XLINKS' MOROCCO-UK POWER PROJECT

Marine Conservation Zone Assessment

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Acronyms

Acronym	Meaning
AA	Appropriate Assessment
AoO	Advice on Operations
CBRA	Cable Burial Risk Assessment
CEMP	Construction Environment Management Plan
CLV	Cable laying vessel
COLREG	International Regulations for the Prevention of Collisions at Sea
DAS	Distributed Acoustic Sensing
DML	Deemed Marine Licence
DTS	Distributed Temperature Sensing
EEZ	Exclusive economic zone
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EQS	Environmental Quality Standard
ES	Environmental Statement
EUNIS	European Nature Information System
FOC	Fibre optic cables
FOCI	Features of Conservation Interest
GB	Great Britain
HDD	Horizontal Directional Drilling
HOCI	Habitats of Conservation Interest
HVDC	High Voltage Direct Current
IFCAs	Inshore Fisheries and Conservation Authorities
INNS	Invasive non-native species
JNCC	Joint Nature Conservation Committee
MCAA	Marine and Coastal Access Act 2009
MCZ	Marine Conservation Zone
MFE	Mass flow excavation
MINNS	Marine Invasive Non-Native Species
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MPA	Marine Protected Area
MPCP	Marine Pollution Contingency Plan
NE	Natural England
NSVMP	Navigational Safety and Vessel Management Plan
OCC	Offshore Cable Corridor
OOS	Out of Service
OS	Ordnance Survey
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PLONOR	Pose Little Or No Risk
RIAA	Report to Inform Appropriate Assessment

Acronym	Meaning
ROV	Remotely operated vehicle
SAC	Special Area of Conservation
SNCB	Statutory Nature Conservation Body
SOCI	Species of conservation interest
SOLAS	International Convention for the Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SoS	Secretary of State (Secretary of State for Energy Security and Net Zero)
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
UK	United Kingdom
UXO	Unexploded Ordnance
VMP	Vessel Management Plan
WFD	Water Framework Directive
ZoI	Zone of Influence

Units

Units	Meaning
m	Metre
m^2	Square metre
m^3	Cubic metre
GW	Gigawatt
GWh	Gigawatt hour
GWp	Gigawatts peak
ha	Hectares
km	Kilometre
km^2	Square kilometre
kV	Kilovolt

1 INTRODUCTION

1.1 Overview

1.1.1 This report presents the Marine Conservation Zone (MCZ) assessment for the UK offshore elements of Xlinks' Morocco-UK Power Project. For ease of reference, the UK elements of the Project are referred to in this report as the 'Proposed Development'. The report accompanies the application to the Planning Inspectorate for development consent for the Proposed Development.

1.1.2 The assessment presented is consistent with and informed by the ES, principally the Benthic Ecology technical chapter (Volume 3, Chapter 1: Benthic Ecology of the ES), the Physical Processes Chapter (Volume 3, Chapter 8: Physical Processes) and Volume 3, Appendix 8.1 Sediment source concentrations and assessment of disturbance of the ES.

1.1.3 This report has incorporated comments received from stakeholders within the Scoping Opinion following submission of the EIA Scoping report submitted in January 2024, and comments on a draft version of the MCZ assessment submitted in July 2024 which were received as part of wider Section 42 (Planning Act 2008) consultation responses.

1.2 Proposed Development Details

1.2.1 The Proposed Development forms part of the wider Project proposed by Xlinks 1 Limited (the 'Applicant') to develop a sub-sea electricity supply project from Morocco to the UK. The Project includes an electricity generation facility entirely powered by solar and wind energy combined with a battery storage facility. Located in Morocco's renewable energy rich region of Guelmim Oued Noun, the Applicant proposes to install approximately 11.5 Gigawatts peak (GWp) of renewable energy capacity that would cover an approximate area of 1,500 km^2 and connect exclusively to Great Britain (GB) via four high voltage direct current (HVDC) sub-sea cables, with a total offshore route between Morocco and the UK of approximately 4,000 km.

1.2.2 The offshore elements of the Proposed Development in UK waters that are the subject of this assessment will be undertaken within the Offshore Cable Corridor (OCC).

1.2.3 The extent of the OCC assessed in this MCZ Assessment is from the UK exclusive economic zone (EEZ) boundary to the landfall site at Cornborough Range on the north Devon coast. The total length of the OCC in UK waters is approximately 370 km.

1.2.4 The OCC has a nominal width of 500 m extending up to 1,500 m at some crossing locations (where the cable needs to cross existing power and telecoms cables for example) to provide the cables with sufficient space to cross the existing assets as close to 90 degrees as possible (and thus reduce the footprint of the crossing on the seabed). The OCC width is also extended to 1,500 m at the western edge of The Crown Estate's (TCE's) Project Development Area 3 (Offshore Wind Leasing Round 5) to ensure this area can be avoided if necessary.

1.2.5 Route optimisation studies have informed the routing of the OCC; these studies have included multiple desktop studies and marine investigation surveys. Route optimisation has considered e.g. depth, seabed features, metocean influences, external stakeholders (e.g. seabed leaseholders, fishing activities, shipping etc) and environmental constraints such as marine protected areas including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and MCZs.

1.2.6 The width of the OCC will allow some flexibility for micro-routing of the cables within it. Flexibility for micro routing within the OCC will be retained until cable installation, to:

- allow for the final precise cable route to adapt to the conditions encountered during pre-construction surveys and selection of specific installation methods (noting that extensive seabed characterisation surveys and an Outline Cable Burial Risk Assessment (CBRA) – Volume 1, Appendix 3.4 of the ES - have been undertaken);
- allow potential micro-routing comments from relevant stakeholders to be addressed, including e.g. Historic England inputs via the Archaeological Outline Offshore Written Scheme of Investigation (Volume 3, Appendix 7.5 of the ES); and
- allow the flexibility to avoid currently unforeseen hazards (such as potential unexploded ordnance (UXO) identified during the pre-cable lay geophysical survey.

1.2.7 The offshore cables would consist of four 525 kV HVDC marine power cables which would be installed for the majority of the cable route as two bundled pairs (Bipole 1 and Bipole 2). The bundled pairs would be separated into four individual cables a short distance before the landfall HDD entry points, to allow each cable to be pulled onshore through individual HDD ducts.

1.2.8 Each offshore HVDC cable would have a diameter of approximately 175 mm and an approximate weight of 70 kg/m in air. Each cable pair (forming a bipole) would facilitate the transfer of 1.8 GW to the national grid, resulting in a total of 3.6 GW power supply into the UK.

1.2.9 In addition to the four HVDC marine power cables, two fibre optic cables (FOC) would provide a cable monitoring fibre system (Distributed Acoustic Sensing and/or Distributed Temperature Sensing). Each FOC would be approximately 35-40 mm in diameter and laid together with the marine cables within a shared trench (one FOC per cable bundle). FOC repeaters would be required approximately every 70 km along the OCC (four to five repeaters per Bipole). At each repeater location, there would likely be a spur of FOC installed adjacent to the cables for the installation of the repeaters and ongoing maintenance purposes. The spur of FOC at each repeater location would be equal in length to the water depth at the repeater location.

1.2.10 The FOC spurs and repeaters would be buried to the same depth as the HVDC Cables in accordance with the outline CBRA (Volume 1, Appendix 3.4 of the ES). It is assumed that the FOC spurs would be buried using the same, or less intrusive, methods as the HVDC Cables (lesser trench width required for FOC burial). The FOC repeaters would be buried broadly parallel to the HVDC Cables, within the boundary of the OCC taking place soon after the HVDC cable works.

1.2.11 At the landfall, the FOCs would be installed alongside an HVDC cable within an HDD duct, i.e. adjacent to one of the power cables within the same HDD duct.

1.3 Structure and Purpose of the Document

1.3.1 The objective of this MCZ assessment report is to provide information required to enable the Secretary of State (SoS) (i.e. Secretary of State for Energy Security and Net Zero) and other public authorities and the Statutory Nature Conservation Bodies (SNCBs) to consider whether the Proposed Development is capable of affecting (other than insignificantly):

- the protected features of any MCZs; or
- any ecological or geomorphological process on which the conservation of any protected features of MCZs is (wholly or part) dependent.

