




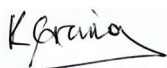
Cambois Connection – Onshore Scheme
Water Framework Directive Assessment

	Cambois Connection – Onshore Scheme	Doc No:
	Water Framework Directive Assessment	A100796-S00-A-REPT-002
Classification: Final		
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Acronyms

Acronym	Description
AC	Alternating Current
AEOSI	Scheme will not lead to an Adverse Effect on Site Integrity (AEOSI)
AWB	Artificial Waterbody
BAP	Biodiversity Action Plan
BBWF	Berwick Bank Wind Farm
BBWFL	Berwick Bank Wind Farm Limited
BOD	Biological Oxygen Demand
BTPL	Blyth from Pont to Tidal Limit
BWD	Bathing Water Directive
CAL	Cefas Action Level
CDM	Construction, Design, and Management
CEMP	Construction Environmental Management Plan
CFE	Controlled Flow Excavation
COD	Chemical Oxygen Demand
CVA	Coastal Vulnerability Assessment
DC	Direct Current
DrWPA	Drinking Water Protected Areas
EA	Environment Agency
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMP	Earthworks Management Plan
ES	Environmental Statement
EU	European Union
EQS	Environmental Quality Standards
GCS	Good Chemical Status
GEP	Good Ecological Potential
GES	Good Ecological Status
GS	Good Status

Acronym	Description
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HDD	Horizontal Directional Drilling
HMWB	Heavily Modified Waterbody
HRA	Habitats Regulations Appraisal
HVAC	High Voltage Alternating Current
HVDC	High Voltage Directional Current
IEMA	Institute of Environmental Management and Assessment
INNS	Invasive Non-Native Species
LLFA	Lead Local Flood Authority(ies)
LPA	Local Planning Authority
LUT	Look-up Table
MBES	Multibeam Echosounder
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MD-LOT	Marine Directorate Licencing Operations Team
MHWS	Mean High Water Springs
MLA	Marine Licence Application
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
NCC	Northumberland County Council
NECO	North East Coastal Observatory
OCSP	Offshore Converter Station Platform
OCT	Open Cut Trench
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic
PBDE	Polybrominated diphenyl ethers
PFOS	Perfluorooctane sulfonate
PLONOR	Pose Little or No Risk
PSD	Priority Substance Directive
RBMP	River Basin Management Plan
rBWD	Revised Bathing Water Directive
SAC	Special Area of Conservation

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Acronym	Description
SAD	Site Assessment Document
SBHBSTL	Sleekburn / Hepscott Burn Source to Tidal Limit
SEPA	Scottish Environmental Protection Agency
SPA	Special Protection Area
SPZ	Source Protection Zone
SuDS	Sustainable Drainage Systems
SSC	Suspended Sediment Concentrations
SSER	SSE Renewables
SSSI	Sites of Special Scientific Interest
SWMP	Site Waste Management Plan
SWO	Surface Water Outfall
TJB	Transition Joint Bay
UWWT	Urban Wastewater Treatment
UWWTD	Urban Wastewater Treatment Directive
WBBNS	Wansbeck from Bothal Burn to North Sea
WFD	Water Framework Directive
Zol	Zone of Influence


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Units


Unit	Description
GW	Giga watt (power)
km	Kilometre (distance)
km ²	Kilometre squared (area)
mg/l	Milligrams per litre (concentration of solids within a liquid)
nm	Nautical mile (distance)

Glossary


Term	Description
Berwick Bank Wind Farm (BBWF)	Refers to the offshore wind farm from which the Cambois Connection (the Project) will export part of the produced electricity. The BBWF array area (where the wind turbines are located) is shown in Figure 1. The BBWF is under development, with the consent applications being determined.
Cambois Connection (the Project)	Offshore export cables, onshore export cables, an onshore converter station and associated onshore grid connection at the existing National Grid ESO, Blyth substation near Cambois in Northumberland. The purpose of this infrastructure is to facilitate the export of a portion of the green electricity from BBWF, allowing the BBWF to reach its full generation capacity before 2030.
EIA Regulations	Collectively, this term is used to refer to the suite of Environmental Impact Assessment (EIA) Regulations which are of relevance to the Marine Scheme and to the Onshore Scheme. For the Onshore Scheme, this is the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended). For the Marine Scheme, this is the Marine Works (EIA) Regulations 2007 (as amended).
Environmental Assessment	Impact Assessment of the likely significant effects of a plan, programme, project or activity on the receiving environment.
Firth of Forth	Estuary or Firth of the River Forth in Scotland which flows into the North Sea and is flanked by Fife to the north and West Lothian, City of Edinburgh and East Lothian to the south.
Horizontal Directional Drilling	Horizontal Directional Drilling or 'HDD' refers to a trenchless method of drilling generally used for installation of underground utilities,

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Term	Description
	which does not require any direct works, and can aid installation of crossings with sensitive or challenging features and obstructions.
High Voltage Alternating Current	Refers to high voltage electricity in alternating current ('AC') form.
High Voltage Direct Current (HVDC)	Refers to high voltage electricity in direct current ('DC') form. In relation to transmission, HVDC is often selected for longer transmission infrastructure on the basis that losses are typically lower when compared to transmission infrastructure utilising alternating current.
HVAC Zone	The area within the Site in which the HVAC cables connecting the Onshore Converter Station and existing Blyth substation will be located.
Intertidal Zone	Section of the coastline located between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS).
Landfall	Area where the offshore export cables carrying power from BBWF are brought ashore at MHWS to connect the offshore and onshore infrastructure.
Landfall/HVDC Zone	The area within the Site in which the Landfall will be located and the HVDC cables, extending from the Transition Joint Bays to the Onshore Converter Station.
Local Planning Authority	Local Planning Authority (or 'LPA') refers to the local government body legally empowered to exercise terrestrial (onshore) planning functions for a given area. In the case of the Project, this is Northumberland County Council (NCC).
Marine Licence	A licence granted under the Marine and Coastal Access Act 2009.
Marine Scheme	Activities required as part of the Project extending seawards below Mean High Water Springs.
Maximum Design Parameters	The maximum range of design parameters of each Onshore Scheme asset.
Mean High Water Springs	Monthly tides are defined as 'Springs' or 'Spring tides' when the tidal range is at its highest and 'Neaps' or 'Neap tides' when the tidal range is at its lowest. The height of Mean High Water Springs (MHWS) is the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest (Spring tides).

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Term	Description
Mean Low Water Springs	The height of Mean Low Water Springs (MLWS) is the average throughout a year of the heights of two successive low waters during periods of 24 hours (approximately once a fortnight).
National Site Network	<p>Formerly referred to as 'Natura 2000 (network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types, which are protected in their own right) this now refers to the national site network within the UK territory.</p> <p>It is comprised of the protected sites that were designated under the Nature Directives (Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) until the UK's exit of the EU, and any further sites designated under the Conservation of Habitats and Species Regulations 2017 (as amended).</p>
Offshore Converter Station Platforms (OCSPs)	Offshore converter stations mounted on platforms within the BBWF array area. These are used to convert AC electricity generated by the wind turbines to DC electricity for transfer back to shore.
Onshore Converter Station	The onshore Converter Station is used to convert DC electricity to AC for connection into the national transmission network.
Onshore Converter Station Zone	An area within the Site in which the Onshore Converter Station will be located.
Onshore HVDC Export Cable	HVDC cables used for exporting power produced by BBWF between the landfall and the onshore convertor station.
Onshore HVAC Cable/Grid Cables	Export HVAC cables used for transporting electricity from the onshore convertor station to the National Grid Substation.
Onshore Scheme	Activities and infrastructure required as part of the Project extending landwards above Mean Low Water Springs.
Open Cut Trenching	Method of cable installation involving trenching. The applicant has made the decision to eliminate open cut trenching at landfall due to engineering (see Volume 2, Chapter 6 Site Selection and Alternatives).
Planning Permission	Planning permission for development under the Town and Country Planning Act 1990.
Project Design Envelope	A series of maximum design parameters which are defined for the Onshore Scheme which are considered to be the worst case for any given assessment.

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Term	Description
Substation	Refers to the point at which electricity is connected into the UK electricity network. For the Onshore Scheme, this is the National Grid substation at Blyth.
The Site	The area within the red line boundary as shown on Figure 1 (Volume 4).
The Project (Cambois Connection)	Offshore export cables, onshore export cables, an onshore converter station and associated onshore grid connection at the existing National Grid ESO, Blyth substation near Cambois in Northumberland. The purpose of this infrastructure is to facilitate the export of a portion of the green electricity from BBWF, allowing the BBWF to reach its full generation capacity before 2030.
Transition Joint Bay	A concrete structure where offshore export cables and onshore export cables are connected together.

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1. Water Framework Directive Assessment

1.1. Introduction

1. Berwick Bank Wind Farm Limited (BBWFL) is a wholly owned subsidiary of SSE Renewables (SSER) (hereafter referred to as ‘the Applicant’). The Applicant is proposing the development of Offshore Export Cables, Onshore Export Cables, an Onshore Converter Station and associated grid connection at Blyth in Northumberland, England (collectively called the Cambois Connection) (hereafter referred to as ‘the Project’). The purpose of the Project is to facilitate the export of green energy from the generation assets of the Berwick Bank Wind Farm (BBWF), located in the outer Firth of Forth, Scotland. The Project will enable the BBWF to reach full generating capacity by 2030.

2. The Cambois Connection comprises two distinct proposals, or ‘Schemes’: the Onshore Scheme and the Marine Scheme. Plate 1 provides a cross-sectional summary of the Project whilst Figure 1 provides a boundary for the Onshore Scheme and Marine Scheme. The onshore components of the Project consider all infrastructure down to Mean Low Water Springs (MLWS) (collectively referred to as the ‘Onshore Scheme’). Consent for all infrastructure associated with the Onshore Scheme will be subject to a planning application to Northumberland County Council (NCC) as the local planning authority (LPA) under Section 57 of the Town and Country Planning Act 1990. An Environmental Statement (ES) has been prepared in support of an Onshore Scheme planning application to NCC in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

3. The offshore components of the Project consist of all infrastructure seawards of Mean High Water Springs (MHWS) (collectively referred to as the ‘Marine Scheme’). The Marine Scheme is located within both Scottish and English waters, therefore consent for the Marine Scheme is being sought in both Scotland and England. In Scotland the Marine Scheme is located entirely within offshore waters (i.e., between 12 nautical miles (nm) and the outer limits of the Scottish Exclusive Economic Zones (EEZ)). In England the Marine Scheme is located within both offshore (12-200 nm) and territorial waters (i.e., between 0 nm and 12 nm). Marine Licence Applications (MLAs) were submitted to the Marine Directorate Licencing Operations Team (MD-LOT) and the Marine Management Organisation (MMO) for Scottish and English waters respectively in July 2023, supported by a Marine Scheme ES.

4. The precise location of the proposed Landfall is not yet known but will be located along the Cambois coastline. Following stakeholder engagement and formal consultation, and as informed by a range of technical studies along the Cambois coastline, the Applicant has committed to adopting trenchless techniques (such as Horizontal Directional Drilling (HDD)) to achieve Landfall for the Offshore Export Cables. This process will involve drilling a hole (or holes) underground from one point to another, whereupon the Offshore Export Cables are installed through the hole(s), without the need to excavate an open trench in the intertidal zone.

5. This Water Framework Directive (WFD) compliance assessment has been completed in support of the Onshore Scheme with details on the Marine Scheme provided contextually where appropriate. This WFD compliance assessment provides a WFD Screening, Scoping and Assessment of impacts of the Onshore Scheme against the objectives of relevant designated waters (defined under the WFD as waterbodies, Bathing Waters, Shellfish Waters, nitrate sensitive areas and other associated protected areas). Details on the existing WFD baseline environment within a Project-specific study area (see section 1.4) are provided in addition to the legislative context which forms the basis of the WFD compliance assessment undertaken for the Onshore Scheme. A full WFD assessment for the Marine Scheme has been submitted alongside the Marine Scheme ES and is available on the MMO website (MLA/2023/00334); (this was limited to the Marine Licence Application to the MMO only as this was only relevant for the Marine Scheme in English Waters); this considered potential impacts to water bodies as a result of the Landfall and installation of Offshore Export Cables below MHWS.

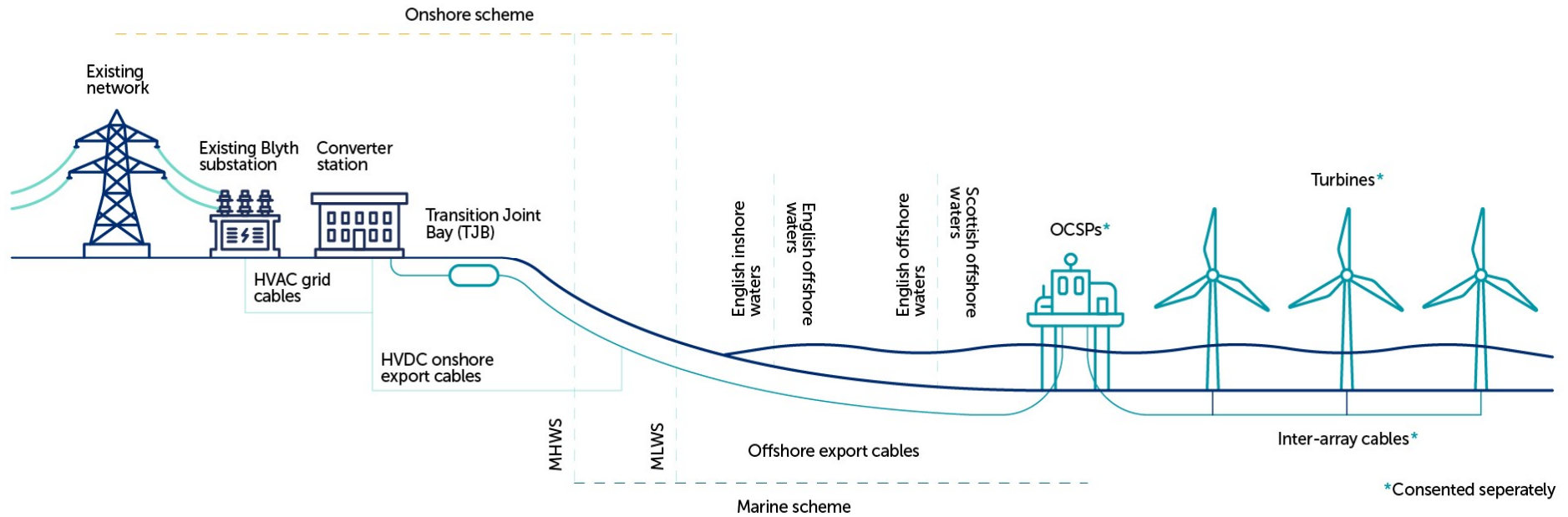


Plate 1 Cross-Sectional Summary of the Cambois Connection

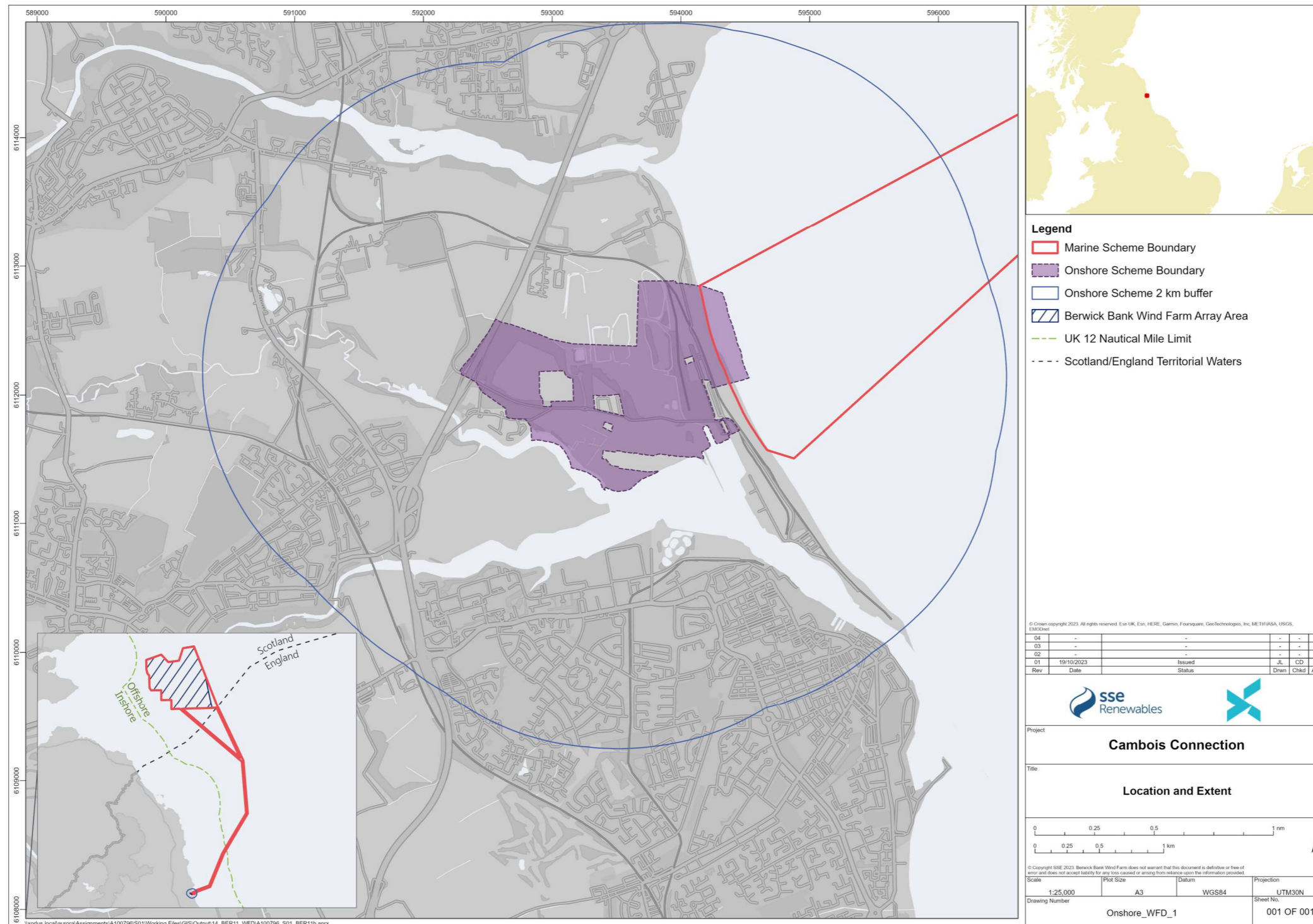



Figure 1 Cambois Connection Location and Extent

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1.2. Study Area

6. The study area for the Onshore Scheme WFD compliance assessment considers all infrastructure located within the Onshore Scheme boundary (as described in section 1.3.1 below) plus a 2 km buffer (Figure 1).

7. The rationale for this study area is based on the guideline buffer distance for the assessment of impacts on WFD protected areas as outlined in the Environment Agency ‘Clearing the Waters for All’ guidance (Environment Agency, 2017). If it is deemed that an activity has an especially high environmental risk, the Environment Agency is at liberty to extend this 2 km buffer to consider WFD protected areas further away from the activity.

8. In forming the study area for the Onshore Scheme, the Applicant has adequately considered all relevant water bodies within and adjacent to the Onshore Scheme. Whilst a 2 km buffer has been applied to help inform this, and therefore taking a worst case position in terms of environmental risk, a review of potential hydraulic connectivity with wider (more distant) additional waterbodies has been undertaken by way of a sensitivity appraisal, and to ensure all relevant pathways are being considered.

9. The study area intersects a number of Transitional / estuarine and coastal waters (TRaC), two operational catchments (with up to three fluvial features) and one groundwater, which are all detailed further in the WFD compliance assessment.

10. The Applicant is aware of the fluvial water bodies further upstream of the Sleekburn / River Blyth, and these are considered below. This includes the seven water bodies within the Blyth Operational Catchment (Big Waters Reservoir; Blyth from Pont to Tidal Limit; Brierdene Burn from Source to North Sea; Duddo Burn from Source to Blyth; New Hartley Ponds; Seaton Burn from Source to Tidal Limit; and Sleekburn / Hepscott Burn Source to Tidal Limit).


11. Two catchments are located within the River Blyth and Sleekburn, considered fluvially dominated, upstream of Blyth (N) GB510302203200:

- Sleekburn / Hepscott Burn Source to Tidal Limit Water Body (GB103022076230); and
- Blyth from Pont to Tidal Limit Water Body (GB103022077052).

12. One catchment located within River Wansbeck, considered fluvially dominated upstream of Wansbeck Estuary (GB510302210100):

- Wansbeck from Bothal Burn to North Sea (GB103022077062).

13. Whilst considered for completeness, there is no hydraulic connectivity with the aforementioned water bodies (as they are all beyond the tidal limit of the Sleekburn and beyond the ‘reach’ of the Onshore Scheme).

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1.3. Onshore Scheme Properties

1.3.1. Project Description

14. As described above, the Cambois Connection is divided into two separate Schemes, the Onshore Scheme and the Marine Scheme. The details of each Scheme are provided below:

- **Onshore Scheme:** the Applicant is proposing the construction and installation of a cable landfall, onshore High Voltage Direct Current (HVDC) cables, a new onshore converter station, High Voltage Alternating Current (HVAC) grid cables (from the new onshore converter station to the existing Blyth National Grid substation near Cambois), including ancillary infrastructure¹ and works to integrate the Onshore Scheme into the National Grid at the existing Blyth National Grid substation at Cambois; and
- **Marine Scheme:** the Applicant is proposing the construction, operation and maintenance and decommissioning of up to four HVDC Offshore Export Cables from up to two Offshore Converter Station Platforms (OCSPs) within the BBWF array area to MHWS of the Landfall location near Cambois, Northumberland. The Marine Scheme includes all aspects of the Project seawards of MWHS.

15. A complete description of the Onshore Scheme and Marine Scheme Project Description have been provided within Volume 2, Chapter 5: Project Description (Onshore Scheme EIA) and Volume 2, Chapter 5: Project Description (Marine Scheme EIA) respectively.

