FOREWIND

DOGGER BANK
TEESSIDE A & B

March
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Environmental Statement Chapter 24 Appendix E Water Framework Directive Compliance Assessment

Application Reference: 6.24.5

Cover photograph: Indicative image showing installation of meteorological mast within the Dogger Bank Zone

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1 Introduction

1.1 General

1.1.1 The Water Framework Directive (WFD) (Council Directive 2000/60/EC establishing a framework for community action in the field of water policy) was adopted by the European Commission in December 2000. The WFD requires that all EU Member States prevent deterioration and protect, enhance and restore all bodies of water. This means that Member States must ensure that new schemes do not adversely impact upon the status of aquatic ecosystems, and that historical modifications that are already impacting need to be addressed.

1.1.2 In December 2003, the WFD was transposed into national law by means of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. These Regulations provide for the implementation of the WFD through the designation of all surface waters (rivers, lakes, transitional (estuarine) and coastal waters) and groundwaters as water bodies and the establishment of targets to achieve good ecological status by 2015, or, where justified, by 2021 or 2027.

1.1.3 Unlike the EU Birds and Habitats Directives, which apply only to designated sites, the WFD applies to all water bodies, including those that are man-made. The consideration of the proposals under the WFD will, therefore, apply to all surface and groundwater bodies that have the potential to be impacted by the Dogger Bank Teesside A & B proposals.

1.2 Water body classification

1.2.1 Classification schemes for surface waters and groundwaters have been developed in response to the WFD.

1.2.2 For surface waters there are two separate classifications for water bodies; ecological and chemical. For a water body to be in overall 'good' status, both ecological and chemical status must be at least 'good'. The ecological status of surface waters is classified using information on the biological, physico-chemical and hydromorphological quality of the body of water.

1.2.3 The ecological status of a surface water body is assessed according to:

- The condition of biological elements, for example fish, benthic invertebrates and other aquatic flora;
- The condition of the supporting hydromorphological quality elements, including morphological condition, hydrological regime and tidal regime (coastal waters only);
- The condition of supporting physico-chemical elements, for example thermal conditions, salinity, and concentrations of dissolved oxygen, ammonia and nutrients; and

- Concentrations of specific pollutants, for example copper and other priority substances.

1.2.4 Ecological status is recorded on a scale of high, good, moderate, poor or bad. 'High' denotes largely undisturbed conditions and the other classes represent increasing deviation from this natural condition, otherwise described as a 'reference condition'. The ecological status classification for the water body, and the confidence in this, is determined from the worst scoring quality element. This means that the condition of a single quality element can cause a water body to fail to reach its WFD classification objectives.

1.2.5 Chemical status is assessed by compliance with environmental standards for chemicals that are listed in the EC Environmental Quality Standards Directive (2008/105/EC). These chemicals include priority substances, priority hazardous substances, and eight other pollutants carried over from the Dangerous Substance Daughter Directives. Chemical status is recorded as 'good' or 'fail'. The chemical status classification for the water body is determined by the worst scoring chemical.

1.2.6 Where the hydromorphology of a surface water body has been significantly altered for anthropogenic purposes, it can be designated as an Artificial or Heavily Modified Water Body (A/HMWB). An alternative environmental objective, Good Ecological Potential (GEP) applies in these cases.

1.2.7 The UK Technical Advisory Group on WFD (UKTAG) have developed the 'mitigation measures approach' for classifying HMWBs (UKTAG, 2008), which has been adopted by the competent authorities in the UK. This approach first assesses whether actions to mitigate the impact of physical modification are in place to the extent that could reasonably be expected. If this mitigation is in place, then the water body may be classified as achieving 'good' or better ecological potential. If this level of mitigation is not in place, then the water body will be classed as 'moderate' or worse ecological potential.

1.2.8 Before an overall ecological potential classification is applied, the second step is for the results of the mitigation measures assessment to be cross-checked with data from biological and physico-chemical assessments.

1.2.9 Where the Environment Agency has data for biological quality elements that show signs of damage from pressures other than hydromorphological alterations (for example, if the benthic invertebrate status is poor because of nutrient pressures) the ecological potential will be changed. To reflect this other pressure the water body will be labelled as having 'Poor Ecological Potential'. This is also true where data are available for physico-chemical quality elements.

1.2.10 In addition, some areas require special protection under European legislation. The WFD therefore brings together the planning processes of a range of other European Directives, such as the revised Bathing Waters Directive (2006/44/EC) and the Habitats Directive. These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species and wildlife, and have been brought in line with the planning timescales of WFD.

1.2.11 Groundwaters are assessed in a different way to surface waters, since they do not support ecological communities. Instead of Good Ecological Status (GES)

and GEP, groundwaters are classified as either Poor or Good in terms of quantity (groundwater levels, flow directions) and quality (pollutant concentrations and conductivity).

1.3 Procedure and process

1.3.1 There is no designated methodology for the assessment of plans or projects in relation to undertaking WFD compliance assessments. There are, however, several sets of guidance that have developed in relation to undertaking such assessments, written by the Environment Agency. Considered to be the most relevant to the proposals are the documents "Clearing the Waters" (Environment Agency, 2012) which has been produced to assist in the assessment of the potential impact of dredging and disposal on the requirements of the WFD; and "Assessing new modifications for compliance with WFD" (NEAS Operational Instruction 488_10) (Environment Agency, 2010), an Environment Agency internal operational instruction which has been produced to guide WFD assessment of new modifications to surface waters.

1.3.2 For the purposes of undertaking the WFD compliance assessment for Dogger Bank Teesside A & B, it is proposed that the broad methodologies outlined in NEAS Operational Instruction 488_10 and Clearing the Waters are modified in order to undertake the assessment. The proposed four stage process is summarised below.

Stage 1: Collation of baseline information to inform the assessment

1.3.3 The aim of this stage is to collate all available baseline data that will be necessary to complete the WFD compliance assessment, i.e. to collate all information on the scheme, the baseline environment, the water bodies which could potentially be impacted by the scheme, and details of any additional schemes which could also impact on the water bodies.

Stage 2: Preliminary compliance assessment

1.3.4 The aim of this stage is to identify whether there is potential for deterioration in water body status or failure to comply with WFD objectives for any of the water bodies identified in Stage 1. This stage considers potential non-temporary impacts, cumulative impacts and impacts on critical or sensitive habitats. Water bodies can be screened out of further assessment if it can be satisfactorily demonstrated that there will be no non-temporary impacts resulting in WFD non-compliance. If impacts are predicted, it will be necessary to undertake a detailed compliance assessment.

Stage 3: Detailed compliance assessment

1.3.5 This stage of the assessment aims to assess whether the activities and/or scheme components that have been put forward from Stage 2 will have a significant non-temporary effect on the status of one or more WFD quality elements at water body level. The test is, therefore, to determine whether the activity is likely to affect a quality element sufficiently to lower its existing status.

1.3.6 For priority substances, the process requires the assessment to consider whether the activity is likely to cause the quality element to achieve good chemical status. If it is established that an activity and/or scheme component is

likely to affect water status at water body level (that is, by causing deterioration in status or by preventing achievement of WFD objectives, including the implementation of mitigation measures for HMWBs), or that an opportunity may exist to contribute to improving status at a water body level, potential measures to avoid the affect or achieve improvement must be investigated. This stage considers these measures and, where necessary, evaluates the measures in terms of cost and whether this may be disproportionate.

