



DOGGER BANK
WIND FARM



**Dogger Bank C and Sofia
Offshore Wind Farms Onshore Works**

CoCP Appendix 4.4

Soil Management Plan

**DB-C RE-PM763-ARCUS-00011
Sofia 003757667-01**

Title: Dogger Bank C and Sofia Offshore Wind Farms Onshore Works CoCP Appendix 4.4 – Soil Management Plan		
Document no: DB-C - RE-PM763-ARCUS-00011 Sofia - 003757667-01	Contract no.: N/A	Project: Dogger Bank C and Sofia

Classification: External	Distribution: Redcar and Cleveland Borough Council
Expiry date:	Status Final

Distribution date: 13/11/20	Rev. no.: 01	Copy no.: N/A
---------------------------------------	------------------------	-------------------------

Author(s)/Source(s): Arcus Consultancy Services Ltd	
Subjects: CoCP – Appendix 4.4 – Soil Management Plan	
Remarks: Requirement 27 Dogger Bank Wind Farm (Teesside A and B) Development Consent Order 2015 (as amended) and TCPA #1 Condition 9	
Valid from: 13/11/20	Updated:
Responsible publisher: Arcus Consultancy Services Ltd	Authority to approve deviations: DB-C and SOWFL

Techn. responsible (Organisation unit / Name): Arcus – Eve Browning	Date/Signature: 13/11/20 EB
Responsible (Organisation unit/ Name): Arcus – Stuart Davidson	Date/Signature: 13/11/20 SD
Recommended (Organisation unit/ Name): Projco 3 – Victoria Ridyard SOWFL – Sandra Painter	Date/Signature: 13/11/20 VR 13/11/20 SP
Approved by (Organisation unit/ Name): Projco 3 - Jonathan Wilson SOWFL - Kim Gauld-Clark	Date/Signature: 13/11/20 JW 13/11/20 KGC



Doc. No. DB-C - RE-PM763-ARCUS-00011
Sofia - 003757667-01

DOGGER BANK
WIND FARM



Rev. no. 01

CoCP Appendix 4.4 - SMP

Valid from: November 2020

Table of Contents

1	Introduction	4
2	Baseline Conditions	4
3	Potential Impacts	5
4	Soil Re-Use and Material Characterisation.....	6
5	Mitigation	6

1 Introduction

1 This Soil Management Plan (SMP) has been produced to support the Code of Construction Practice (CoCP) and to fulfil Condition 9 of the Town and Country Planning Application #1 (TCPA #1, as defined further in the Glossary) and Requirement 27 of the Dogger Bank Teesside A & B Offshore Wind Farm Order 2015 (as amended) (the Development Consent Order, herein 'the DCO'). The measures set out within this SMP will be implemented by the Principal Contractor appointed for the Onshore Works associated with the DCO, as defined within the CoCP.

2 The SMP is required to satisfy Condition 9 and Requirement 27, Part 2(g) which states:

"The CoCP must reflect and ensure delivery of the construction phase mitigation measures included in the environmental statement and must include consideration of the following matters, amongst others, during construction of the onshore works - (g) land use and agriculture, including the management, excavation and removal of soils, land drainage, land quality and biosecurity".

3 The SMP prescribes the procedures and protocols that will be adhered to during works with regard to soils structure, ground conditions and mitigation measures. Land use and agriculture, including land quality and biosecurity measures are detailed in the main CoCP document. A separate Site Waste Management Plan has been produced, which covers the disposal of soil as waste, including hazardous waste. A separate Foul and Surface Water Drainage Scheme has also been produced, covering the interaction of soils and water, to satisfy Requirement 25 of the DCO and Condition 7 of TCPA #1.

4 To secure effective delivery of the SMP, the Principal Contractor will use the information provided within this SMP through task-specific construction method statements. Tasks will be determined by the Principal Contractor, or their soils specialist, depending upon factors such as, but not limited to, the works to be undertaken, the machinery to be used, soil types and results of any additional survey works, and site constraints (e.g. depth to water table or ecological constraints).

5 Construction will also be monitored to audit compliance with the SMP and to allow ongoing advice on soil handling to be provided.

2 Baseline Conditions

6 Details of baseline conditions are available within **Chapter 24** Geology, Water Resources and Land Quality of the 2014 ES and are summarised below.

2.1 Drift Geology

7 The drift geology beneath the Onshore Works is shown to comprise considerable thickness of clayey till with only one potential area of Glaciofluvial deposits to the far west of the cable route. The till is defined as an unproductive aquifer with low permeability. The clayey nature of the till and its thickness represents a significant barrier for the vertical migration of contaminants at the ground surface. Its presence is considered to act as a protective cover to the underlying Secondary B aquifer within the solid geology. Therefore, groundwater is considered to have a low sensitivity.

