principal Contractor(s) and briefed to all site personnel. Prior to construction, the Principal Contractor(s) will ensure that appropriate measures to stop any site run off into watercourses, as detailed in section 3.2) will be installed to prevent any pollution incidents and will ensure that all works on site are planned in accordance with the locations of sensitive groundwater features to ensure their protection.

27. As detailed in section 6.2.2.1 of the OCoCP, a Piling Risk Assessment will be undertaken, prior to the commencement of any piling works in the vicinity of a SPZ. the following guidance will be used: Piling and Penetrative Ground Improvement Methods on land Affected by Contamination: Guidance on Pollution Prevention (Environment Agency 2001), or latest relevant available guidance. The mitigation measures and monitoring requirements recommended by these assessments, would be implemented during construction works and included within the detailed CoCP accordingly.

4.2.1 Groundwater quality

28. The following mitigation measures for the protection of groundwater quality during construction activities will be implemented in addition to those measures for surface water outlined in section 3.2:

- To protect groundwater bodies, excavation will be shallow, except where below road or rail infrastructure and water bodies, where it may be deeper. At these sites hydrogeological risk assessments may be required, as described in section 6.2.2.2 of the OCoCP.
- Deep trenchless excavations and deep excavations for pile foundations to be mitigated by casing off perched groundwater units during construction works and sealing off once the casing is removed;
- Inert bentonite or natural clay seals may be used as a drilling fluid and to seal deep excavations where there is a risk that groundwater could be compromised, thereby reducing or eliminating the pathway whereby new contaminants can enter groundwater as a result of subsurface activities. This would be included in the Drilling Fluid Breakout Plan;
- If perched groundwater were to be encountered during construction, it would need to be mitigated by appropriate construction techniques and in accordance with an appropriate method statement;
- A Surface Water Management Plan and detailed drainage scheme will be developed and implemented to minimise water within the cable trench and ensure ongoing drainage of surrounding land. If water enters the trenches during installation from surface runoff or groundwater seepage, this will be pumped via settling tanks, sediment basins or mobile treatment facilities to remove sediment, before being discharged into local ditches or drains via temporary interceptor drains. Existing land drains will be reinstated following construction;
- Reuse of water will be prioritised during construction where possible to ensure efficient use of this precious resource. The Principal Contractor(s) will consider the design of the temporary compounds to store water for reuse;
- Approvals will be sought from owners of private and public water supplies if required for use during construction;
- Where cable trenching is required across perched or near-surface secondary A or B aquifers, thermally insulated cables will be used to minimise effects on groundwater temperature; and

- Measures to ensure that the cable trench does not become a conduit for groundwater flow will also be implemented. All such appropriate measures will be identified following consultation with the Environment Agency and will be reported within the detailed PPP and in line with the requirements of Section 23-25 of the Land Drainage Act 1991, or the latest relevant available guidance.

4.2.2 Storage of oils and fuels

29. Appropriate storage and handling of materials and products will be provided and will include for example:

- Potential contaminants will be stored under cover to prevent rainwater carrying pollutants away;
- Potential contaminants will be stored in a safe place away from vehicles, to prevent collisions;
- Storing all fuels, oils, lubricants and other chemicals in impermeable bunds with at least 110% of the stored capacity, with any damaged containers being removed from site. Refuelling would take place in a dedicated impermeable area, using a bunded bowser, located at least 10m away from the nearest water body;
- A spill procedure will be documented, and suitably sized and stocked spill kits kept in the vicinity of potentially hazardous materials storage areas;
- Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed. Personnel will be trained in their use;
- Ensuring that spill kits are available on site at all times as well as sand bags and stop logs for deployment on the outlets from the site drainage system in case of emergency spillages;
- Storage facilities will be provided for solid materials to prevent deterioration of the materials and their escape;
- All flammable and hazardous substances (COSHH) will be kept in a secure bunded cupboard, cabinet or tank constructed of materials which are chemically resistant to its contents and suitably ventilated;
- Storage facilities will be kept secure to prevent acts of vandalism that could result in leaks or spills;
- All containers of any size will be correctly labelled indicating their contents and any hazard warning signs;

- All fuel pumps to be located on skid plates or plant nappies. Where available hand pumps to be included within pumps to remove any spilled fuel from the pump housing. All pumps to be located on flat and level ground and located over 10m away from a watercourse or from any water treatment area. Diesel pumps should not be located within 10m of any sump or attenuation pond to ensure no contamination of attenuated water or watercourses;
- Fuel storage tanks will be sited on an impermeable base, surrounded by an impermeable bund, and inspected regularly for leaks. Any valve, filter, sight gauge, vent pipe or ether ancillary equipment must be kept within the bund when not in use. An impermeable bund should be placed around refuelling areas;
- Associated pipework should be situated above ground and protected from accidental damage; and
- Plant will be regularly inspected, serviced and maintained to minimise the risk of leaks/spills. At the end of each working day, driveable plant will be removed from any areas of floodplain.

30. No fuels, oils or other chemicals will be stored in high-risk locations such as:

- Avoidance of oil storage within 50 m of a spring, well or borehole; or within 10 m of a watercourse;
- within 10m of any attenuation ponds/areas;
- Places where spills could enter open drains or soak into groundwater; or
- Within a Groundwater Source Protection Zone (SPZ) 1. Storage within a SPZ 2 (if relevant) must be approved by the LLFA;

31. In accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001, refuelling of machinery will be undertaken within designated areas where spillages can be easily contained.