1.3.2 The Stage 1 assessment then considers whether:

- there is a significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZs.

1.3.3 This report provides information about the features of relevant MCZs and the approach to assessment. For any MCZs screened through to Stage 1 assessment an impact assessment has been conducted to assess the potential effects of the Proposed Development on the features of the MCZs.

1.3.4 The approach to this MCZ assessment has been largely informed by guidance published by the MMO (2013). The guidance recommends the following staged approach to the assessment:

- Screening;
- Stage 1 assessment; and
- Stage 2 assessment (if required).

1.3.5 Where specific activities, impacts or MCZs and their features are screened into the MCZ Assessment process, these are then considered within the Stage 1 assessment. Should a significant risk of the activity hindering the conservation objectives be identified within Stage 1, then specific impact receptor pathways need to be considered at Stage 2 assessment. Further detail for the approach is provided in **Section 5** (Assessment Methodology) of this report.

1.4 Proximity to MCZs

1.4.1 The study area for the MCZ assessment extends from the landfall at Cornborough Range near Bideford, Devon to the EEZ boundary. A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES) have indicated that disturbed sediments could, under worst case assumptions, be dispersed up to 15.2 km in an east northeast and west

southwest direction within Bideford Bay (OCC section 1, c.f. e.g. **Figure 7**). This 15.2 km dispersal would only ever be associated with a peak spring tide. On a mean neap tide the distance is predicted to be approximately 5 km. Ensuring a worst case scenario assessment, a 15.2 km MCZ assessment study area has been applied in the Bideford Bay area.

1.4.2 Along a discrete section of the OCC near its southern extent in UK waters sediment transport was calculated to be possible up to 7.5 km on a peak spring tide (OCC section 9, c.f. Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). There are however no MCZs in the vicinity of this section of the OCC. For the rest of the OCC minimal transport of sediment (tens of metres from disturbance source) is anticipated to occur following consideration of the combination of current speeds and sediment particle size, but a precautionary study area of 5 km has been added for these sections (**Figure** 1).

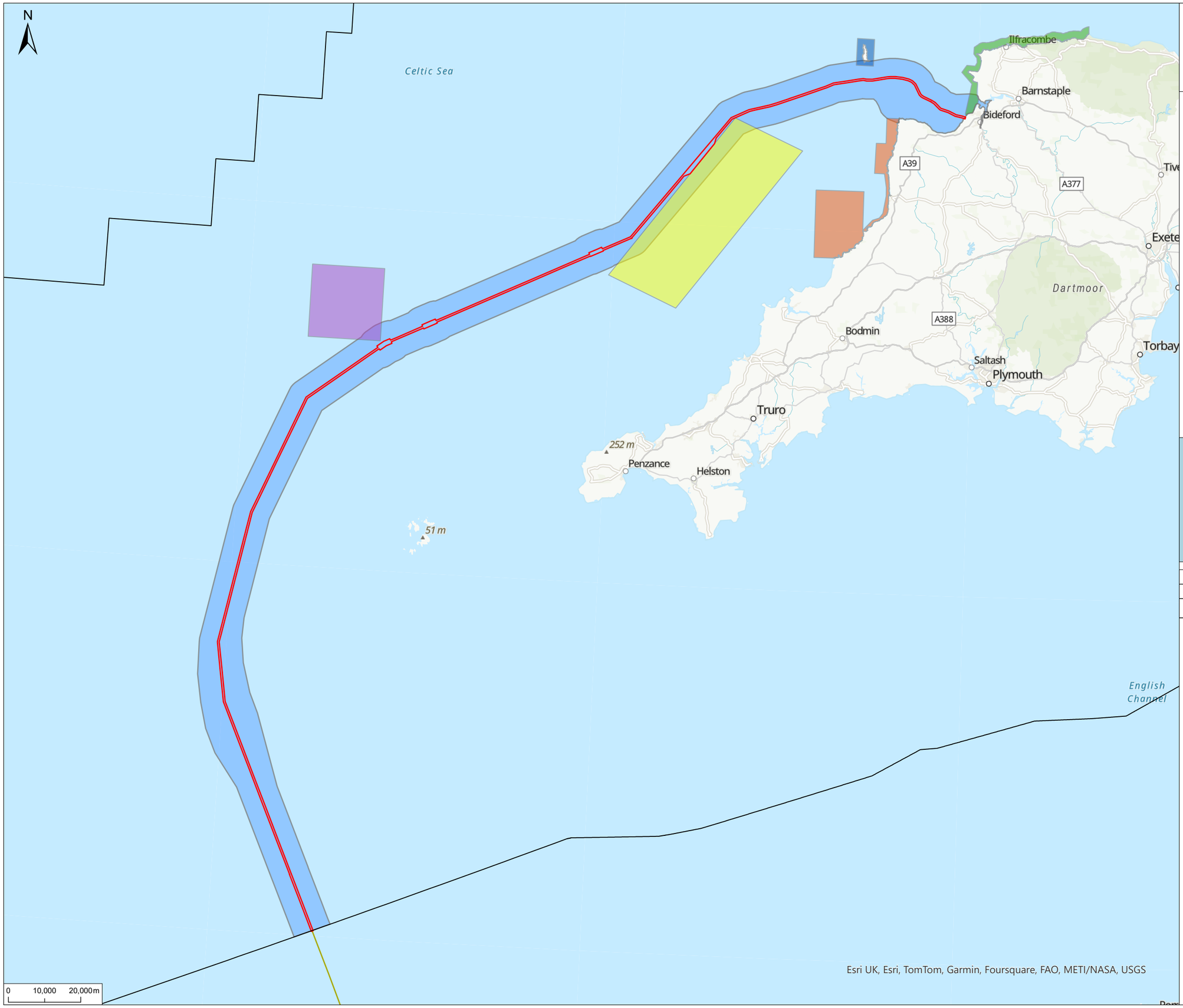
1.4.3 Five MCZs are located within 5 to 15.2 km of the OCC (with the distance considered being dependent on the section of the OCC and the potential ZoI of the Proposed Development, as outlined above). These are listed below and the distance from the Proposed Development to each MCZ is indicated in **Table 1**. Further information relating to features of the MCZs is provided in **Section 44**.

- Bideford to Foreland Point MCZ (UKMCZ0029);
- Hartland Point to Tintagel MCZ (UKMCZ0034);
- Lundy MCZ (UKMCZ0010);
- South West Approaches to Bristol Channel MCZ (UKMCZ0083); and
- East of Haig Fras MCZ (UKMCZ0023)

Table 1. MCZ proximity to Proposed Development.

Designation	Proximity to Proposed Development (distance to OCC)	Reasons for designation
Bideford to Foreland Point MCZ (UKMCZ0029)	0.5 km to the north east of the Proposed Development, within Barnstaple / Bideford Bay	Designated for its broadscale marine habitats (e.g. high energy circalittoral rock), other habitats (e.g. honeycomb worm reefs) and species (e.g. spiny lobster).
Hartland Point to Tintagel MCZ (UKMCZ0034)	11.5 km from the Proposed Development outside Bideford Bay.	Designated for its broadscale marine habitats (e.g. high energy circalittoral rock), and other habitats (e.g. honeycomb worm reefs and fragile sponge & anthozoan communities on subtidal rocky habitats) and species (pink sea fan).
Lundy MCZ (UKMCZ0010)	3.5 km to the north of the Proposed Development	Only designated feature is spiny lobster.
South West Approaches to Bristol Channel MCZ (UKMCZ0083)	0 km (no overlap with the OCC, however immediately adjacent to the south of the Proposed Development)	Designated for the habitats subtidal coarse sediment and subtidal sand, which support a variety of species that bury into the seabed including razor clams and sea urchins.
East of Haig Fras MCZ (UKMCZ0023)	0.65 km to the north west of the Proposed Development, within the Celtic Sea	Designated for marine habitats (e.g., subtidal muds and sands) and marine species (e.g. fan mussel).