16. As noted above, the Applicant has already submitted an MLA to the MMO for the Marine Scheme considering the elements of the Landfall below MHWS and installation of Offshore Export Cables within the nearshore area, insomuch as the potential for this activity to impact upon the WFD water bodies relevant to the Marine Scheme. These Marine Scheme properties are not considered within the Onshore Scheme. However, as part of this separate WFD assessment for the Marine Scheme, the Applicant has demonstrated WFD compliance. The full Marine Scheme WFD compliance assessment is available on the MMO website (MLA/2023/00334). The Marine Scheme WFD compliance assessment is consistent with the MMO and Environment Agency requirements in support of the Marine Licensing process, the activities associated with the Marine Scheme not being ‘low-risk’. For completeness, a summary of the Marine Scheme WFD compliance assessment is provided in section 1.3.3.1 below. In addition to the existing MLA, the Applicant is aware of the requirements for a further MLA for the works associated with the construction, operation and maintenance and decommissioning of a Surface Water Outfall (SWO) to the Sleekburn; this will be obtained in due. The Applicant will engage with the MMO to discuss this and formally apply in due course. The approach to obtaining a Marine Licence from the MMO separate to the planning application to NCC is required due to the lack of detailed design information associated with the outfall on the Sleekburn (noting also that the approach is consistent with that which was followed by the adjacent North Sea Link converter station development).

17. In accordance with the Environment Agency (2017) guidance, information regarding activities which form part of the Onshore Scheme, as relevant to the Onshore Scheme WFD Assessment, have been presented in Table 1.

¹ As part of the Onshore Scheme, surface water will be discharged into the River Blyth, via an outfall to the Sleekburn – this is considered under ‘ancillary works’ but specifically referenced here and Table 1 given the relevance to the WFD compliance assessment.




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Table 1 Onshore Scheme Project Description

Activity	Description
Applicant name	Berwick Bank Wind Farm Limited
Name of activity	Cambois Connection Onshore Scheme
Brief description of activity	<p>Trenchless technologies / Transition Joint Bay (TJB) Compounds Trenchless techniques will be carried out from within a temporary compounds which will also be used to install the TJBs. Depending on the final design there could be several separate trenchless technology / TJB compounds or one large trenchless technology / TJB compound.</p> <p>Regardless of final design arrangement the maximum footprint of the trenchless technology / TJB compounds will not exceed 15,000 m2.</p> <p>The trenchless /technology / TJB construction compounds will house the trenchless technology (e.g. HDD) drill rig and other equipment, machinery and plant including excavators, bulldozers and cranes. The trenchless technology / TJB construction compound will also house temporary portable cabin structures to be used as the Site office and welfare facilities, including toilets, kitchens, and the provision of sealed waste storage and removal.</p> <p>Temporary construction compounds will also be used for the storage of infrastructure components, parking for vehicles, storage for tools and small parts, as well as oil and fuel storage and an electrical generator.</p> <p>. As with the rest of the temporary works, topsoil will be relocated, stored and reinstated following the completion of works. Earthwork movements will be detailed and controlled under the Construction Environmental Management Plan (CEMP).</p> <p>Secure temporary fencing and lighting will be erected around the trenchless technology / TJB construction compounds. The security fencing will define the working area, protect any sensitive areas, and prevent third party access. Access gates will be installed that are suitable for both personnel and for movement of plant and equipment.</p> <p>Transition Joint Bay (TJB) Buried concrete chamber with maximum dimensions (per TJB) of 6 m wide and 25 m in length.</p> <p>Up to four TJBs will be required of the Onshore Scheme, with manhole covers visible above ground post-construction. The permanent infrastructure present below ground will consist of cable anchor block(s), a concrete slab and the TJB.</p> <p>Onshore High Voltage Directional Current (HVDC) Cables Up to four HVDC cables with a nominal operating voltage of up to +/- 525 kV.</p> <p>Total length of the HVDC cable corridor is up to 2.1 km. Each cable trench (up to four) will be up to 12 m wide.</p> <p>HVDC cables will be installed using Open Cut Trenching (OCT) technique, supplemented by trenchless techniques (such as Horizontal Directional Drilling</p>


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Activity	Description
	<p>(HDD)) where infrastructure crossings are required (i.e., roads, railways or other sensitive features).</p> <p>Onshore Converter Station Will be situated immediately to the west of the existing North Sea Link (NSL) converter station, with Brock Lane running east west along the southern boundary of the Site and the A189 forming the western boundary.</p> <p>The total number, size and configurations of buildings will be informed by the final design of the Onshore Converter Station. The Onshore Converter Station will consist of one station comprising multiple buildings within the overall envelope, which will not exceed 30 m in height (maximum roof level) and will have a maximum footprint 90,000 m2.</p> <p>Surface Water Outfall Surface water will be discharged into the River Blyth via a Surface Water Outfall (SWO) to the Sleekburn.</p> <p>The SWO will include an appropriate headwall/ apron structure, non-return flap and energy dissipation measures. The construction of the culvert will include a headwall comprising standard construction materials (such as pre-cast concrete) atop a sustainably designed foundation.</p> <p>At this early stage, there is only limited information available associated with the outfall into the Sleekburn; this is summarised in Volume 2, Chapter 5: Project Description, whilst further discussion associated with the outfall is available within Volume 2, Chapter 11: Hydrology and the supporting Volume 3, Appendix 11.3: Surface Water Drainage Strategy (Onshore Converter Station).</p> <p>The construction of the culvert will include an appropriately sized headwall comprising of consolidated materials. The culvert and headwall will be placed at the base of the riverbed on top of an appropriate concrete foundation which will, in effect, prevent any undercutting and destabilisation during periods of high discharge.</p> <p>Based on comparable infrastructure development including the adjacent North Sea Link outfall and on a precautionary basis, it is assumed that this may potentially include various potential sources of construction noise and visual disturbance. The installation will be completed under industry standard safe working conditions when working next to a live, flowing water source.</p> <p>During operation, surface water from the converter station will eventually discharge into Sleekburn Estuary. A minimum of two linked SuDS components will be constructed to filter the water prior to discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn Estuary and this will include flow energy dissipation to prevent erosion of the banks. The drainage design will also maximise the use of native plants and ecological connectivity. Measures to ensure effective management of siltation and pollution risk will be further adopted, to be agreed via the CEMP.</p>

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Activity	Description
Location of activity (central point XY coordinates or national grid reference)	429909.845 / 583696.578 ²
Footprint of activity within 1 NM of MHWS	<p>Converter Station: [90,000 m²] (~ 500 m north west of the tidal Sleekburn)</p> <p>Trenchless Technology / TJB Compounds: [15,000 m²] (exact location to be determined landward of MHWS on Cambois beach)</p>
Timings of activity (including start and finish dates)	<p>An outline of the programme for construction of the Onshore Scheme is given to provide indicative dates and durations for commencement and installation activities.</p> <p>These details have been used to inform assessment of construction phase impacts:</p> <ul style="list-style-type: none"> • Commencement of site preparation works in Q4 2027; • Commencement of landfall construction in Q4 2029; • Commencement of onshore Cable installation Q3 2030; • Commencement of onshore converter station construction Q4 2030; • Completion of landfall construction in Q4 2030; • Completion of converter station construction in Q4 2030; and • Completion of export cable installation in Q4 2029.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	Please refer to the details supplied above, and further information available within Volume 2, Chapter 5: Project Description of the Onshore Scheme EIA.
Use or release of chemicals (state which ones)	<p>During the course of the installation of Offshore Export Cables at the Landfall, there may be the potential for drilling fluids losses to the marine environment. Maximum volume discharge of 2,000 m³ (comprising 1,900 m³ of water and 100 m³ of solids) per trenchless duct could be released on exit. However, these will be on the Centre for Environment, Fisheries and Aquaculture Science (Cefas) approved list of drilling fluids, and the OSPAR list of Substances/Preparations Used and Discharge Offshore which are considered to Pose Little or No Risk (PLONOR) to the environment. These elements of the Landfall process are considered under the Marine Scheme WFD compliance assessment described above.</p> <p>The SWO described above is intended to facilitate the discharge of surface water only – no chemical treatment (i.e. dosing or biocides etc.) are intended for use.</p> <p>Surface water drainage provided for the Converter Station has been designed in line with pollution mitigation requirements (Technical Appendix 11.2). The Onshore Scheme proposes to use two ponds to provide filtration for any pollution which is shed from the Converter Station (very low hazard). The drainage design satisfies the requirements of the Simple Index Method, as</p>

² Coordinate reference system using British National Grid.

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Activity	Description
	outlined in The SuDS Manual, CIRIA C753, and provides the satisfactory pollution remediation for hydrocarbons, metals and total suspended solids. The surface water drainage infrastructure will be regularly maintained to ensure efficiency of the scheme. The likelihood of deterioration of water quality through the operational phase of the Onshore Scheme is very low.
Summary of installation activity	As described above – the Onshore Scheme relates to the construction and installation of a cable landfall, onshore HVDC cables, a new onshore converter station, HVAC grid cables (from the new onshore converter station to the existing Blyth National Grid substation near Cambois), including ancillary infrastructure and works to integrate the Onshore Scheme into the National Grid at the existing Blyth National Grid substation at Cambois.
Maximum Zone of Influence (Zol) / Study Area	The study area adopted is the Onshore Scheme plus a buffer of 2 km to consider all relevant waterbodies.

1.3.2. Measured Adopted as part of the Onshore Scheme

18. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on WFD water bodies, sensitive and protected areas; details on these proposed management plans can be found in Volume 2, Chapter 5: Project Description and Volume 3, Appendix 5.2: Outline CEMP. and a summary of measures of relevance to the WFD compliance assessment can be found in Table 2 below. These include measures which have been incorporated as part of the Onshore Scheme's design (referred to as 'designed in measures') and measures which will be implemented regardless of the impact assessment (referred to as 'tertiary mitigation'). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Onshore Scheme and have therefore been considered in the assessment presented below. Provision of mitigation measures within the WFD compliance assessment is also in accordance with the Environment Agency guidance (2017) which sets out that where relevant, mitigation measures should be included to avoid or minimise risks of deterioration.



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Table 2 Measures adopted as part of the Onshore Scheme

Mitigation Measure	Form (Designed In Measures or Tertiary)
Avoidance of intertidal area at Cambois beach	A trenchless technique, such as Horizontal Directional Drilling (HDD), will be deployed to bring the Offshore Export Cables ashore via ducts that will be installed from a point landward of Mean High Water Springs (MHWS) to an exit point at least 250 m seaward of Mean Low Water Springs (MLWS), thus completely bypassing the intertidal area. All construction works and infrastructure associated with the Onshore Scheme will be above MHWS, and landward of the dune system on Cambois beach, and therefore there is no potential for any direct interaction with the intertidal area. Direct impacts on Northumberland Shore SSSI and priority sand dune habitats will be avoided via the use of trenchless techniques such as HDD under the beach and sand dunes.
Route Selection and Avoidance	<p>The Project has undergone a site selection process which has involved incorporating environmental considerations in collaboration with the engineering design requirements. Careful routing of the onshore infrastructure including commitment to trenchless techniques at Landfall to avoid key areas of sensitivity.</p> <p>Further detail on this is provided in Volume 2, Chapter 4: Site Selection and Consideration of Alternatives.</p>
Project Design	<p>Outline Design Commitments, to ensure that the Onshore Scheme minimises impacts on hydrological and hydrogeological receptors:</p> <ul style="list-style-type: none"> • Routing of the HVDC and HVAC cable routes to minimise watercourse crossings, where practicable.
Drainage Design	A swale will be constructed around the converter station which will eventually discharge into Sleekburn Estuary. A minimum of two linked Sustainable Drainage System (SuDS) components will be constructed to filter the water prior to discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn Estuary and this will include flow energy dissipation to prevent erosion of the banks. The drainage design will also include the use of native plants and ecological connectivity where practicable.
Construction timing restriction	In order to avoid disturbance to wintering birds utilising the Sleekburn construction works relating to the outfall into the Sleekburn will be restricted to avoid the winter period (October to March inclusive).
Construction Environmental Management Plan (CEMP)	<p>A CEMP will be developed and adhered to, and will set out the management measures, commitments, and working standards proposed to be adopted and implemented throughout the construction process. The various measures proposed as part of the CEMP are detailed below. An outline CEMP has been provided as part of this application (Technical Appendix 5.1, Volume 3).</p> <ul style="list-style-type: none"> • Pollution Commitments- <i>relevant Pollution Prevention Guidelines and CIRIA guidance, would be followed to reduce any potential risks of ground pollution</i>

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Mitigation Measure	Form (Designed In Measures or Tertiary)
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- *Contamination Commitments- Standard industry practice and mitigation measures, comprising relevant contaminated land guidelines would be followed to reduce any potential risks from contaminated land. A Site Waste Management Plan (SWMP) will be developed to monitor waste arising and ensure adherence to duty of care and waste legislation. All works will be carried out in accordance with Land Contamination Risk Management (LCRM) guidance; BS5930: 1999 (The Code of Practice for Site Investigations) and BS10175:2001 (Investigation of Potentially Contaminated Sites); Hazardous Waste (England and Wales) Regulations 2005.*
- *Construction dust - Proportionate mitigation, as recommended by the Institute of Air Quality Management, is proposed in order to reduce, or where practicable remove potential impacts*
- *Soil Management -A Soil Management Plan (SMP) will be developed and will be produced in advance of construction. The SMP will provide further details of mitigation measures and standard industry practice handling techniques during stripping, handling and reinstatement to safeguard soil resources by ensuring their protection, conservation and appropriate reinstatement following the construction of the onshore works. Following construction, land not required through the operational phase will be reinstated to allow it to return to agricultural or recreational use. The land take for the Onshore Scheme will be kept to the minimum necessary for safe construction and operation of the works. All construction work will be undertaken in accordance with DEFRA Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (2009).*
- *Biosecurity- Reasonable precautions to avoid the spread of Invasive Non-Native Species (INNS) during the construction phase will be taken. An INNS management plan will be produced*

CEMP: Standard Industry Practice

All construction work will be undertaken in accordance with the CEMP which will be drafted having consideration of good practice guidance including, but not limited to:

- Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors CIRIA (C532) (CIRIA, 2001);
- Development and flood risk: guidance for the construction industry (C624) (CIRIA, 2004);
- CIRIA – SuDS Manual (C753) (CIRIA, 2015);
- The Environment Agency’s approach to groundwater protection, version 1.2, February 2018 (EA, 2018); and
- Code of Practice for Assessing and Managing Flood Risk in Development, BS8533 (BSI, 2017).

All construction work will be undertaken in accordance with the Construction Design and Management) Regulations 2015 (CDM Regulations) which requires contractors to make sure the client is aware of the client duties under CDM 2015 before any work starts.

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Mitigation Measure		Form (Designed In Measures or Tertiary)
CEMP: Emergency Flood Response Plan		A Flood Emergency Response Plan will be developed to ensure safe working and evacuation at all times
Environmental Plan (EMP)	Management	An Environmental Management Plan (EMP) (or similar document) will be produced and will detail how the site will be managed throughout Operation and Decommissioning phases in order to avoid negative impacts on the environment. The EMP will contain good practice and pollution prevention procedures in line with the prevailing future guidance and legislation.
Marine Licence Application ³		A Marine Licence Application (MLA) is required for construction activity and is enforced by the licensing authority for England, the MMO.

1.3.3. Approach to Completing Onshore Scheme WFD Compliance Assessment


19. The approach to completing the Onshore Scheme WFD compliance assessment considers the status of relevant water bodies. For surface waterbodies status is classified on the basis of chemical and ecological status or potential (i.e., ‘good ecological status’ and ‘good chemical status’). The current status of a water body is defined within its specific River Basin Management Plan (RBMP) and supporting appendices. Updated in December 2022, the RBMPs consider existing and future challenges to the water environment which have the potential to impact the status of the water bodies within the RBMP. The Onshore Scheme is located within the Northumbria RBMP.

20. Good ecological status (or ‘good ecological potential’ for heavily modified water bodies or artificial water bodies) includes biological, hydromorphological and physiochemical quality elements and specific pollutants. Parameters are assessed on a five-point scale as either High, Good, Moderate, Poor or Bad and on the basis of four classification elements or ‘tests’. The classification system is based on a worst-case system ‘one-out all-out’ system (this means that the overall ecological status is based on the lowest individual parameter score).

21. Good chemical status considers a series of priority substances (including a number of priority hazardous substances). Chemical status is defined by compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances, in accordance with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Environmental Permitting (England and Wales) (Amendment) Regulations 2016. Chemical Status is assigned on a scale of good or fail. Surface water bodies are only monitored for priority substances where there are known discharges of these pollutants; otherwise surface water bodies are reported as being at good chemical status.

22. All five status class definitions and the WFD general classification system for water body status is provided in Plate 2.

³ As detailed above, a Marine Licence Application will be required for the construction of the SWO below MHWS – the Applicant is aware of this requirement under the Marine and Coastal Access Act 2009. A commitment similar to that which is detailed above in relation to NCC may be applied via Marine Licence condition(s) dictated by the MMO.

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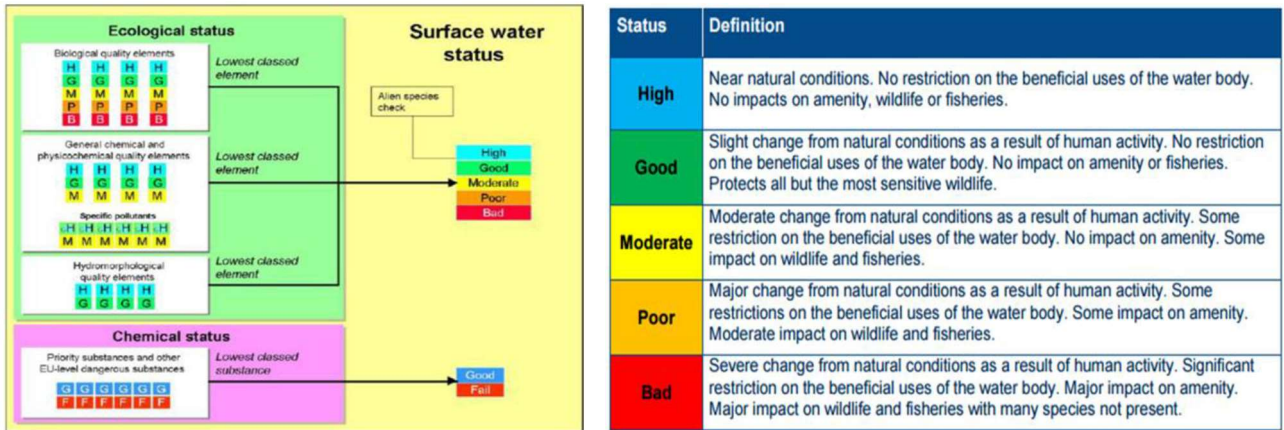


Plate 2 WFD General Classification System (L) and WFD status class definitions (R) (Environment Agency, 2015)

23. Under the WFD, groundwater body status is classified on the basis of quantitative and chemical status. Status is principally assessed using data collected from the Environment Agency monitoring network. On this basis, the scale of assessment means that groundwater status is mainly influenced by larger scale regional effects (such as significant abstraction or discharge activity and/or widespread/diffuse pollution). The worst-case classification is assigned as the overall groundwater body status, in a ‘one-out all-out’ system, similar to the classification detailed above for ecological status.

24. Quantitative status is defined by the quantity of groundwater available as baseflow to watercourses and water-dependent ecosystems, and as a resource for consumption; this is assessed on a scale of good through to poor, and on the basis of four classification tests (saline or other intrusions, surface water, groundwater dependent terrestrial ecosystems (or GWDTEs) and water balance).

25. Chemical status is defined by the concentrations of key pollutants, by the quality of groundwater which may feed into watercourses and GWDTEs and by the quality of groundwater available for drinking water. Chemical status is assessed on a scale of good to poor and on the basis of five classification tests (saline or other intrusions, surface water, GWDTEs, Drinking Water Protected Areas (DrWPAs) and a ‘general; quality assessment’).

26. Plate 3 below sets out the WFD classification system for groundwater.

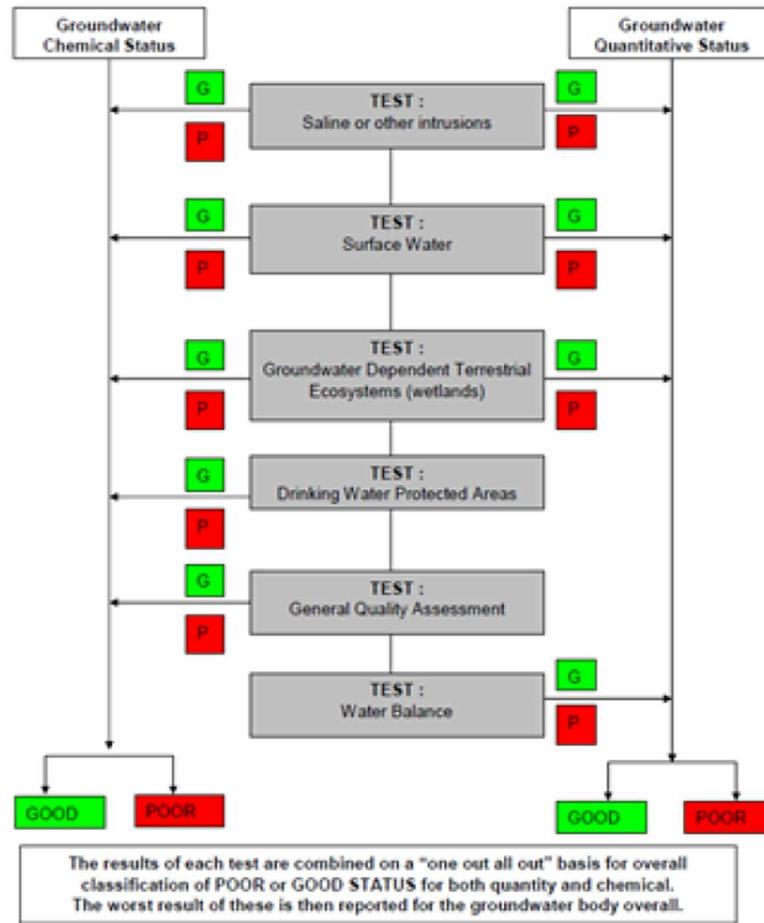



Plate 3 WFD Classification System (GW) (Environment Agency, 2015)

27. In line with the guideline buffer distance for the assessment of impacts on WFD protected areas as outlined in the Environment Agency 'Clearing the Waters for All' guidance (Environment Agency, 2017), this Onshore Scheme WFD compliance assessment considers the Onshore Scheme boundary plus a 2 km buffer (hereafter referred to as the study area). By defining this study area, it is possible to consider the spatial footprint of works associated with the construction of the Onshore Scheme when assessing the impact on WFD sensitive and protected areas as well as considering WFD protected areas further away from the activity.