Stage 4: Summary of mitigation and monitoring measures

1.3.7 This stage of the process produces a summary of the preceding stages and a description of any mitigation and monitoring proposals for each of the activities assessed. The aim of this stage is to provide a clearly documented list of any mitigation measures that are required to prevent deterioration in water body status as a result of the proposed scheme, and specify how the performance of these measures should be monitored and reviewed.

1.4 Information available to inform the assessment

1.4.1 The Dogger Bank Teesside A & B Development Consent Order (DCO) application is supported by a large number of documents. The Environmental Statement (ES) to accompany the DCO application, which reports the outcomes of the Environmental Impact Assessment (EIA) process, comprises 35 chapters addressing each topic identified at the EIA scoping stage and a Cumulative Impact Assessment (CIA).

1.4.2 In addition to the ES, a **Habitats Regulations Assessment (HRA) Report** has also been produced and supports the DCO application. This report examines the effects of the proposed development on the Natura 2000 sites in and around the offshore development site and Dogger Bank Teesside A & B Export Cable Corridor.

1.4.3 To inform the ES, Forewind has undertaken a thorough pre-application consultation process, which has included the following key stages:

- Scoping Report submitted to the Planning Inspectorate (May 2012);
- Scoping Opinion received from the Planning Inspectorate (June 2012);
- First stage of statutory consultation (in accordance with sections 42 and 47 of the Planning Act 2008) on Preliminary Environmental Information (PEI) 1 (report published June 2012); and
- Second stage of statutory consultation (in accordance with sections 42, 47 and 48 of the Planning Act 2008) on the ES designed to allow for comments before final application to the Planning Inspectorate.

1.4.4 In between the statutory consultation periods, Forewind consulted specific groups of stakeholders on a non-statutory basis to ensure that they had an opportunity to inform and influence the development proposals. Further information detailing the consultation process is presented in **Chapter 7 Consultation** of the ES. A Consultation Report will be provided alongside the ES as part of the overall planning submission.

2 Stage 1 (Screening)

2.1 Introduction

2.1.1 In order to undertake the screening stage, information required falls into two categories. The first category consists of information on the water bodies that the activities could affect. Screening then requires the identification of all WFD parameters that potentially could be affected at water body level by the proposed activities.

2.2 Water bodies that the development could effect

2.2.1 **Figure 2.1** shows the project outline and the WFD water bodies that could potentially be impacted by the proposals. Water bodies to be considered have been selected on the basis of the following criteria:

- All surface and/or ground water bodies that could potentially be directly impacted by the activities (i.e. those within the footprint of the proposals); and
- Any surface and/or ground water bodies that have direct connectivity and could potentially be affected by the proposals.

2.2.2 The following water bodies have, therefore, been identified as relevant in geographical and hydrological terms to take through the WFD compliance assessment process (**Table 2.1** – **Table 2.3**):

- Yorkshire North (Coastal water body GB650301500003). The proposals are located within this water body;
- Tees Mercia Mudstone & Redcar Mudstone (Ground water body GB40302G701300). This water body underlies the area in which the development will be constructed; and
- Redcar Coastal Area (Rogers Dike) (River water body GB103025072660). The cable route crosses this water body and the network of drainage channels which feed into it.

2.2.3 Analysis of the drainage network suggests that all the small watercourses which drain the Redcar area (many of which are fully or partially culverted) drain into the Redcar Coastal area water body and do not have any direct connectivity with the River Tees estuarine water body (GB510302509900). This includes The Fleet, which drains Dormanstown and much of the dock area. The River Tees has therefore been excluded from further assessment, and all watercourses have been considered to be part of the Redcar Coastal Area water body.

Table 2.1 Water body information for the Yorkshire North coastal water body

Yorkshire North (Coastal Water Body GB650301500003)	
Water body area (km^2)	257.77
Type	Coastal
Current Status	Good Potential
Objective	Good potential by 2015
If not at good status record all parameters at moderate status or below	N/A
Is the water body heavily modified or artificial, if so record reason?	Yes heavily modified – coastal protection
Mitigation measures in place	None listed in the River Basin Management Plan
Protected Areas	Bathing Waters Directive, Freshwater Fish Directive, Natura 2000 (Habitats Directive),

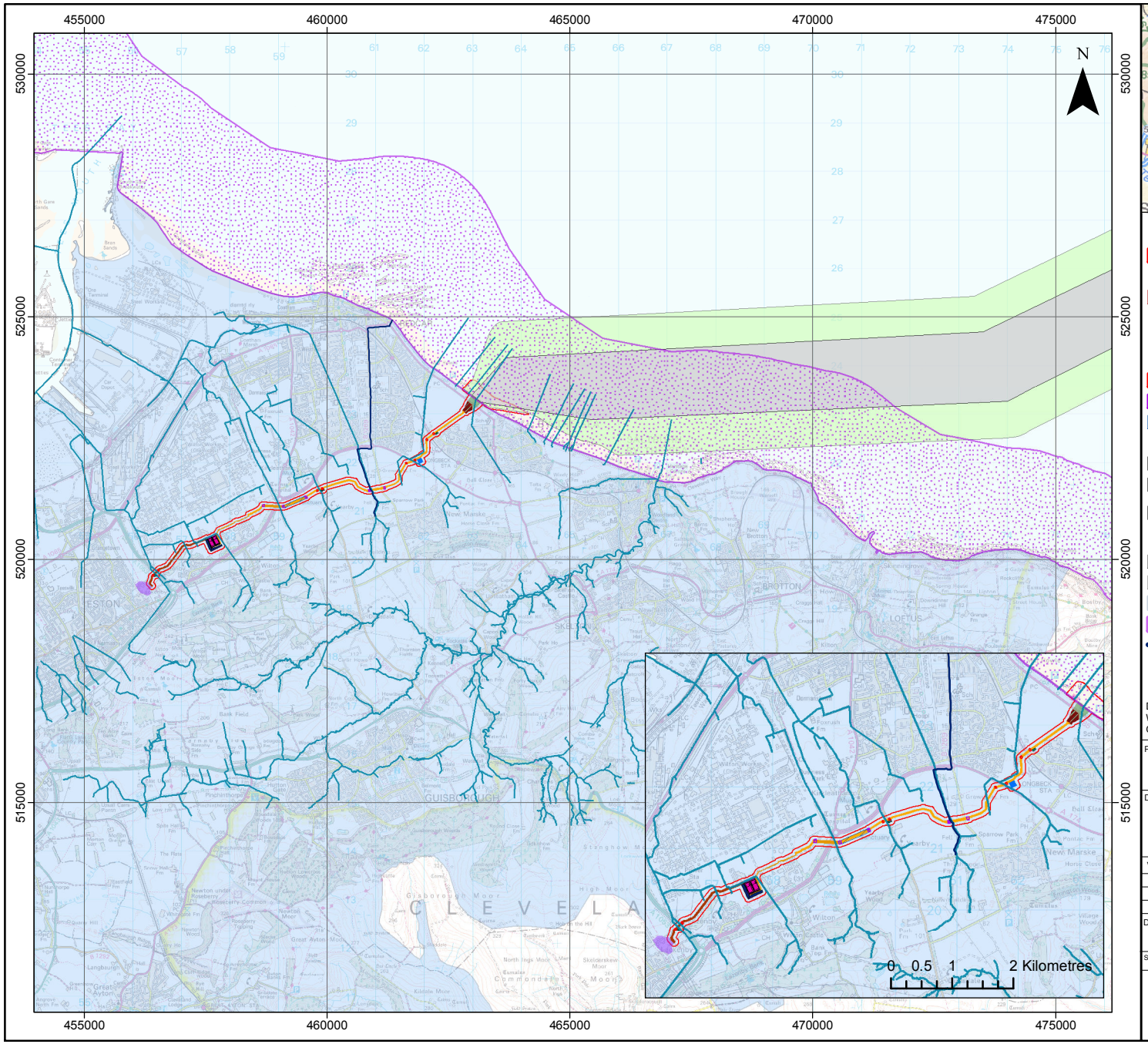
Table 2.2 Water body information for the Tees Mercia Mudstone & Redcar Mudstone ground water body