32. Machinery would be routinely checked to ensure it is in good working condition; and any tanks and associated pipe work containing oils and fuels would be double skinned and be provided with intermediate leak detection equipment. Measures would be employed to intercept and treat run-off from the working width. After treatment, discharge of any waters will be carried out so as to minimise physical impacts on channel morphology. Discharges would not be made without prior agreement and appropriate consents and approvals from the Environment Agency, LLFA and relevant IDB.

33. Used oils will be disposed of properly in accordance with the Environmental Permitting (England and Wales) Regulations 2016.

4.2.3 Deliveries and dispensing activities

34. For deliveries and dispensing activities it will be ensured that:

- Site-specific procedures are in place for bulk deliveries;
- Delivery points and vehicle routes are clearly marked;
- Emergency procedures are displayed, and a suitably sized spill kit is available at all delivery points, and staff are trained in these procedures and the use of spill kits;
- Suitable facilities (for example, drip trays, drum trolleys, funnels) meet the sites specific dispensing needs and are maintained and used;
- Tank capacities and current contents levels are checked prior to accepting a delivery to ensure that they are not overfilled;
- All deliveries are supervised throughout the delivery operation;
- Spill prevention equipment is used during dispensing activities; and
- All spillages occurring during dispensing and handling activities are cleared up and reported via the appropriate site manager/agent.

4.2.4 Watercourse Crossings

35. Details of Main River and Ordinary watercourses crossings are included in section 6.4.2.6 of the OCoCP.

36. Trenchless techniques will be used to cross all Main Rivers as detailed in **Volume 7, Chapter 20 Flood Risk and Hydrology (application ref: 7.20).**

37. To mitigate the potential impacts to water quality at open cut watercourse crossing or when working near watercourses, the following principles will be applied:

- Entry into water will be avoided where possible;
- All cables will be installed beneath the active channel bed;
- Temporary crossings will be appropriately sized to maintain flow patterns and sediment conveyance, and avoid unnecessary changes to the hydromorphology of the watercourses;
- Clear span bailey bridges (or similar) or suitable sized culverts will be used to avoid impacts to the hydromorphology of the watercourses;
- Temporary culverted sections of watercourses will be designed to be long enough to protect the section of watercourse being crossed to ensure no egress of mud/silt runoff into watercourses from vehicular use of the haul road;

- Works will be thoroughly planned and controlled in order to minimise the risk of pollution;
- In areas where there is likely to be large quantities of silt generated, straw bales or sediment traps will be placed in the watercourse downstream to help filter out any silts;
- Where the water flow is high, water will be over pumped during construction to prevent flooding upstream;
- If there is a requirement for dewatering of excavations, water will be pumped out and passed through a suitable filtration system which may include a settlement tank or lagoon to allow suspended solids to settle out before being discharged to an appropriate location;
- Regular clearing of debris from culverts along ordinary watercourses or main rivers within the working area will need to be undertaken to ensure that no blockages are present during construction. Notification to the Relevant Authority will be made in advance of debris clearing to ensure no consent/permits/approvals are required prior to the clearance activity commencing.

38. In addition, watercourse crossings comprising culverts (temporary or permanent) will be designed to consider ecological receptors and habitat requirements (i.e. mammal shelves, fish spawning habitat) in line with **Outline Ecological Management Plan (Volume 8, application ref: 8.10)** (refer to **Table 3-3** of the OCoCP).

39. Following removal of temporary culverts or temporary bridges (and their abutments), the bed and banks will be reinstated to their former condition. The Principal Contractor(s) will take photos of riverbanks/bed pre and post construction to ensure appropriate reinstatement.

4.2.5 Abstraction

40. Where groundwater (and surface water) abstraction may be considered by the Principal Contractor(s) during construction for purposes such as dust suppression, relevant approvals from the Environment Agency must be sought in advance in the form of an abstraction licence to ensure protection of groundwater resource - see **Other Consents and Licenses (Volume 8, application ref: 8.3)**.

4.2.6 Monitoring

41. Groundwater monitoring and ground gas monitoring may be required as part of the targeted ground investigations undertaken as part of the Contaminated Land and Groundwater Scheme (see section 4.2) or Hydrogeological Risk Assessments.

42. The monitoring would aid in the identification of potential risks to human health, groundwater and surface water receptors identified within this chapter.

References

CIRIA (2001) C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors. London, CIRIA.

CIRIA (2006) C648 Control of Water Pollution from Linear Construction Projects. London, CIRIA.

CIRIA (2015) C753 SuDS Manual. London, CIRIA.

Department for Environment, Food and Rural Affairs (2001) Control of Pollution (Oil Storage) (England) Regulations 2001.

Department for Environment, Food and Rural Affairs (2016) Environmental Permitting (England and Wales) Regulations 2016.

Environment Agency (2004) PPG08 – Storage and disposal of used oils:

Environment Agency (2007) PPG05 – Works near or liable to affect watercourses:

Environment Agency (2009) PPG21 – Pollution incident response planning:

Environment Agency (2012) PPG06 – Working at construction and demolition sites:

Environment Agency (2014) PPG01 – General guide to the prevention of water pollution.