2.2 Solid Geology

- 8 The underlying bedrock geology across the Onshore Works is Redcar Mudstone. The Redcar Mudstone Formation is described as predominantly grey, well bedded, marine calcareous mudstone and silty mudstone over 200m in thickness.
- 9 The Onshore Works does not run through any Regionally Important Geological Sites (RIGS) identified by the Tees Valley RIGS Group. Although one is identified within the study area to the north of the landfall in the intertidal zone. The site known as Red Howles, lies approximately 150m from the Onshore Works.

2.3 Abstractions

- 10 The EA has defined Source Protection Zones (SPZs) for groundwater sources which are used for public drinking water. There are no SPZs within 1km of the study area.
- 11 The EA has provided details of all other licensed groundwater and surface water abstractions (without designated SPZs) within the study area. There are no licensed groundwater abstractions or surface water abstractions within the vicinity of the cable route and converter stations site (1km).

2.4 Land Classification

- 12 The Natural England 1:250 000 Series Agricultural Land Classification for the North East Region¹ and interactive Provisional Agricultural Land Classification (ALC) (England) map² indicate that the western sector of the Onshore Works is in an area classified as non-agricultural land where land is predominantly in urban use. The eastern sector passes through areas of land with agricultural classifications of 'Very Good' and 'Good to Moderate'.

3 Potential Impacts

- 13 The main threats to soil resources at construction sites are trafficking of vehicles/plant and incorrect handling, which can cause damage to soil structure through compaction and smearing (both effects are sometimes referred to as deformation). These effects compromise the ability of the soil to perform its functions, such as providing adequate amounts of water, air and nutrients to plant roots. The risk of compaction and smearing increases with soil wetness.
- 14 Although potential impacts to soils at the Onshore Works have been assessed as negligible, the following potential impacts have been identified in relation to the construction phase on soils:
- Degradation of soils (including soil compaction);
 - Loss of soil resources;
 - Impacts on land drainage systems; and
 - Biological Contamination.

¹ Natural England, 1:250 000 Series Agricultural Land Classification, North East Region (Map Reference 10-111a) dated 2010

² Natural England, Provisional Agricultural Land Classification (ALC) (England) [Online] Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/5d2477d8d04b41d4bbc9a8742f858f4d_0?geometry=-1.383%2C54.528%2C-0.920%2C54.598 (Accessed 06/10/2020)

- 15 It is proposed that soil generated on-site is re-used, as detailed in Section 4. Section 5 provides the detail of mitigation which will be implemented to reduce the potential for impacts on soils.

4 Soil Re-Use and Material Characterisation

- 16 There is no specific requirement to remove soils from the Onshore Works from an environmental risk perspective. However, any soils that are excavated during the construction phase for other reasons have the potential to be legally classified as a waste if the process is not managed appropriately. Any hazardous or non-hazardous wastes (including soils) arising during the construction works will be managed in accordance with the SWMP.
- 17 Where managed appropriately, materials excavated during construction will be suitable for re-use within the Onshore Works and will be carried out in a way that minimises impact to soil quality through the implementation of mitigation measures outlined in Section 5.

5 Mitigation

5.1 Soil Handling

- 18 Soil handling during construction will be conducted in accordance with guidance set out in the Defra report 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'.³
- 19 A summary of selected guidance points to be adhered to by the Principal Contractor are as follows. Further details will be provided in each Stage-specific Construction Environmental Management Plan (CEMP):
- Remove surface vegetation by blading off, by scarification and raking, or kill off by application of a suitable non-residual herbicide applied not less than two weeks before stripping commences;
 - Topsoil stripping should be undertaken by the excavator standing on the surface of the topsoil, digging the topsoil to its maximum depth and loading into site or off-site transport vehicles;
 - Where subsoil stripping is required, soil layers above the base/formation layer are to be removed in sequential strips that can be up to 6 metres (m) wide (the reach of a 360° excavator). Using an excavator bucket with teeth is preferable to using one without. Where there is a cover of topsoil, that layer is removed first before stripping subsoil to the specified depth. The soil transport vehicle runs on the layer beneath the subsoil;
 - If sustained heavy rainfall (e.g. >10 mm in 24 hours) occurs during soil stripping operations, work must be suspended and not restarted until the ground has had at least a full dry day or agreed moisture criteria (such as a specified soil moisture content) can be met. Lighter soil (e.g. free draining sandy soil) can generally be moved at higher moisture content with less risk of damage when compared to a heavy soil (e.g. clayey soil); and
 - Soil restoration will be undertaken using the 'loose tipping' method with the use of dump trucks and hydraulic tracked excavators. This method entails working to a strip system (the width of the strip

³ Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, DEFRA (2009) [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf (Accessed 06/10/2020)

determined by the reach of the excavator), and replacing soil sequentially across the soiling area. The receiving ground, whether a basal layer or compacted subsoil is first loosened with a wing-tine ripper.