28. The potential impacts of Onshore Scheme operation and maintenance activities are considered to be of a lesser extent and magnitude than those assessed as part of the construction phase. Similarly, the potential impacts of the Onshore Scheme decommissioning activities are not expected to exceed the extent and magnitude as those assessed as part of the construction phase. Operation and maintenance and decommissioning activities have been considered as part of the Onshore Scheme WFD compliance assessment, however no additional impact pathway is likely given the nature and scale of activities associated with these development phases.

29. This WFD compliance assessment adheres to the Environment Agency guidance on WFD Assessment of estuarine (transitional) and coastal waters, 'Clearing the Waters for All' which outlines three stages of WFD assessment, as summarised below:

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- Screening – excludes any activities that do not need to go through the scoping or impact assessment stages
- Scoping – identifies the receptors that are potentially at risk from your activity and need impact assessment
- Impact assessment – considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status.

30. This WFD compliance assessment has been informed by the following chapters of the Onshore ES:

- Volume 2, Chapter 5: Project Description;
- Volume 2, Chapter 10: Geology and Soils;
- Volume 2, Chapter 11: Hydrology and Hydrogeology;
- Technical Appendix 5.2: Outline Construction Environmental Management Plan (CEMP);
- Technical Appendix 9.1: Ecology – Habitat Survey Report;
- Technical Appendix 11.2: Flood Risk Assessment (Converter Station); and
- Technical Appendix 11.3: Surface Water Drainage Strategy.

1.3.3.1. OUTCOMES OF THE MARINE SCHEME WFD COMPLIANCE ASSESSMENT


31. While this WFD compliance assessment has been completed in support of the planning application for the Onshore Scheme, it is important to note that the WFD assessment presented within this report is supported and informed by the assessment methodology and conclusions of the Marine Scheme WFD compliance assessment which was submitted alongside the MLA to the MMO, as detailed above.

32. The Marine Scheme WFD compliance assessment considered potential impacts to water bodies associated with this process, including Tyne and Wear (coastal) as well as Blyth and Wansbeck (transitional). The scope for defining the Onshore Scheme WFD compliance assessment study area extends 2 km from the trenchless HDD compound into the intertidal environment of the Cambois Bay (see Figure 1), resulting in a direct spatial overlap with the Marine Scheme WFD compliance assessment study area. This spatial overlap is considered necessary to ensure a complete assessment of potential impacts of the Project as a whole on the relevant WFD protected areas within the intertidal environment. Full details on the Marine Scheme WFD compliance assessment can be found on the MMO website (MLA/2023/00334), however the conclusions of the assessment have been summarised below:

Following the staged approach (as described in section 18) it was concluded during WFD Screening that there is the potential for some spatially or temporally limited effects on WFD protected areas as a result of installation works associated with the Offshore Export Cables and trenchless techniques (e.g., HDD) at the Landfall.

33. The WFD Scoping exercise concluded that a WFD Impact Assessment was required for biology (habitats) and four protected areas located within or adjacent to the Marine Scheme WFD compliance assessment study area.

34. The assessment of impacts arising from the installation and physical presence of Offshore Export Cables and any associated cable protection during the operation and maintenance phase would result in impacts of a local spatial extent, long term duration and would be highly reversible in nature, with an overall conclusion of minor adverse significance. The assessment of impacts during the decommissioning phase were also concluded to be of minor adverse significance. The assessment of potential cumulative impacts associated with the Marine Scheme and other projects or developments in the area concluded no potential for cumulative impacts, which would result in a significant adverse effect of deterioration of a WFD water body.

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35. Overall, it was concluded that works associated with the installation, operation and maintenance and decommissioning of the Marine Scheme would result in minor adverse significance and no deterioration of the ‘good’ status of WFD water bodies or the potential for any water bodies progressing towards ‘good’ status.

2. Legislative Context

36. Full details on the policy and legislation associated with the development of the Onshore Scheme is provided in Volume 2, Chapter 2: Policy and Legislative Context. The legislative drivers of the onshore WFD assessment have been summarised below.

2.1. The Water Framework Directive


37. The Water Framework Directive (Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy) (the WFD) was adopted by the European Commission in December 2000. The WFD establishes a framework for the management and protection of water resources throughout Europe and requires the European Union Member States protect, enhance and restore all water bodies identified under the WFD. Member States must ensure that any new proposals do not adversely impact the status of an aquatic ecosystem, and that any historical modifications already impact an aquatic ecosystem are addressed. Following the UK’s exit from the European Union the requirements of the WFD are transposed in England and Wales through the Water Environment, Water Framework Directive) (England and Wales) Regulations 2017 (the Water (the Water Environment Regulations).

38. While it is considered that the assessment presented within the Onshore Scheme ES is an efficient mechanism for gathering EIA relevant information on the receiving environment, a stand-alone WFD compliance assessment should be completed in compliance with the Water Environment Regulations. According to the Environment Agency ‘Clearing the Waters for All’ guidance (Environment Agency, 2017; PINS, 2017) and as informed by relevant industry guidance (IEMA, 2012), any potential impacts to fish and habitat biology, chemistry, hydromorphology and groundwater⁴ need to be considered in the context of WFD water body status and reported within a WFD assessment in support of any environmental statement.

39. As such, this WFD compliance assessment has been completed in support of the Onshore Scheme to demonstrate the potential impact on WFD receptors as a result of works associated with the construction, operation and maintenance and decommissioning phases of the Onshore Scheme. The WFD compliance assessment also offers the opportunity to inform the detailed design of the Onshore Scheme to avoid, minimise, mitigate or compensate for the risks to the environmental objectives of WFD surface water and groundwater receptors. Where risk to WFD receptor(s) (and potential deterioration) is identified, the WFD compliance assessment determines whether an activity has the potential to:

- Cause a surface water body to deteriorate from one WFD status class to another or result in significant localised impacts that could result in water body deterioration;
- Prevent or undermine action to get surface water bodies to good status (e.g., through compromising control or mitigation measures in place to achieve the ultimate objectives of the water body); and
- Result in any pollution event which could result in a deterioration from existing good groundwater chemical status or facilitate continued localised upward trends in groundwater pollution.

⁴ In accordance with the guidance referenced in this WFD compliance assessment and the Planning Inspectorate Advice Note Eighteen, the stated assessment process for WFD waterbodies is equally applicable to structuring an assessment on groundwater and / or fluvial waterbodies.

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40. The overall objective of the WFD is to achieve ‘good status’ (GS) for all inland, transition, coastal and ground waters by 2015 unless alternative objectives are set. For a surface water body⁵ to achieve overall GS, the water body must also achieve good ecological status (GES) and good chemical status (GCS). The ecological status of a water body is measured on a scale of high, good, moderate, poor or bad, and chemical status is measured as good or fail (i.e., failing to achieve good).

41. Under Article 4 of the WFD and regulation 1 of the Water Environment Regulations, the ecological status of a surface water body is classified on the status of its biological (e.g., fish, benthic invertebrates, phytoplankton, angiosperms and macroalgae), physico-chemical (e.g. dissolved oxygen and salinity) and hydromorphological (e.g. hydrological regime) qualities, as well as several specific pollutants (e.g., copper and zinc). The chemical status objectives for a surface water body are assessed in relation to the environmental quality standards (EQS) for a specified list of ‘priority’ and ‘priority hazardous’ substances. Under the Priority Substance Directive (PSD) (Council Directive 2008/105/EC on environmental quality standards in the field of water policy) outlines the objectives for the reduction of these priority and priority hazardous substances through the cessation of discharges or emissions into the environment. The requirements of the PSD are transposed by the Water Environment Regulations and are considered throughout this WFD compliance assessment.

42. Under Article 4 of the WFD and regulation 15 of the Water Environment Regulations a surface water body has a hydromorphological designation which describes how modified the water body is compared to its natural state. Water bodies can either be described as undesignated (i.e., natural or unchanged), designated as a heavily modified water body (HMWB) or designated as an artificial water body (AWB). A HMWB is defined as a body of water which, as a result of physical alteration by sustained human activity and/or development (e.g., flood protection) are substantially changed from their natural state and therefore cannot meet GES. Under the WFD the default target for HMWBs and AWBs is to achieve good ecological potential (GEP), thus recognising their importance in the context of human use while ensure that the ecology of the water body is protected as far as possible.

43. For any development which has the potential to result in an ecological or chemical deterioration of an existing water body status, to introduce or spread invasive non-native species (INNS) or to compromise the ability of the water body in meeting the objectives of the WFD, a WFD compliance assessment is required.


2.2. Other Relevant Legislation

44. The WFD assessment requires that activities associated with a proposal area also undertaken in compliance with other relevant legislation such as the Habitats Directive (92/43/EEC as amended), Birds Directive (2009/147/EC), Ramsar Convention, Bathing Water Directive (2006/7/EC), Nitrates Directive (91/676/EEC), Urban Wastewater Treatment Directive (91/271/EEC), Shellfish Waters Directive (2006/113/EC) and the Groundwater Directive (2006/118/EC), which are each briefly summarised below.

2.2.1. Nature Conservation

45. Internationally designated nature conservation sites which are relevant to the onshore WFD assessment include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites. Nationally designated sites of relevance to the onshore WFD include Sites of Special Scientific Interest (SSSIs), and Marine Conservation Zones (MCZs).

⁵ Under the WFD, surface water bodies are subdivided into a series of discrete surface water bodies including rivers, lakes, lagoons, estuaries, coastal waters (out to one nautical mile from the low watermark), man-made docks and canals.

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46. SAC are designated in accordance with Article 3 of the Habitats Directive (92/43/EEC as amended) an integrated network of high-value conservation sites (SACs) are established for the conservation of habitats and species of European importance (as described under Annex I and Annex II of the Habitats Directive). Bird species are not considered under the Habitats Directive and instead are afforded protection under Article 4 of the Birds Directive (2009/147/EC) through the designation of SPAs. SPAs are designated for the conservation of rare, vulnerable and regularly occurring migratory bird species of European importance under Annex I of the Birds Directive. Collectively, SACs and SPA are referred to as European Sites which form part of the UK's National Site Network, and their protection is transposed into UK law by the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations), as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

47. Under the Ramsar Convention, wetlands of international importance (and their associated resources) are also afforded protection. Ramsar sites do not form part of the National Site Network however they remain protected in the same way as SACs and SPAs.

48. Designated under the Wildlife and Countryside Act 1981, SSSIs are areas of conservation recognised for their biological or geological significance. In England, SSSIs are designated by Natural England who are responsible for protecting England's natural environment.

49. MCZs protect a range of nationally important marine habitats and species. In English waters, MCZs are designated under Part 5 of the Marine and Coastal Access Act 2009.

2.2.2. Bathing Water Directive

50. The revised Bathing Water Directive (rBWD) (2006/7/EC) was adopted in 2006, updating the microbiological and physico-chemical standards and the processes of measuring and monitoring water quality of the original Bathing Water Directive (BWD) (76/160/EEC). Bathing waters afforded protection under the rBWD (transposed in England under the Bathing Water Regulations 2013) are classified by their levels of a certain type of bacteria (Intestinal Enterococci and Escherichia coli) as either excellent, good, sufficient or poor. Bacteria samples are taken during the bathing season (between May to September) with the overall classification of a bathing waters defined by samples obtained over the previous four years.


51. Under the rBWD and described under the Bathing Water Regulations 2013 (as amended), the UK Government aimed to achieve a 'sufficient' classification for all bathing waters in the UK by 2015. In 2022, out of the 419 bathing waters sampled in England, 407 (or 97%) met at least the minimum standards of the Bathing Water Regulations with a total of 302 bathing waters (72/1%) meeting the Excellent classification (Defra, 2022). In 2022 twelve bathing waters in England (or 2.9%) did not meet the minimum standard of the Bathing Water Regulations, receiving a poor classification (Defra, 2022). Of the remaining bathing waters in England, 87 (20.8%) were classified as good and 18 (4.3%) were classified as sufficient in 2022 (Defra, 2022).

2.2.3. Shellfish Water Directive

52. The Shellfish Directive (2006/113/EC) was incorporated into the WFD in 2013, however the Shellfish Water Protected Areas (England and Wales) Directions 2016 still require that the Environment Agency microbial standards for shellfish water protected areas are observed (i.e., 300 or fewer colony forming units of Escherichia coli per 100 ml of shellfish flesh and intervalvular liquid). The Shellfish Water Directive also requires that the Environment Agency assessed compliance with this standard to monitor microbial pollution in shellfish water protected areas throughout England and Wales.

2.2.4. Nitrates Directive Zones

53. The Nitrates Directive (91/676/EEC), transposed in England and Wales by the Protection of Water Against Agricultural Nitrate Pollution (England and Wales) Regulations 1996, seeks to reduce water pollution

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from agricultural sources, and to prevent such pollution occurring in the future. Under the Nitrates Directive, nitrogen pollution of surface waters is identified through an increase in organic plant growth which affects existing plant and animal species within the water body (eutrophication).

2.2.5. Urban Wastewater Treatment (UWWT) Directive

54. The Urban Wastewater Treatment Directive (91/271/EEC) (UWWTD), transposed in England and Wales by the Urban Waste Water Treatment (England and Wales) Regulations 1994, seek to protect the natural environment from the adverse effects of the collection, treatment and discharge of urban wastewater. The Directive outlines wastewater treatment levels based on the size of the discharge and the nature of the receiving environment and requires that, for significant discharges, collected wastewater is treated to at least secondary treatment standards⁶. Under the UWWTD a sensitive area is defined as water bodies affected by eutrophication or elevated nitrate concentrations which therefore act as an indicator for further action against future pollution of the receiving environment.

2.2.6. The Groundwater Directive

55. The Groundwater Directive (2006/118/EC), including amendments to Annex II detailed under Directive 2014/80/EC, outlines specific measures to prevent and control groundwater pollution through the assessment of good groundwater chemical status and the identification and reversal of significant and sustained upward trends in groundwater pollution.

56. The Groundwater Directive (2006/118/EC) is transposed in England by The Groundwater (Water Framework Directive) (England) Direction 2016 (which revokes and replaces the Groundwater (Water Framework Directive) (England) Direction 2014). The direction outlines the obligations to protect groundwater, including:

- Monitoring and setting thresholds for pollutants in groundwater;
- Adding new pollutants to the list of pollutants to be monitored in England; and
- Changing the information which is to be reported to the European Commission.


57. In England, the management and protection of groundwater is undertaken by the Environment Agency. In October 2023 The Environmental Permitting (England and Wales) (Amendment) (England) Regulations 2023 were implemented, as such the amendment of Schedule 3 pertaining to groundwater include but are not limited to:

- A discharge does not result in an input of pollutants to groundwater within a groundwater Source Protection Zone (SPZ) 1⁷;
- The system must not be discharged within a groundwater SPZ 1;
- The system does not cause pollution of surface water or groundwater; and
- The system is appropriately decommissioned following the cessation of operation to ensure that there is no risk of pollutants or polluting matter entering groundwater (UK Government, 2023).

58. In light of these amendments to Schedule 3, as of October 2023 the Environment Agency is reviewing their approach to groundwater protection in England (Environment Agency, 2023).


⁶ Secondary treatment is defined as the treatment of urban wastewater through a process generally involving biological treatment with a secondary settlement. Secondary treatment must meet the relevant look-up table (LUT) compliance limits and maximum compliance limits for the biological oxygen demand (BOD) and chemical oxygen demand (COD) (Environment Agency, 2019a).

⁷ The groundwater source protection zones are zones which show the level of risk to the source from contamination, where the greatest risk is associated with an activity closest to the source. An SPZ 1 is defined as an inner groundwater zone with a 50-day travel time of pollutant to source with a 50 metres default minimum radius (Environment Agency, 2019b).

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2.2.7. Marine and Coastal Access Act 2009

59. Under the Marine and Coastal Access Act 2009 (MCAA), the completion of licensable activities (section 66, MCAA) within the UK marine area (section 42, MCAA) requires a Marine Licence from the MMO. The Applicant is aware of the requirement for a Marine Licence for elements of the SWO within the UK marine area (i.e. below MHWS), and will engage with the MMO to discuss this and formally apply in due course. The approach to obtaining a Marine Licence from the MMO separate to the planning application to NCC is required due to the lack of detailed design information associated with the outfall on the Sleekburn (noting also that the approach is consistent with that which was followed by the adjacent North Sea Link converter station development).

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3. Consultation

60. A summary of consultation and technical engagement activities undertaken to date specific to the WFD assessment is presented in Table 3 Summary of Consultation and Technical Engagement below, together with how these issues have been considered in the production of this assessment. Further detail is presented in Volume 2, Chapter 4: Stakeholder Consultation and Engagement.

61. It is important to note that for WFD, consultation and technical engagement has not given rise to significant volumes of feedback. Statutory Consultees and key stakeholders were asked to review the Scoping Report and the key response of relevance to this WFD compliance assessment was from the Environment Agency who suggested that water and sediment quality should be considered in more detail as the Marine Scheme boundary intersects two WFD water bodies (Environment Agency, 2023a). This response, and any other feedback which could be relevant to the WFD assessment, has been addressed in full as detailed below.

Table 3 Summary of Consultation and Technical Engagement

Date	Consultee and Type of Consultation	Issues(s) Raised	Response to Issue Raised and/or Where Considered in the Onshore Scheme assessment
12/12/2022	Natural England Consultation Response	<p>The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.</p> <p>The assessment should take account of the risks of water pollution and how these can be managed or reduced. A number of water dependent protected nature conservation sites have been identified as failing condition due to elevated nutrient levels and nutrient neutrality is consequently required to enable development to proceed without causing further damage to these sites. The ES needs to take account of any strategic solutions for nutrient neutrality or Diffuse Water Pollution Plans, which may be being developed or implemented to mitigate and address the impacts of elevated nutrient levels.</p>	Natural England’s response to consultation has been addressed in Section 11.11, Volume 2, Chapter 11: Hydrology and Hydrogeology.
14/12/2022	Environment Agency– Consultation Response	The development raises some environmental concerns/issues regarding flood risk. The development may need to undertake further work to show how these issues can be satisfactorily addressed to ensure no adverse environmental impacts. We welcome that a Flood Risk Assessment is proposed to be completed as part of the EIA report.	As per the request, flood risk has been assessed in Volume 3, Technical Appendix 11.1 Onshore Cable Corridor Flood Risk Assessment and Volume 3, Technical Appendix 11.2 Converter Station Flood Risk Assessment.

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4. WFD Baseline Environment

62. The following section presents the known baseline environment it is compiled with respect to the following key sources of information:

- The legislative framework for the WFD (section 2);
- The requirements of a WFD compliance assessment from the Environment Agency guidance (Environment Agency, 2017);
- The RBMP Northumbria Cycle 3 status and objectives (UK Government 2022b; 2022c) and where applicable, relevant information from Cycle 2; and
- Ongoing monitoring of the water bodies on varying ecological and chemical classifications (Environment Agency, 2023c; 2023d; 2023e; 2023f).

63. Baseline environment is supported by the following figures:

- Figure 2 Environmental Designations (provides an overview of WFD water bodies and WFD protected areas);
- Figure 3 Permitted Discharges and Abstractions (provides an overview of spatial data associated with discharge and abstraction activity within the study area);
- Figure 4 Higher Sensitivity WFD Habitats (provides a spatial representation of higher sensitivity WFD habitats based on publicly-available Environment Agency data⁸);
- Figure 5 Lower Sensitivity WFD Habitats (provides the equivalent to Figure 5 but for lower sensitivity habitats);
- Figure 6 WFD Baseline Habitat Mapping (provides a more refined site-specific account of habitats located within the Onshore Scheme, as informed by baseline habitat surveys undertaken by the Applicant); and
- Figure 7 (WFD Superficial Deposits / Aquifer) and Figure 8 (WFD Geology / Aquifer), provide relevant baseline geological data overlaid against the Onshore Scheme to help inform the regional understanding of baseline conditions and how the Onshore Scheme may interact with hydrology and/or hydrogeology.

⁸ It is important to note that whilst the publicly available higher sensitivity habitat data has been considered within the WFD compliance assessment for completeness and in accordance with the Environment Agency guidance (2017), the site-specific data obtained by the Applicant is of a far greater granularity (being underpinned by a campaign of site-specific baseline surveys).