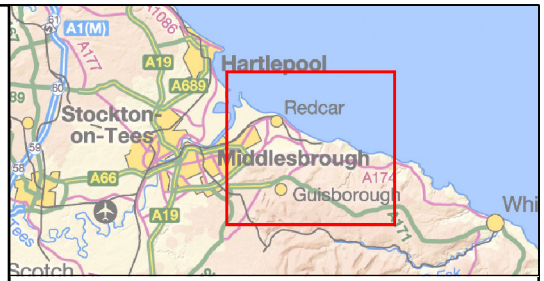
Tees Mercia Mudstone & Redcar Mudstone (Ground Water Body GB GB40302G701300)	
Water body area (km^2)	494.47
Type	Ground water
Current Status	Poor
Objective	Good by 2021
If not at good status record all parameters at moderate status or below	Impact on surface waters (justification for not achieving good status is that it is technically infeasible – due to nature of impact being diffuse and point source pollution with many activities likely to be contributing)
Protected Areas	Drinking Water Protected Area

Table 2.3 Water body information for the Redcar Coastal Area (Rogers Dike) riverine water body

Redcar Coastal Area (Rogers Dike) (River Water Body GB103025072660)	
Water body area (km^2)	4.86
Type	River
Current Status	Moderate
Objective	Good by 2027

Redcar Coastal Area (Rogers Dike) (River Water Body GB103025072660)	
If not at good status record all parameters at moderate status or below	Biological parameters based on expert judgement.
Is the water body heavily modified or artificial, if so record reason?	No
Mitigation measures in place	None
Protected Areas	Bathing Waters Directive, Freshwater Fish Directive





LEGEND

- Direct Impacts Footprint
- Cable landfall envelope
- Landfall horizontal directional drill compound and joint transition bay
- Direct current cable route (agricultural setting, 36m working width)
- Direct current cable route (industrial setting, 18m working width)
- Alternating current cable route (39m working width)
- Minor horizontal directional drill entry or exit locations (1,200m²)
- Major horizontal directional drill entry or exit locations (2,000m²)
- HDD or open trench to be confirmed
- Primary construction compound (10,000m²- 5,000m² per project)
- Intermediate construction compound (784m²)
- Converter stations (one per project)
- Converter station construction compounds (10,000m², one per project)
- Lackenby 400kV substation
- Dogger Bank Teesside A & B offshore cable corridor
- Offshore temporary works area
- Tees Mercia Mudstone & Redcar Mudstone groundwater body
- Yorkshire North Coastal water body
- Redcar Coastal Area (Rogers Dike) river water body
- River network

0 2 4
Kilometres

Data Source:
WFD water bodies © Environment Agency
Ordnance Survey data © Crown copyright and database right, 2012

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 2.1 Proposal outlines against the WFD water bodies

VER	DATE	REMARKS	Drawn	Checked
1	04/09/2013	Draft	GC	CP
2	10/10/2013	PEI3	LW	CP
3	11/02/2014	Pre-DCO submission review	LW	DW

DRAWING NUMBER: **F-ONC-MA-410**

SCALE	1:120,000	PLOT SIZE	A4	DATUM	OSGB36	PROJECTION	BNG

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2.3 Activities with the potential to impact on WFD compliance parameters

2.3.1 To determine which activities are of relevance to the WFD compliance assessment, all potential impacts on ecology, hydromorphological parameters and water quality need to be considered. It should be noted that the WFD covers waters only out to 1 nautical mile (nm) (see above) and, therefore, the offshore development within the Dogger Bank Zone is screened out of the assessment as the proposals are located approximately 125km from the coastline. As a result, the assessment focuses on the Dogger Bank Teesside A & B Export Cable Corridor, landfall and onshore infrastructure.

2.3.2 The following bullet points summarise the activities that could potentially impact WFD compliance parameters:

2.3.3 For the construction phase:

- Installation of cables within the 1nm boundary of the coast (water quality, marine ecology, hydrodynamics);
- Horizontal Directional Drilling (HDD)/open trenching of cable onshore for connection to the converter stations and existing National Grid Electricity Transmission (NGET) substation at Lackenby (water quality, hydromorphology, biology); and
- Works in and around watercourses – accidental spills and leaks (water quality).

2.3.4 During the operational phase:

- The possible presence of cable protection within the 1nm boundary of the coast (marine ecology, hydrodynamics).

2.3.5 There are not anticipated to be any operational effects on water bodies once the onshore cable is in place for both ground waters and river water bodies.

2.4 Screening results

2.4.1 For all activities identified, the screening phase involves considering each WFD parameter to identify all those where a possible causal link exists. That is, where water status could be affected at water body level by the proposed activities. The outcome of this initial assessment is summarised in **Table 2.4**.

Table 2.4 Screening assessment for both the activities identified in the construction and operational phases of the development (status information from the Yorkshire North water body)

	Identify issues	Record current status & 2015 objectives	Record 2015 objective
	Tick all potentially effected quality elements	**High/good/moderate/poor/bad for ecological elements or High/fail for chemical elements**	
Biological elements			
Phytoplankton	✓	High	High
Other aquatic fauna	✓	Good	Good
Benthic Invertebrate fauna	✓	Good	Good
Physical elements			
Depth variation	✓	These have not been assessed in the current river basin management plan	Not specified
Bed	✓		
Intertidal zone structure	✓		
Tidal Regime	✓		
Dominant currents	✓		
Wave exposure	✓		
Physico-chemical elements			
Transparency	✓	These have not been assessed in the current river basin management plan	Not specified
Thermal conditions	×		
Oxygenation conditions	✓		
Salinity	×		

	Identify issues	Record current status & 2015 objectives	Record 2015 objective
	Tick all potentially effected quality elements	High/good/moderate/poor/bad for ecological elements or High/fail for chemical elements	
Nutrient conditions (e.g. nitrogen)	✓		
Specific pollutants/priority substances			
Specific pollutants/priority substances	✓	These have not been assessed in the current river basin management plan	Not specified
Other parameters			
Chemical status	✓	Good	Good
Protected areas	✓	Bathing Waters Directive, Freshwater Fish Directive, Natura 2000 (Habitats Directive), Nitrates Directive	
Mitigation measures	✓	Good	Good