Environment Agency (2018) PPG22- Dealing with Spills

RWE Renewables UK Dogger Bank South (West) Limited

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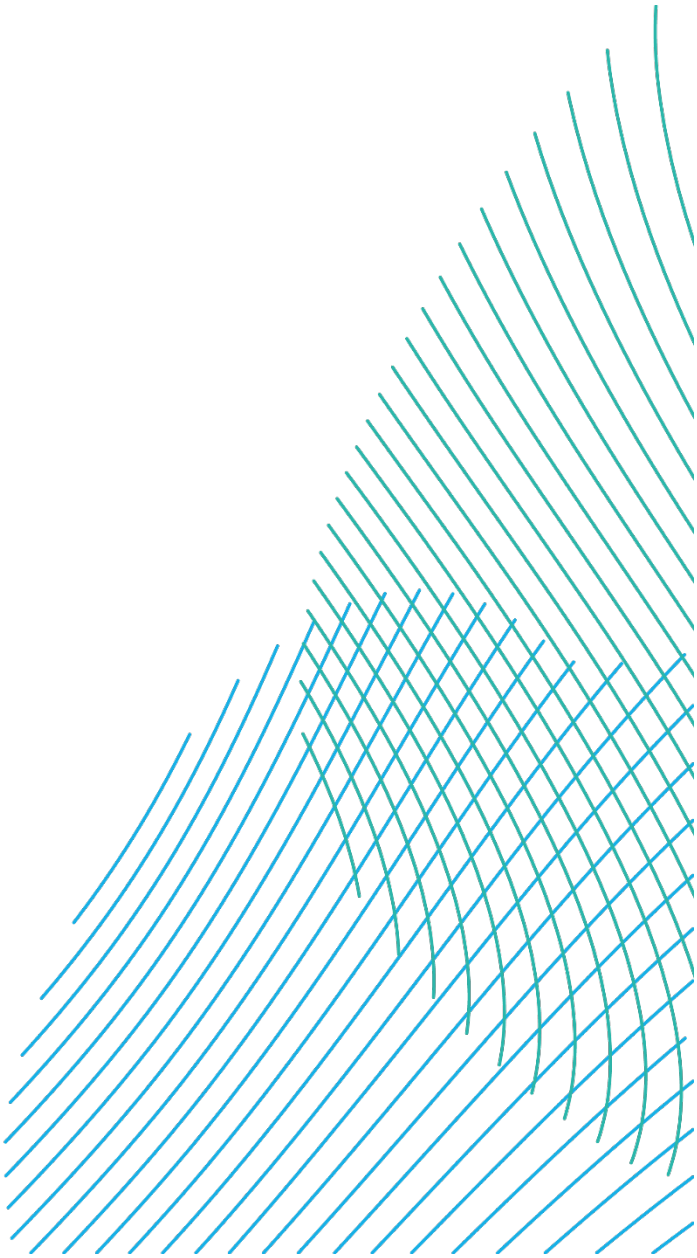

RWE Renewables UK Dogger Bank South (West) Limited

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Dogger Bank South Offshore Wind Farms

Outline Code of Construction Practice

Volume 8

Appendix E – Outline Site Waste Management Plan

June 2024

Application Reference: 8.9

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Revision: 01

Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project/Package:	**Consents**
Document Title or Description:	Appendix E - Outline Site Waste Management Plan		
Document Number:	005149952-01	Contractor Reference Number:	N/A

Rev No.	Date	Status/Reason for Issue	Author	Checked by	Approved by
01	June 2024	Final for DCO Application	RWE	RWE	RWE

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1 Introduction

1.1 Project Background

1. The Outline Site Waste Management Plan (OSWMP) for the Dogger Bank South (DBS) East and DBS West Offshore Wind Farm projects (the Projects) forms **Appendix E** of the **Outline Code of Construction Practice (OCoCP) (Volume 8, application ref: 8.9),** herein after referred to as the OCoCP. The OSWMP forms part of the application to the Planning Inspectorate for a Development Consent Order (DCO) for the details of the activities and infrastructure that comprise the project description for the Projects is provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** of the Environmental Statement (ES).

1.2 Purpose and Scope

2. The purpose of the OSWMP is to meet the requirements of the Overarching National Policy Statement (NPS) for Energy (EN-1), as part of the Government's policy on hazardous and non-hazardous waste which is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. A detailed SWMP will be developed to be appended to the detailed CoCP(s), secured via the CoCP, which is secured by Requirement 19 of **Draft Development Consent Order (Volume 3, application ref: 3.1)** which will be agreed with ERYC prior to commencement of the relevant stage of the connection works.

3. SWMPs were introduced by the Site Waste Management Plan (England) Regulations 2008 and despite the regulations being repealed in 2013, SWMPs continue to be regarded as a best practice tool in achieving better waste management on construction projects.

4. According to EN-1, applications for a proposed development must consider the types and quantities of waste that would be generated in all phases of a development and identify how the waste would be managed. EN-1 requires developers to prepare a SWMP that identifies the waste management arrangements for all types of waste and provide information on the proposed systems that would be used.

5. The application, in following best practice, should demonstrate that the waste hierarchy has been applied and that the volume of waste generated, and the volume of waste sent for land disposal would be minimised.

6. It is also intended that on the basis of the above, the detailed SWMP will provide statutory and non-statutory consultees with sufficient information to understand the types and volumes of wastes likely to be generated from the construction of the Projects and how the wastes will be managed.