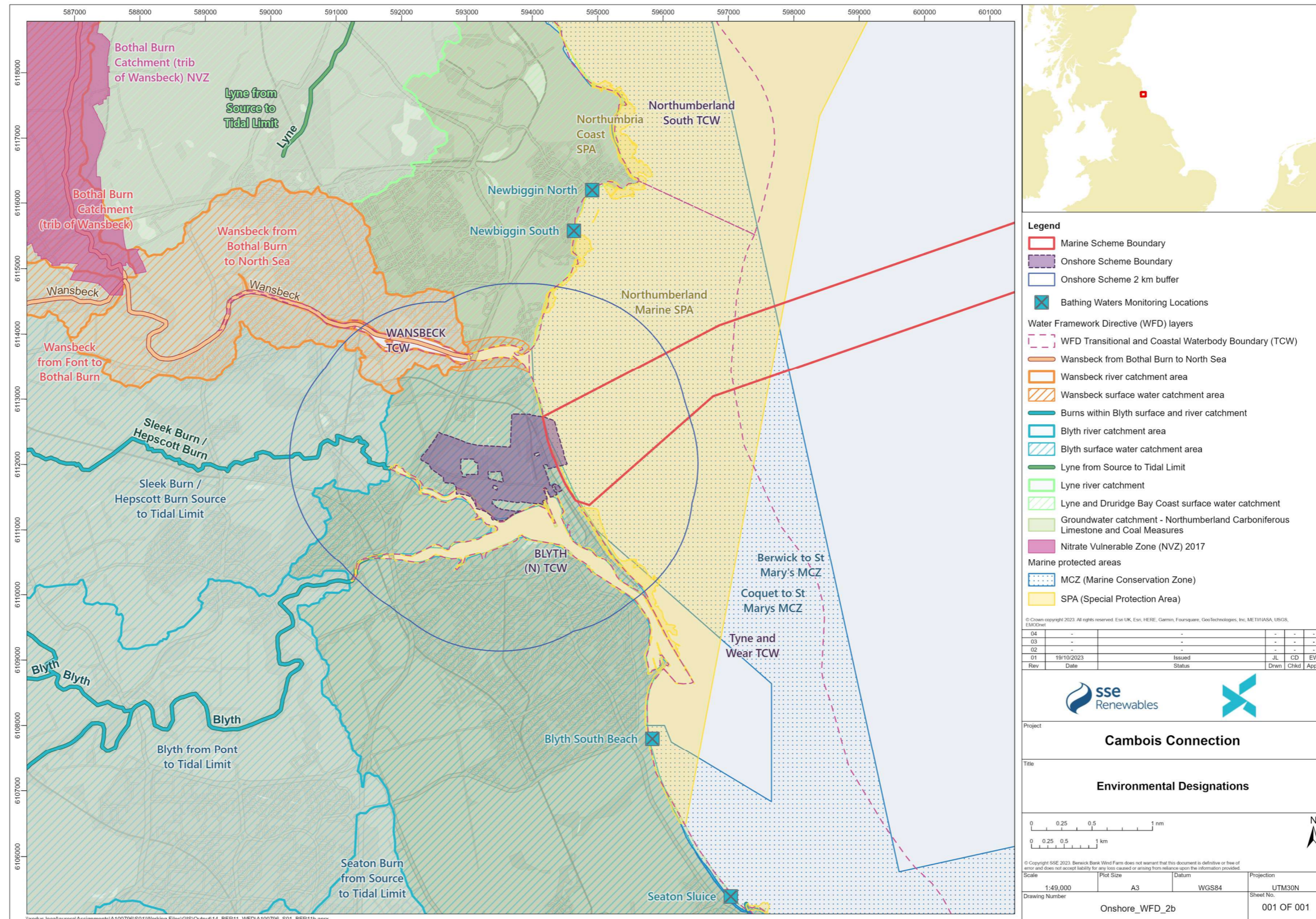


Figure 2 Environmental Designations

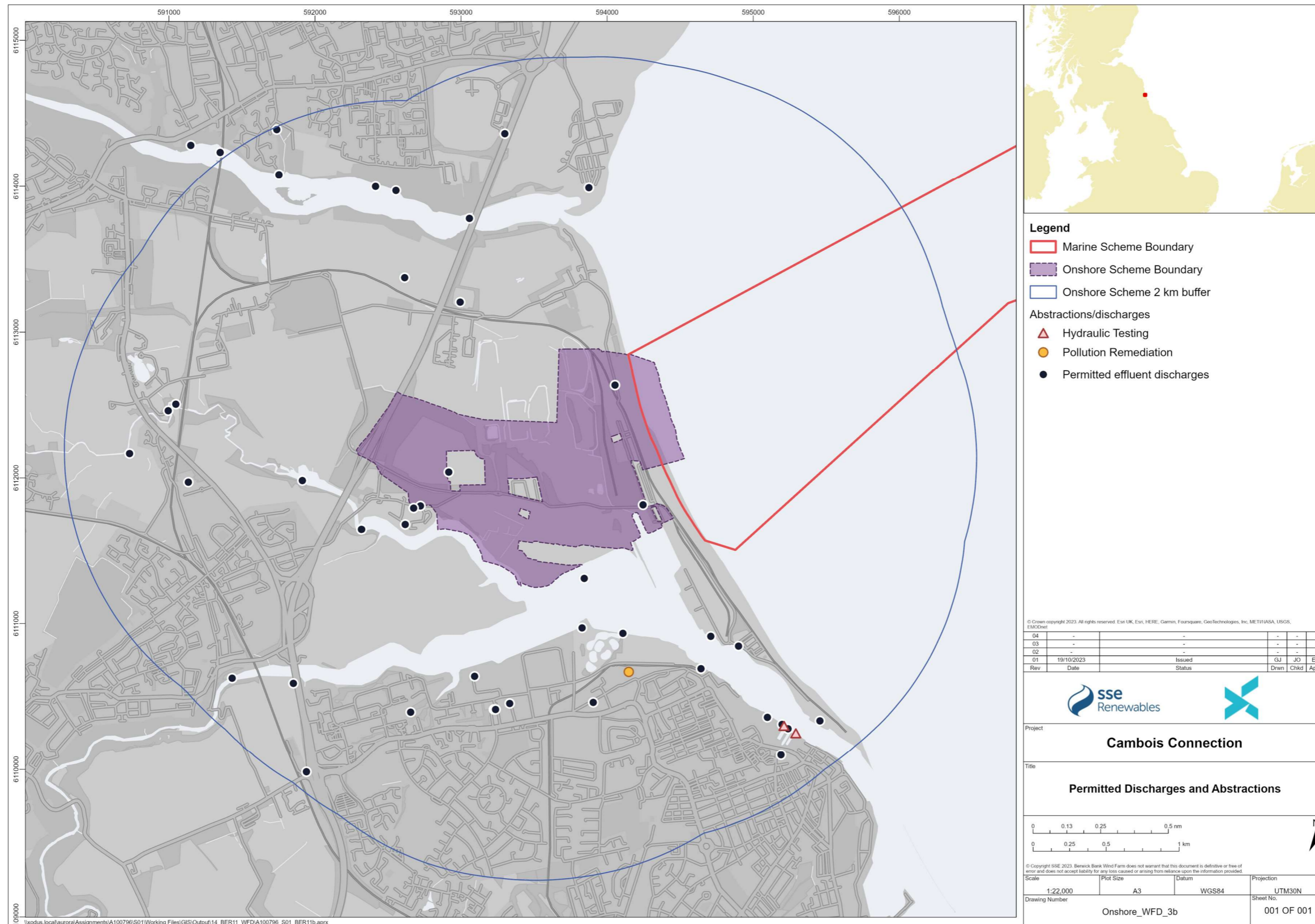


Figure 3 Permitted Discharges and Abstractions

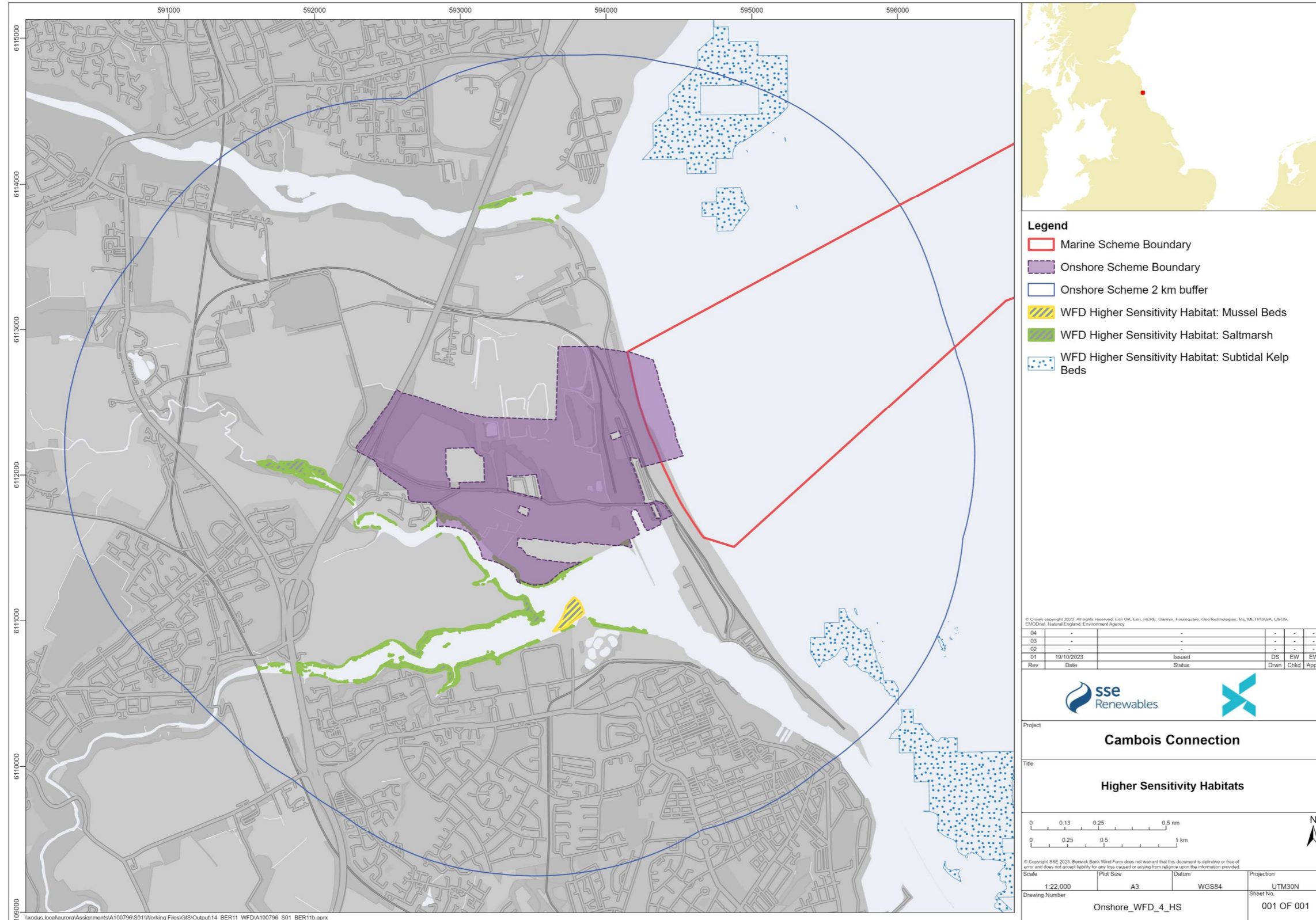


Figure 4 Higher Sensitivity WFD Habitats

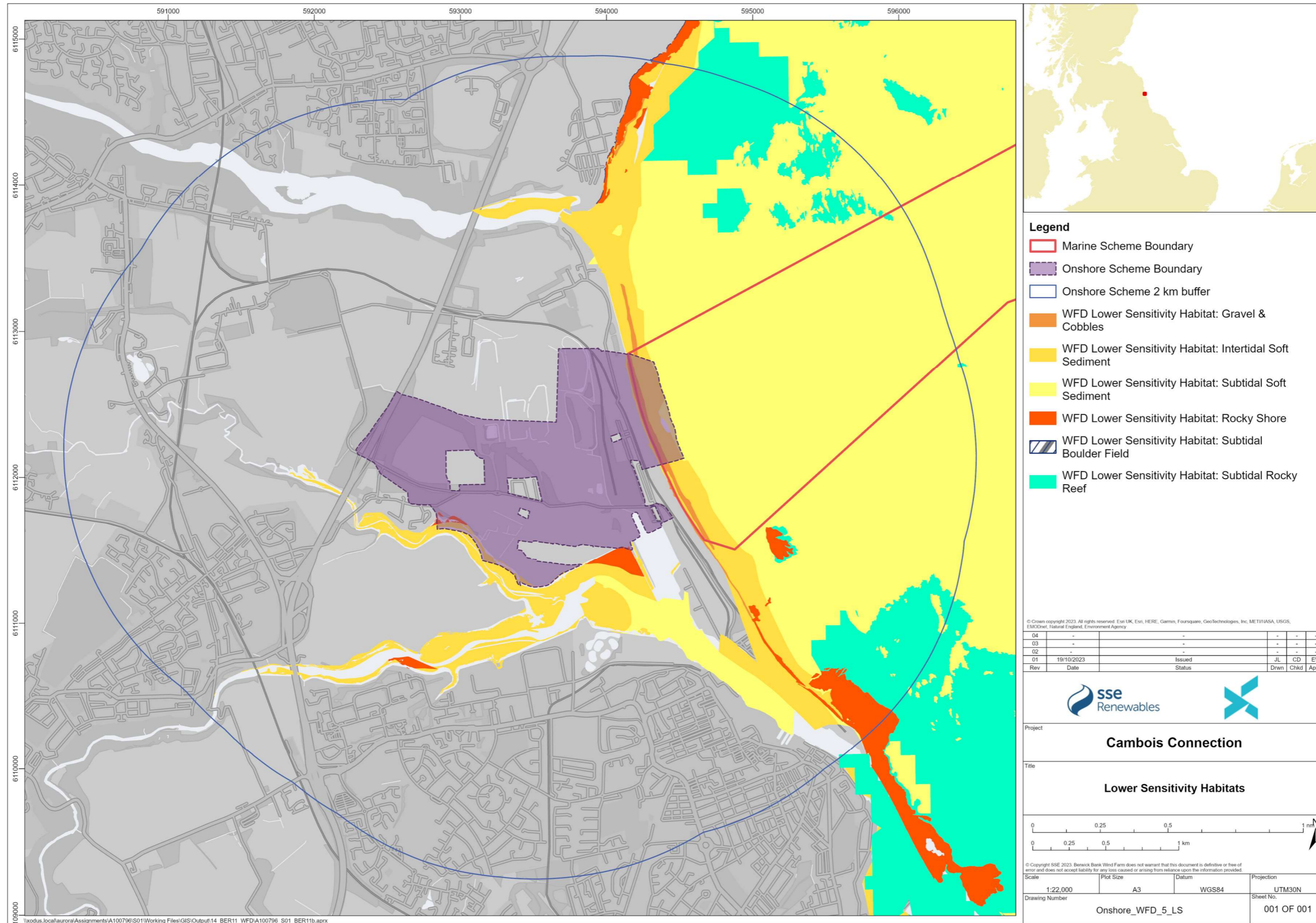


Figure 5 Lower Sensitivity WFD Habitats

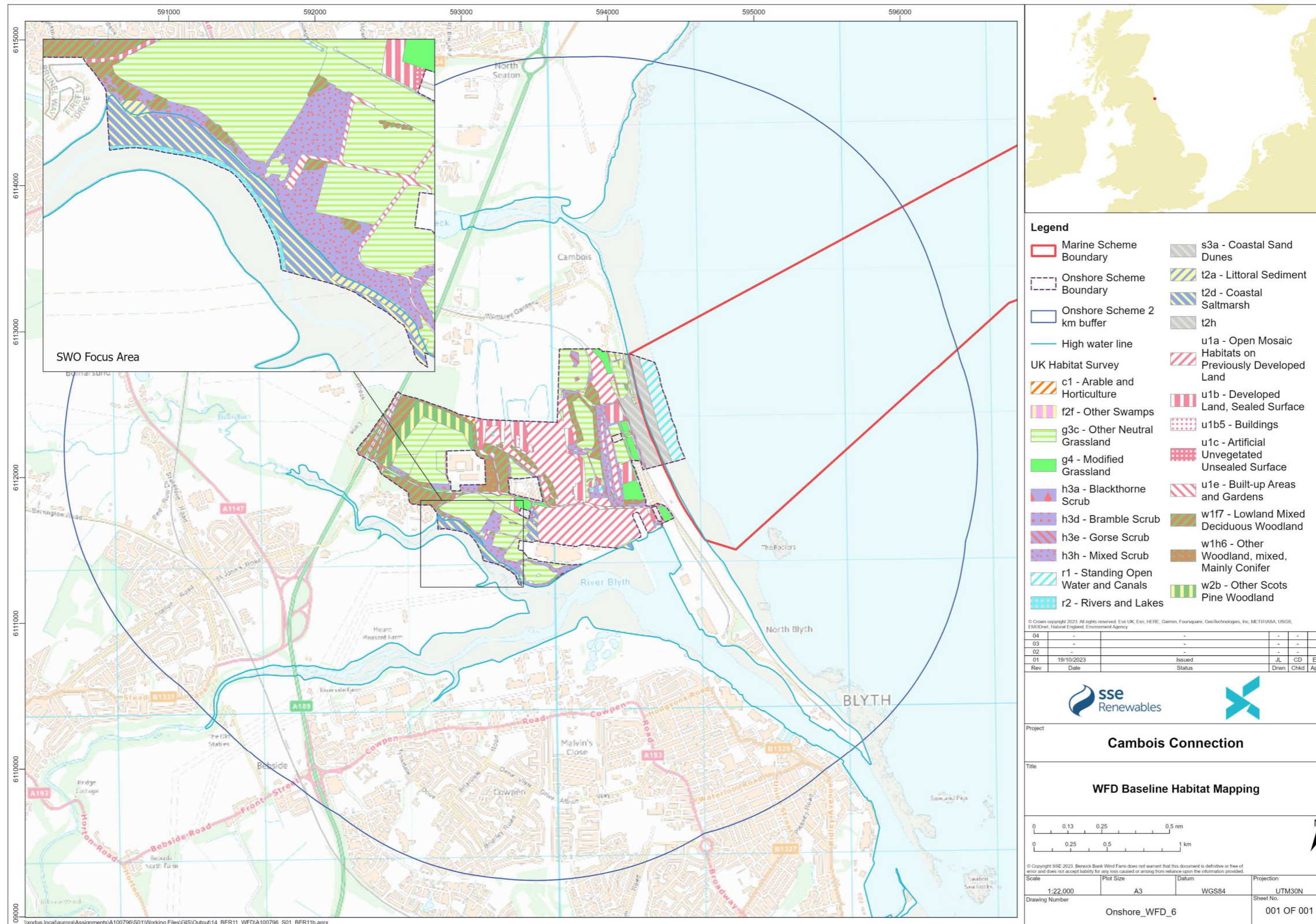


Figure 6 WFD Baseline Habitat Mapping

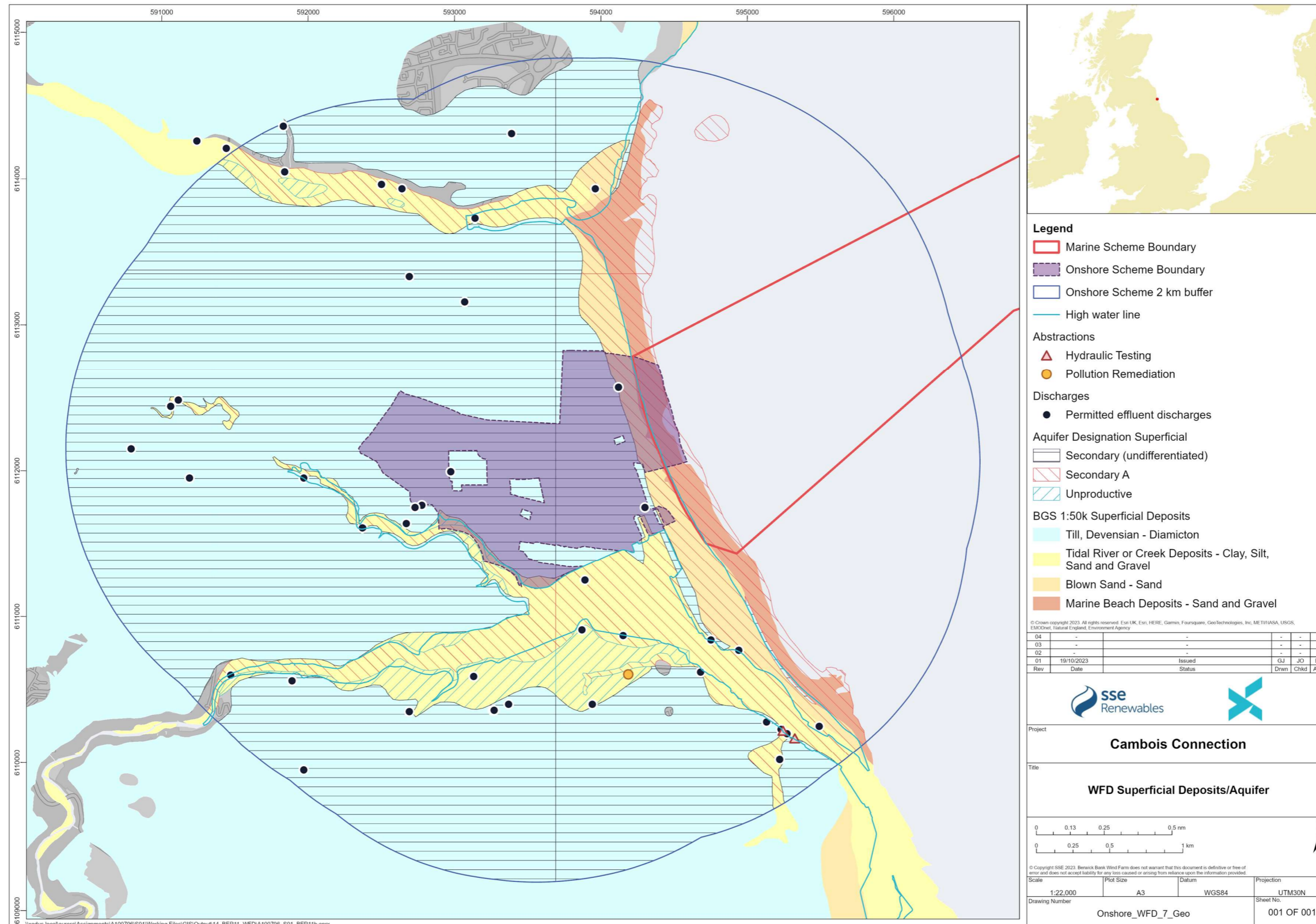


Figure 7 WFD Superficial Deposits / Aquifer

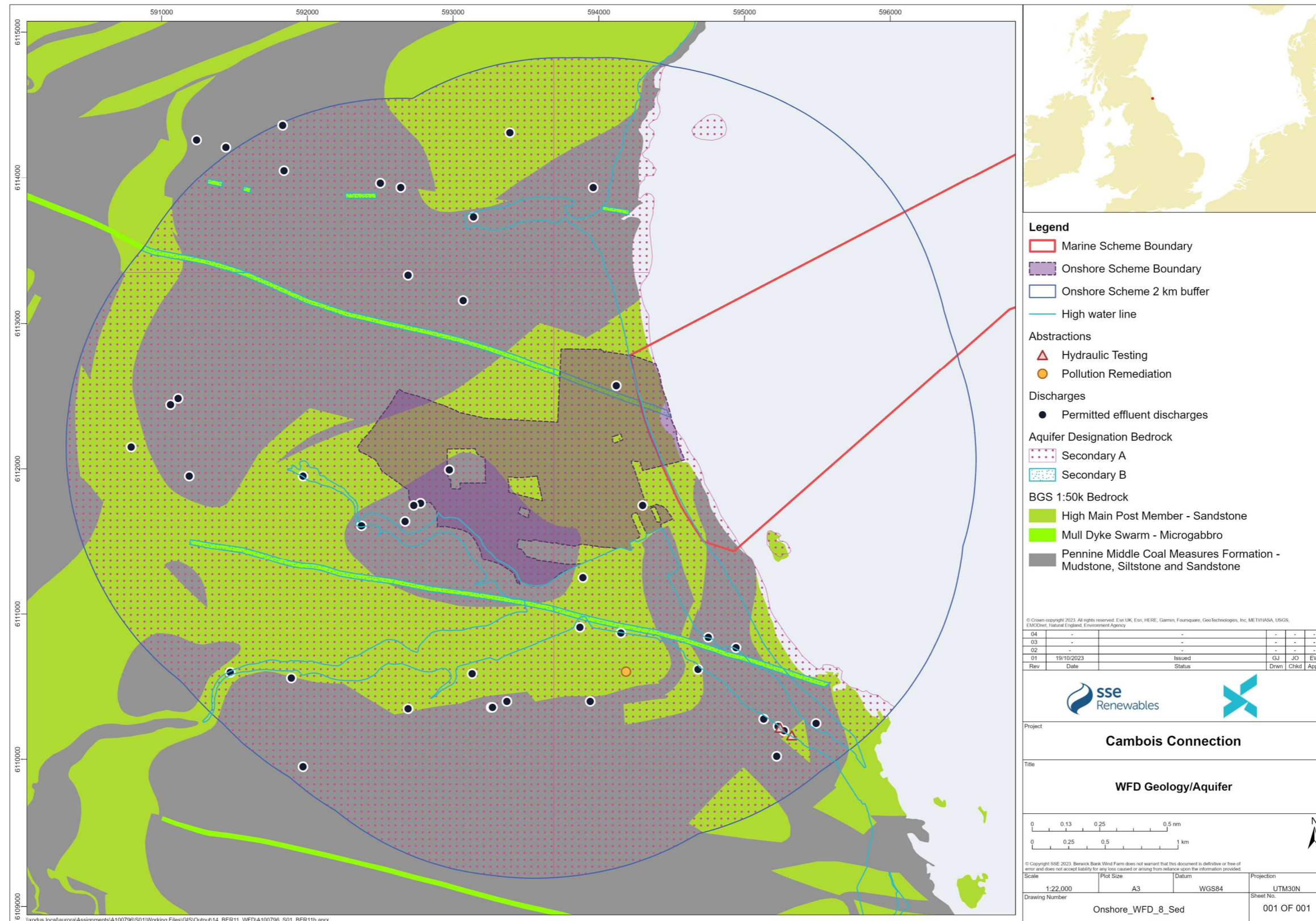



Figure 8 WFD Bedrock Geology / Aquifer


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4.1. Relevant Water bodies – TraC⁹