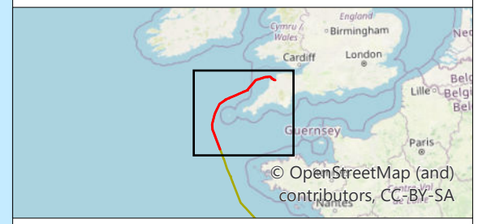
1.4.4 The full OCC in UK waters and relevant MCZs are presented in **Figure 1.** Magnified sections of the route in proximity to the MCZs are provided in **Figure 2** to **Figure 6.** Further detail relating to each MCZ is provided in **Section 4**.



Notes
1. This plan is scaled at paper size A3. If received electronically it is the recipients responsibility to print to the correct scale. Only written dimensions should be used.

Legend

- UK Offshore Cable Corridor
- Indicative Cable Centreline
- UK Exclusive Economic Zone (EEZ)
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- Bideford to Foreland Point MCZ
- East of Haig Fras MCZ
- Hartland Point to Tintagel MCZ
- Lundy MCZ
- South-West Approaches to Bristol Channel MCZ



P01	FINAL	RM	RW	Nov 2024
Rev	Description	By	CB	Date

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: The Offshore Cable Corridor and Zone of Influence in relation to the location of MCZs in the region

Status	Scale @ A3	Date Created
FINAL	1:1,000,000	Nov 2024

Figure Number: **1**

Rev: **P01**

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N

Ilfracombe
Lynton
Barnstaple
Northam
Bideford
South Molton
Great Torrington
Exm
A39
A361
A386

0 2,000 4,000m

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Legend

- UK Offshore Cable Corridor
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ

Rev	Description	By	CB	Date
P01	FINAL	RM	RW	Nov 2024

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: Bideford to Foreland Point MCZ in relation to the Offshore Cable Corridor

Status	Scale @ A3	Date Created
FINAL	1:200,000	Nov 2024

Figure Number: **2**

Rev: **P01**

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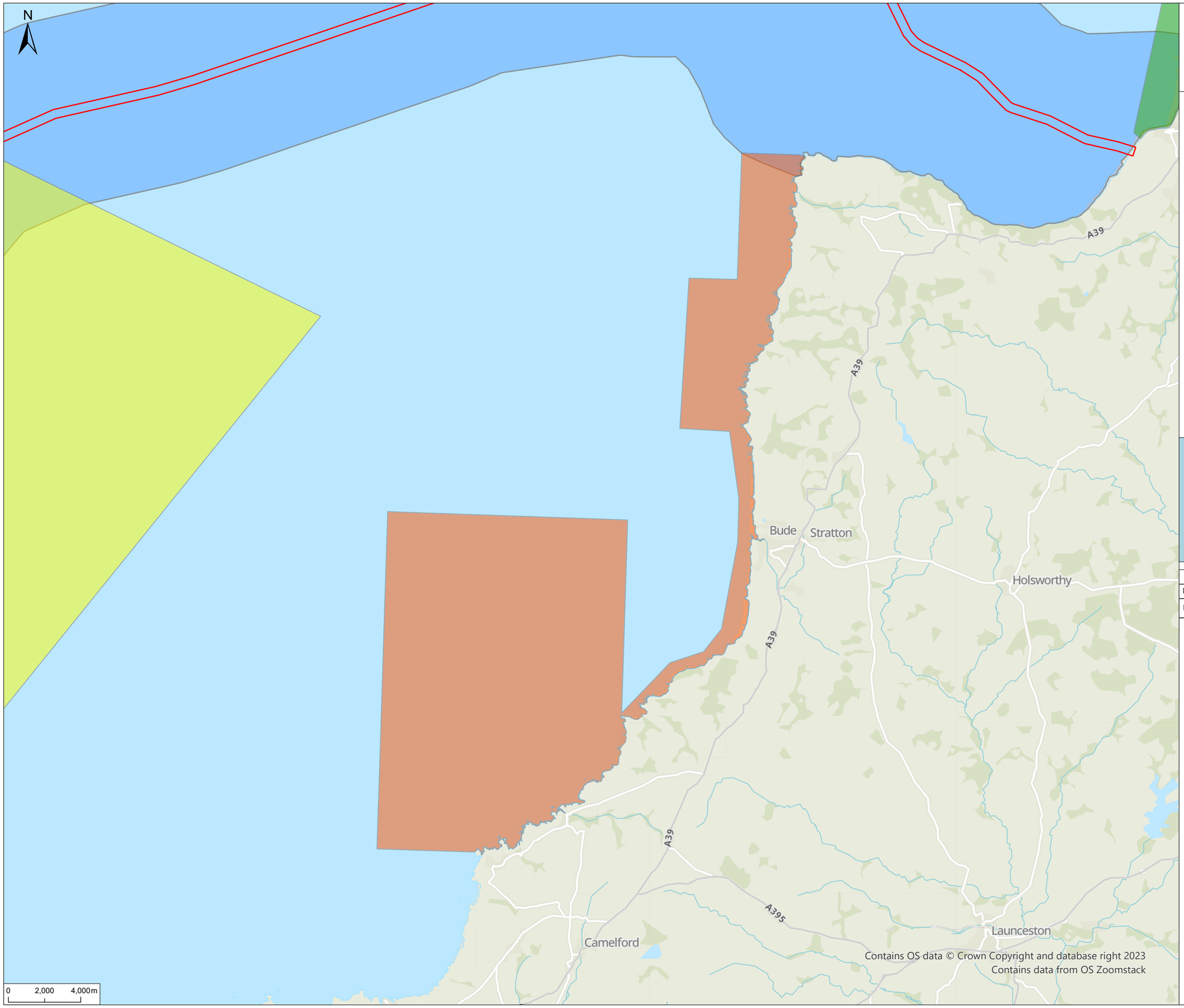

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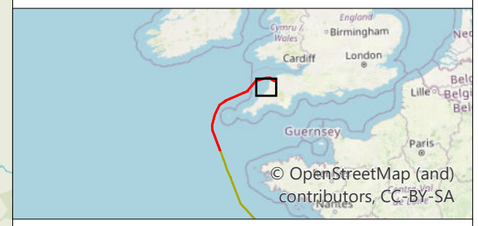
Legend

- UK Offshore Cable Corridor
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- Bideford to Foreland Point MCZ
- Hartland Point to Tintagel MCZ
- South-West Approaches to Bristol Channel MCZ



Rev	Description	By	CB	Date
P01	FINAL	RM	RW	Nov 2024

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: Hartland Point to Tintagel MCZ in relation to the Offshore Cable Corridor

Status	Scale @ A3	Date Created
FINAL	1:200,000	Nov 2024

Figure Number: **3**

Rev: **P01**

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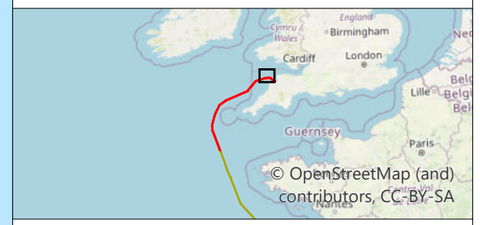
Legend

- UK Offshore Cable Corridor
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- Hartland Point to Tintagel MCZ
- Lundy MCZ



Rev	Description	By	CB	Date
P01	FINAL	RM	RW	Nov 2024

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: Lundy MCZ in relation to the Offshore Cable Corridor

Status	Scale @ A3	Date Created
FINAL	1:150,000	Nov 2024

Figure Number: **4**

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Legend

- UK Offshore Cable Corridor
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- Hartland Point to Tintagel MCZ
- South-West Approaches to Bristol Channel MCZ

Rev	Description	By	CB	Date
P01	FINAL	RM	RW	Nov 2024

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: South-West Approaches to Bristol Channel MCZ in relation to the Offshore Cable Corridor

Status	Scale @ A3	Date Created
FINAL	1:250,000	Nov 2024

Figure Number: **5**

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Padstow
Wadebridge
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A39
Bodmin