Table 2.5 Screening assessment for both the activities identified in the construction and operational phases of the development (status information from the Tees Mercia Mudstone & Redcar Mudstone ground water body)

	Identify issues Tick all potentially effected quality elements	Record current status & 2015 objectives	Record 2015 objective
Quantitative elements			
Impacts on wetlands	×	Good (low)	Good
Impact on surface waters	×	Good (high)	Good
Saline Intrusion	×	Good (low)	Good
Water balance	×	Good (high)	Good

	Identify issues Tick all potentially effected quality elements	Record current status & 2015 objectives	Record 2015 objective
Chemical elements			
Drinking Water Protected Area	✓	Good (low)	Good
General Chemical test	✓	Good (low)	Good
Impact on wetlands	✓	Good (low)	Good
Impact on surface waters	✓	Poor (high)	Poor
Saline intrusion	×	Good (low)	Good

Table 2.6 Screening assessment for both the activities identified in the construction and operational phases of the development (status information from the Redcar Coastal Area water body)

	Identify issues Tick all potentially effected quality elements	Record current status & 2015 objectives	Record 2015/2027 objective
Ecological status			
Current status is based on expert judgement	✓	Moderate (uncertain)	Good by 2027
Supporting conditions			
Quantity and dynamics of flow	✓	Supports good	Supports good (2015)
Morphology	✓	Supports good	Supports good (2015)
Chemical status			
Does not require assessment but there is the possibility that contamination from accidental spills or leaks could impact on chemical status and therefore this is also identified as a potential issue			

3 Stage 2: Scoping

3.1 Scoping for marine water bodies

3.1.1 In order to inform Stage 2 of the assessment for the marine water body, the scoping tables from the Clearing the Waters guidance (Environment Agency 2012) have been modified in order to allow the assessment of the construction and operational phases of the proposed cabling for Dogger Bank Teesside A & B. This is to provide a first level of assessment in relation to the WFD parameters that could be at risk of a non-temporary effect against the water body WFD compliance criteria.

3.1.2 The Clearing the Waters guidance has determined trigger levels for dredging and disposal to assess whether an individual activity should proceed to Stage 3 (the assessment stage). These trigger levels are therefore aimed at identifying activities likely to have a significant effect on WFD parameters at a water body level. If these triggers are not reached, then impacts on these parameters can effectively be scoped out. Since the installation of the cabling will require the movement of sediments, some of these triggers can be used in undertaking this assessment.

3.1.3 For the operational phase of the development, triggers are not available and therefore the scoping is undertaken using expert judgement based on information provided within the ES.

3.1.4 There are no published scoping guidelines for river or groundwater bodies. However, NEAS Operational Instruction 488_10 provides a series of hydromorphological screening thresholds which help to determine whether detailed assessment is required. These thresholds, which only apply to river, relate to the proportion of a water body that is likely to be affected by different elements of a scheme. Some of the thresholds relate to modifications to the bed and banks of a water course, and can be used to help examine the potential impacts of cable installation and river crossings.

3.1.5 This scoping assessment is presented in **Tables 3.1** to **3.3** for each activity identified in Section 2 for both construction and operational phases.

Table 3.1 Outcome of scoping stage for the installation of the export cable (Yorkshire North water body)

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Biological elements			
Phytoplankton	Composition, abundance and biomass	In the Clearing the Waters guidance this element is screened out as dredging (and therefore by implication, cable installation techniques such as jetting or trenching which similarly temporarily suspend sediments) are generally considered to only have very transient effects on this parameter (see Environment Agency, 2012)	No
Other aquatic flora (angiosperms, saltmarsh, seagrass, macroalgae, seaweed)		In the Clearing the Waters guidance (Environment Agency, 2012) triggers are split into three categories: a. Trigger in guidance: Will the cable installation activities directly remove intertidal area or are the activities within 10m of Mean Low Water Springs (MLWS). Response: Yes, the activities will occur within 10m of MLWS b. Trigger in guidance: The proportion of water body impacted by the activity will be >5% (formula to be applied 1.5 x activity footprint) (if yes, scoping is triggered). Response: The proportion of the water body impacted by the cable installation activities is less than 1%. or, c. High level assessment (made up of a number of elements; need to score 2 or more to trigger scoping). • Is the activity dispersive or non-dispersive?	Yes – information is provided within the ES (**Chapter 9 Marine Physical Processes**, **Chapter 10 Marine Water and Sediment Quality**, **Chapter 11 Marine and Coastal Ornithology** and **Chapter 12 Marine and Intertidal Ecology**)
Benthic invertebrate fauna			

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	**Assessment required (and where yes, a description of information available)**
		Response: The cable installation uses a dispersive technique (Score 1). • Duration: <25% of the year =0, 25-50% of the year = 0.5 and >50% of the year = 1. Response: The duration of the activities within the 1nm area are unlikely to occur for more than 25% of the year. (Score 0). • When will the activity occur (score 1 if March to October, score 0 if November to February). Timing not yet determined (Score 1). TOTAL SCORE for high level assessment = 2	
Hydromorphological elements			
Depth variation	-	The triggers in the Clearing the Waters guidance (Environment Agency, 2012) refer to proportion of water body impacted. If greater than 5% then scoping required. As calculated above, the proportion of water body impacted is less than 1%.	No
Bed	Quantity (transitional only), structure and substrate		
Intertidal zone structure	-	Will the activity directly remove intertidal or is it within 10m of MLWS? Response: Yes	Yes- information is provided within the ES (**Chapter 9 Marine Physical Processes**)
Dominant currents	Direction	Is the dredge a significant change to a maintenance dredge? Response: The installation activities are not considered to be a dredging activity, however, since there will be movement of sediment	Yes- information is provided within the ES (**Chapter 9 Marine Physical Processes**)

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	**Assessment required (and where yes, a description of information available)**
		that wouldn't have been occurring during the water body classification period, the activity is screened into the assessment.	
Wave exposure	-	Will the cable installation activity take place in shallow water? Response: Yes	Yes- information is provided within the ES (**Chapter 9 Marine Physical Processes**)
Chemical and physical-chemical elements			
Transparency	-	Triggers relate to time of year, duration and whether the activity is dispersive. As above, the score would be 2 in relation to the potential time of year in which the activity would be undertaken, as it could occur between March and September and due to the dispersive nature of the activity.	Yes- information is provided within the ES (**Chapter 9 Marine Physical Processes**, **Chapter 10 Marine Water and Sediment Quality**)
Thermal conditions	-	Screened out (see Environment Agency, 2012)	N/A
Oxygenation conditions	-	Triggers relate to time of year, duration and whether the activity is dispersive. As above, the score would be 2 in relation to the potential time of year in which the activity would be undertaken, as it could occur between March and September and due to the dispersive nature of the activity. Additional points should be allocated where sediment chemical oxygen demand is an issue, where the activity will be near to raw sewage inputs and where oxygen issues have been identified within the water body. Scoping is required where 4 points or more are scored. In relation to these additional issues, cable installation will not occur in the vicinity of raw sewage discharges and there are no known reports of	No