7. This OSWMP sets out:

- The waste regulation framework;
- The indicative types of waste that will be generated during construction and their waste estimates;
- How each waste type will be managed during construction – i.e. will it be reduced, re-used or recycled; and
- The methods used to measure and record the quantity of waste generated from the Projects.

8. Offshore waste is considered in the **Disposal Site Characterisation Report (Volume 8, application ref: 8.18)** (which deals with the disposal of dredged material from sandwave clearance and drill arisings from foundation installation). An Outline Project Environmental Management Plan (PEMP) has been prepared that will set out details of waste management and disposal arrangements for offshore wastes **(Outline Project Environmental Management Plan (Volume 8, application ref: 8.21))** which will become a detailed PEMP ahead of the start of construction works.

1.3 Site Waste Management Plan Governance

9. The responsibility for ensuring that measures set out in the detailed SWMP are delivered rests with the Principal Contractor(s) appointed to carry out the works; with ERYC as the enforcing agency.

10. The OSWMP will inform the development of a detailed SWMP, which will be agreed with ERYC prior to commencement of the relevant stage of the construction works. The SWMP will be reviewed and updated during the construction phase as required (such as to reflect the progress of the Projects). The Principal Contractor(s) will be responsible for updating the SWMP and will make the SWMP available to ERYC during the construction period on request. No additional consultation is anticipated during this process.

1.4 Site Waste Management Commitments

11. All Commitments identified for the Projects are detailed within the **Commitments Register (Volume 8, application ref: 8.6).**

2 Regulatory framework

2.1 Definition of Waste

12. For the purpose of this document the definition of 'waste' is taken from Article 3(1) of the revised European Waste Framework Directive (2008/98/EC), which states that waste is "*any substance or object which the holder discards or intends or is required to discard*".

13. 'Discard' includes the recovery and recycling of a subject or object as well as its disposal. The decision on whether something is discarded must take account of all the circumstances (for example, the nature of the material, how it was produced and how it will be used) and have regard to the aims of the Waste Framework Directive, which is "*the protection of human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste*".

14. Guidance on the interpretation of the Waste Framework Directive definition of waste is taken from Defra's published 'Guidance on the legal definition of waste and its application' (Defra 2012), which provides a practical guide to help organisations make decisions about whether a material is a waste or not.

15. The document also takes into account CL:AIRE's Definition of Waste: Development Industry Code of Practice (CoP) (CL:AIRE 2011). The CoP sets out good practice for the development industry to use when:

- "*Assessing on a site specific basis whether excavated materials are classified as waste or not; and*
- *Determining on a site specific basis when treated excavated waste can cease to be waste for a particular use*".

16. The CoP will be taken into account by the Environment Agency in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Environment Agency considers that those materials are unlikely to be waste if they are used for the purpose of '*land development*'.

17. The scope of the CoP relates to 'excavated materials' which include:

- Soil, both topsoil and subsoil, parent material and underlying geology);
- Ground based infrastructure that is capable of reuse within earthworks projects (e.g. road base, concrete floors);
- Made ground; and
- Stockpiled excavated materials that include the above.

2.2 Legislation and Guidance

18. The legislative framework for the management of construction wastes comprises the following:

- Environmental Protection Act 1990;
- Environment Act 1995;
- Hazardous Waste (England and Wales) Regulations 2005;
- Revised Waste Framework Directive (2008/98/EC);
- Landfill Directive (1999/31/EC);
- Environmental Permitting (England and Wales) Regulations 2016;
- Waste Management (England and Wales) Regulations 2006;
- Waste (England and Wales) Regulations 2011;
- Technical guidance MW3: waste Classification – Guidance on the classification and assessment of waste (EA, 2014) (as updated in 2018);
- Waste Duty of Care: Code of Practice (Defra, 2016); and
- Joint Sustainable Waste Management Strategy (ERYC and Hull City Council (HCC), 2012).

19. The framework of waste management legislation in the UK is currently shaped by the Waste Framework Directive. The Directive is transposed into English and Welsh law by the Waste (England and Wales) Regulations 2011. These regulations require all businesses and organisations that produce waste to take all reasonable measures to prevent waste, to apply the waste hierarchy (refer to section 4.1) when transferring waste using the definitions in Article 3 of Directive 2008/98/EC and include a declaration on their waste transfer notes or consignment notes to that effect. Standard Industry Classification (SIC) Codes 2007 (Office for National Statistics 2009) of the waste producer must also be provided in the waste transfer note. The SIC is a system for classifying industries by a four-digit code.

20. The Hazardous Waste (England and Wales) Regulations 2005 set out the requirements for controlling and tracking the movement of hazardous waste and bans the mixing of different types of waste. Under the Regulations "mixing" includes mixing of different categories of hazardous waste, non-hazardous wastes or any other substance or material.

21. The following waste strategy and plans detail the Governments approach to managing wastes in England:

- Our Waste, Our Resources: A Strategy for England (Defra, 2018b); and

- Waste Prevention Programme for England: Maximising Resources, Minimising Waste (Defra, 2023).