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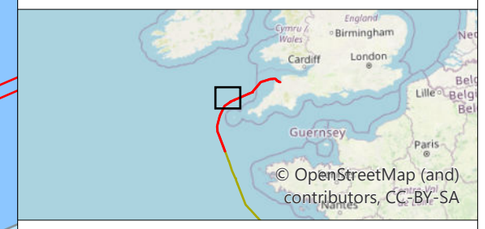
Legend

- UK Offshore Cable Corridor
- Zone of Influence - 5 km (15.2 km in Bideford Bay)
- East of Haig Fras MCZ



Rev	Description	By	CB	Date
P01	FINAL	RM	RW	Nov 2024

Client: Xlinks 1 Limited

Project: Xlinks' Morocco-UK Power Project

Title: East of Haig Fras MCZ in relation to the Offshore Cable Corridor

Status	Scale @ A3	Date Created
FINAL	1:250,000	Nov 2024

Figure Number: **6**

Rev: **P01**

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1.5 Background and Legislative Context for the MCZ Assessment

1.5.1 The SNCBs (Natural England (NE) and Joint Nature Conservation Committee (JNCC)) have a statutory and advisory role in the identification and delivery of MCZs under Section 127 of the Marine and Coastal Access Act 2009 (MCAA). SNCBs also have a wider role in relation to identification and monitoring of MCZs and reporting on MCZs and the Marine Protected Area (MPA) network (NE, 2014).

1.5.2 A range of public authorities have responsibility for regulation of activities occurring in the sea and on the coast. These include the Marine Management Organisation (MMO), the Inshore Fisheries and Conservation Authorities (IFCAs), the Environment Agency, Local Authorities and Harbour Authorities (Defra, 2010).

1.5.3 Once designated, the MMO and the IFCAs are responsible for the management of MCZs. The scope of duty for the IFCAs will depend on the conservation objectives set for a particular MCZ (Defra, 2010).

1.5.4 Where the functions of a public authority have the potential to have an effect on an MCZ the MCAA requires the authority to carry out its functions in a manner that best furthers the conservation objectives of the MCZ (Section 125 of the MCAA). Where this is not possible, the public authority is required to proceed in the manner that least hinders the achievement of the MCZ's conservation objectives (Defra, 2013).

1.5.5 Regulators set conditions on a licence/order/permit that are proportionate to the scale and nature of the effect and would identify any mitigation measures required. They would also have regard to the advice of the SNCBs and, since the advice from the SNCB may differ for MCZs containing features with a conservation objective of 'recover', it is possible that conditions on a licence may also differ in these cases (JNCC, 2011). For MCZs with a general management approach of 'maintain', any licence conditions, including mitigation requirements, are likely to be similar to those in the same circumstances outside a designated site (JNCC, 2011).

1.5.6 Specific consideration of MCZs is required for any marine licence or DCO application (where a marine licence would normally be 'deemed') in English or UK waters. Under section 126 of the MCAA, public authorities (i.e. the MMO for marine licence applications or the Secretary of State for DCO applications) have specific duties for MCZs in relation to certain decisions. Section 126 applies where:

- A public authority has the function of determining an application (whenever made) for authorisation of the doing of an act, and
- (b) The act is capable of affecting (other than insignificantly) –

  (i) The protected features of an MCZ; or

  (ii) Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.

1.5.7 Consequently, an MCZ assessment was conducted for the Proposed Development in line with the guidance 'Marine conservation zones and marine licensing' (MMO, 2013).

2 PROPOSED DEVELOPMENT

2.1 Summary of Marine Works

2.1.1 The location of the Offshore Cable Corridor in UK waters is indicated on **Figure 1**.

Programme and Installation Schedule

2.1.2 The following dates are indicative at this time and may be influenced by factors such as weather limitations of the Cable Laying Vessel (CLV).

- **2027:**
  - Horizontal Directional Drilling (HDD) at the proposed landfall is scheduled to commence in Q1 of 2027.
  - Pre-lay works for Bipole 1 (first cable bundle) such as route clearance and boulder removal are anticipated to take place in 2027 ahead of cable lay and protection works.
- **2027-2028:** Cable lay works for Bipole 1 are scheduled to begin in 2027. It is anticipated that these works would be completed in three sections each taking approximately one month. It is currently envisaged that one section will be laid in Q3 2027 and two sections will be laid in 2028.
- **2029:** For Bipole 2 (second cable bundle), offshore works would begin with pre-lay works in 2029.
- **2030:** The three sections of bipole 2 are currently scheduled to be laid in 2030.

2.1.3 Burial and protection activities would progress broadly in parallel with the expectation that cable lay and the start of burial would be just a few days apart (noting that burial and protection activities would take longer to complete than the cable lay).

2.1.4 Guard vessels would be provisioned for any periods after the cable has been laid, but has not yet been buried or protected, to minimise the risk of interactions with other marine traffic.

Offshore Construction Works

Horizontal Directional Drilling – Marine Works

2.1.5 The cables would be installed at the landfall using an HDD technique to avoid disturbance of the intertidal zone, the beach and the foreshore including coastal cliffs. This section provides a summary of the marine elements of the HDD works.

2.1.6 The HDD drill direction would be started on land and directed out to sea. For each borehole, a pilot hole would be drilled (at c. 20 m below seabed level) to within approximately 50 m of the seabed exit points. The drilled bore would then be widened to its full intended diameter before the remainder of the bore is drilled. Redundant drilling fluid and cuttings would be removed

and disposed of responsibly, in accordance with waste regulations, from the land-based works.

2.1.7 The primary HDD activity that interacts with the marine environment is the breakthrough, or 'punchout', of the drill from underneath the seabed.

2.1.8 During breakthrough, drilling fluid and cuttings would be released into the immediate marine environment. The use of drilling fluids that are on the OSPAR PLONOR list (Pose Little Or No Risk to the environment) would be prioritised to minimise the risk to the marine environment during breakthrough. The volume of drilling fluid and cuttings lost during breakthrough is minimised by the adopted construction approach (i.e. the boreholes having already been drilled to their full diameter prior to breakthrough of the seabed and the continuous removal of drilling fluid and cuttings during this operation). Lower drilling fluid flow rates are also used during breakthrough to minimise the loss of drilling fluid.

2.1.9 There will be no requirement for any wet concrete pours associated with the landfall HDD or any of the offshore works.

2.1.10 An excavated 'exit pit' may be required at HDD exit points on the seabed to clear unconsolidated sediment layers (sand and pebbles) that may jam HDD equipment on breakthrough or prevent subsequent duct installation once the boreholes have been drilled. Localised clearance of unconsolidated sediments is expected to be undertaken by either a back-hoe dredger (long arm barge mounted excavator), or mass flow excavation (MFE). Sediment will be cleared from an area of approximately 15 m x 15 m around the exit points.

2.1.11 Sediments will be cleared, rather than removed offsite (as was proposed at PEIR stage). Thus, sediments will not be removed from Bideford Bay, with exit pits refilled via a combination of manual infilling (long arm barge mounted excavator) and by natural infilling of sediments (which would be expected to be rapid given the extensive mobility of surface sediments in Bideford Bay).

2.1.12 Exit points in the marine environment for the four drills are currently being considered between approx. 5 m water depth (approximately 500 m offshore) and 10 m water depth (approximately 1,800 m offshore). Volume 1, Figure 3.9 of the ES presents a plan of the landfall HDD that shows this enveloped area.

2.1.13 Following installation, cable ducts at the exit pits will be protected using the material excavated from the 'exit pit'. If concrete mattresses or rock protection are needed at the final duct exits this will be highly localised and all such protection would be below seabed level. Away from the exit pits, cables will be protected and buried in trenches, as elsewhere. The sandy sediments of Bideford Bay mean that achieving target depth burial is highly likely, with trenches infilled with the excavated sandy sediments; thus supplementary cable rock protection is highly unlikely to be required elsewhere in Bideford Bay (c.f. e.g. Volume 1, Figure 3.15 of the ES: Indicative rock placement along Offshore Cable Corridor).

2.1.14 Dependant on the contractor's final design and depth of the boreholes, there would be up to a 40 m separation between adjacent drill exit points for cables on the same circuit, and approximately a 50 m separation between

circuits (i.e., all four exit points would be within an area of the seabed of approximately 130 to 150 m width).