Table 4 TRaC Water body Summary within 2 km of the Onshore Scheme Boundary

Water body		Description, notes or more information		
WFD water body name	Tyne and Wear	Wansbeck	Blyth (N)	
Water body ID	GB650301500002	GB510302210100	GB510302203200	
River basin district name	Northumbria	Northumbria	Northumbria	
Water body type	Coastal	Transitional	Transitional	
Water body total area (ha)	12,656.881 ²	60.432 ³	171.98 ⁴	
Hydromorphological designation	Not designated artificial or heavily modified	Heavily modified – for navigation, ports and harbours	Heavily modified – for navigation, ports and harbours	
Overall water body status ¹	Good	Good	Moderate	
Ecological status (2019)	Good ²	Moderate ³	Moderate ⁴	
Biological quality elements (2019)	Good ²	Moderate ³	High ⁴	
Physico-chemical quality elements (2019)	High ²	Not assessed ³	Moderate ⁴	
Hydromorphological Supporting Elements (2019)	Supports good ²	Supports good ³	Supports good ⁴	
Specific elements/pollutants (2019)	High ²	Good ³	Moderate or less ⁴	
Chemical status (2019) ⁵	Fail ²	Fail ³	Fail ⁴	
Priority hazardous substances (2019) ⁵	Fail ²	Fail ³	Fail ⁴	

⁹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

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Water body	Description, notes or more information		
Priority substances (2019)	Good ²	Good ³	Good ⁴
Other Pollutants (2019)	Does not require assessment ²	Does not require assessment ³	Does not require assessment ⁴
Target water body status and deadline ¹	Good (2063)	Good (2063)	Moderate (2015)
Higher sensitivity habitats present ⁶	Polychaete reef (320.32 ha); Saltmarsh (3.59 ha); Subtidal kelp beds (2,015.84 ha)	Saltmarsh (0.6 ha)	Mussel beds, including blue and horse mussel (2.00 ha); Saltmarsh (11.88 ha)
Lower sensitivity habitats present ⁶	Cobbles, gravel and shingle (204.54 ha); Intertidal soft sediment (468.56 ha); Rocky shore (202.93 ha); Subtidal soft sediments (5,923.15 ha); Subtidal rocky reef (7,228.33 ha)	Intertidal soft sediment (9.71 ha)	Intertidal soft sediment (86.23 ha); Rocky shore (5.45 ha); Subtidal soft sediments (28.19 ha)
Phytoplankton status ⁶	Unknown	Unknown	Unknown
History of harmful algae ⁶	Not monitored	Not monitored	Not monitored
WFD protected areas within 2 km of the Marine Scheme boundary	Northumberland Marine SPA; Northumbria Coast SPA; Berwick to St Mary's MCZ; Coquet to St Mary's MCZ;		
<p>1: Information on cycle 3 WFD classification from UK Government (2022)</p> <p>2: Information from Environment Agency (2023a), on the latest RBMP data.</p> <p>3: Information from Environment Agency (2023b) on the latest RBMP data.</p> <p>4: Information from Environment Agency (2023c) on the latest RBMP data.</p> <p>5: The Fail chemical classification is in relation to Mercury and its Compounds and Polybrominated diphenyl ethers (PBDE). Since 2015, the approach to chemical status has been updated in terms of analytical methods and standards. Since the update, three groups of pollutants have caused approximately 97% of water bodies to fail to achieve good chemical status and these include: PBDEs, mercury and perfluorooctane sulfonate (PFOS). All water bodies of interest to this project achieved good chemical status in 2015.</p> <p>6: Information of protected habitats as informed by the cycle 2 WFD classifications from UK Government (2017).</p>			

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4.2. Relevant¹⁰ Water bodies – Fluvial¹¹

Table 5 Fluvial Water body Summary within 2 km of the Onshore Scheme Boundary


Water body		Description, notes or more information	
WFD water body name	Blyth from Pont to Tidal Limit (BPTL)	Sleekburn / Hepscott Burn Source to Tidal Limit (SBHBSTL)	Wansbeck from Bothal Burn to North Sea (WBBNS)
Water body ID	GB103022077052	GB103022076230	GB103022077062
River basin district name	Northumbria (Rivers)	Northumbria (Rivers)	Northumbria (Rivers)
Water body type	River	River	River
Water body total area (ha)	5316.96 ²	3221.072 ³	1050.721 ⁴
Hydromorphological designation	Heavily modified	Heavily modified	Heavily modified
Overall water body status ¹	Moderate	Moderate	Moderate

¹⁰ Fluvial water bodies are presented for completeness and owing to their proximity to the Onshore Scheme however for the reasons detailed within the WFD compliance assessment, there is no pathway for impacts which could lead to deterioration.

¹¹ Waterbody information can be found in the Environment Agency's catchment data explorer and the waterbody summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

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Water body	Description, notes or more information		
Ecological status (2019; 2022, where applicable)	Moderate ²	Moderate ³	Moderate ⁴
Biological quality elements (2019; 2022, where applicable)	Good ²	Moderate ³	Moderate ⁴
Physico-chemical quality elements (2019; 2022, where applicable)	Good ²	Moderate ³	Good ⁴
Hydromorphological Supporting Elements (2019; 2022, where applicable)	Supports good ²	Supports good ³	Supports good ⁴
Specific elements/pollutants (2019; 2022, where applicable)	Moderate ²	High ³	High ⁴
Chemical status (2019; 2022, where applicable) ⁵	Fail ²	Fail ³	Fail ⁴
Priority hazardous substances (2019; 2022, where applicable) ⁵	Fail ²	Fail ³	Fail ⁴
Priority substances (2019; 2022, where applicable)	Good ²	Good ³	Good ⁴
Other Pollutants (2019; 2022, where applicable)	Does not require assessment	Good	Good
Objectives	Ecological (Good, 2027) Chemical (Good, 2063) Supporting Elements (Good, 2027)	Ecological (Good, 2027) Chemical (Good, 2063) Supporting Elements (Good, 2027)	Ecological (Good, 2027) Chemical (Good, 2063) Supporting Elements (Good, 2027)

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Water body	Description, notes or more information		
Higher sensitivity habitats present ⁶	no data available	no data available	no data available
Lower sensitivity habitats present ⁶	no data available	no data available	no data available
Phytoplankton status ⁶	no data available	no data available	no data available
History of harmful algae ⁶	no data available	no data available	no data available
WFD protected areas ⁶	no data shown	Northumberland Marine (UK9020325) SPA	Northumberland Marine (UK9020325) SPA; River Wansbeck and Amenity Lake (UKENRI96) Urban Waste Water Treatment Directive

1: Information on cycle 3 WFD classification from UK Government (2022)


2: Information from Environment Agency (2023d), on the latest RBMP data.

3: Information from Environment Agency (2023e) on the latest RBMP data.

4: Information from Environment Agency (2023f) on the latest RBMP data.

5: The Fail chemical classification is in relation to Mercury and its Compounds and Polybrominated diphenyl ethers (PBDE). Since 2015, the approach to chemical status has been updated in terms of analytical methods and standards. Since the update, three groups of pollutants have caused approximately 97% of waterbodies to fail to achieve good chemical status and these include: PBDEs, mercury and perfluorooctane sulfonate (PFOS). All waterbodies of interest to this project achieved good chemical status in 2015.

6: Information of protected habitats as informed by the cycle 2 WFD classifications from UK Government (2017).

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4.3. Relevant Water bodies – Groundwater ¹²

Table 6 Groundwater Summary within 2 km of the Onshore Scheme Boundary

Waterbody ¹	Description, notes, or more information
WFD water body name	Northumberland Carboniferous Limestone and Coal Measures Water Body
Water body ID	GB40302G700200
River basin district name	Northumbria
Water body type	Groundwater
Water body total area (ha)	182274
Overall water body status	Poor
Quantitative Status Element (2019)	Good
Quantitative GWDTEs test (2019)	Good
Quantitative Water Balance (2019)	Good
Chemical element (2019)	Poor
Chemical Dependent Surface Water Body Status (2019)	Poor
Chemical Drinking Water Protected Area (2019)	Good

1. Water body information can be found in the Environment Agency's catchment data explorer Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.
2. Information from Environment Agency (2023f) on the latest RBMP data.

¹² Waterbody information can be found in the Environment Agency's catchment data explorer and the waterbody summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

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4.4. Protected Areas within the WFD Study Area

64. Figure 2 provides an overview of WFD protected areas; relevant protected areas are discussed below.

4.4.1. Nature Conservation

65. There are two SPAs and two MCZs within 2 km of the Onshore Scheme boundary. The Onshore Scheme boundary lies within the Northumberland Marine SPA, the Northumbria Coast SPA, Berwick to St Mary's MCZ and the Coquet to St. Mary's MCZ.

4.4.2. Bathing Waters

66. There are no bathing waters situated within 2 km of the Onshore Scheme boundary, as illustrated in Figure 2.

4.4.3. Shellfish Waters

67. There are no shellfish Water Protected Areas situated within 2 km of the Onshore Scheme boundary.

4.4.4. Nitrate Waters and sensitive areas

68. The Tyne and Wear Water body, Wansbeck Waterbody, and Blyth (N) Waterbody are not designated under the Nitrates Directive. The Onshore Scheme is within an area defined as 'medium priority' in relation to surface water nitrate issues although is outside of any area defined as 'high priority' (the closest high priority nitrate issues area is approximately 800 m to the north west of the Onshore Scheme). The Onshore Scheme is not within a Nitrate Vulnerable Zone (NVZ), the closest NVZ being approximately 5.3 km to the north west (NCZ associated with 'Surface Water S230 - Bothal Burn Catchment (trib of Wansbeck) NVZ').

4.4.5. Urban Wastewater Treatment (UWWT) Zones


69. There are no designations under the UWWTD located within 2 km of the Onshore Scheme boundary.

4.4.6. Non-Statutory Protected Areas

70. There are no Non-Statutory Protected Areas within 2 km of the Onshore Scheme Boundary.

4.4.7. WFD Sensitive Habitats

71. There are higher and lower sensitivity habitats present within 2 km of the Onshore Scheme boundary, as detailed in Figure 4 and Figure 5.

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5. WFD Assessment

5.1. WFD Assessment Methodology

72. This WFD compliance assessment has followed the latest Environment Agency (2017) guidance and where appropriate, the assessment has also considered wider best-practice and guidance as summarised above. This includes the Planning Inspectorate Advice Note Eighteen (WFD) (Planning Inspectorate, 2017); whilst the Onshore Scheme is not a nationally significant infrastructure project, the principles set out within the advice note provide valuable guidance associated with the completion of WFD for infrastructure projects. Northumberland County Council (NCC) have no published guidance associated with WFD, however the need for WFD is recognised by the NCC local plan (NCC, 2022) as well as the local flood risk management strategy (NCC, 2015).


73. Based on the updated draft to the RBMP and the cycle 3 review of WFD classification, the assessment considers the status as per the cycle 3 classification, with additional information on protected areas from cycle 2, where the information is not provided under updated draft to the RBMP or cycle 3 review. Based on the guidelines, a WFD assessment can have up to three stages; this is described below.

74. As detailed above, it is important to note that in accordance with the guidance referenced in this WFD compliance assessment and the Planning Inspectorate Advice Note Eighteen, the stated assessment process for WFD water bodies is equally applicable to structuring an assessment on groundwater and fluvial water bodies. Where it is necessary to deviate away from the Environment Agency (2017) guidance or indeed where elements of the guidance is not applicable, this is made clear in the WFD compliance assessment.

5.1.1. Screening

75. Screening is used to inform the Scoping stage and to exclude any activities that do not need to go through the Scoping or Impact Assessment stages as they are low risk. According to the Environment Agency guidance (2017b), screening is required for the Onshore Scheme as it is not a low-risk activity and does not meet any of the criteria detailed below:

- A self-service marine licence activity or an accelerated marine licence activity that meets specific conditions;
- Maintaining pumps at pumping stations – if you do it regularly, avoid low dissolved oxygen levels during maintenance and minimise silt movement when restarting the pumps;
- Removing blockages or obstacles like litter or debris within 10m of an existing structure to maintain flow;
- Replacing or removing existing pipes, cables or services crossing over a water body – but not including any new structure or supports, or new bed or bank reinforcement; and
- ‘Over water’ replacement or repairs to, for example bridge, pier and jetty surfaces – if you minimise bank or bed disturbance.

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5.1.2. Scoping

76. The Scoping stage identifies the WFD receptors that are potentially at risk from the proposed activity on the basis of Scoping criteria and therefore may need impact assessment. The WFD receptors and the associated Scoping criteria used to complete this stage¹³ are listed in Table 7 below.

77. At the scoping stage it is necessary to identify all potential risks to each receptor associated with the proposed activity/activities. The receptors, as specified in the ‘Clearing the Waters for All’ guidance, are: hydromorphology; biology – habitats; biology – fish; water quality; protected areas; and INNS.


78. The ‘Clearing the Waters for All’ guidance provides specific criteria for each of the receptors outlined above to determine if an assessment of effects is required and recommends the use of a scoping template as part of the WFD assessment process. These criteria are considered for each receptor below based on the recommended scoping template.

79. The Environment Agency (2017) guidance is focused on coastal and estuarine assessment, being titled by the Environment Agency as an aid to ‘*assess the impact of [...] activity in estuarine (transitional) and coastal waters for the Water Framework Directive (WFD)*’. The guidance does not explicitly set out a process for the Scoping of groundwater or fluvial water bodies, but it is widely accepted by industry and relevant stakeholders, including the Environment Agency, that the assessment process is equally relevant to structuring assessment under the WFD.

Table 7 WFD Receptors and Scoping Criteria

Receptor	Scoping criteria
Hydromorphology	Hydromorphology in this assessment is defined as the physical characteristics of the water body, including the size, shape, structure; and for marine bodies the flow and quantity of water and sediment.
Biological habitats	- This includes both those designated as higher and lower sensitivity habitats. They will be considered if the footprint (temperature or sediment plume) of the activity is any of the following: <ul style="list-style-type: none"> • 0.5 km² or larger; • 1% or more of the water bodies area; • Within 500 m of any higher sensitivity habitat; and • 1% or more of any lower sensitivity habitat.
Biology – fish	Fish activity only needs to be considered if the activity: <ul style="list-style-type: none"> • Is in an estuary and could affect fish in the estuary; • Is outside the estuary but could delay or prevent fish from entering the estuary; • Could affect fish migrating through the estuary to freshwater; and • If the activity could impact on normal fish behaviour.
Water Quality	Water quality is included in the impact assessment if the activity:

¹³ The Environment Agency guidance (2017) is focused on coastal and estuarine environments. The content therein can be applied to inform and structure the assessment of other water bodies (i.e. non-TraC); this is explained throughout the WFD compliance assessment where relevant.

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Receptor	Scoping criteria
	<ul style="list-style-type: none"> • Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days); • Is in a water body with phytoplankton status of moderate, poor or bad; • Is in a water body with history of harmful algae; and • Uses or releases chemicals e.g., through sediment disturbance or building works.
Protected Areas	Protected areas include Bathing Waters, Shellfish Waters, nutrient sensitive areas, SACs, SPAs, and Ramsar sites.
Invasive Non-Native Species (INNS)	INNS should be considered if the activity has the potential to introduce or spread INNS to a water body.

5.1.3. Impact Assessment

80. Should potential impacts be identified on WFD receptors during the Scoping stages, the guidelines necessitate an impact assessment is completed to evaluate the following:

- Identification of the potential pressures on the receptor as a result of the activity; and
- Determine whether there is potential for deterioration in the status of the water body receptor.

81. Under the guidelines, deterioration is defined as when the status of a quality element reduces by one class. If a quality element is already at the lowest status, then any reduction in its condition counts as deterioration. Temporary effects due to short-duration activities are not considered to cause deterioration if the water body would recover in a short time without any restoration measures (Environment Agency, 2017). Where relevant, mitigation measures should be included to avoid or minimise risks of deterioration. In the instance an activity causes deterioration to the quality of the receptor or supporting habitat, the assessment should consider the pathway for the impact and how the deterioration could occur, in terms of being:

- Direct and immediate – it will happen at the same time and place as the activity; or
- Indirect – it will happen later or further away, including in other linked water bodies.

82. The impact assessment is also required to consider the potential risk of jeopardising ‘Good status’ or an activity limiting the ability of a water body to achieve ‘Good status’ in the future.

5.1.4. Screening Outcome

83. The Applicant is proposing the construction and installation of a cable landfall, onshore HVDC cables, a new onshore converter station, HVAC grid cables (from the new onshore converter station to the existing Blyth National Grid substation near Cambois), including ancillary infrastructure and works to integrate the Onshore Scheme into the National Grid at the existing Blyth National Grid substation at Cambois. None of these activities are considered to fall within the Environment Agency’s ‘low risk’ category and therefore warrant a WFD compliance assessment.

84. The following water bodies have been identified as within 2 km, as summarised in Section 1.2 .


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Table 8 WFD Screening

WATER BODY	WATER BODY ID	WATER BODY TYPE	WATER BODY TOTAL AREA (HA)
Blyth (N)	GB510302203200	Transitional Estuarine	168
Tyne and Wear	GB650301500002	Coastal Water	12639
Wansbeck	GB510302210100	Transitional Estuarine	61
Northumberland Carboniferous Limestone and Coal Measures	GB40302G700200	Groundwater	182274
Blyth from Pont to Tidal Limit	GB103022077052	Fluvial	5317
Sleekburn / Hepscott Burn Source to Tidal Limit	GB103022076230	Fluvial	3321
Wansbeck from Bothal Burn to North Sea	GB103022077062	Fluvial	1051

5.1.5. Scoping Assessment - TraC

85. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on WFD water bodies and associated receptors (i.e., higher and lower sensitivity habitats, WFD protected areas etc). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Onshore Scheme and have therefore been considered in the assessment presented below.

86. Provision of mitigation measures within the WFD compliance assessment is also in accordance with the Environment Agency guidance (2017 which sets out that where relevant, mitigation measures should be included to avoid or minimise risks of deterioration.

87. The measures adopted as part of the Onshore Scheme are referenced throughout the scoping exercise and are referred to as Table 9 measures adopted as part of the Onshore Scheme

5.1.6. Hydromorphology

88. With respect to hydromorphology, potential impacts from the Onshore Scheme are scoped out from further WFD impact assessment for the reasons explained within Table 9.