2.3 Key Obligations

2.3.1 Duty of care

22. A key requirement of section 34 of the Environmental Protection Act 1990 is that the waste producer is responsible for ensuring that their waste is collected by an appropriately licensed waste carrier and managed at a suitably licensed facility. These requirements are set out in the 'Waste Duty of Care: Code of Practice' (Defra 2016). To meet these requirements, waste materials arising from the construction of the Projects will only be transported by waste carriers and hazardous waste carriers holding a valid registration with the Environment Agency. Each consignment of waste removed from the construction site will be accompanied by a waste transfer note (or hazardous waste consignment note as appropriate), which correctly describes the waste using the European Waste Catalogue code, identifies the waste carrier and where the waste will be transported to.

23. Requirements for transferring waste and registered waste carriers are set out in Part 8 and 9 of the Waste (England and Wales) Regulations 2011. The waste will only be transferred to facilities that have the benefit of a registered waste exemption, or an environmental permit. Periodic audits would be undertaken of these facilities. Prior to construction commencing, the Applicants and Principal Contractor(s) will sign the declaration in **Table 2-1** to confirm that waste from the construction of the Projects will be managed in accordance with the duty of care requirements.

Table 2-1 Waste declaration

Name of developer	
Contact	
Principal Contractor	
Site Waste Management Plan Prepared by	
Date	
Project Details	
Estimated Build Cost of the Project	

Name of developer	
Declaration	
All waste from the site will be dealt with in accordance with the duty of care in section 34 of the Environmental Protection Act 1990 and the duty of care provisions in the Waste (England and Wales) Regulations 2011 (formerly the Environmental Protection (Duty of Care) Regulations 1991). Materials will be handled efficiently, and waste managed appropriately.	
Signature of Developer	Signature of Principal Contractor

2.3.2 Hazardous waste consignment notes

24. Hazardous wastes will be stored separately from other wastes.

25. Any hazardous waste transported offsite will be accompanied by a Hazardous Waste Consignment Note and will include all legal requirements including:

- Consignment note code;
- A description of the waste (including European Waste Classification code and an industry Standard Industry Code (SIC) code) and Hazard Code(s), UN identification numbers;
- Details of the waste producer;
- Quantity, and details of any pre-treatment undertaken;
- Specific handling requirements (where appropriate);
- The name and permit reference of the facility to where the waste is being taken;
- The waste carrier details;
- Consigners certificate; and
- Consignees certificate completed by waste facility receiving waste.

2.4 Pretreatment of wastes

26. Inert, non-hazardous and hazardous wastes destined to be landfilled will be pre-treated prior to disposal in accordance with the EU Landfill Directive (1999/31/EC). Treatment can comprise physical, thermal, chemical or biological processes providing that they change the characteristics of the waste in order to reduce its volume or hazardous nature or to facilitate its handling or recovery.

3 Identification of Waste Arisings

3.1 Waste types

27. At a strategic level, the key waste streams generated from the construction of the onshore elements of the Projects can be classified as:

- **INERT** – wastes that will not cause adverse effects to the environment when disposed of, or do not decompose and they have no potentially hazardous content when placed in a landfill. Examples of inert wastes are rocks, concrete, mortar, glass, uncontaminated soils and aggregates;
- **NON- HAZARDOUS** – wastes that will decompose when buried resulting in the production of methane and carbon dioxide. Examples of non-hazardous wastes include timber, paper and cardboard; and
- **HAZARDOUS** – wastes that are harmful to human health or the environment (for example, pollution of watercourses) if they are incorrectly contained, treated or disposed of. Hazardous wastes may have one or more of the following properties: explosive, corrosive, flammable, highly flammable, infectious, oxidising or sensitising.

28. Wastes will be generated from construction, operational and decommissioning phases of the Projects and the final SWMP will be updated at later stages to ensure appropriate controls are applied to anticipated waste streams for each works phase.

29. The following waste types are expected to be generated from the Projects:

- Inert wastes:
  - Soils and subsoil – removed from works areas; and
  - Hardcore – that cannot be reused.
- Non-hazardous wastes:
  - Drilling wastes – fluids and solids from Horizontal Directional Drilling (HDD) or other trenchless technique activities;
  - Food waste – from welfare facilities;
  - General wastes – mixed packaging and general waste from welfare facilities and site offices;
  - Green waste – from vegetation removal and clearing if transferred from site;
  - Concrete and rubble.;
  - Scrap metal;

  - Recyclables – plastic bottles, drinks cans that are segregated at site welfare facilities;
  - Sewage waste – from toilet facilities at temporary construction works areas and substation; and
  - Wood – pallets, packing wastes, cable reels.
- Hazardous wastes:
  - Batteries, lead-acid;
  - Chemicals, off spec and unwanted;
  - Contaminated land – if any is identified and removed;
  - Empty drums, with residues – chemicals/oils/lubricants;
  - Medical/clinical waste – from first aid posts;
  - Oil filters – from plant maintenance;
  - Oily rags - from plant maintenance;
  - Used oil - from equipment and plant; and
  - Waste electrical and electronic equipment (WEEE).

30. There will be a range of quantities of wastes generated from the Projects development activities, some will be relatively small quantities such as clinical wastes from first aid posts and others in large quantities such as soils from excavation.

31. The Projects are anticipated to generate a number of different waste types during construction. This will include (but is not limited to) wastes contained within the following list of waste categories (also known as waste classification codes, as identified in Environment Agency 2014):

- 17 01 Concrete, bricks, tiles and ceramics;
- 17 02 Wood, glass and plastic;
- 17 03 Bituminous mixtures, coal tar and tarred products;
- 17 04 Metals (including their alloys);
- 17 05 Soil (including excavated soil from contaminated sites), stones and dredging spoil;
- 17 06 Insulation materials and asbestos-containing construction materials;
- 17 08 Gypsum-based construction material; and
- 17 09 01* Construction and demolition wastes containing mercury.