2.1.15 The HDD installation would be undertaken ahead of cable lay, likely commencing in Q1 2027 (avoiding the winter period). Active working on HDD exit pits would also be avoided during peak spring tides; this is embedded mitigation to minimise the disturbance of suspended sediments (see Volume 3, Chapter 8: Physical Processes of the ES).

HDD Duct Installation

2.1.16 Following drilling of the four boreholes, ducting would be installed in each bore. Three methods are being considered for the installation of ducting: pulling the ducting from either onshore or offshore or pushing the ducting through the boreholes from onshore.

2.1.17 A pulled installation with a pulling winch onshore requires a complete string of duct to be towed (afloat) from offshore to the HDD exit points and pulled onshore through the boreholes. If the pulling winch is located offshore, then the string of duct can be fabricated at the HDD onshore site as the duct is pulled offshore.

2.1.18 A pushed installation involves the fabrication of the ducts at the HDD onshore site with the ducts fed into the entry points and driven through the boreholes using a pipe thruster. The project design team have rejected any option of moving ducting across the beach, which would effectively be isolated from the HDD works. The choice of the HDD installation method avoids potential impacts to designated sites and the intertidal zone.

2.1.19 All methods of duct installation require marine vessels; however, the pull method would require additional vessels relative to the push method (as described in Volume 3, Chapter 5: Shipping and Navigation of the ES).

Pre-Lay Marine Surveys

2.1.20 The baseline UK marine investigation surveys, that included geophysical surveys, subtidal drop-down video (DDV) surveys and subtidal grab surveys have been completed and have informed the environmental baseline for the ES (see e.g. Appendix 8.4 GEOxyz Environmental Report of the ES).

2.1.21 Prior to cable installation (commencing in 2027), additional ground condition surveys may be required by the Contractor. These are unlikely to be required to further characterise the environmental baseline (given the high resolution baseline data collection already compiled for the OCC within UK waters), but may be required for micro-routing purposes or to identify any UXO within the OCC that may need to be avoided or cleared. If required, UXO clearance (removal or detonation) would be undertaken by a specialist contractor and any such works would be subject to a separate consenting process at the time such need is identified. The approach to consenting of UXO has been discussed with the MMO, following Scoping Opinion responses, and the MMO confirmed their preference and expectation for separate licensing of UXO survey and any UXO removal, separate to the DCO/Deemed Marine Licence. As such, consideration of effects from activities associated with UXO clearance have been excluded from this MCZ assessment.

Route Preparation

2.1.22 The marine baseline investigation surveys (see e.g. Volume 3, Appendix 8.4 GEOxyz Environmental Report of the ES) and any pre cable laying ground condition survey would inform the requirements for, and extent of, seabed preparation and clearance along the OCC in UK waters. Types of seabed preparation that could be required prior to cable installation include:

- Clearance of debris and some local seabed features e.g. boulders;
- Clearance of Out of Service (OOS) cables; and
- Construction of crossing structures over existing in-service cables.

2.1.23 Seabed preparations will not remove bed materials from the local area i.e. there will be no dredge arisings or similar. Any seabed preparations will be limited to immediate clearance / highly localised flattening only.

Seabed Debris

2.1.24 Where deemed necessary, marine debris such as abandoned, lost or discarded fishing gear that may impede the cable installation operations, would be cleared from the cable route prior to installation. This would require a pre-lay grapnel run involving towing a heavy grapnel hook of circa 1 m total width, at a max penetration depth of circa 1 m, along the centre line of each bundled cable pair route to clear debris. It is anticipated that the pre-lay grapnel run would extend along the entire OCC apart from at live cable crossings (the locations of which are shown on Volume 1, Figure 3.10 of the ES). The only exception will be if the cable is installed by pre-cut trenching by plough whereby a pre-lay grapnel run is not required, but this is currently not known.

2.1.25 Debris collected during the grapnel run would be recovered on board the vessel for onshore disposal at appropriately licensed disposal facilities.

Out of Service Cables

2.1.26 There are currently 27 anticipated crossings of OOS cables along the UK OCC. A section of the OOS cables would be cut and removed where possible, which is consistent with Natural England's preference (Natural England, 2022) i.e. prevents the need for mandatory external cable protection at these OOS crossings. Liaison with the asset owners for the OOS cables is underway, with the expectation that agreements for cable removal will be in place for the majority.

2.1.27 As a worst case, it is assumed for MCZ assessment purposes that x5 of the OOS cables will require crossings (5 OOS cables x 2 bipoles = 10 OOS cable crossing protection structures in total). Should any OOS cable crossings be required, this will be confirmed to the MMO (and Natural England) post DCO approval, prior to construction.

Sandwaves and Large Ripples

2.1.28 The outline CBRA (Volume 1, Appendix 3.4 of the ES) has determined that there are no sandwaves or large sand ripples in UK waters that would require pre-sweeping / large-scale flattening. The scale of sandwaves and

ripples is such that cable burial below mobile sediment layers is expected to be achieved during normal installation procedures i.e. using MFE and/or 'surface plough'/leveller.

2.1.29 MFE utilises a jetting tool that uses high flow water jets to temporarily displace and suspend sediments for localised seabed excavation and levelling. Based on the provisional assessment of the geophysical survey data, the MFE is anticipated to be deployed infrequently (based on seabed type), potentially most appropriate to the seabed conditions in Bideford Bay.

2.1.30 Localised seabed levelling, where required, would be more likely undertaken by a pre-lay trench plough, with a swath width of 10-15 m (per trench). For the purpose of this MCZ assessment, the entire 370 km UK OCC length is assumed to require deployment of the pre-lay trench plough. The assumed (worst case) area for pre-lay trench clearance is 11,100,000 m2 (15 [width] x 370,000 [length] x 2 [number]).

Boulder Clearance

2.1.1 Areas of boulder fields have been identified along the route (as presented on Volume 1, Figure 3.11: Boulder densities along Offshore Cable Corridor of the ES), which will prevent burial of the cable bundles where they cannot be avoided by micro-routing. In these areas, a pre-lay plough and / or boulder grab may be deployed for boulder clearance purposes, to increase the likelihood of successful burial. It is anticipated that boulder clearance would be carried out by boulder grab in areas of low boulder density and by pre-lay plough in areas of high boulder density, however this is not prescriptive as the use of tools may be swapped due to operational requirements (for example a small area of low density boulders may be cleared by plough if between areas of high density boulder fields or vice versa).

2.1.2 The pre-lay plough has a boulder clearance swath width of 10-15 m. It is anticipated that up to approximately 200 km of the route may need deployment of the pre-lay plough for boulder removal. Any moved boulders would remain within the limits of the OCC.

2.1.3 For either method, as part of embedded mitigation for the boulder clearance design, debris and boulders, there will be a buffer of at least 20 meters between disturbance activities and any MCZ boundary and it will be ensured that no boulders will be deposited within any MCZ.

Trench Ploughing

2.1.4 The pre-lay plough can also perform pre-cut trenching, to produce an initial trench to enable subsequent cable burial. The pre-lay plough has capability to perform boulder clearance, pre-cut trenching and backfill services (after cable lay). The pre-lay plough can operate in each mode independently or carry out the boulder clearance and pre-cut trenching activities simultaneously. During boulder clearance surface boulders are unearthed and relocated to an outer spoil berm. Siphoned soil from pre-lay plough trenching is relocated to an inner spoil berm to be used to backfill the trench after cable lay.

2.1.5 The profile of the pre-lay plough trench would be 500 mm (width) x 700 mm (depth) at its base, with a further 'Y' shaped profile where the cut depth is

>700 mm. Where ground conditions allow the pre-lay plough can trench down to the target cable burial depth of approximately 1.5 m.

2.1.6 The disturbance width (swath) of the pre-lay plough in pre-cut trenching and backfill modes is 15 m.

2.1.7 There will be a buffer of at least 20 meters between trench ploughing activity and any MCZ boundary and it will be ensured that no boulders will be deposited within any MCZ.