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	**Assessment required (and where yes, a description of information available)**
		oxygenation issues within the water body. Significant impacts on the dissolved oxygen concentrations on the Yorkshire south/Lincolnshire water body associated with the cable installation are therefore not anticipated. TOTAL SCORE remains at 2.	
Salinity	-	Screened out	N/A
Nutrient conditions	-	The trigger in the guidance relates to whether the dredge is a capital or new dredge. The installation activities are not considered to be a dredging activity. Additionally, on further consultation of the Clearing the Waters guidance (trigger explanation tables), it is considered by the Environment Agency that dredging (and therefore by implication the cable installation activities as these activities will release suspended sediment) do not generally affect nutrient conditions within a water body; however, on a precautionary basis new dredges will be screened in if they are in a Nutrient Sensitive Area (presumably designated under the Urban Waste Water Treatment Directive, although this is unclear). The Yorkshire North water body does not contain a designated sensitive area.	No
Specific/priority pollutants			
Sediment quality	Cefas Action Levels	The sediment samples collected to inform the EIA show exceedances of Cefas Action Level 1 for some contaminants.	Yes. There are sediment samples and an assessment available in the ES (**Chapter 10 Marine Water and Sediment Quality**)

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Mitigation measures			
Manage disturbance Site selection (dredge material/disposal) (e.g. avoid sensitive sites) Sediment Management	None	The cable installation activities avoid sensitive sites and will only occur for a short amount of time within the water body. Once the installation is completed there will be no further requirement for sediment disturbance. It is therefore deemed more relevant to consider the potential impacts on the ecological and supporting parameters.	No
Protected Areas			
Natura 2000 (Habitats and/or Birds Directive), Bathing Waters Directive	Relevant legislation associated with each protected area	The impacts on the protected areas under Natura 2000 have been addressed in the HRA Report and therefore are not considered here. The impacts on the protected areas under the bathing waters directive have been addressed in the ES (see **Chapter 10 Marine Water and Sediment Quality**) and therefore are not considered here.	No (Habitats Regulations Assessment available) No (Bathing Waters assessment of the potential impacts on nearby located bathing waters is included within **Chapter 10 Marine Water and Sediment Quality** of the ES).

Table 3.2 Outcome of scoping stage for the operational phase of the development (i.e. the presence of the cable in the marine environment) (Yorkshire North water body)

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Dredging triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Biological elements			
Phytoplankton	Composition, abundance and biomass	The presence of the cable is unlikely to impact on this parameter	No
Other aquatic flora (angiosperms, saltmarsh, seagrass, macroalgae, seaweed)		The presence of the cable will not impact on these habitats	No
Benthic invertebrate fauna		There may be impacts on small amounts of benthic invertebrate habitat should cable protection be required, however, it is anticipated that minimal amounts of protection, will be required within 1nm.	Yes. Information exists within the ES in order to inform this assessment
Hydromorphological elements			
Depth variation	-	The presence of the cable and structures to protect the cable could potentially impact on hydrodynamic parameters, however, it is anticipated that minimal amounts of protection, will be required within 1nm.	Yes Information exists within the ES in order to inform this assessment
Bed	Quantity (transitional only), structure and substrate		
Intertidal zone structure	-		
Dominant currents	Direction		
Wave exposure	-		

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Dredging triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Chemical and physical-chemical elements			
Transparency	-	The presence of the cable and any structures to protect the cable (likely to be minimal) will not impact on these supporting parameters.	No
Thermal conditions	-		
Oxygenation conditions	-		
Salinity	-		
Nutrient conditions	-		
Specific/priority pollutants			
Sediment quality	Cefas Action Levels	The presence of the cable and any structures to protect the cable (likely to be minimal within 1nm) will not impact on sediment quality.	No
Mitigation measures			
Manage disturbance	None	The presence of these structures (likely to be minimal within 1nm) will not impact on the mitigation measures in place.	No
Site selection (dredge material/disposal) (e.g. avoid sensitive sites)			
Sediment Management			

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Dredging triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Protected Areas			
Natura 2000 (Habitats and/or Birds Directive), Bathing Waters Directive	Relevant legislation associated with each protected area	The impacts on the protected areas under Natura 2000 have been addressed in the **HRA Report** (Section 1) and therefore are not considered here. The impacts on the protected areas under the bathing waters directive have been addressed in the ES (see **Chapter 10 Marine Water and Sediment Quality**) and therefore are not considered here. The presence of the cable and structures to protect the cable (likely to be minimal within 1nm) will not impact on bathing waters.	No

Table 3.3 Outcome of scoping stage for the installation of the onshore cable on the Redcar Coastal Area water body

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Quantitative elements			

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	**Assessment required (and where yes, a description of information available)**
Ecological status		Crossing of the main water courses will be undertaken using HDD techniques which will pass underneath the active bed level of each watercourse. HDD crossings are therefore unlikely to impact on biological parameters. To provide a continuous access along the route, temporary crossings will be required. These could alter the hydromorphology if the water course by creating impoundment, disrupting flow and sediment transport which could have an impact on biological habitats.	Yes Information is provided within **Chapter 24 Geology, Water Resources and Land Quality** of the ES.
Hydromorphological elements			
Supporting elements (quantity and dynamics of flow and morphology)		Crossing of the larger watercourses (seven in total, including Rogers Dike and Main Dike) will be undertaken using HDD techniques which will pass underneath the geomorphologically active bed level of each watercourse. HDD crossings are therefore unlikely to impact on hydromorphological quality elements of the Redcar Coastal Area water body and the remaining surface drainage network. 6 smaller watercourses will be crossed using dry open cut techniques. The associated cable trenches will be approximately 1.5m wide and 1.5m deep. This technique will require damming of the watercourse in order to install the cable and the water will be pumped over and around the trench and back into the watercourse downstream of the working area. As with the HDD technique, the cable will be buried beneath the geomorphologically active bed of the channel and pre-installation bed levels will be reinstated. Whilst cable installation using the dry open cut technique could have temporary impacts on these minor watercourses in terms of disrupting flow and sediment transport and causing localised disturbance to bed and bank habitats, these effects are unlikely to adversely impact water body status because pre-construction conditions will be reinstated and there will be no cable housing proud of the active channel bed. Dry open cut	Yes Information is provided within **Chapter 24 Geology, Water Resources and Land Quality** of the ES.

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	**Assessment required (and where yes, a description of information available)**
		crossings are therefore not considered to have any non-temporary impacts on the hydromorphology of the Redcar Coastal Area water body and the rest of the drainage network. To provide a continuous access along the route, temporary crossings will be required during the 36 month construction period. These will consist of culverts with a maximum width of 6m over the watercourses. Depending upon the size of the crossings in relation to the width of the watercourse at the proposed crossing points, these culverts have the potential to alter the hydromorphology of the watercourses by creating impoundment, disrupting flow and sediment transport.	
Chemical elements			
Supporting elements (chemical)		Accidental spills and leaks associated with working in and around a watercourse, particularly associated with open cuts and temporary crossings.	Yes Information is provided within **Chapter 24 Geology, Water Resources and Land Quality** of the ES.