32. It is noted that a number of sub-categories of wastes are included within the above. The waste codes for each specific waste type will be provided on each waste transfer note that will accompany every movement of waste from the Project's construction areas.

3.2 Estimated Waste Arisings

3.2.1 Waste types

33. The groupings of inert, non-hazardous and hazardous have been split into the key waste types based on the available design information. Where appropriate, the wastes are described according to the general List of Waste Categories for construction wastes. The list of wastes given in **Table 3-1** is not exhaustive and may be extended as the detailed design and construction philosophy develops after consent. On appointment of the Principal Contractor ahead of construction **Table 3-1** will be reviewed and updated by the Principal Contractor(s) to include estimates for all anticipated waste streams during construction, installation and commissioning phases. A waste assessment has been completed as part of the ES **(Volume 7, Appendix 19.3 Onshore Waste Assessment (application ref: 7.19.19.3)).**

Table 3-1 Key Indicative Waste Forecasts

Construction Element	Material	Type of Waste	EWC Code	Estimated Quantity*	Target for re-use/recycle (%)
Landfall	Topsoil Subsoil	Non-hazardous	17 05 04		100%
	Cable		17 04 11		70%
	Bentonite - drilling muds		17 04 11		70%
Onshore Export Cable Corridor (including trenchless crossings)	Topsoil Subsoil	Non-hazardous	17 05 04		100%
	Green waste		20 02 01		100%

Construction Element	Material	Type of Waste	EWC Code	Estimated Quantity*	Target for re-use/recycle (%)
	Cable		17 04 11		70%
	Bentonite - drilling muds		01 05 99		70%
Onshore Converter Stations	Topsoil Subsoil	Non-hazardous	17 05 04		100%
	Green waste		20 02 01		100%
	Packaging waste		15 01 01 15 01 02		70%
	Concrete		17 01 01		70%
	Metal		17 04 07		70%
	Cable		17 04 11		70%
Jointing Bays	Packaging waste	Non-hazardous	15 01 01 15 01 02		70%
	Subsoil		17 05 04		100%
	Cable		17 04 11		70%

Construction Element	Material	Type of Waste	EWC Code	Estimated Quantity*	Target for re-use/recycle (%)
Haul Roads	Stone	Non-hazardous	17 05 04 17 05 03		70%
Temporary Construction Compounds	Stone	Non-hazardous	17 05 04 17 05 03		70%
	Concrete	Non-hazardous	17 01 01		70%
Construction and Operational Accesses	Stone	Non-hazardous	17 05 04 17 05 03		70%
	Concrete		17 01 01		70%
Staff welfare areas	Paper and cardboard	Non-hazardous	20 01 01		100%
	Glass		20 01 02		70%
	Food Waste		20 01 08		70%
	Plastic		20 01 39		70%

*Notes: *: The estimated quantity of waste types will be confirmed prior to commencement of the relevant phase of construction.*

3.3 Completing Site Waste Management Plan Data Sheets

34. The indicative types of waste to be generated from the construction of the onshore elements of the Projects are identified in **Table 3-1**. The forecast is a useful planning tool to record the types of waste that will be generated. Targets can then be set for different waste types and entered into a Waste Estimates Data Sheet (to be produced as part of the detailed SWMP). This will identify how the waste types will be managed (i.e. re-used on site, recycled off site etc).

35. Once construction is underway, the Principal Contractor(s) will complete a Waste Management Data Sheet (a template of which is to be produced as part of the detailed SWMP). These sheets will be updated every time waste is removed from the construction site and will record:

36. The types and quantities of waste produced;

- The types and quantities of waste that have been re-used/ recycled/ recovered/ landfilled or otherwise disposed of on or off site;
- The identity of the person removing the waste;
- The registration number of the waste carrier;
- A copy of or reference to the written description of the waste; and
- Details of the site where the waste is taken to and whether it holds a permit or is exempt.

37. The SWMP will be reviewed by the Principal Contractor(s) during the construction process to check progress in meeting the reuse/recycling targets and to identify if any changes are required to the waste management measures. Any changes will be provided to ERYC upon request.

38. On completion of construction of the relevant stage of the construction works, a comparison of the estimated waste arisings (Waste Estimates Sheet) and the actual waste management data (Waste Management Data Sheet) will be undertaken by the Principal Contractor(s).

3.4 Setting targets to divert waste from landfill

39. A target has been set to reuse, recycle or recover 70% of overall construction waste generated by the Projects. This target is in line with the target in the Waste (England and Wales) Regulations 2011 and the Waste Framework Directive.

40. Further targets will be set to reduce, reuse or recycle key waste materials (for example, topsoil and stone) on and/or off the construction areas where applicable. Preliminary material targets are included in **Table 3-1**. These targets will be re-visited, and further targets will be added as the Projects design and the construction philosophy progress, typically post-consent. Further information will be provided in the detailed SWMP, to be submitted as part of the detailed CoCP(s). The setting of targets allows the performance of the SWMP to be monitored and evaluated at the end of the construction period.

41. Any resource efficiency targets to be set by the Principal Contractor(s) and its suppliers once appointed will be incorporated into contract specifications.