Cable Installation Methods

2.1.8 The HVDC cables would be installed as two bundled pairs from a CLV. The specific CLV(s) that would install the HVDC cables is unknown at this stage and would be determined by the selected cable contractor. Based on CLV(s) currently in operation, it is anticipated that two turntables would be mounted on the CLV(s), each holding up to approximately 160 km of HVDC cable. As the CLV travels along the route, the two turntables release cable at the same rate and the two cables are bundled together at the stern of the vessel and fed overboard. An additional cable tank would contain the fibre optic cables, which would be installed as part of the bundle. Tensioners control the cable tension and cameras monitor the cable to ensure it is laid safely on target.

2.1.9 Based on the initial assessment of the geotechnical and geophysical survey data as part of the CBRA (outline CBRA presented as Volume 1, Appendix 3.4 of the ES: Outline Cable Burial Risk Assessment) the cables will be buried along the entire route. For 220 km of the route it is anticipated that the cables will be protected by trenching and covered by natural sediments. It is anticipated that additional protection would be required along approximately 150 km of the route. Further details are provided in the following sections.

Cable Burial Method

2.1.10 Burying the cables would provide protection and avoid damage and future entanglement with fishing equipment or other marine users. Burial techniques available include trench ploughing (above), trench jetting, or mechanical trench excavation. The outline CBRA confirms that trench jetting is unsuitable for the majority of the OCC, with potential exception of shallow coastal areas in Bideford Bay, or used as a remedial measure to be applied following mechanical trenching. Mechanical trenching (mechanical cutter mounted on a remotely operated vehicle (ROV)) is expected to be the main burial method in UK waters. The burial risk (as determined by the CBRA) along the OCC associated with trench jetting, mechanical trench excavation, and ploughing is shown on Volume 1, Figures 3.13 to 3.15 of the ES.

2.1.11 Once the cables have been laid on the seabed (by the CLV), the ROV is lowered to the seabed until it straddles the cable bundle lying on the seabed. Where the mechanical cutter is deployed, the tool would lift the cables up above the seabed safely out of the way of the burial tool and would then feed the cables into the trench behind the tool. Where the water jetting ROV is deployed, two jetting legs (also known as swords) would extend down either side of the cable bundle and fluidise the seabed immediately below the cable bundle enabling it to sink under its own weight.

2.1.12 Cable burial depth would be monitored as the burial tool progresses. Where the target burial depth is not achieved on first pass of the tool, a second pass may be required using e.g. the water jet.

2.1.13 The footprint of the mechanical cutter ROV on the seabed is up to 126 m^2 (10 m width and 12.6 m in length) and the water jet ROV up to 55.2 m^2 (6 m width and 9.2 m length). The average rate of trenching is typically 150 m per hour.

Additional Cable Protection

2.1.14 Preliminary investigations (outline CBRA, Volume 1, Appendix 3.4: Outline Cable Burial Risk Assessment of the ES) indicates that there is significant burial risk (due to e.g. hard seabed and / or boulder fields, the locations of which are shown on Volume 1, Figure 3.12 of the ES) that may reduce the ability to protect the cables using the ROV tools for approximately 150 km of the total length of the OCC. In these areas, the pre-lay plough may pass through prior to cable lay to determine if a trench can be produced, followed by at least one pass of the mechanical cutter after the cable bundles had been surface laid with the aim of producing a trench that can be backfilled back to / close to the seabed surface. In areas where this is not possible, the final option would be for the cable to be covered with a layer of rock protection that extends above the level of the surrounding seabed (a rock berm). Indicative / estimated rock placement across the OCC is shown on Volume 1, Figure 3.15 of the ES, as interpreted from burial assessment considerations; see e.g. the outline CBRA (Volume 1, Appendix 3.4: Outline Cable Burial Risk Assessment of the ES).

2.1.15 Where required, rock protection would consist of rock ranging from coarse gravel to cobbles and be up to approximately 1 m high above the seabed. The rock source is currently not known but is highly probable to be either basaltic or granitic in origin (this will be dependent on selected rock placement contractor). Where possible rock placement would be limited to within trench and level with the existing seabed. Where rock berms are required (rock placement above sea bed level up to 1 m height), these would be constructed according to industry standards (including International Cable Protection Committee (ICPC) recommendations). Rock berms are only anticipated to be required in areas of shallow rock and boulder fields where the introduction of gravel/cobbles would not be a highly significant change of habitat i.e. rock placement will be least likely to be required where the baseline sea bed substrates are e.g. fine sands.

Cable Crossings

2.1.16 Where the cables cross other in-service cables, the cable would not be buried in a trench. The trench depth would taper to seabed level at a suitable distance from the in-service cable to be crossed and the Proposed Development cable would cross above the in-service cable. The Proposed Development cable would then be buried again on the other side of the in-service cable.

2.1.17 Where the Proposed Development cable crosses in-service cables, whether buried or surface laid, a layer of separation in the form of a pre-lay rock berm or pre-lay concrete mattress may be installed over the crossed asset. The Proposed Development cable would then also require protection in the

form of a post-lay rock berm. The height of the concrete mattress and rock berm would be approximately 1.4 m above the seabed. The use of mattresses is anticipated to be very limited. Where they are necessary mattresses would be pre-formed, marine-grade concrete mattresses designed for very long-term deployment. Most of these specialist mattresses have integrated plastic handles / ropes for ease of deployment and installation. Given the specific design of these mattresses for long-term marine deployment, the potential for plastic degradation over time is assumed negligible, and due to the fact that mattresses will be covered with a rock berm / overlying sediments, any risk of degradation into the marine environment of plastics is further reduced. All crossings and crossing agreements would be in line with industry standards(including ICPC recommendations).

2.1.18 There are x20 active or planned cable crossings, the locations of which are shown on Volume 1, Figure 3.10 of the ES. There are 18 planned crossings of active fibre optic cables (15 cables but three are crossed twice), one crossing of a fibre optic cable where installation is currently under way and one crossing of a planned power cable. (Thus, 20 in-service assets x 2 bipoles = 40 in-service asset crossing protection structures in total.)

2.1.19 There are also x27 OOS cables that cross the Offshore Cable Corridor which will have a short section removed where possible. As a worst case (given removal conversations with historical asset owners are ongoing), it is assumed that x5 of the OOS cables will require crossings (5 OOS cables x 2 bipoles = 10 OOS cable crossing protection structures in total).

2.1.20 The total asset crossing protection structures (across both bipoles) = 50 (40 in-service asset crossing protection structures and 10 OOS cable crossing protection structures). Precautionary dimensions for these crossings are assumed in this MCZ assessment - a crossing approach length of 250m either side of an existing asset is assumed. The crossing footprint for MCZ assessment purposes is 3500 m2 per crossing which is considered a precautionary/worst case overall area estimate based on 500 m length x 7 m width (recognising that width may extend out to c.9.5m width in the immediate vicinity of the other asset). The total crossing footprint is assumed to be (3500 x 50) 175,000 m2 (taken to be representative of a worst-case footprint area). As suggested above the dimensions are considered precautionary and it is likely that the length of most crossings would be less than the maximum suggested here.

Cable Burial Depth, Width and Spacing

2.1.21 The intended depth at which the cables would be buried is up to a depth of 1.6 m, as detailed in the outline CBRA (Volume 1, Appendix 3.4: Outline Cable Burial Risk Assessment of the ES). The outline CBRA finds an average target depth of 1.5 m, and average minimum depth of 0.8 m (n=42).

2.1.22 The width of the trench in which the cable bundles would be buried typically ranges from 0.5 to 1.5 m. The infrequent cable joints and FOC repeaters would require a short additional trench laid broadly parallel to the main cable. The trench width required for these infrequent FOC repeater cables would be narrower than the main trench (<50 cm).

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Installation Vessels

2.1.23 Cable installation activities would be undertaken on a 24 hour / 7 day basis, unless interrupted by weather or other disruptions. This would maximise the available operational weather windows, vessel and equipment time, and minimise navigational impacts on other users of the sea.