Table 3.3 Outcome of scoping stage for the installation of the onshore cable on the Tees Mercia Mudstone & Redcar Mudstone groundwater body

WFD parameter	Classification (blank cells indicates no classification criteria currently exist)	Triggers for potential effects on WFD parameters at water body level	
		Screening trigger	Assessment required (and where yes, a description of information available)
Quantitative elements			
All		There are no predicted to be any impacts associated with the works on quantitative elements of the groundwater. The proposed works will not impact upon the quantity of groundwater or groundwater flows, and will not affect connectivity between groundwaters and groundwater-dependent terrestrial ecosystems.	No
Chemical elements			
All		Excavation, earth moving and implementation of HDD drilling techniques during cable laying could potentially remove some of the existing protective clay layer potentially creating pathways for the mobilisation and transmission of contaminants. There is also the potential for landfill leachates etc to be present. Spills and leaks associated with the activities could also affect groundwater quality and the removal of impermeable surfaces could increase the risk of erosion of soil particulates to groundwater.	Yes Information is provided within **Chapter 24 Geology, Water Resources and Land Quality** of the ES.

4 Stage 3: Compliance Assessment

4.1 Introduction

4.1.1 An assessment of effects under the WFD must focus on the potential for impacts on the status of the various WFD parameters and should only consider whether the activity will have a significant non-temporary effect on the status of one or more WFD parameters at water body level. The WFD compliance assessment is, therefore, about determining whether the activity is likely to affect a parameter sufficiently to lower its existing class status and therefore cause deterioration in water body status or potential. For HMWB, consideration must also be given to the mitigation measures in place to ensure that proposals do not threaten their implementation.

4.1.2 The assessment is again undertaken in a staged process similar to that required in undertaking EIA:

- Step 1: Consultation and further elaboration of scope with regulators and key stakeholders;
- Step 2: Data collection/collation;
- Step 3: Baseline environment description (for the parameters scoped into the assessment);
- Step 4: Identification of how the proposed activity may affect the baseline environment (what type of changes may occur);
- Step 5: Qualitative/quantitative description of the predicted changes including the area affected and the duration of the change;
- Step 6: Impact assessment (the significance of the predicted change against the relevant standards and thresholds); and
- Step 7: Discussion (including levels of confidence and certainty).

4.1.3 Section 1.4 provides information on the consultation undertaken to date. For the purposes of this stage of the assessment, Steps 2 and 3 have been combined to provide signposting to the baseline descriptions.

4.2 Data collation/collection and baseline description (stages 1 and 2)

4.2.1 Data have been collated as part of the EIA process and, therefore, the information required has already been reported for each environmental parameter throughout the ES. These data are, therefore, reconsidered in light of the WFD compliance parameters in order to assess for compliance against the WFD.

4.3 WFD Compliance Assessment (stages 4-7)

4.3.1 The results of the screening and scoping exercise identify that the WFD compliance criteria on which the proposed activities could impact are:

- Ecological parameters (other aquatic flora and benthic invertebrate flora) for the coastal water body;
- Hydrodynamic parameters (intertidal zone structure, dominant currents, wave exposure) for the coastal water body;
- Water quality (associated with the release of contaminated sediments i.e., exceedance of Action Level 1 in existing data and transparency) for the coastal water body;
- Water quality (associated with accidental spills and leaks) for the river and ground water bodies; and
- Hydromorphological parameters (associated with installation of temporary river crossings and cofferdams for open trenching) for the river water body.

4.3.2 Full baseline details are presented in **Chapter 9 Marine Physical Processes**, **Chapter 10 Marine Water and Sediment Quality**, **Chapter 11 Marine and Coastal Ornithology**, **Chapter 12 Marine and Intertidal Ecology** and **Chapter 24 Geology, Water Resources and Land Quality** of the ES and therefore are not reproduced in full here.

Impacts of onshore cable installation activities (Redcar Coastal Area water body)

4.3.3 The construction activities with the potential to disturb surface waters can be summarised as follows:

- Removal of impermeable superficial deposits and surface cover could increase the potential for erosion of soil particulates discharging to water resources. However, the anticipated extent of surface cover removal at any one time will be limited;
- Spills and leaks of contaminants directly in to surface waters could adversely affect water quality. The effect is, however, likely to be localised to the areas where potential contaminants are to be stored and/or used;
- The requirement may exist to dewater excavations when rainfall or surface water runoff has to be removed or shallow perched groundwater is encountered. There is the risk that dewatering of trenches may lead to the discharge of potentially contaminated water or sediment laden runoff entering nearby surface watercourses or surface water features;
- The installation of the cable by HDD or dry open cut techniques if the cable is not buried sufficiently deep below the geomorphologically active channel bed (i.e. it is proud of the river bed or vulnerable to exposure through natural erosion processes; and
- The installation of temporary crossings over watercourses, which have the potential to cause impoundment, disrupt sediment transport and cause local degradation in bed and bank habitats. Temporary bridges (bailey bridges) or culverts may be used as options to traverse watercourses where direct access is not readily available from both sides. For a number of water courses permanent culverts may be the preferred crossing technique. Selection of crossing technique will be dependent on local site conditions.

4.3.4 In order to ensure that there is no deterioration or non-temporary effect to the status of the water body, mitigation measures are proposed and summarised in **Table 4.1**.

Table 4.1 Mitigation measures in relation to surface water quality

Mitigation measures
In order to mitigate the potential impacts to surface water quality where crossing or working near water courses: • Entry into water will be avoided where possible; • All cables will be installed beneath the active channel bed; • The top of the crossing will be kept below the top of the adjacent bank level to ensure that in the event of high flows, the water will overtop the obstruction, rather than resulting in impoundment and localised flooding; • Temporary crossings will be appropriately sized to maintain flow patterns and sediment conveyance, and avoid unnecessary changes to the hydromorphology of the watercourses; • No culverts are planned as temporary crossings of watercourses. Clear span bailey bridges will be used in preference to avoid impacts to the hydromorphology of the watercourses. Adherence to best practices and guidance to ensure the risk of pollution is minimised; • A temporary haul road bridge should be constructed if repeated crossings are required; • If cement etc. Is likely to be batched on site a suitable area should be designated and located at an appropriate distance from the watercourse; • 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; • Adherence to best practices and guidance to ensure the risk of pollution is minimised; • If there is a requirement for dewatering of excavations, water will be pumped out and passed through a settlement tank or lagoon to allow suspended solids to settle out before being discharged to an appropriate location; • Appropriate treatment methods will be adopted prior to discharge of the water from any land drains uncovered during the construction phase; and
In order to mitigate the potential impacts to surface water quality where stockpiling is used: • Where earthworks are undertaken, soil and water will be managed with sufficient care to prevent surface water run-off; • Stockpiles will be designed and positioned in order to minimise erosion, pollution of watercourses or increase flooding; and • All stockpiling will be undertaken at a safe distance from watercourses.
In order to mitigate the potential impacts to surface water quality where HDD is used: • In accordance with best practice, the HDD will commence at a safe distance from the edge of the each watercourse. The distance will be agreed with the EA prior to commencement of the works; • The process of HDD involves the use of bentonite (used as a lubricating agent and grout); in order to reduce the risk of pollution of surface waters and / or break out in the river bed the use of these materials will be carefully controlled; • In order to reduce the likelihood of pollution from bentonite and / or grout when working near rivers, hydrophobic (water repelling) grout and quick setting mixes will be used; and • If cement etc. Is likely to be batched on site a suitable area will be designated and located at an appropriate distance from the watercourse.