3.4.1 Re-use of site won material

42. Most excavated material associated with the Projects is anticipated to be inert or non-hazardous. Any material that cannot be re-used on site under a Materials Management Plan (refer to **Table 3-2** of the OCoCP) and is surplus to requirements for construction purposes will be sent offsite in adherence with the waste hierarchy.

4 Management of Waste Arisings from the Projects

4.1 Waste Hierarchy

43. Construction waste generated from the development of the Projects will be managed according to the principles of the waste hierarchy. The waste hierarchy ranks waste management options according to what is best for the environment. It gives top place to waste prevention. When waste has been generated, priority is given to preparing it for re-use, then recycling, then recovery, and last of all disposal (for example, landfill). The waste hierarchy is a key element of sustainable waste management and is a legal requirement of the revised EU Waste Framework Directive and the Waste (England and Wales) Regulations 2011.

44. Defra has published guidance on how the waste hierarchy should be applied to a range of common wastes (Defra 2011). It summarises the findings of current scientific research on the environmental impacts of various waste management options for a range of materials and products. The guidance states that for most materials the waste hierarchy ranking applies. However, the evidence suggests that for some materials, the preferred waste management option (i.e. with the lowest environmental impact) does not follow the waste hierarchy order. This is true for lower grades of wood, where energy recovery options are more suitable than recycling.

4.1.1 Prevention

45. Waste can be minimised during the design stage, including the following measures:

- Using prefabricated materials for on-site assembly;
- Buildings/structures designed to standard dimensions of blocks or frames to avoid off-cuts;
- Topsoil and subsoil generated from the site preparation works at the Onshore Converter Stations will be retained on site where possible to be used in the site restoration and landscaping; and
- Internal materials and fittings will be pre-cut to reduce the need for site cutting.

46. Waste will also be minimised by improving wastage rates when ordering materials. Waste allowances are generally included within material orders to take into account design waste and construction process waste. These waste allowances are often generic and not project specific and therefore, run the risk of being inaccurate. This can lead to a surplus of materials, which typically ends up being discarded (i.e. waste). A system will be put in place to enable the accurate estimates of material requirements (and waste allowances) at the detailed design stage.

47. On appointment of the Principal Contractor(s), the purchasing requirements will be discussed with the Site Manager(s) to identify priorities and review the quotations received. Materials will be checked against the material specifications as part of the quality control system. Where possible, hazardous materials will be substituted for less hazardous alternatives.

48. Waste minimisation measures will be implemented by the Principal Contractor(s) and Site Manager(s) during construction in order to achieve the waste allowance targets. These measures include:

- Subsoil and Topsoil generated from the construction of the Onshore Export Cable Corridor will be used as backfill to reinstate the trenches;
- A logistic system which allows 'just-in-time' deliveries to minimise the length of time materials are stored on-site and co-ordinate with other trades;
- Providing suitable and secure storage for materials where 'just-in-time' deliveries cannot be set up;
- Mechanical systems and machinery will be considered for moving materials to reduce the risk of damage; and
- Programming and monitoring construction activities to avoid overlap of incompatible trades working in the same area and to reduce the potential for waste to be generated from replacing damaged work.

4.2 Preparing for Re-Use

49. The installation of the Onshore Export Cable Corridor will require the construction of a temporary haul road and temporary logistics compounds (including landfall and Onshore Converter Station(s). The haul road will be constructed of on average 350 mm depth of permeable crushed gravel aggregate with a geotextile membrane. Where possible and economical, the use of geogrids to strengthen the road will be considered to reduce the thickness and hence the required volume of imported material. For the compounds, an average depth of 300-500 mm permeable aggregate would be used. Where appropriate and where this is a suitable available source(s) of materials, the use of clean recycled aggregates (as an alternative to primary aggregates will be considered by the construction contractor prior to construction).

50. On completion of the cable installation works, the haul road will be dismantled (i.e. the gravel and membrane would be removed). The use of the geotextile membrane underneath. The gravel will allow a greater proportion of the aggregate to be recovered as it would be easy to segregate from the underlying soil. Where possible, opportunities to re-use the aggregate to construct other elements of the Projects will be investigated. Landowners may also be given the option of re-using the stone on their land for maintaining farm tracks.

51. Alternatively, the aggregate will be transported to a local waste management facility for re-use on construction projects elsewhere. Where possible, durable geotextile underlay/protective matting will be selected to allow its reuse on other projects. Opportunities to reduce packaging or implement take-back schemes for packaging and unused materials will also be discussed with the suppliers.

4.2.1 Recycling

52. Waste generated during the construction process will be segregated into waste types to facilitate off-site recycling (for example, metals, wood, plastic). Layout of the main TCCs, as well as all other will be designed to allow sufficient space for separate containers of key waste materials to be stored. These containers will be clearly labelled, and construction staff will be given training on waste segregation.

53. Green waste generated during site preparation works will be composted off-site. Opportunities will be investigated to retain woody material on site for ecological habitats, however this would be subject to agreement with landowners.

54. The Principal Contractor(s) will consider the use of recycled materials where possible, subject to client approval, cost and availability (for example, recycled aggregate and secondary aggregates for use in concrete, or granular fill).