5.2 Degradation of Soils (including Soil Compaction)

20 To minimise the risk of damage to soil structure, the following rules must be observed during all soil handling tasks:

- No trafficking of vehicles/plant or materials storage to occur outside demarcated working areas;
- No trafficking of vehicles/plant on reinstated soil (topsoil or subsoil);
- Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage);
- Soil handling is to be determined based upon soil moisture content. Where practicable, soil handling when soil moisture content is above the lower plastic limit will be avoided; this is the moisture content limit at which the soil begins to behave as a plastic material and the soil is deemed too wet to handle without causing damage to the soil structure,
- Movement of wet or damp soils should be kept to a minimum, however where movement cannot be avoided, soils should be handled using excavators rather than dozers to minimise compaction;
- Heavy plant vehicles will be restricted to designated haulage routes when moving around the Site;
- No mixing of topsoil with subsoil, or of soil with other materials;
- Soil is only to be stored in designated soil storage areas;
- All soil storage areas (stockpiles) must be planned appropriately and must have clear signage to avoid cross contamination and to ease identification for reinstatement;
- Topsoil stockpiles should not exceed 4 m in height and subsoil stockpiles should not exceed 5 m in height. However, if the soil to be stockpiled is dry, formation of higher stockpiles may be permissible, if required, as the soil is likely to remain dry in the core of the stockpile for the entire storage period. The appropriateness of higher stockpiles will need to be established on a location by location basis by the Site Manager;
- Soils will be formed into smooth graded stockpiles, effectively 'sealing' the soils to prevent rainfall causing run-off or significant changes to the soil moisture conditions. Excessive run-off and erosion of the soil resource has the potential to change the soil composition, if fine material is lost leaving a greater proportion of stones. Stockpile erosion can also result in significant environmental impacts, such as discharges of sediment laden for pathways that could be susceptible to local receptors (roads, drainage systems, watercourses and surrounding land);
- Locations and footprints of each stockpile will be accurately recorded on a plan of appropriate scale by the Contractor(s). Marker posts will need to be provided in locations which have been surveyed and recorded (this should be repeated in the event of further soil surveys being required);
- Operation of plant and machinery only when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing);
- All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages;
- The size of the earthmoving plant to be used should be tailored to the size of the area to be stripped and the space available within the working area. The use of a long reach excavator, which will

minimise the need for movement across the soil surface, and the use of tracked vehicles will further reduce soil compaction;

- Targeted soil and groundwater sampling should be undertaken in areas of proposed buried concrete to confirm there is no risk associated with chemical attack on buried concrete. The process should be documented; and
- If any soil or aggregate materials are imported as part of the construction works, the materials will be subject to sampling and chemical analysis at a UKAS accredited laboratory to demonstrate its compliance with the Generic Assessment Criteria (GAC) agreed for the site and its suitability for intended use from an environmental risk and waste management perspective. This process will be fully documented and tracked and all certification obtained from the supplier will be retained.

5.3 Mitigation (Soil Quality)

21 To reduce the risk of impacts from general site activities including spill and leakages to soil the mitigation measures in relation to soil quality include:

- Store oils and fuel within designated areas above ground and in impervious storage bunds with a minimum of 110% capacity to contain any leakages or spillages, in addition, ensure storage areas are regularly inspected to identify any leak or spills;
- Limit refuelling activities where possible to designated, impermeable surfaced areas and use drip traps where possible;
- Check and maintain equipment regularly to ensure that leakages do not occur;
- Have spill kits available on-site at all times; and
- Ensure site inductions for all staff, to include the above procedures and the locations of spill kits.

5.4 Loss of Soil Resources

22 As discussed above, to minimise the loss of soil resource construction works will be carried out adhering to the MAFF (2000) Good Practice Guide for Handling Soils and Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites. Good practice includes:

- Only working in appropriate weather conditions where soil type dictates;
- Appropriate soil storage;
- Maintaining effective field drainage systems during construction;
- All soils will be removed as per the best practice procedures set out in the SWMP;
- Ensuring reinstatement occurs as soon as practical after construction; and
- Planting vegetation shortly after reinstatement.