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Table 9 Scoping Outcome Hydromorphology -TraC

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
<p>Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status</p>	<p>The water body is classified as “Supports good” (i.e., not classified as high status).</p> <p>The water body has been included in the WFD compliance assessment owing to its linear proximity to the Onshore Scheme (and specifically the eastern boundary of the Onshore Scheme and likely trenchless technology / TJB compound). Under the WFD assessment process and the Environment Agency guidance (2017), assessment is required.</p> <p>Whilst assessment is required based on this linear distance, there is no pathway for hydromorphological impacts to Tyne and Wear TraC. This is on the basis that trenchless technology (such as HDD) is being adopted for the Landfall, and on the basis that the trenchless technology / TJB compound will be located above MHWS and landward of the dunes at Cambois.</p> <p>The mitigation measures detailed in Table 2 Measures adopted as part of the Onshore Scheme will further reduce potential for impact.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>The water body is classified as “Supports good” (i.e., not classified as high status).</p> <p>The water body has been included in the WFD compliance assessment owing to its linear proximity to the Onshore Scheme. Under the WFD assessment process and the Environment Agency guidance (2017), assessment is required.</p> <p>However there is no pathway for hydromorphological impacts to Wansbeck TraC – there is > 700 m of landmass separating the northern boundary of the Onshore Scheme to this waterbody.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>The water body is classified as “Supports good” (i.e., not classified as high status).</p> <p>The extent of works adjacent to / within the water body is highly limited and relates to the installation of a SWO on the Sleekburn.</p> <p>All construction work on the SWO will be undertaken in accordance with the CEMP which will be drafted having consideration of all relevant standards and practice guidance, as set out in Table 2.</p> <p>The SWO will be accessed via an onshore route. Access to the site will be along a clearly defined and marked route, reducing the disturbance to the foreshore environment. Measures will be adopted to retain any intertidal soft sediment disturbed and excavated as part of construction works, with sediment returned to the nearshore and intertidal areas as close to the excavation site as practicable.</p> <p>Scoping Outcome: Scoped-Out for this test</p>

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

<p>Could significantly impact the hydromorphology of any water body</p>	<p>The Onshore Scheme will not impact the hydromorphology of any water body for the same reasons as presented above. Scoping Outcome: Scoped-Out for this test</p>	<p>The Onshore Scheme will not impact the hydromorphology of any water body for the same reasons as presented above Scoping Outcome: Scoped-Out for this test</p>	<p>The extent of works adjacent to / within the water body is highly limited and relates to the installation of a SWO on the Sleekburn.</p> <p>All construction work on the SWO will be undertaken in accordance with the CEMP which will be drafted having consideration of all relevant standards and practice guidance, as set out in Table 2.</p> <p>The SWO will be accessed via an onshore route. Access to the site will be along a clearly defined and marked route, reducing the disturbance to the foreshore environment. Measures will be adopted to retain any intertidal soft sediment disturbed and excavated as part of construction works, with sediment returned to the nearshore and intertidal areas as close to the excavation site as practicable.</p> <p>During operation, surface water will eventually discharge into the Sleekburn. A minimum of two linked SuDS components will be constructed to filter the water prior to discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn and this will include flow energy dissipation to prevent erosion of the banks. The</p>
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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

			<p>drainage design will also maximise the use of native plants and ecological connectivity.</p> <p>Measures to ensure effective management of siltation and pollution risk will be further adopted, to be agreed via the CEMP. It should be noted that the scoping conclusion is not based on this mitigation.</p> <p>Scoping Outcome: Scoped-Out for this test</p>
<p>Is in a water body that is heavily modified for the same use as your activity</p>	<p>The water body is not heavily modified.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>The water body is heavily modified for navigation, ports and harbours, however this is not the same use as the Onshore Scheme. Specifically, the Onshore Scheme is related to the construction and installation of a cable landfall, onshore HVDC cables, a new onshore converter station, HVAC grid cables, ancillary infrastructure and works to integrate the Onshore Scheme into the National Grid. Furthermore, there is no pathway for hydromorphological impacts to Wansbeck TraC – there is > 700 m of landmass separating the northern boundary of the Onshore Scheme to this water body.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>The water body is heavily modified for navigation, ports and harbours, however this is not the same use as the Onshore Scheme. Specifically, the Onshore Scheme is related to the construction and installation of a cable landfall, onshore HVDC cables, a new onshore converter station, HVAC grid cables, ancillary infrastructure and works to integrate the Onshore Scheme into the National Grid.</p> <p>The extent of works adjacent to / within the water body is highly limited and relates to the installation of a SWO on the Sleekburn</p> <p>All construction work on the SWO will be undertaken in accordance with the CEMP which will be drafted having consideration</p>

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<p>Status: Final</p>		

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

of all relevant standards and practice guidance, as set out in Table 2.

The SWO will be accessed via an onshore route. Access to the site will be along a clearly defined and marked route, reducing the disturbance to the foreshore environment. Measures will be adopted to retain any intertidal soft sediment disturbed and excavated as part of construction works, with sediment returned to the nearshore and intertidal areas as close to the excavation site as practicable.

During operation, surface water will eventually discharge into the Sleekburn. A minimum of two linked SuDS components will be constructed to filter the water prior to discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of the Sleekburn and this will include flow energy dissipation to prevent erosion of the banks. The drainage design will also maximise the use of native plants and ecological connectivity.

Measures to ensure effective management of siltation and pollution risk will be further adopted, to be agreed via the CEMP. It should be noted that the

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Status: Final

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

scoping conclusion is not based on this mitigation.

Scoping Outcome: Scoped-Out for this test

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5.1.7. Biology


5.1.7.1. HABITATS

89. The Scoping criteria for this WFD property are mainly based on the physical footprint of the Onshore Scheme and proximity to sensitive habitats. Under the WFD, the habitats receptor is split into two categories: higher sensitivity and lower sensitivity. Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures, examples include chalk reef, mussel beds, intertidal seagrass. Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressure, examples include rocky shore and subtidal soft sediments

90. Maximum dimensions for various elements of the Onshore Scheme have been defined and are provided in Project Description (section 1.3.1.). The exact footprint of some elements of the Onshore Scheme have not yet been determined and will not be determined until after submission of the planning application to NCC. The information available is adequate to complete the Scoping process for habitats; this follows in Table 10 below.


Table 10 Scoping Outcomes for Habitats

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
0.5 km ² or larger	The Onshore scheme is not greater than 0.5 km ² within this water body (approximately 0.12 km ²).	The Onshore scheme is not greater than 0.5 km ² within this water body (not located within the water body).	The Onshore scheme is not greater than 0.5 km ² within this water body (approximately 0.025 km ²).
	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-out for this test
1% or more of the water bodies area	The Onshore Scheme is not more than 1% of the water body.	The Onshore Scheme is not more than 1% of the water body (not located within the water body).	The Onshore Scheme is greater than 1% of the water body (approximately 1.48 %).
	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-In for this test
Within 500 m of any higher sensitivity habitat	The Onshore Scheme is not within 500 m of a higher sensitivity habitat within this water body.	The Onshore Scheme is not within 500 m of a higher sensitivity habitat within this water body.	The Onshore Scheme is within 500 m of a higher sensitivity habitat within this water body.
	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test	Specifically, there are pockets of saltmarsh located within and adjacent to the Onshore Scheme and a single pocket of mussel beds approximately 200 m to the south of the Onshore Scheme.

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

			Scoping Outcome: Scoped-In for this test
1% or more of any lower sensitivity habitat	<p>The Onshore Scheme does not overlap with more than 1% of a lower sensitivity habitat in this water body.</p> <p>The eastern edge of the Onshore Scheme overlaps (approximately 0.1%) with gravel & cobbles (intertidal & subtidal coarse sediment) as well as intertidal soft sediment.</p> <p>Scoping Outcome: Scoped-out for this test</p>	<p>The Onshore Scheme does not overlap with 1% or more of any lower sensitivity habitat in this water body.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>The Onshore Scheme does overlap with more than 1% of a lower sensitivity habitat in this water body.</p> <p>Specifically, the southern extent of the Onshore Scheme overlaps with rocky shore (intertidal rock) as well as intertidal soft sediment (approximately 1.13%).</p> <p>Scoping Outcome: Scoped-In for this test</p>

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5.1.7.2. FISH

91. Fish are only considered at risk if the activity is in an estuary or could affect fish in or entering an estuary. As per the Marine Scheme EIA, all impacts from the activities were considered as not significant (please refer to Volume 1, Chapter 9: Fish and Shellfish Ecology within the Marine Scheme EIA for further details – this is available on the MMO public register (MLA/2023/00334)). Table 11 describes the scoping outcome for fish.

Table 11 Scoping Outcome for Fish

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Diadromous species are the species which would migrate to/from rivers. The diadromous species considered as part of the Marine Scheme include: Atlantic salmon (<i>Salmo salar</i>), sea trout (<i>Salmo trutta</i>), sea lamprey (<i>Petromyzon marinus</i>), river lamprey (<i>Lampetra fluviatilis</i>), European eel (<i>Anguilla Anguilla</i>) and Brook lamprey (<i>Lampetra planeri</i>). Full details are available via the MLA (available via the MMO public register using case reference MLA/2023/00334).	Depending on the exact timing and location of construction activities, there is the potential for some noise to enter the water column – this is likely to be from a temporary cofferdam, if required, only. Piling would be undertaken from shore above the tidal level (from onshore plant; no marine-based plant is proposed). There are no fisheries species formally designated on the Sleekburn however local reports indicate the presence of some fish – mainly Brown trout <i>Salmo trutta</i> (a UK BAP fish species) and Grayling <i>Thymallus thymallus</i> along the River Blyth.	Surveys commissioned by the Pont and Blyth Project indicate lower densities of fish than ‘should be expected’, principally due to issues such as channel dredging (thereby depleting natural substrate), over-grazing, bank erosion, barriers to fish migration and lack of aerial cover (Wild Trout Trust, 2023). Based on the low-levels of noise generated by vibro-piling for the temporary cofferdam (if needed) and the low levels of non-designated fish within the vicinity of works (low sensitivity), the activity is considered highly unlikely to lead to a discernible impact on fish ¹⁴ .
	The Onshore Scheme during the operation will discharge surface water to the Sleekburn subject to the controls and mitigation detailed in Table 2: Measures adopted as part of the Onshore Scheme (and under the environmental permit which is anticipated to be required from the Environment Agency under the environmental permitting regime). Due to the nature of the operational phase of the Onshore Scheme and the low levels of surface water discharged through the SWO in accordance with the measures detailed, it is considered highly unlikely that there could be any discernible impact to fish during the operational phase.		

¹⁴ Whilst no further assessment is required for purposes of WFD, further marine-specific consideration of fisheries, if required, will be provided as part of the separate Marine Licence Application (MLA) process for the work below Mean High Water Springs (MHWS) to be undertaken with the MMO. The approach to obtaining a Marine Licence from the MMO separate to the planning application to NCC is required due to the lack of detailed design information associated with the outfall on the Sleekburn (noting also that the approach is consistent with that which was followed by the adjacent North Sea Link converter station development).

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

Table 2: Measures adopted as part of the Onshore Scheme provides a detailed suite of measures which will be adopted as part of the Onshore Scheme. When considered against the context of the fisheries populations within each water body, a further detailed assessment (beyond WFD scoping) is not required.

Scoping Outcome: Scoped Out for this test

Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)	N/A as the scoping template does not require a scoping decision on this if above is scoped out.
Could cause entrainment or impingement of fish	N/A as the scoping template does not require a scoping decision on this if above is scoped out.


5.1.7.3. WATER QUALITY

92. An impact assessment is required if there are adverse impacts on water quality indicators e.g., changes in water clarity, temperature, salinity, oxygen levels etc. or if the activity takes place in a water body with a phytoplankton status of moderate or less or with a history of harmful algae (Table 12).

93. With respect to the proposed works associated with the Onshore Scheme, based on the nature of works (which are almost wholly terrestrial) and considering the application of the measures detailed in Table 2, the potential risk to water quality is scoped out.

Table 12 Scoping Outcome for Water Quality

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	The Onshore Scheme will not involve any proposals which could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days) within either Tyne and Wear or Wansbeck water bodies. This is on the basis of the lack of credible pathway to each water body, the	The Onshore Scheme will involve the discharge of surface water into the Sleekburn (part of the Blyth (N) waterbody) during the operational period.	As set out above, a CEMP will be developed to inform the

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)


nature of the Onshore Scheme as detailed in section 1.3.1, as well as the application of measures presented within Table 2: Measures adopted as part of the Onshore Scheme which will manage any residual risk to both water bodies.

management of construction-phase impacts; this will include measures to control potential pollution from use of fuels and oils or other chemical substances and manage soil handling to prevent sediment entrainment. An outline CEMP has been provided with the planning application to NCC.

All construction work will be undertaken in accordance with the CEMP which will be drafted having consideration of all relevant standards and practice guidance; this is described in full within Table 2.

During operation, the SWO will facilitate the discharge of surface water into the Sleekburn. A minimum of two linked SuDS components may be constructed to filter the water prior to discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn Estuary and this will include flow energy dissipation to prevent erosion of the banks. The drainage design will also maximise the use of native plants and ecological connectivity. Measures to ensure effective management of siltation and pollution risk will be further adopted, to be agreed via the CEMP. It should be noted that the scoping conclusion is not based on this mitigation


Based on these factors, it is considered highly unlikely that the Onshore Scheme could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
			spring neap tidal cycle (~14 days). Scoping Outcome: Scoped out for this test
Is in a waterbody with a phytoplankton status of moderate, poor or bad	No classification data available, also noting lack of any credible pathway for impacts upon this water body for the same reasons described in-full above.	No classification data available, also noting lack of any credible pathway for impacts upon this water body for the same reasons described in-full above.	Phytoplankton High Scoping Outcome: Scoped out for this test
Is in a waterbody with a history of harmful algae	Tyne & Wear: harmful algae Not monitored Scoping Outcome: Scoped out for this test	Wansbeck harmful algae Not monitored Scoping Outcome: Scoped out for this test	Blyth harmful algae Not monitored Scoping Outcome: Scoped out for this test

Table 13 Scoping Outcome for Chemicals Released through Mixing Zone

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
If there is a mixing zone (like a discharge pipeline or outfalls) the chemicals released are on the Environmental Quality Standards Directive (EQSD) list	There is no SWO into Tyne and Wear water body. Scoping outcome - Scoped out for this test	There is no SWO into Tyne and Wear water body. Scoping outcome - Scoped out for this test	The Onshore Scheme will involve the discharge of surface water into the Sleekburn (part of the Blyth (N) water body). During operation, the SWO will facilitate the discharge of surface water (i.e., rain water, not processing fluids) into the Sleekburn at an unrestricted rate (subject to regulation of the Environment Agency under the environmental permitting regime). A minimum of two linked SuDS components will be constructed to filter the water prior to

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

discharge. The outfall will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn and this will include flow energy dissipation to prevent erosion of the banks.

The drainage design will also maximise the use of native plants and ecological connectivity.

Measures to ensure effective management of siltation and pollution risk will be further adopted, to be agreed via the CEMP. It should be noted that the scoping conclusion is not based on this mitigation;

In specific relation to mixing, there is no planned release of chemicals through the SWO (it being used for discharge of surface water, subject to the management measures described above). As the discharge is related to surface water and not a bi-product of cooling or other operations, there is no planned chemical dosing or biofouling management.

Scoping outcome - Scoped out for this test


Table 14 Scoping Outcome for Uses or Release of Chemicals

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

The chemicals are on the EQSD list

As described above, there is no planned release of chemicals through the SWO (it being used for discharge of surface water, subject to the management measures described above). As the discharge is related to surface water and not a bi-product of cooling or other operations, there is no planned chemical dosing or biofouling management.

Scoping outcome - Scoped out for this test

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)

It disturbs sediment with contaminants above Cefas Action Level 1 (CAL1)	The Onshore scheme will be constructed within an almost wholly terrestrial setting (as described above, there are only limited interactions with water bodies which relate to the Landfall and the SWO on the Sleekburn).		
	Cefas action levels can be used as part of a weight of evidence approach to understanding historical contaminant and they are frequently used in support of Marine Licensing for activities below MHWS. Generally, material below AL1 is not of concern whilst material between AL1 and AL2 may require additional management and handling before disposal to sea. Material above AL2 is generally not considered suitable for disposal to sea on the basis it could lead to re-suspension of contaminated material and subsequent (significant) ecological impacts.		
	As part of the WFD scoping process, a contemporaneous review of Marine Licensing in the area was undertaken, with a view to understanding potential contaminant risks adjacent to the SWO on the Sleekburn; no evidence to indicate the presence of material adjacent to this area above AL1 was uncovered. Beyond this, it is important to note that the construction of the SWO will be via onshore access and will require highly limited levels of potential distance with the sediment within the Sleekburn. This water body is part of a highly-dynamic tidal estuary, with any sediment deposition, resuspension and exchange being in relation to tidal processes		
	Beyond these factors, a CEMP will be employed for the Onshore Scheme and management of contamination will be considered within the SWMP, as required. As described in Table 2: Measures adopted as part of the Onshore Scheme above, intertidal soft sediment will be retained as far as practicable during construction of the SWO (consistent with the approach followed for the adjacent North Sea Link outfall).		
Construction works below MHWS will be subject to a Marine licence from the MMO, providing further safeguards to the marine environment.			


Scoping outcome - Scoped out for this test

5.1.8. WFD Protected Areas

94. There are WFD protected areas which need to be considered for the potential to be at risk from an activity under the WFD assessment; this is summarised in Table 15 below.

Table 15 Scoping Outcome for WFD Protected Areas

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
Within 2km of any WFD protected area	The Onshore Scheme boundary overlaps with two Marine Conservation Zones (MCZs) – Berwick to St Mary’s and Coquet to St Mary’s.		

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Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
	<p>The Onshore Scheme also overlaps with the Northumberland Marine SPA and is approximately 400 m from the Northumbria Coast SPA.</p> <p>There are no additional WFD protected areas (i.e. such as bathing waters, shellfish waters, nitrate waters) within 2 km of the Onshore Scheme.</p> <p style="text-align: center;">Scoping outcome - Scoped In for this test</p>		

5.1.9. INNS

95. An impact assessment would be required if there is a risk that the activity could introduce or spread INNS. Risks of introducing or spreading INNS include:

- Materials or equipment that have come from, had use in or travelled through other water bodies; or
- Activities that help spread existing INNS, either within the immediate water body or other water bodies.


96. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on WFD water bodies, please refer to Table 2: Measures adopted as part of the Onshore Scheme for further details

97. Table 16 describes the scoping outcome for INNS.

Table 16 Scoping Outcome for INNS

Scoping Test	Scoping Decision (IN/OUT) and Justification		
	Tyne and Wear	Wansbeck	Blyth (N)
Introduce or spread INNS	<p>The Habitat Survey Report (Volume 3 Appendix 9.1) confirmed the existence of seven, Schedule 9 invasive species recorded within the Onshore Scheme¹⁵. There is no planned release of construction-phase discharges into water bodies, meaning pathways for impact are limited. Best-practise protocols to prevent and manage the spread these terrestrial Schedule 9 invasive plant species will be employed to mitigate spread and introduction to transitional water bodies.; refer to Table 2: Measures adopted as part of the Onshore Scheme for further details.</p> <p style="text-align: center;">Scoping outcome - Scoped out for this test</p>		

¹⁵ The Technical Appendix 9.1: Habitat Survey Report confirmed the existence of the following Schedule 9 invasive species recorded on the Onshore Site: Japanese Knotweed in open mosaic habitat east of Site in the Landfall/HVDC Zone; Cotoneaster in in open mosaic habitat east of Site in the Landfall/HVDC Zone; Japanese Rose in open mosaic habitat and coastal woodland east of Site in the Landfall/HVDC; and Zone; and Himalayan Balsam in coniferous woodland west of Site in the Converter Station Zone. Additionally, the following species are considered invasive due to the detrimental impacts they are known to have on ecosystems: Pirri Burr in open mosaic habitat east of Site in the Landfall/HVDC Zone; and Buddleja in open mosaic habitat east of Site in the Landfall/HVDC Zone.


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5.1.10. Scoping Summary – TraC

98. Table 17 summarises which receptors are potentially at risk from the proposed Onshore Scheme and are therefore carried forward for Impact Assessment as shown below.

Table 17 Summary of Scoping Assessment

Receptor	Scoped In or Scoped Out	Scoping justification for impact assessment
Hydromorphology	Scoped Out	Highly limited potential for hydromorphological interactions, as explained in the preceding section of the WFD compliance assessment.
Biology: habitats	Scoped In	<p>The Onshore scheme is not greater than 0.5 km² within any water body identified within the WFD compliance assessment and all are scoped out for this test</p> <p>The Onshore Scheme is 1% or more of the Blyth (N) water body area and is scoped in for this test.</p> <p>The Onshore Scheme is within 500 m of a higher sensitivity habitat within Blyth (N) water body and is scoped in for this test. High sensitivity habitats (Blyth (N)): pockets of saltmarsh located within and adjacent to the Onshore Scheme and a single pocket of mussel beds approximately 200 m to the south of the Onshore Scheme.</p> <p>The Onshore Scheme does overlap with more than 1% of a lower sensitivity habitat in Blyth (N) water body and is scoped in for this test. Lower sensitivity habitats (Blyth (N)): the southern extent of the Onshore Scheme overlaps with rocky shore (intertidal rock) as well as intertidal soft sediment.</p>
Biology: fish	Scoped Out	Limited potential for impacts on fish, as set out in the preceding section of the WFD compliance assessment; no designated fish species present (i.e., as part of a Special Area of Conservation / MCZ or similar).
Water quality	Scoped Out	Based on the application of mitigation described in Table 2: Measures adopted as part of the Onshore Scheme and the extent of activities during both the construction and operational phase of the Onshore Scheme, there is limited potential for impacts on water quality, as explained in the preceding section of the WFD compliance assessment.
Protected areas	Scoped In	The Onshore Scheme boundary intersects one SPA and two MCZs, with an additional SPA and MCZ within 2 km
INNS	Scoped Out	There is no planned release of construction-phase discharges into water bodies, meaning pathways for impact are limited. Best-practice protocols to prevent and manage the spread these terrestrial Schedule 9 invasive plant species will be employed (see Table 2: Measures adopted as part of the Onshore Scheme for further details).

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5.1.11. Scoping Assessment – Groundwater


99. A detailed appraisal of groundwater has been undertaken as part of the Onshore Scheme EIA; please refer to Volume 2, Chapter 11: Hydrology and Hydrogeology for further information. This assessment has been drawn on to inform the scoping assessment; for brevity, it is not repeated in full.

100. Northumberland Carboniferous Limestone and Coal Measures Water Body is the groundwater water body which the Onshore Scheme is within. The aquifer characteristics for the strata on and in the immediate vicinity of the Onshore Scheme are summarised below in Table 18.