4.2.2 Disposal

55. All waste that cannot be reused, recycled or recovered will be collected by the licensed waste management contractor and disposed of at a permitted site suitable for the type of waste. Burning of surplus material or material arising from the construction of the Projects will not be permitted.

4.3 Storage of waste

56. Waste storage areas will be provided at the two Main Compounds, the Transition Joint Bay Compound at the landfall compound and within the compound(s) to support construction of the Onshore Converter Stations in the Landfall Zone. Smaller waste storage areas will be provided in the satellite TCC's along the Onshore Export Cable Corridor, as required. Each skip/container will be clearly marked to indicate the intended contents and will be suitable for the storage of the specified contents. All skips/containers will be covered to prevent the escape of waste by windblow or vandalism. If liquid waste is being stored, an appropriate bund and drip pans will be in place. Storage areas will be located away from potential contaminant pathways such as soakaways and drains, trial pits, excavations and trenches. Any hazardous waste will be stored safely in a designated area away from non-hazardous and inert wastes and labelled accordingly.

57. Where appropriate, waste will be stored in secure containers to prevent the escape of waste and wind blow.

4.4 Registered Carriers

58. Construction waste generated by the Projects will only be transported by companies registered with the Environment Agency and with valid waste carrier licences as required by the '*Waste Duty of Care Code of Practice*' and legislation (i.e. Environmental Protection Act section 34 and the Waste (England and Wales) Regulations 2011).

5 Implementation of Site Waste Management Plan

5.1 Roles and Responsibilities

59. Although the Principal Contractor(s) have not been appointed at the time of writing this plan, the key roles and associated responsibilities with regard to this OSWMP are outlined below. The Construction (Design and Management) Regulations 2015 also identify the legal duties, responsibilities and obligations of all the major roles within the construction team.

5.1.1 Applicants

60. The Applicants will be responsible for the following:

- Appointing onshore Principal Contractor(s) for the purpose of the SWMP Regulations;
- Ensuring that the SWMP is implemented effectively;
- Giving necessary direction to contractors (for example, setting contractual obligations); and
- Reviewing, revising and refining the SWMP (where necessary) in conjunction with the Principal Contractor.

5.1.2 Principal Contractor(s)

61. The Principal Contractor(s) will have the overall responsibility for:

- Updating and delivering the SWMP;
- Ensuring all procedures in the SWMP are followed;
- Ensuring all contractors are suitably qualified and experienced in Implementing the measures within the SWMP. These measures will be contained within the terms of contracts to ensure understanding and accountability;
- Ensuring that all legal and contractual requirements relating to the SWMP are met by ensuring adequate plans/procedures, licences and certificates are in place, and that they can be achieved;
- As a requirement of the SWMP the Principal Contractor(s) will regularly (not less than every six months) review the SMWP to ensure that it accurately reflects the progress of the project and update where necessary;
- Establish procedures for the regular review and recording of the quality of the works as part of its Quality Management System;
- Maintain records relevant to the SWMP;

- Within three months of work being completed, the Principal Contractor(s) must confirm that the SWMP has been monitored (and updated) on a regular basis throughout the project; compare the actual waste quantities against the estimated quantities of each waste type; and provide an explanation of any deviation from this plan. This information will be provided within a Close Out report, provided to the Applicant; and
- Contractors/Sub-contractors.

62. Principal Contractor(s) and all sub-contractors will be responsible for carrying out the waste management tasks in this OSWMP and the detailed SWMP.

5.2 Training

63. A training regime will be implemented to ensure that all relevant members of the onshore construction teams, including subcontractors' personnel receive focused SWMP training to ensure their competence in carrying out their duties on the project.

64. Any SWMP training will be additional to the mandatory training requirements on site Health and Safety.

5.2.1 Environmental Induction

65. A general site induction will be developed to introduce all site personnel to the environmental issues connected with the SWMP, important environmental controls associated with the day-to-day operation of the project and effective delivery of the SWMP (for example, waste storage arrangements, appropriate waste segregation). A full register of induction attendance will be maintained on site.

66. Onshore construction staff will be briefed on the SWMP and the waste management procedures to be followed.

5.2.2 Toolbox Talks and Method Statement Briefings

67. Toolbox Talks and method statement briefings will be given to onshore construction teams as work proceeds and will cover the types of wastes produced at each key build stage, and the SWMP controls related to specific activities undertaken during the works (for example, recycling of concrete). A full register of toolbox talks and method statement briefing attendance will be maintained on site.

5.2.3 Training Records

68. All training records will be maintained and filed on-site. The records will include the content of the courses (induction and Toolbox Talks training), record of attendance and schedule of review.

6 Audit, monitor and review

6.1 Site Inspection

69. Regular inspections of the onshore construction works will be undertaken by the Principal Contractor(s) (or appropriately trained member of the construction staff) to ensure the continued compliance of site operations with the provisions of the SWMP and control measures outlined in relevant method statements.

6.2 Monitoring of the Site Waste Management Plan

70. Appropriate Duty of Care paperwork for the movements of waste (for example, waste transfer notes) will be retained on site. Volumes (m3 or tonnes) and waste types will be recorded for all wastes sent for reprocessing, recycling or disposal. Records will also be kept of waste re-used/recycled on site.

71. A separate SWMP Close Out Report will be compiled by the Principal Contractor(s) at the end of the construction process that summarises performance of the Projects against the targets set in the SWMP. The report will identify any deviations from the SMWP and discuss lessons learnt.

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