4.3.5 A non-temporary effect on water body status is therefore not anticipated.

Impacts of onshore cable installation activities (Tees Mercia Mudstone & Redcar Mudstone groundwater body)

4.3.6 With respect to potential impacts, construction activities will include surface excavation, earth moving and implementation of HDD drilling techniques during the cable laying. They will also include site preparation works during the construction of the converter stations. These activities have the potential to disturb the local geology and hydrogeology in the following way:

- Excavation, disturbance of soils, and drilling at depth, has the potential to temporarily open the soil structure and/ or remove some of the protective clay (Glacial Till) layer, potentially creating pathways for the mobilisation and transmission of contaminants;
- There is a potential for chemically aggressive ground to be present in the form of landfill leachates, or naturally occurring sulphates etc.; and
- Spills and leaks of contaminants could affect superficial geology and perched groundwater quality.

4.3.7 Piling and HDD activities are not expected to exceed the depth of the glacial Till (approximately 10m). However if detailed design requires this depth to be exceeded then further risk assessment (e.g. Pilling Risk Assessment) will be undertaken to assess the risks to the groundwater receptor.

4.3.8 Mitigation measures in relation to geological and hydrogeological features are detailed in **Table 4.2**.

Table 4.2 Mitigation measures in relation to hydrogeological features

Mitigation measures
In order to reduce the impacts to underlying geology from general trenching, piling, drilling and construction activities including spills and leakages to geological features a site Construction Environmental Management Plan (CEMP) will be developed in consultation with the contractor and the EA. This will include measures for avoiding the likelihood of spills and leakages, such as: • The implementation of properly designed shoring systems to avoid unstable excavations; • The removal of superficial deposits should be minimised wherever possible; • Storage of oils and fuel within designated areas in impervious storage bunds with a minimum of 110% capacity to contain any leakages of spillages; • Limiting of refuelling activities to designated, impermeably surfaced areas and use drip traps where possible; • Checking and maintain equipment regularly to ensure that leakages do not occur; • Having spill kits available on site at all times; and • Ensuring site inductions are completed for all staff including contractors and sub-contractors, include the above procedures and the locations of spill kits.

4.3.9 A non-temporary effect on water body status is therefore not anticipated.

Impacts of cable installation activities (Yorkshire North water body)

4.3.10 For the potential implications on marine ecological compliance parameters, the various habitats along the Dogger Bank Teesside A & B Export Cable Corridor were identified and grouped as Valued Ecological Receptors (VERs) which takes account of the value of the habitat and the ecological sensitivity of the habitat to the development.

4.3.11 For the area within the WFD coastal water body Yorkshire North (i.e. landfall to 1nm offshore), three VER's are relevant;

- VER D: Sandy sediment supporting relatively low diversity benthic communities with representative biotopes:
  - SS.SSa.CfiSa
  - SS.SCS.ICS.SLan
  - SS.SSa.CFiSa.ApriBatPo
  - SS.SSa.CFiSa.EpusOborApri
  - SS.SSa.IFiSa.NcirBat
- VER H: Intertidal sand-based habitats with representative biotopes:
  - LS.LSa.MoSa.AmSco.Pon
  - LS.LSA.MoSa.AmSco.Sco
  - LS.Lsa.MoSa.BarSa
  - LS.LSa.St.tal
  - LS.LSa.MoSa.AmSco.Eur
  - LS.LSa.FiSa.Po.Ncir
- VER I: - Intertidal rock-based habitats with representative biotopes:
  - LR.FLR.Eph.Entpor

4.3.12 The intertidal area of landfall (0 – 300m offshore) is dominated by VER H, with small areas characterised by VER I. It is predicted that were the landfall works for Dogger Bank Teesside A & B built together, a total area of 0.006km^2 would be affected via temporary habitat disturbance during the installation of export cables. This area is based on a 20m wide x 300m installed cable in the intertidal region. The majority of this habitat (>95%) will be VER H, with a small proportion possibly VER I. The biotopes that characterise VER H and I are widespread along this part of the NE England coast and also have a low sensitivity to physical disturbance due to their high rate of recovery to such effects.

4.3.13 The VER D biotope covers the immediate area of the shallow subtidal from MLWS further offshore, i.e. from 300m to the 1nm (1,852m) boundary. Assuming that unbundled cables for Dogger Bank Teesside A & B are installed, each resulting in a 10m wide disturbance (via worst-case of jetting), then the area of disturbance per cable in the area from MLWS to 1nm is (1,552m x 10m) = 15,520m^2. For a total of four cables, this area of total disturbance amounts to 62,080m^2 (0.062km^2). It has been calculated that there is a total of 13.12km^2 of VER D within the entire Dogger Bank Teesside A & B Export Cable Corridor, therefore, the temporary disturbance of 0.062km^2 in the area from 0-1nm offshore, would represent 0.47% of this habitat. The biotopes that characterise this VER also have a low sensitivity to physical disturbance and would be expected to show high recovery after cable installation. It is therefore not anticipated that a non-temporary effect on the water body status will occur.

4.3.14 For the hydrodynamic supporting elements, the nature of the cable installation activities, which are only predicted to be short term and will naturally infill where cable protection is not required, means that the construction phase of the cable installation is unlikely to have a non-temporary effect on the water body. The main effects are therefore likely to occur in the operational phase due to the presence of cable protection. As a result, this impact is considered within the operational phase impacts section below.

4.3.15 For water quality impacts, **Chapter 10** of the ES considers the results of the sediment analysis in order to determine the potential impacts on water quality (Environmental Quality Standards (EQS)) and the results of the turbidity plume modelling on baseline levels in the environment.

4.3.16 In summary, the ES concludes that concentrations of suspended solids along the Dogger Bank Teesside A & B Export Cable Corridor increase to 50-100mg/l towards the coast. There is also a small area on the coast that predicts concentrations to be above 100mg/l. However, in terms of excavation rates, a figure of approximately 298m/hour was applied to the sediment plume modelling as trenching is the likely to be the preferred methodology of installation (see **Chapter 9**). The installation process close to the coast may therefore be completed in a matter of hours, even with lower excavation rates. Additionally, the unrestricted nature of the receiving environment will also mean that a plume would quickly disperse following cessation of activities. This is further supported by time series extracted from the modelling which demonstrates that the high levels of suspended solids in the bottom layer only exist for 12 hours or so before the water returns to baseline conditions (see **Appendix 9A** Dogger Bank Teesside A & B Physical Processes Assessment of Effects).

4.3.17 Overall therefore, it is unlikely that a non-temporary effect will occur on transparency. Additionally, whilst concentrations of some parameters exceeded Cefas Action Level 1, the nature of the environment (dispersive) and temporary nature of the effect meant that significant impacts on EQS' are not anticipated. Non-temporary effects on priority substances and specific pollutants in addition to supporting chemical parameters are therefore not anticipated.