Table 18 Aquifer characteristics for the strata on and in the immediate vicinity of the Onshore Scheme

Formation	Description	Aquifer Characteristic
Superficial Geology		
Glacial Till / Diamicton	Poorly sorted sediment suspended in an unconsolidated matrix of mud or sand. Borehole records locally indicate the diamicton is variable across the Site from 5 m to 25 m thick.	Secondary (undifferentiated)
Tidal River or Creek Deposits	Sediments of varying grain sizes from mud to salt but mainly silt and clay, deposited within channel in tidal flats and lagoons.	Secondary A
Blown Sand	Sand that has been transported via aeolian processes / wind.	Secondary A
Marine Beach Deposits	Shingle, sand, silt and clay; may be bedded or chaotic; beach deposits such as dunes, sheets or banks; associated with the marine environment.	Secondary A
Bedrock Geology		
Pennine Middle Coal Formations (Sandstone)	Interbedded Mudstone, Siltstone and pale grey Sandstone with coal seams.	Secondary A
Pennine Middle Coal Formations (Sandstone, Mudstone and Siltstone)	Interbedded Mudstone, Siltstone and pale grey Sandstone with coal seams.	Secondary A

101. It is expected that groundwater is naturally flowing towards the east through the Onshore Scheme towards the coast. Groundwater levels beneath the Onshore Scheme are likely in continuity with the tidal levels in the River Blyth and North Sea. It is unlikely that this groundwater is in continuity with the overlying diamicton and instead becomes confined below the clay substrate when the groundwater levels locally are higher.

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102. Groundwater vulnerability across the Onshore Scheme is considered medium to low which is considered representative of the poor permeability geology (diamicton) overlaying the majority of the Onshore Scheme (low vulnerability of groundwater). Permeable deposits have limited spatial extent but inherently increase the vulnerability of the receiving groundwater.

103. It is likely that any shallow groundwater within the diamicton is expressed locally from watercourses. It is important to note that these are likely very low and non-consistent. The upper reaches of Cow Gut on the site were noted to be dry (i.e., no baseflows) during the completion of baseline surveys undertaken by the Applicant (refer to Volume 3, Appendix 9.1: Habitat Survey Report for further information). Small watercourses within the Onshore Scheme (including Cow Gut and Maw Burn) are unlikely to be hydrologically connected to the regional groundwater table and therefore are predominantly sourced from rainfall runoff and overland flows.

104. Incident rainfall onto the Study Area will either run overland into adjacent watercourses, infiltrate via permeable geology into the regional groundwater table, or infiltrate into more permeable lenses in the diamicton and act as perched groundwater of which levels are inconsistent throughout the deposit. Some rainfall on the partially developed brownfield land within the site will be managed by surface water drainage reticulation, which drain to local watercourses.

105. The quality of the groundwater is likely poor given the degree of saline intrusion which is likely to occur following interaction with the North Sea and known coal seams within the bedrock likely resulting in elevated levels of heavy metals. Mapping does not suggest these coal seams have been worked. Typically worked coal seams would have a detrimental impact on the chemical classification of the groundwater.


106. It is understood that 'Ordinary Watercourses' on the Site are sourced from overland flows and are not in hydraulic continuity with the regional groundwater. Larger watercourses / 'Main Rivers' are at lower elevation and interact with groundwater within the bedrock / permeable superficial geology. Baseflows into the larger watercourses will have little influence on flow and levels in the channel given that these are tidally dominated.

107. Unlike the other scoping assessments provided above, there is no prescribed scoping appraisal methodology for groundwater however relevant aspects of the Environment Agency guidance (2017b) may be drawn upon to inform the assessment. For consistency with the remainder of the WFD compliance assessment, a tabulated summary of key considerations associated with groundwater is provided in Table 19 below.

Table 19 Summary of Key Considerations for Groundwater

Scoping Consideration ¹⁶	Scoping Decision (IN/OUT) and Justification
	Northumberland Carboniferous Limestone and Coal Measures (GW)
Potential impacts during construction from sediment	Groundwater which is present beneath the Onshore Scheme is considered to be low vulnerability (i.e., unlikely to exist within the shallow layers) and of low value. The recoverability of the receptor is considered low as any groundwater within the diamicton

¹⁶ As described above, there is no prescribed series of WFD scoping 'tests' for groundwater. On this basis, a series of scoping considerations have been made within the WFD compliance assessment based on professional judgment and expertise of assessment for comparable infrastructure projects.

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Scoping Consideration¹⁶	Scoping Decision (IN/OUT) and Justification
	Northumberland Carboniferous Limestone and Coal Measures (GW)

disturbance and or accidental spills. would not be in hydraulic continuity laterally or vertically and therefore not freely flowing. Any spillage at the ground surface is unlikely to enter the groundwater water body.

Scoping Outcome: Scoped Out for this test

Potential interaction with water table during construction by causing modifications to natural drainage patterns

Construction activities associated with all construction and civil engineering activities for the Onshore Converter Station have the potential to interact with the shallow water table and alter the local hydrogeology which may increase the risk of groundwater flooding locally. Any groundwater emergence would discharge offsite via local watercourses. All watercourses on the site discharge into a tidal body and therefore any changes in the hydrological regime will have negligible impact on water levels, and consequently flood risk, in Sleekburn River Blyth, and North Sea.

Interaction with the water table is not considered an impact for the construction compound, or inland areas of the HVDC and HVAC cable routes, both of which are underlain by diamicton geology. Due to the nature of the underlying geology (clay), there will be no shallow water table and therefore interaction with this would not be possible. Water may be present in permeable areas of the diamicton however these are likely localised and confined and not continuous across the strata.

The Onshore Scheme is located adjacent to an area of open coast and therefore regional groundwater levels, particularly at a site level, will fluctuate with the incoming tidal level. Interaction with the water table will only occur at Landfall areas (more permeable geology) whereby the groundwater is hydrologically connected to the sea. Changes to the hydrogeological regime in this location would be unlikely due to the dominance of the tide impacting water levels. There would therefore be no implication on groundwater flood risk (i.e., which may typically occur through spring formation, etc) and any cabling installed through the Onshore Scheme will be designed in consideration of water resilience. As detailed in section 1.1.2, the trenchless technology / TJB compounds will be located landward of the beach and dunes at Cambois in an appropriately located compound. The use of the compound in this area will be subject to the control of the CEMP detailed above, the compound location will be agreed with NCC before construction.


Scoping Outcome: Scoped Out for this test

During operational phase

Throughout the operational phase the HVDC/HVAC cable routes will remain in-situ with ground levels and vegetation initially reinstated to existing (pre-development) conditions.

Once installed, the cable routes will not interact with watercourses or other water bodies as instead it will be lain beneath the base of any surface water features. During operation, once the cables are installed and ground reinstated, there will be no further works which may result in the mobilisation of sediment and turbid water. The cables will be installed within water resilient ducts with little to no leaching potential. On this basis, the HVDC/HVAC cable routes during the operational phase will have negligible impact on water quality.

Scoping Outcome: Scoped Out for this test

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5.1.12. Scoping – Fluvial

108. The Onshore Scheme lies c.450 m to the south of Cambois, on land between the River Wansbeck in the north and the Sleekburn and River Blyth in the south. The Site is located immediately north of the River Blyth Estuary along an area of open shoreline associated with the North Sea. Sleekburn is present along the south-western boundary discharging into the Blyth Estuary.

109. Water bodies on/in the vicinity of the Study Area include:

- North Sea – located to the east of the Site, the North Sea has a semi-diurnal tidal cycle and its tidal levels dominate local watercourses.
- River Wansbeck – located c.90 0m north of the Site flowing in a south easterly direction into the North Sea.
- River Blyth – located immediately south of the Site flowing east into the North Sea.
- Sleekburn – located along the south-western boundary flowing south-east into the River Blyth and subsequently the North Sea.
- Cow Gut – 'Ordinary Watercourse' which rises to the west of the A189, beyond the western boundary of the Site, and is culverted beneath the highway to enter the Site in the north-western extent. Much of the channel has been re-routed through the Site following partial development of the brownfield land within the Site. The channel outfalls into the River Blyth at the marina (south-eastern site).
- Maw Burn – 'Ordinary Watercourse' in the northern extent of the Site, conveying flows in an easterly direction beneath the railway line and Unity Terrace (road) into the North Sea.

110. Topographic data for the Site suggests that the overall slope across the site falls south towards Sleekburn and the River Blyth (within Blyth N GB510302203200 Trac) and east towards the North Sea.

111. The Onshore scheme is surrounded by tidally dominated water bodies and located downstream of WFD surface water catchments. There are however three fluvial catchments that intersect with 2 km buffer around the Onshore Scheme.

112. Two catchments located within the River Blyth and Sleekburn, considered fluvially dominated, upstream of Blyth (N) GB510302203200:


- Sleekburn / Hepscoth Burn Source to Tidal Limit Water Body (GB103022076230)
- Blyth from Pont to Tidal Limit Water Body (GB103022077052).

113. One catchment located within River Wansbeck, considered fluvially dominated upstream of Wansbeck Estuary (GB510302210100):

- Wansbeck from Bothal Burn to North Sea (GB103022077062)

114. There is no hydrological connectivity between the Onshore schemes to these fluvial water bodies due to hydrological controls (i.e. sluice) or hydraulic limits of tidal exchange (i.e. tidal limits) and they have subsequently been scoped out as outlined below.

115. The Sleekburn / Hepscoth Burn Source to Tidal Limit water body in 2019 was classified as having Moderate ecological status but failed with regards to chemical elements. The 'fail' in chemical status is due to the change in assessment method outlined above. Previous assessment of chemical status prior to 2019 indicated good status.

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116. Sleekburn / Hepscoth Burn Source to Tidal Limit, Data from WB_GB650301500002_C2-plan_objectives 2016, C2 Classification _data _2016:

- Ammonia (Phys-Chem) Class moderate
- Dissolved oxygen Class High
- pH Class High
- Phosphate Class Good

117. The Blyth from Pont to Tidal Limit water body in 2019 also had 'Moderate' ecological elements and failed with regards to chemical elements. The 'fail' in chemical status is due to the change in assessment method outlined above. Previous assessment of chemical status prior to 2019 indicated good status.

118. Blyth from Pont to Tidal Limit, Data from WB_GB650301500002_C2-plan_objectives 2016, C2 Classification _data _2016:

- Ammonia (Phys-Chem) Class High
- Dissolved oxygen Class High
- pH Class High
- Phosphate Class Good

119. Wansbeck from Bothal Burn to North Sea water body in 2019 was classified as having Moderate ecological status but failed with regards to chemical elements. The 'fail' in chemical status is due to the change in assessment method outlined above. Previous assessment of chemical status prior to 2019 indicated good status.

120. Wansbeck from Bothal Burn to North Sea, Data from WB_GB650301500002_C2-plan_objectives 2016 , C2 Classification _data _2016:

- Ammonia (Phys-Chem) Class High
- Dissolved oxygen Class High
- pH Class high
- Phosphate Class moderate

121. The Onshore Scheme is conducted adjacent to estuary Blyth (N) Trac water body, the fluvial water bodies are located upstream of the Onshore Scheme and there is no hydraulic connectivity from estuary to river.




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Table 20 Scoping Outcome – All WFD Considerations for Fluvial

Scoping Consideration	Scoping Decision (IN/OUT) and Justification		
	Blyth from Pont to Tidal Limit (BPTL)	Sleekburn / Hepscoot Burn Source to Tidal Limit (SBHBSTL)	Wansbeck from Bothal Burn to North Sea (WBBNS)
HYDROMORPHOLOGY			
<p>Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status</p>	<p>Both waterbodies are upstream of Blyth (N) Estuary; both water bodies are classified as “Supports good” (i.e., not classified as high status).</p> <p>Each waterbody has been included in the WFD compliance assessment owing to its linear proximity to the Onshore Scheme. Under the WFD assessment process and the Environment Agency guidance (2017), assessment is required.</p> <p>There are no works planned within (BPTL) waterbody.</p> <p>The BPTL is beyond the tidal limit of the Sleekburn, and beyond the ‘reach’ of potential impacts associated with the SWO. Furthermore, the very nature of the SWO means that during peak high-tide events, the SWO will not be discharging into the (linked) Sleekburn, as described above and within Volume 3 , Appendix 11.3 : Surface Water Drainage Strategy. On this basis, there is not considered to be any hydrological exchange with the – upstream – water body BPTL and SBHBSTL.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	<p>WBBNS is upstream of Wansbeck Estuary</p> <p>The relevant water body is classified as “Supports good” (i.e., not classified as high status).</p> <p>The waterbody has been included in the WFD compliance assessment owing to its linear proximity to the Onshore Scheme. Under the WFD assessment process and the Environment Agency guidance (2017), assessment is required.</p> <p>There are no works planned within (WBBNS) water body.</p> <p>There is not considered to be any potential for hydromorphological impacts on a water body of high status.</p> <p>Scoping Outcome: Scoped-Out for this test</p>	

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Scoping Consideration	Scoping Decision (IN/OUT) and Justification		
	Blyth from Pont to Tidal Limit (BPTL)	Sleekburn / Hepscoth Burn Source to Tidal Limit (SBHBSTL)	Wansbeck from Bothal Burn to North Sea (WBBNS)
Could significantly impact the hydromorphology of any water body	There are no works planned within BPTL water body, There is not considered to be any potential for hydromorphological impact on another water body.	There are no works planned within SBHBSTL water body. There is not considered to be any potential for hydromorphological impact on another water body.	There are no works planned within WBBNS water body. There is not considered to be any potential for hydromorphological impact on another water body
	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test
Is in a water body that is heavily modified for the same use as your activity	BPTL is heavily modified. The pre-existing modification is not for same use as onshore scheme activity	SBHBSTL is heavily modified. The pre-existing modification is not for same use as onshore scheme activity	WWBBNS is heavily modified . The pre-existing modification is not for same use as onshore scheme activity
	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test	Scoping Outcome: Scoped-Out for this test
BIOLOGY - HABITATS			
0.5 km ² or larger	The Onshore Scheme is not 0.5km ² or more within any of these water bodies.		
	Scoping Outcome: Scoped Out for this test		
1% or more of the water bodies area	The Onshore Scheme is not 1% or more in relation to any of these water bodies.		
	Scoping Outcome: Scoped Out for this test		
Within 500 m of any higher sensitivity habitat	The Onshore Scheme is not within 500 m of any higher sensitivity habitat associated with these water bodies.		
	Scoping Outcome: Scoped Out for this test		

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Scoping Consideration	Scoping Decision (IN/OUT) and Justification		
	Blyth from Pont to Tidal Limit (BPTL)	Sleekburn / Hepscomb Burn Source to Tidal Limit (SBHBSTL)	Wansbeck from Bothal Burn to North Sea (WBBNS)

1% or more of any lower sensitivity habitat	The Onshore Scheme is not within 500 m of any lower sensitivity habitat associated with these water bodies.		
	Scoping Outcome: Scoped Out for this test		

BIOLOGY - FISH


if your activity is in an estuary and could affect fish in the estuary	The Onshore Scheme does have components which extend into a tidal estuary (the River Blyth / Sleekburn, part of Blyth (N) waterbody); this relates to the SWO, as detailed in section 1.1.2 above. However, the Onshore Scheme is not located within any of these fluvial water bodies, nor are they considered to be in hydrological connectivity with the Onshore Scheme. Based on these factors and the wider assessment of fisheries in relation to Blyth (N) above, no further assessment is required.		
	Scoping Outcome: Scoped Out for this test		

Is outside the estuary but could delay or prevent fish from entering the estuary	The same rationale above applies equally here.		
	Scoping Outcome: Scoped Out for this test		

could affect fish migrating through the estuary to freshwater	The same rationale above applies equally here.		
	Scoping Outcome: Scoped Out for this test		

WATER QUALITY

could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	The Onshore Scheme does have components which extend into a tidal estuary (the River Blyth / Sleekburn, part of Blyth (N) waterbody); this relates to the SWO, as detailed in section 1.3.1 above. However, the Onshore Scheme is not located within any of these fluvial water bodies, nor are they considered to be in hydrological connectivity with the Onshore Scheme. Based on these factors and the wider assessment of water quality in relation to Blyth (N) above, no further assessment is required.		
	Scoping Outcome: Scoped Out for this test		

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Scoping Consideration	Scoping Decision (IN/OUT) and Justification		
	Blyth from Pont to Tidal Limit (BPTL)	Sleekburn / Hepscoth Burn Source to Tidal Limit (SBHBSTL)	Wansbeck from Bothal Burn to North Sea (WBBNS)


is in a water body with a phytoplankton status of moderate, poor or bad	The same rationale above applies equally here. Scoping Outcome: Scoped Out for this test		
is in a water body with a history of harmful algae	The same rationale above applies equally here. Scoping Outcome: Scoped Out for this test		

WFD PROTECTED AREAS

Within 2km of any WFD protected area	The Onshore Scheme is located adjacent to / within the estuary Blyth (N) TraC water body, the fluvial water bodies are located upstream of the Onshore Scheme and there is no hydraulic connectivity from estuary to river water bodies. The onshore scheme could not affect protected areas. The Applicant is aware of the relevant WFD protected areas which are within 2 km of the Onshore Scheme; they are scoped into detailed assessment based on TraC interactivity – no detailed assessment in specific relation to fluvial water bodies is required. Scoping Outcome: Scoped Out for this test		
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INNS

Introduce or spread INNS	The Onshore Scheme is located adjacent to / within part of the estuary Blyth (N) Trac water body, the fluvial water bodies are located upstream of the Onshore Scheme and there is no hydraulic connectivity from estuary to river water bodies. Based on this factor and further to the detailed scoping assessment above for relevant water bodies (including Blyth (N)), no further detailed assessment for fluvial water bodies is required. Scoping outcome - Scoped out for this test		
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5.2. WFD Impact Assessment

Table 21 below provides a summary of the outcomes from the WFD scoping assessment above for all relevant waterbodies.

Table 21 Pathways Considered / Outcomes

Receptor and Scoping Tests / Considerations	Scoped In or Scoped Out
TRANSITIONAL AND COASTAL (BLYTH (N); WANSBECK; AND TYNE AND WEAR)	
Hydromorphology	Scoped Out
Biology: habitats	Scoped In Blyth (N)
Biology: fish	Scoped Out
Water quality	Scoped Out
Protected areas	Scoped In Blyth (N)
INNS	Scoped Out
GROUNDWATER (NORTHUMBERLAND CARBONIFEROUS LIMESTONE AND COAL MEASURES)	
Sediment disturbance / accidental spills.	Scoped Out
Modifications to natural drainage patterns	Scoped Out
Operational effects	Scoped Out
FLUVIAL (BLYTH FROM PONT TO TIDAL LIMIT (BPTL); SLEEKBURN / HEPSCOTT BURN SOURCE TO TIDAL LIMIT (SBHBSTL); AND WANSBECK FROM BOTHAL BURN TO NORTH SEA (WBBNS))	
Hydromorphology	Scoped Out
Biology: habitats	Scoped Out
Biology: fish	Scoped Out
Water quality	Scoped Out
Protected areas	Scoped Out
INNS	Scoped Out

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5.2.1. Biology (Habitats)

5.2.1.1. SCOPED-IN RECEPTORS

122. The Onshore Scheme is Scoped-In for the following tests for Blyth (N) Water body:

123. The Onshore scheme is 1% or more of the Blyth (N) water body area.

124. The Onshore Scheme is within 500 m of a higher sensitivity habitat within this water body. Specifically, there are pockets of saltmarsh located within and adjacent to the Onshore Scheme and a single pocket of mussel beds approximately 200 m to the south of the Onshore Scheme.

125. The Onshore Scheme does encompass more than 1% of a lower sensitivity habitat in this water body. Specifically, the southern extent of the Onshore Scheme overlaps with rocky shore (intertidal rock) as well as intertidal soft sediment.

5.2.1.2. IMPACT ASSESSMENT: HIGHER SENSITIVITY HABITATS (BLYTH (N))

5.2.1.2.1. Saltmarsh

126. This higher sensitivity feature relates to angiosperm-dominated stands of vegetation, occurring on the extreme upper shore of sheltered UK coasts periodically covered by high tides (MarLIN, 2023). The vegetation develops on a variety of sandy and muddy sediment types and may have admixtures of coarser material. The character of the saltmarsh communities is affected by height up the shore, resulting in a zonation pattern related to the degree or frequency of immersion in seawater. Saltmarsh vegetation is well studied and is covered under the UK National Vegetation Classification, where 26 types are defined (Rodwell, 2000). Pioneer saltmarsh is represented by 8 of the 26 NVC communities recognised by Rodwell (2000) and are dominated by *Spartina sp.*, *Salicornia spp.*, *Suaeda maritima*, *Aster spp.* and *Arthrocnemum perenne* communities.

127. Alongside the baseline data from Environment Agency mapping which indicates the presence of saltmarsh (as identified on Figure 4), the Applicant has commissioned a suite of baseline habitat surveys in support of the Onshore Scheme; for further details, please refer to Volume 3, Technical Appendix 9.1: Ecology – Habitat Survey Report. The data obtained by the Applicant provides a much more refined understanding associated with the presence and distribution of saltmarsh within the water body; please refer to Figure 6 for a visual representation of saltmarsh within and adjacent to the Onshore Scheme.


5.2.1.2.2. Construction Phase

128. During the construction phase of the Onshore Scheme, the Applicant has committed to avoiding the most sensitive areas of saltmarsh, higher sensitivity feature, within the Onshore Scheme when siting the SWO, as detailed within Table 2: Measures adopted as part of the Onshore Scheme. On this basis, the majority of 'direct' impacts are fully addressed (noting that no marine access is proposed and all access to install the SWO will be from shore, as detailed above. In terms of secondary impacts (such as risk associated with pollution and increases in suspended sediment concentrations), the mitigation described in Table 2 will ensure potential impacts – however unlikely – are appropriately managed.

129. During construction of the convertor station, a surface water drainage strategy (Technical Appendix 11.2) will be implemented to provide attenuation, filtration and conveyance of surface water runoff.

5.2.1.2.3. Operation and Maintenance Phase

130. During the operational phase, the physical presence of the SWO has the potential to result in increased flows as a result of SWO discharge, which in turn can result in coastal erosion of the riverbed and bank below the SWO (SEPA, 2019). It is proposed that all runoff from the Onshore Scheme will

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discharged into Sleekburn via a new SWO at a restricted rate, to be pre-determined with NCC prior to construction and then subject to the control of the Environment Agency under the environmental permitting regime (as a permitted discharge).