2.1.24 A description of likely vessel groups to be utilised during the installation activities of the Proposed Development is provided below:

- Vessels for pre and post-installation survey works;
- Workboats/construction vessels and tugs for all works including route clearance/preparation, trenching, installation of rock protection/concrete mattresses, duct installation, cable pull and floating in, and dive support, depending on requirements. These workboats often deploy ROVs and would utilise geophysical survey and positioning equipment to monitor the progress of the works, and for positioning of any ROVs or other underwater equipment needed to complete the works;
- CLVs for cable laying;
- Guard vessels – as necessary, these would accompany the CLV to maintain surveillance around the worksite ensuring other vessels are kept clear i.e.. reducing the risk of collision; guard vessels would also be deployed to protect the cable prior to burial;
- Rock placement vessel – where rock placement is required for additional cable protection (e.g. at cable crossings), a rock placement vessel may be used. Such vessels feature a rock storage hopper and equipment by which rock can be placed in-situ on the seabed, such as fall pipes; and
- Jack up vessel / multi-cat vessel – for the HDD works (breakthrough, duct push/pull and duct sealing works) near the landfall, jack up vessels would be deployed to enable stable and safe marine works in the subtidal environment.

2.1.25 The precise number of vessels to be used is to be determined by the cable contractor, however, indicative vessel types and numbers are presented in **Table 2**.

Table 2. Indicative construction phase vessel numbers

Vessel Type	Anticipated Total Number	Key Construction Activities	Indicative Total Number of Days	Comments
Cable lay vessel	2	Cable installation	144	Maximum of 2 at crossover, but only one laying at a time
Construction support vessel e.g. trenching support	5	Pre-lay trenching Cable protection	457	5 construction support vessels in total (cable protection + pre-lay trenching)
Rock protection vessel	2	Rock placement/ protection	352	
Jack-up barge	2	Landfall/HDD works Cable pull-through	120	

Vessel Type	Anticipated Total Number	Key Construction Activities	Indicative Total Number of Days	Comments
Guard vessel	20	Guard	3500	Up to 20, but likely much less on account of phased works
Survey vessel	2	e.g. Boulder clearance	90	2 survey vessels in total (e.g. boulder clearance)
Small tug	1	Pre-lay grapnel run	51	Included in the 20 'Guard vessel' numbers above, as will be complete ahead of any lay/ protection

Operational Phase

Inspection Surveys

2.1.26 The preferred installation methods are designed to minimise the number of cable inspection surveys that would be required. However, some cable inspection surveys are expected during the operational lifetime of the Proposed Development.

2.1.27 Following the installation of each Bipole an 'as-built' survey shall be conducted along the entirety of the subsea cable route. This survey shall involve the use of a single survey vessel equipped with an inspection ROV and geophysical survey equipment including Multibeam Echo Sounder (MBES) and Side Scan Sonar (SSS) and check:

- Status of the cable within its buried sections of the route,
- Status of rock protection and rock berms
- Condition of the seabed around the cable, include sandwaves and scars
- Fishing gear

2.1.28 Following the 'as-built' surveys, routine inspection surveys would be required under the following survey schedule:

- Routine surveys of the offshore submarine cables shall commence two years from the commissioning of the first Bipole.
- If no issues are found, the next follow up survey would be in three years, with the interval increasing by one year each time, until the period between surveys reaches five years.
- If no issues are found, routine surveying is likely to be conducted on a five-year basis.
- If an issue is found, it will be flagged for further investigation, mobilisation of repair or remediation, as appropriate.
- Following this, subject to the identified issue, associated risk and mitigation, the surveys might remain at this interval or reduce to an

appropriate level (this could mean that the next survey is undertaken just one or two years from the last one).

Maintenance and Repair

2.1.29 There may be a requirement to undertake unplanned maintenance works in the event of failure of components of the system or if a cable becomes exposed due to changes in seabed morphology or the activities of third parties.

2.1.30 Repair works for cable failure would require the exposure of the cable at the point of failure, which would require de-burial of the cable from the trench. The cable would then be cut, recovered to the surface, repaired using a section of spare cable and redeployed for reburial using similar methods to those used for installation.

2.1.31 Given additional cable length would need to be added to join the cut ends at the surface, the relayed cable would take up a greater footprint than the original cable through incorporation of a 'repair loop'. Any additional footprint associated with repaired sections would be anticipated to fall within the Offshore Cable Corridor.

Decommissioning Phase

2.1.32 The current anticipated lifetime of the Proposed Development (operational phase) is 50 years, following which the Proposed Development may be decommissioned. The Applicant is not seeking consent for decommissioning and any consent required for decommissioning would be sought at the appropriate time.

2.1.33 If decommissioning is required, the options for decommissioning the cables would be evaluated at the time of decommissioning, with the available technologies of the time reviewed fully (in recognition that engineering technologies are ever evolving). The least environmentally damaging decommissioning option, is (in general) to de-energise the cable, disconnect it from any wider system, and secure it in place to be left in-situ, thereby avoiding unnecessary seabed disturbance.

2.1.34 However, other options may include the requirement for full or partial removal of the cables. The methods for removal would be broadly similar to those used during the construction phase with the potential for the cables to be removed by direct pulling, rather than de-burial. The requirement for any removal could also apply to other infrastructure installed as part of the project i.e. cable protection. The footprint of decommissioning activities (disturbance footprint at the sea bed) is anticipated to be less than that of the construction phase.

2.1.35 The framework of environmental permitting and all applicable UK and International legislation at the time of decommissioning (and the preparation of the decommissioning plans) would be adhered to.

2.1.36 Once the final decommissioning timescales and measures are known, an environmental assessment (EIA or similar) would be performed prior to the decommissioning phase (i.e. in approximately 50 years' time) to assess the potential impacts that may arise. This would inform any licence applications for decommissioning (separate to this application for DCO).

2.1.37 An Outline Decommissioning Strategy containing the anticipated approach to, and methods associated with decommissioning has been prepared in parallel to this MCZ assessment (PINS Document Reference 7.17; and summarised in Volume 1, Chapter 3: Project Description of the ES).

Mitigation Measures Adopted as part of the Proposed Development

2.1.38 For the purposes of the EIA process, the term *'measures adopted as part of the Proposed Development'* is used to include the following types of mitigation measures (adapted from IEMA, 2016). These measures are set out in Volume 1, Appendix 3.1: Commitments Register of the ES, with confirmation of the associated securing mechanisms for each measure.

- Embedded mitigation. This includes the following.
  - Primary (inherent) mitigation - measures included as part of the Proposed Development design. IEMA describes these as '*modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project and do not require additional action to be taken'*. This includes modifications arising through the iterative design process. These measures will be secured through the consent itself through the description of the project and the parameters secured in the DCO and/or marine licences. For example, a reduction in footprint or height.
  - Tertiary (inexorable) mitigation. IEMA describes these as '*actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects*'. It may be helpful to secure such measures through a Construction Environmental Management Plan or similar.
- Secondary (foreseeable) mitigation. IEMA describes these as '*actions that will require further activity in order to achieve the anticipated outcome'*. These include measures required to reduce the significance of environmental effects (such as lighting limits) and may be secured through environmental management plan (EMP).

2.1.39 In addition, where relevant, measures have been identified that may result in enhancement of environmental conditions. Such measures are clearly identified within Volume 1, Appendix 3.1: Commitments Register of the ES. The measures relevant to this MCZ assessment are summarised in **Table 3.**

2.1.40 Embedded measures that will form part of the final design (and/or are established legislative requirements/good practice) have been taken into account as required, as part of the assessment presented. This ensures that the measures to which the Applicant is committed are taken into account in the assessment of effects.