Impacts of presence of cable protection (Yorkshire North water body)

4.3.18 In terms of hydrodynamic parameters during the lifetime of operation, the export cables will be buried below the intertidal area and therefore there will be no effects on coastal processes. However, in the subtidal area, there is a possibility that the cables will be on the surface and protected by rock armour (or some other form of protection), which could potentially alter hydrodynamic processes.

4.3.19 Rock armour protection is anticipated to be up to approximately 15m wide and stand up to approximately 1.5m above the surrounding seabed. A 15m wide and 1.5m high structure has therefore been assessed as the worst case scenario within the ES (see **Chapter 9**). The presence of this structure on the seabed would provide a physical barrier to water flow and flows would tend to accelerate over the armour and then decelerate on the ‘down-flow’ side, returning to baseline values a short distance from the structure. These changes are, however, unlikely to significantly alter water depths, seabed structure,

currents and wave exposure within the water body. As a result, a non-temporary effect is not anticipated.

4.3.20 In terms of ecological parameters, it is predicted that there will be no impact on VERs H or I as the cables are to be buried beneath the beach. For VER D, it is possible that a very small amount (<0.01km^2) of this habitat in the area between MLWS and 1nm would be directly impacted via the placement of cable protection. Since this habitat is considered to be typical of the shallow sub-tidal region in the central North Sea region, it is likely that this habitat is present along the coastline throughout the water body and therefore, the permanent loss of this small area of habitat via the placement of cable protection is unlikely to have a significant non-temporary effect on the ecological status of the water body.

4.4 Cumulative effects

4.4.1 In order to undertake the cumulative assessment, plans and projects within the 1nm boundary identified within each ES chapter relevant to WFD compliance parameters (**Chapters 9, 10** and **12** of the ES), have been considered. From this search, the only projects that could potentially overlap within the WFD coastal water body are:

- Cleveland Potash mining outfall dredging;
- The York Potash Mine;
- Dogger Bank Teesside C & D Export Cable Corridor; and
- Teesside Offshore Windfarm.

4.4.2 Cleveland Potash Ltd operates a potash mine and refining plant on the North Sea coast south of the Tees Estuary and has intakes and outfalls to manage seawater intake and brine discharges. The discharge point consists of two outfalls which are approximately 62m apart located about 1.5km offshore. Cleveland Potash Ltd have successfully applied for a permit to dredge and dispose of the sediment close to the two outfalls in the spring and then again in the autumn (two campaigns a year equating to approximately 100,000 tonnes of silt per year). The outfalls and disposal area are, at the shortest distance, 3km from the Dogger Bank Teesside A & B Export Cable Corridor and therefore there is the possibility that any sediment plumes created by the two activities occurring simultaneously could have a cumulative impact on water quality at the coast.

4.4.3 Modelling undertaken to inform the permit application (by Cleveland Potash Ltd), however, does not predict any impacts of dredging at the coast. Additionally, the plume created by the cable installation will be short-lived and disperse quickly. As a result, the potential for interaction is low. As a result, cumulative impacts are not predicted.

4.4.4 In relation to the York Potash mine, the mine is a kilometre deep below the seabed and therefore there are unlikely to be any impacts on water quality associated with this activity. No cumulative impacts are therefore predicted.

4.4.5 In terms of the proposals for Dogger Bank Teesside C & D, cumulative impacts are not predicted. This is because the Dogger Bank Teesside A & B Export

Cable Corridor and Dogger Bank Teesside C & D Export Cable Corridor plume footprints are unlikely to overlap, due to the distance of the Dogger Bank Teesside A & B Export Cable Corridors from one another and the short timeframe over which installation is likely to occur.

4.4.6 The only other project within the 1nm boundary is the Teesside Offshore Windfarm which has now been constructed. Additionally, scour protection is installed at Teesside Offshore Windfarm thus removing the risk of scour plumes. Cumulative impacts in terms of changes to turbidity in the water column are therefore not anticipated.

4.4.7 In terms of marine ecology, the area of direct loss is considered to be so small, even cumulatively with other wind farm projects and cable corridors, that a significant change in WFD compliance parameters such as removal of benthic invertebrate habitat, is considered unlikely.

4.4.8 With regard to the operational phase of Dogger Bank Teesside A & B, the effect of the presence of the cable protection is largely confined to the immediate vicinity of the schemes in the coastal area and the wider scale effects on compliance parameters is such that there is no concern with regard to the status of the water body.

4.4.9 As a result, it is concluded here that there are no plans or projects that could give rise to non-temporary cumulative effects on the water body either during construction or operation of Dogger Bank Teesside A & B.

4.5 Conclusion of the detailed assessment (Stage 3)

4.5.1 A screening and scoping assessment has considered all activities that potentially could impact on water bodies and has concluded that, based the impact assessments documented in the ES, there are four potential activities that could either cause a deterioration in water body status or potentially threaten the ability of the water body to meet its objectives.

4.5.2 A Stage 3 Detailed Assessment was, therefore, carried out on the activities identified and, using information already available, determined that the activities would not cause deterioration in water body status or cause potential problems with respect to the ability of the water body to meet its objectives in the future.

5 Stage 4: Mitigation Measures and Monitoring

5.1 Background

5.1.1 Stage 4 requires the consideration of mitigation and improvement measures if it is established that an activity is likely to affect status at a water body level or that an opportunity exists to contribute to improving status at a water body level. In line with this requirement, mitigation measures have been considered throughout the development of the scheme design and the EIA process. These mitigation measures are summarised below:

5.1.2 To mitigate the potential impacts to surface water quality (inland) the following mitigation will be adopted:

- All work will be thoroughly planned and controlled, ensuring complete adherence to best practises and guidance will be given throughout the project;
- Entry into the water will be avoided where possible, however if repeated crossings are required a temporary haul bridge will be constructed. To avoid localised flooding and changes to the watercourses, the top of the crossing will be appropriately sized and kept below the top of the adjacent bank level;
- The storage of construction materials as well as all stockpiling work and HDD will be undertaken at a safe distance from the watercourses;
- Straw bales or sediment traps will be placed in the watercourse downstream to help filter out any silt if large quantities of silt are generated;
- If there is a requirement for dewatering of excavations, water will be pumped out and passed through a settlement rank or lagoon to allow suspended soils to settle out before being discharged in an appropriate location;
- During stockpiling, every effort will made be to prevent surface water run-off, additionally, stockpiling will be designed and positioned to minimise erosion, pollution and the risk of flooding; and
- To reduce the risk of pollution of surface waters and / or break out in the river, the use of bentonite during HDD will be carefully controlled. Similarly, grout and quick setting mixes will be used when using bentonite near the watercourses.

5.1.3 To mitigate the potential impacts to ground waters the following mitigation will be adopted:

- All on site staff will be given site inductions to include all of the procedures listed below as well as the location of spill kits, which will be available on site at all times;

- Equipment will be checked and maintained regularly to ensure leakages do not occur;
- Storage of oils and fuels and refuelling activities will be limited to designated area in impervious storage bunds to contain leakages and spillages, similarly, all refuelling activities will be limited to designated, impermeably surface areas; and
- A well-designed shoring system will be implemented to avoid unstable excavations.

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