131. At the convertor station, a Surface Water Drainage Strategy (Technical Appendix 11.3) will be implemented at the Onshore Scheme to provide attenuation, filtration and conveyance of surface water. The surface water drainage system will be in place throughout the proposed operational lifetime of the convertor station and is sized to prevent flooding of the onshore scheme n for all events up to and including; a 1 in 100 annual probability rainfall event, plus a 40% climate change uplift allowance, to account for changes in peak rainfall intensity throughout the anticipated lifetime of the Onshore Scheme. .

132. It is envisaged that the new SWO into Sleekburn will discharge adjacent to the existing North Sea Link outfall, which has an invert level of 2.33 m above ordnance datum. Daily high tide in the North Sea at Blyth is around 2.62 m aOD and therefore the proposed new SWO will become surcharged each day across a period of approximately 4-hours (duration of the tidal peak). At low tide, the SWO will discharge as pre-determined with NCC into the Sleekburn.

133. The physical presence of the new SWO has the potential to result in increased flows as a result of SWO discharge during low tidal flows, which in turn can result in coastal erosion of the riverbed and bank below the SWO (SEPA, 2019). Moreover, increased bank erosion and associated increases in sediment concentrations can have the potential to result in increased sediment supply (in-turn leading to higher suspended sediment concentrations (SSC) and associated impacts on habitats and water quality.

134. A swale will be constructed around the converter station which will eventually discharge into Sleekburn. Two linked SuDS components may be constructed to filter the water prior to discharge. The SWO will be designed in consultation with the Environment Agency to avoid degradation of Sleekburn Estuary and this will include flow energy dissipation to prevent erosion of the banks. The drainage design will also maximise the use of native plants and ecological connectivity.


135. Given the tidal and dynamic nature of the Sleekburn, it is considered highly likely that SSC levels are already high with silt and sediment constantly moving within the estuary. On this basis, any minor increases in sediment load downstream of the SWO will likely be indiscernible from background concentrations as tidal flows wash over and redistribute the sediment. Furthermore, the development and approval of the final SWO design will help to ensure optimisation of the SWO against the requirements and advice of the Environment Agency.

136. Priority saltmarsh habitats are considered to have a low sensitivity and high recoverability to smothering (MarLIN, 2023). Therefore any minor increase in sediment load downstream of the SWO will not result in a significant impact to priority saltmarsh habitats within the Sleekburn.

137. With consideration given to the commitments and designed-in measures identified in Table 2: Measures adopted as part of the Onshore Scheme and the factors above, it is considered that there the Onshore Scheme will not lead to a deterioration of the higher sensitivity feature, saltmarsh, located within the water body.

138. In consideration of the potential for cumulative impacts with nearby projects, the only relevant project is the Marine Scheme which overlaps with the Onshore Scheme. However, the Marine Scheme does not overlap with the saltmarsh habitats therefore there is no potential for cumulative impacts with the Onshore Scheme.

ASSESSMENT CONCLUSION: NO DETERIORATION.

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5.2.1.2.4. Mussel Beds

139. As identified above, a single pocket of the higher sensitivity feature habitat, mussel beds is located approximately 200 m to the south of the Onshore Scheme on the southern bank of the River Blyth. It is important to note that as set out within Volume 2, Chapter 5: Project Description, the anticipated location of the SWO / discharge into the water body will be further north west of the mussel beds (i.e. toward the existing North Sea Link outfall). Notwithstanding, and on a precautionary basis, this higher sensitivity feature has been considered in further detail.

Construction

140. Whilst water quality has justifiably been scoped out for assessment of deterioration on relevant water bodies above, it is necessary to consider a range of potential impacts to mussel beds here by virtue of their high sensitivity habitat status and mussel beds on the southern bank of the River Blyth (downstream from the existing North Sea Link outfall).

141. The nature of works associated with the construction of the SWO will be highly localised and temporary, with potential impacts considered to be appropriately managed through the implementation of mitigation detailed in Table 2. For water quality and this higher sensitivity habitat specifically, the development, approval and application of an agreed CEMP is likely to be of primary relevance. Furthermore, the SWO will be designed in consultation with the Environment Agency, to be approved by NCC. As detailed above, during the operational phase of the Onshore Scheme, the SWO will discharge surface water (i.e. rain) into the Sleekburn (part of Blyth (N)), although with the application of the measures explained in Table 2, there is not considered to be any discernible impact to this higher sensitivity habitat.

142. It is not anticipated that any potential impacts to water quality as a result of an increase in SSC will occur as a result of construction activities. The nature of works associated with SWO construction will be undertaken at low tide and therefore will not directly interact with the waters of the Sleekburn. It is therefore considered that any potential impacts associated with short-term impacts to water quality as a result of increased SSC are not significant.

143. With consideration given to the factors above and the wider suite of commitments and designed-in measures identified in Table 2: Measures adopted as part of the Onshore impacts, it is considered that any potential impacts associated with short-term impacts to higher sensitivity feature mussel beds will be minor and reversible.


144. In consideration of the potential for cumulative impacts with nearby projects, the only relevant project is the Marine Scheme which overlaps with the Onshore Scheme. However, the Marine Scheme does not overlap with the Mussel Beds therefore there is no potential for cumulative impacts with the Onshore Scheme

ASSESSMENT CONCLUSION: NO DETERIORATION.

5.2.1.3. IMPACT ASSESSMENT: LOWER SENSITIVITY HABITATS (BLYTH (N))

145. For this water body specifically, the southern extent of the Onshore Scheme overlaps with rocky shore (intertidal rock) as well as intertidal soft sediment.

146. The nature of works associated with the construction of the SWO will be highly localised and temporary, with potential impacts considered to be appropriately managed through the implementation of mitigation detailed in Table 2. Of specific relevance to intertidal soft sediment is the commitment to retaining as much material as practicable during the construction of the SWO, consistent with practices adopted for the adjacent North Sea Link outfall.

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147. The SWO will be designed in consultation with the Environment Agency, to be approved by NCC; this will provide further opportunity for influence into design.

148. In relation to the rocky shore (intertidal rock) habitat, as presented within Figure 5 to the south west of the Onshore Scheme, this overlaps with areas of saltmarsh which the Applicant has committed to avoiding. To the far south east of the Onshore Scheme, the area of rocky shore is virtually entirely avoided (save for approximately 700 m² of rocky shore, although this is a very limited and isolated overlap of the Onshore Scheme with this lower sensitivity habitat and not within the area intended for the SWO, as detailed in section 1.1.2 and associated Figure 5).

149. The lower sensitivity habitats in Blyth (N) Water body are located on southern extent of the Onshore Scheme overlaps with rocky shore (intertidal rock) as well as intertidal soft sediment.

150. With consideration given to these measures and the wider suite of commitments and designed-in measures identified in Table 2, it is considered that any potential impacts upon lower sensitivity habitats associated with short-term impacts to water quality within the SWO will be minor and reversible.

151. It is therefore considered that any potential impacts associated with short-term impacts upon lower sensitivity features to water quality as a result of increased SSC are not significant.

152. In consideration of the potential for cumulative impacts with nearby projects, the only relevant project is the Marine Scheme which overlaps with the Onshore Scheme. However, the Marine Scheme does not overlap with the Mussel Beds therefore there is no potential for cumulative impacts with the Onshore Scheme

ASSESSMENT CONCLUSION: NO DETERIORATION.


5.2.1.4. ASSESSMENT OF POTENTIAL FOR DETERIORATION

153. The Environment Agency define deterioration as '*when the status of a quality element reduces by one class*'. If a quality element is already at the lowest status, any reduction in its condition is generally counted as deterioration.

154. The potential impacts associated with the Onshore Scheme are limited to a discrete set of specific interactions with the receiving environment which have been scoped-in to the WFD compliance assessment; principally, this relates to interactions with the Blyth (N) water body, higher and lower sensitivity habitats and WFD protected areas as a result of the proposed SWO on the Sleekburn.

155. Considering the application of the measures set out in Table 2: Measures adopted as part of the Onshore Scheme and for the reasons explained within this WFD compliance assessment, no deterioration in the classification of the water bodies considered expected to occur. Therefore, the Onshore Scheme:

- Will not result in a reduction of the WFD classification of any water bodies within or adjacent to the Onshore Scheme;
- Will not put at risk the 'good' status or potential of any water bodies within or adjacent to the Onshore Scheme; and
- Will not inhibit any water bodies from progressing towards good status or potential which are located within or adjacent to the Onshore Scheme.
- The conclusion is relevant to the Onshore Scheme and cumulatively with the Marine Scheme

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5.2.1.5. PROTECTED AREAS

156. The Onshore Scheme intersects or is within 2 km of the following protected areas (defined as WFD protected areas, as described above):

- Northumberland Marine SPA (intersects);
- Northumbria Coast SPA (~400 m away at closest point);
- Berwick to St Mary’s MCZ (intersects); and
- Coquet to St Mary’s MCZ (intersects).

157. There are no additional WFD protected areas (i.e. such as bathing waters, shellfish waters, nitrate waters) within 2 km of the Onshore Scheme.

5.2.1.6. IMPACT ASSESSMENT: NORTHUMBERLAND MARINE SPA, NORTHUMBRIA COAST SPA AND THE BERWICK TO ST MARY’S MCZ, ALL DESIGNATED BASED ON ORNITHOLOGICAL FEATURES


158. Northumberland Marine SPA, Northumbria Coast SPA and the Berwick to St Mary’s MCZ sites are all designated based on ornithological features; these designations have been considered by the Applicant as part of the EIA undertaken for both the Onshore Scheme and the MLA which has been submitted to the MMO (MLA/2023/00334).

159. For the purposes of this WFD compliance assessment and, a tabulated summary of key conclusions from these assessments has been provided.


Table 22 Summary of ornithological conclusions from RIAA and MPA and MCZ Assessments

Protected Area	Features	Pathways Considered	Significant Effect Identified ¹⁷
Northumberland Marine SPA	<ul style="list-style-type: none"> • Guillemot (<i>Uria aalge</i>) (Breeding) • Common tern (<i>Sterna hirundo</i>) (Breeding) • Little tern (<i>Sterna albifrons</i>) (Breeding) • Sandwich tern (<i>Sterna sandvicensis</i>) (Breeding) • Arctic tern (<i>Sterna paradisaea</i>) (Breeding) • Puffin (<i>Fratercula arctica</i>) (Breeding) • Roseate tern (<i>Sterna dougallii</i>) (Breeding) • Seabird assemblage (breeding) including the components: <ul style="list-style-type: none"> ○ Cormorant (<i>Phalacrocorax carbo</i>) 	<p>Marine Scheme:</p> <p>Vessel Disturbance, Nearshore Construction (and Decommissioning) Activity; Long-term habitat loss, and Changes in prey availability.</p> <p>Onshore Scheme: Disturbance and displacement and accidental pollution.</p>	<p>Screened-In as part of the Stage One HRA Screening (BBWFL, 2023) and assessed in-detail within the RIAA’s for the Marine Scheme and the Onshore Scheme.</p> <p>The Applicant subsequently concluded that both the Marine Scheme and Onshore Scheme will not lead to an Adverse Effect on Site Integrity (AEOSI) for the Northumberland Marine SPA or any of its supporting qualifying features.</p> <p>This assessment included a full appraisal of potential in-combination effects; the</p>

¹⁷ The term ‘significance’ is used here for consistency with the terminology used elsewhere in this assessment however it is important to note that for HRA and MCZ-specific assessments, the terminology used may differ. The topic-specific conclusions from separate assessments are provided in this table but supported with an equivalent EIA terminology descriptor. For further details regarding the EIA methodology, please refer to Volume 1, Chapter 3: EIA Methodology.

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Protected Area	Features	Pathways Considered	Significant Effect Identified ¹⁷
	<ul style="list-style-type: none"> ○ Shag (<i>Gulosus aristotelis</i>) ○ Black-headed gull (<i>Chroicocephalus ridibundus</i>) ● Kittiwake (<i>Rissa tridactyla</i>) 		<p>conclusions remained the same (no AEOSI).</p> <p>Whilst this is a HRA-specific conclusion, in EIA terms, this is considered not significant.</p>
Northumbria Coast SPA	<ul style="list-style-type: none"> ● Little tern (Breeding) ● Turnstone (<i>Arenaria interpres</i>) (Non-breeding) ● Purple sandpiper (<i>Calidris maritima</i>) (Non-breeding) ● Arctic tern (Breeding) 	<p>Marine Scheme:</p> <p>Vessel Disturbance, Nearshore Construction (and Decommissioning)</p> <p>Onshore Scheme: Disturbance and displacement and accidental pollution.</p> <p>Activity; Long-term habitat loss, and Changes in prey availability.</p>	<p>Screened-In as part of the Stage One HRA Screening (BBWFL, 2023) and assessed in-detail within the RIAA's for the Marine Scheme and the Onshore Scheme.</p> <p>The Applicant subsequently concluded that both the Marine Scheme and Onshore Scheme will not lead to an AEOSI for the Northumberland Marine SPA or any of its supporting qualifying features.</p> <p>This assessment included a full appraisal of potential in-combination effects; the conclusions remained the same (no AEOSI).</p> <p>Whilst this is a HRA-specific conclusion, in EIA terms, this is considered not significant.</p>
Berwick to St Mary's MCZ	Breeding and non-breeding Common eider <i>Somateria mollissima</i>	Temporary visual and auditory disturbance	<p>The designated feature of the Berwick to St Mary's MCZ was identified as having the potential to be affected by the Marine Scheme and was therefore Screened-In for a full assessment.</p> <p>The Applicant subsequently concluded that that there is no significant risk of the Marine Scheme hindering the achievement of the conservation objectives stated for the MCZ.</p> <p>This assessment included a full appraisal of potential cumulative effects; the conclusions remained the same (no risk of hindering the</p>

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Protected Area	Features	Pathways Considered	Significant Effect Identified ¹⁷
			<p>achievement of the conservation objectives stated for the MCZ).</p> <p>Whilst this is an MCZ-specific conclusion, in EIA terms, this is considered not significant.</p>

160. As outlined above, no significant effects have been identified through these topic-specific assessments, with respect to the Onshore Scheme or cumulatively / in-combination nearby cumulative projects. Furthermore, the preceding appraisals within this WFD assessment conclude that activities associated with the Onshore Scheme, and their related impact pathways, will not result in significant effects to any identified receptors. As a result, it is considered that the Onshore Scheme does not present a risk to any of the qualifying features for which the identified SPAs and ornithologically-focused MCZ are designated. The protected areas above are therefore not considered further and the remainder of this WFD impact assessment is focused on Coquet to St Mary’s MCZ.


5.2.1.7. COQUET TO ST MARY’S MCZ

161. The Coquet to St Mary’s MCZ, which was designated in January 2016, is located entirely within inshore waters along the Northumberland coast covering a total area of approximately 192 km². The site is designated for: Low energy intertidal rock; Moderate energy intertidal rock; High energy intertidal rock; Intertidal mixed sediments; Intertidal coarse sediment; Intertidal sand and muddy sand; Intertidal mud; Intertidal under-boulder communities; Peat and clay exposures; Moderate energy infralittoral rock; High energy infralittoral rock; Moderate energy circalittoral rock; Subtidal coarse sediment; Subtidal sand; Subtidal mixed sediments; and Subtidal mud.

162. The general management approach for all of these features is ‘maintain in favourable condition’. The seabed protected by this site is made up of rock, sand, mud and sediment as detailed above. This range of habitats provides a home for a large variety of marine life. The coarse sediment found within the MCZ is home to animals such as bristleworms, sand mason worms, small shrimp-like animals, burrowing anemones, and cockles. Rocks in shallow water (infralittoral rocks) are a key habitat for kelp and red seaweed, whilst the deep water (circalittoral) rock is a habitat for cup coral, sea-fans, and anemones, and sponges. These animals thrive in this deeper water where there is not enough sunlight for algal life to grow.

163. These complex habitats and communities also support mobile species such as starfish, sea urchins, crabs, and lobsters. When this site was surveyed, amongst the species recorded, is the first ever Arctic cushion star, a starfish, on the English coast. The site also supports a range of intertidal habitats, which are above water at low tide and underwater at high tide. One of these habitats is intertidal under-boulder communities. Boulders create shaded areas that provide a refuge to sea squirts, sea mats, and sponges. The undersides of the boulder provide a habitat for animals like sea slugs, long-clawed porcelain crabs and brittlestars, which shelter and feed in the damp shaded conditions. Crabs, fish and young lobsters also scavenge for food and seek shelter amongst the boulders.

164. Multibeam echosounder (MBES) bathymetry and backscatter data was collected within the MCZ between January and March 2014, followed by a ground truth survey between July and September 2014 in support of the recommendation to designate the MCZ at the time (Defra, 2015). Ninety-five target sampling stations were identified for the collection of ground truth data within the MCZ. This selection of stations was deemed to give the best possible representation of the MCZ and potential broadscale habitats.

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165. There are some significant differences between the original Site Assessment Document (SAD) (NetGain, 2011) and the survey results. High energy infralittoral rock, moderate energy infralittoral rock, subtidal coarse sediment and subtidal mixed sediments were not found to be present within the MCZ. However, results from the ground truth survey indicated significantly higher than predicted levels of habitats; this included subtidal sand with an approximate extent of 51.76 km² (~51.63 km² more than the previous estimate) and subtidal mud with an approximate extent of 47.00 km² (~46.84 km² than the previous estimate). Further analysis of the 2014 data was carried out by Natural England as part of a review of the MCZ to confirm the potential presence of an undesignated habitat feature of conservation interest – sea-pen and burrowing megafauna communities’ – within the MCZ (Natural England, 2022).

166. Whilst the MCZ has been included in the WFD compliance assessment owing to its linear proximity to the Onshore Scheme (and specifically the eastern boundary of the Onshore Scheme and likely trenchless technology / TJB compound), there is no pathway for impacts to habitats present within the Coquet to St Mary’s MCZ. This is on the basis that trenchless technology (such as HDD) is being adopted for the Landfall, and on the basis that the trenchless technology / TJB compound will be located above MHWS and landward of the dunes at Cambois.

167. On this basis, it is therefore also concluded that that there is no significant risk of the Onshore Scheme or cumulative projects hindering the achievement of the conservation objectives stated for the MCZ (this is consistent with the findings of the EIA and WFD undertaken in support of the MLA (MLA/2023/00334) submitted to the MMO in support of the Marine Scheme).

5.3. Conclusion of WFD Assessment

168. As informed by the Environment Agency guidance (2017), the Applicant has followed a sequential process to demonstrate full compliance with the WFD.


169. The Applicant has followed a staged process to structure the WFD compliance assessment (screening, scoping and impact assessment) using the details provided within Volume 2, Chapter 5: Project Description) to inform the compliance assessment. The wealth of data available as part of the Onshore Scheme EIA (and where applicable, the Marine Scheme EIA) has been used to inform the WFD compliance assessment.

170. The Applicant has provided a robust suite of best-practice and mitigation, summarised within this document where relevant to the WFD compliance assessment (and reported on in-full within Volume 2, Chapter 16: Schedule of Mitigation).

171. Three fluvial water bodies located within 2 km of the Onshore Scheme have been considered by the Applicant due to the linear proximity of the Onshore Scheme to each water body.

- Blyth from Pont to Tidal Limit (GB103022077052);
- Sleekburn / Hepscott Burn Source to Tidal Limit (GB103022076230); and
- Wansbeck from Bothal Burn to North Sea (GB103022077062).

172. However, there is no credible pathway for an impact on any of the fluvial water bodies identified. In relation to the ‘Wansbeck from Bothal Burn to North Sea’ Water body, there is > 700 m of separating landmass between the northern boundary of the Onshore Scheme to this water body. In relation to both the ‘Blyth from Pont to Tidal Limit’ and ‘Sleekburn / Hepscott Burn Source to Tidal Limit’ water bodies, they are (as described) beyond the tidal limit of the Sleekburn and there is considered to be no pathway for an impact on either water body.

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5.3.1. Tyne and Wear Coastal Water body (GB650301500002)

173. Potential effects associated with the Landfall have been considered by the Applicant due to the linear proximity of the Onshore Scheme to the Tyne and Wear water body, however there is no credible impact pathway for the reasons demonstrated within this WFD compliance assessment. Principally, this is because of the adoption of trenchless technology (such as HDD) to cross the dunes and intertidal area at Cambois as well as the location of the trenchless technology / TJB compound landward of MHWS and the dunes.

5.3.2. Wansbeck Transitional Water body (GB510302210100)

174. The Wansbeck water body has been considered within this WFD compliance assessment however there is no credible impact pathway (there is > 700 m of landmass separating the northern boundary of the Onshore Scheme to this water body).

5.3.3. Northumberland Carboniferous Limestone and Coal Measures Water body (GB40302G700200)

175. The groundwater waterbody within which the Onshore Scheme is located has been considered within this WFD compliance assessment. A detailed scoping appraisal has been carried out, as informed by the assessment of hydrology and hydrogeology undertaken by the Applicant as part of the Onshore Scheme EIA. As part of WFD scoping, the Applicant has considered potential effects during construction from sediment disturbance and or accidental spills potential interactions with the water table during construction by causing modifications to natural drainage patterns and potential operational phase impacts. For the reasons demonstrated within this WFD compliance assessment, the water body was scoped-out of detailed WFD impact assessment.


5.3.4. Blyth (N) Transitional Water body (GB510302203200)

176. There is potential for some spatially and temporally limited effects to occur as a result of the installation and operation of the SWO on the Sleekburn (located within the Blyth (N) Water body).

177. Following the WFD Screening exercise carried out by the Applicant, WFD Scoping indicated that a WFD Impact Assessment was required for biology (habitats) and four protected areas located within or adjacent to the Marine Scheme.

178. Having considered potential effects further and the two topics required for impact assessment, it is concluded that the Onshore Scheme will not result in a deterioration of water bodies, will not put at risk the 'good' status of water bodies or the potential of any water bodies and will not inhibit any water bodies from progressing toward 'good' status or potential.

179. Based on a review of nearby cumulative projects within the WFD study area, no cumulative impacts have been identified which could give rise to a significant adverse effect or a deterioration of waterbodies. Therefore, considering the potential for cumulative effects, the conclusions of the WFD assessment remain valid.

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