Table 3. Mitigation measures adopted as part of the Proposed Development

Commitment Number	Measure Adopted	How the Measure Will be Secured
Embedded Measures		
OFF01	Cables will be buried (where possible) up to a maximum of approximately 1.6 m below the seabed, as informed by detailed Cable Burial Risk Assessment (CBRA). The average target depth is 1.5 m. Only when full burial is not possible will additional protection be installed.	Design parameters set out in the Outline Offshore Construction Environmental Management Plan (CEMP) (application Document Ref. 7.9). (Ultimately, the measures will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF02	Cable protection measures - Where possible introduced cable protection i.e. rock placement (and potentially concrete mattresses), would be kept level with the seabed, and if above the seabed would be kept to a maximum of c.1 m above seabed level (excluding crossings) as far as reasonably practicable.	Design parameters set out in the Outline Offshore CEMP (application Document Ref. 7.9). (Ultimately, the measures will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF04	All ships subject to the Ballast Water Management Convention (2017) requirements will be obliged to conduct ballast water management in accordance with the Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022.	Regulatory requirement. Also pre-requisite of the Outline Offshore CEMP (Document Ref. 7.9).
OFF05	An Offshore CEMP will set out the detailed approach to offshore construction activities and would implement those measures and environmental commitments identified in the EIA as far as reasonably practicable. The following measures will be included in the Offshore CEMP: marine pollution prevention; waste management; marine invasive species (via the Offshore Biosecurity Plan); and dropped object procedures. An Outline Offshore CEMP (document reference 7.9) forms part of the application for DCO (with a final Offshore CEMP finalised by the offshore contractor).	The Offshore CEMP is a requirement of the Deemed Marine Licence.
OFF06	An Offshore Biosecurity Plan will be implemented as far as reasonably practicable, which will incorporate a biosecurity risk assessment (to assess the likelihood of introducing Marine Invasive Non-Native Species during all phases of the Proposed Development). An outline Offshore Biosecurity Plan (document reference	The Offshore Biosecurity Plan is a requirement of the Offshore CEMP (outline provided at application stage, as Document Ref. 7.9). (Ultimately, the Offshore Biosecurity Plan will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)

Commitment Number	Measure Adopted	How the Measure Will be Secured
	7.19) forms part of the application for DCO (with a final Offshore Biosecurity Plan finalised by the offshore contractor).	
OFF07	A Marine Pollution Contingency Plan (MPCP) will form part of the final Offshore CEMP and will include measures to minimise as far as reasonably practicable the impact of any pollution events arising from the Proposed Development, and will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL).	Requirement of the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the MPCP will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF08	For compliance with the requirements of MARPOL, all Proposed Development vessels with a gross tonnage (GT) above 400 tonnes will require a Shipboard Oil Pollution Emergency Plan (SOPEP) detailing the emergency actions to be taken in the event of an oil spill.	Requirement of the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the measure will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF10	The HDD drill system will be designed to allow for the monitoring of pressure loss and therefore provision for the rapid identification of potential break out.	Outline Bentonite Breakout Plan requirement of the Offshore CEMP (outline provided at application stage, as Document Ref. 7.9) (Ultimately, the measure will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF11	The Navigational Safety and Vessel Management Plan (NSVMP) will confirm the types and numbers of vessels that would be engaged on the Proposed Development and consider vessel coordination including indicative transit route planning. The NSVMP will include protocols for vessel communications, lighting and maintenance of "safe" distances (which will be monitored by guard vessels during the construction period). An outline NSVMP is provided as Volume 3, Appendix 5.2 Navigational Safety and Vessel Management Plan of the ES; the NSVMP will be updated to final by the offshore construction contractor.	Requirement of the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the measure will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
OFF34	All potential sediment disturbance activities in Bideford Bay are to avoid peak spring tides and significant wave activity, to limit any potential for sediment mobilisation as far as	Requirement of the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the measure will be secured via the Final Offshore CEMP, which itself

Commitment Number	Measure Adopted	How the Measure Will be Secured
	reasonably practicable. These activities would include the excavation / sediment clearance at the HDD exit pits and trenching works.	is a requirement of the Deemed Marine Licence, DML.)
OFF36	All construction activities undertaken on the seabed including boulder clearance activities (inclusive of the depositing of moved boulders) will remain entirely within the Offshore Cable Corridor, and a minimum distance of 20 m from any Marine Conservation Zone boundary.	Requirement of the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the measures will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)
Secondary (Further) Measures		
OFF03	Micro-routing of the offshore cables, within the defined Order Limits, will be undertaken to minimise any potential damage to geogenic and biogenic Annex I habitats, to avoid sand waves or large ripples (that would otherwise require pre-lay seabed flattening), and to avoid direct impacts as far as reasonably practicable on archaeology and cultural heritage assets and submerged land surfaces.	Set out as 'Further Commitments' in the Outline Offshore CEMP (Document Ref. 7.9). (Ultimately, the measures will be secured via the Final Offshore CEMP, which itself is a requirement of the Deemed Marine Licence, DML.)

3 CONSULTATION

3.1.1 In January 2024, the Applicant submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects for the construction, operational and decommissioning phases of the Proposed Development. It also described those topics or sub-topics which were proposed to be scoped out of the EIA process and provided justification as to why the Proposed Development would not have the potential to give rise to significant environmental effects in these areas.

3.1.2 Following consultation with the appropriate statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 07 March 2024. Key issues raised during the scoping process which are relevant to the MCZ assessment and how they have been addressed are provided in **Table 4** below. Some of the responses to comments relate to information from the Benthic Ecology technical chapter of the ES (Volume 3, Chapter 1: Benthic Ecology of the ES).

3.1.3 The preliminary findings of the EIA process were published in the Preliminary Environmental Information Report (PEIR) on 16 May 2024. The PEIR was prepared to provide the basis for statutory public consultation under the Planning Act 2008. This included consultation with statutory bodies under section 42 of the Planning Act 2008.

3.1.4 The first MCZ draft submission was issued in July 2024. Section 42 consultation responses (following issue of the PEIR) were received in July 2024 and comments were received from JNCC and NE as part of S42 consultation responses. These have been addressed in this revised version of the MCZ assessment as detailed in **Table 4** below.

3.1.5 A further meeting was held with JNCC and NE on 30th October 2024 to discuss how comments from JNCC and NE had been addressed in the MCZ assessment. It was agreed that the approach taken to addressing comments was satisfactory, with JNCC and NE awaiting view of the final submitted MCZ assessment (alongside the Environmental Statement and other submission documents) before providing final comment.

Table 4. Consultation comments of direct relevance to the MCZ assessment.

Comments	How the response has been addressed
Scoping Report	
Section 8.2 of the Scoping Report identifies several SACs and MCZs within the study area, but these are not referred to as receptors for consideration in the assessment in Table 8.2.5. For the avoidance of doubt, the potential for likely significant effects to designated MCZ and SAC, and relevant benthic ecology	Features of SACs and MCZs identified within the study area have been considered as key receptors for consideration within the benthic ecology assessment chapter of the ES (Volume 3, Chapter 1: Benthic Ecology of the ES). This MCZ assessment has been prepared and is submitted alongside the ES and other application documents.

Comments	How the response has been addressed
features, should be considered in the impact assessment.	
The assessment should include reference to, and consideration of, the conservation objectives for the MCZ. The Applicant's attention is drawn to the comments of NE and the JNCC (Appendix 2 of this Scoping Opinion), which highlight the availability of further information about MCZ.	Benthic ecology features of MCZs within the zone of influence of the Proposed Development are outlined in Volume 3, Chapter 1: Benthic Ecology of the ES. An indication of potential effects on MCZ features is provided in the ES (Volume 3, Chapter 1: Benthic Ecology) and this MCZ assessment has been prepared.
Where cable protection is required, the Inspectorate advises that the ES should identify the options available and provide an assessment of the likely significant effects that would arise from installation of the selected option (or options if flexibility is sought), including impacts from secondary scouring. The ES should clearly describe any mitigation measures relied on to avoid significant effects on benthic receptors including SACs and MCZs and explain how the measures would be secured.	The impact 'Temporary habitat loss/disturbance' has been considered for installation of cable protection (Volume 3, Chapter 1: Benthic Ecology of the ES). For the assessment of effects of cable protection during operation the impact 'Long-term habitat loss/change' has been considered (Volume 3, Chapter 1: Benthic Ecology of the ES). The OCC does not intersect with any MCZs (see **Table 1**), consequently the effects associated with temporary and long-term habitat loss and scour identified in Volume 3, Chapter 1: Benthic Ecology of the ES are not applicable when considering impacts on MCZ features.
JNCC and NE S42 Comments (on draft MCZ assessment)	
Natural England does not agree with the decision to scope out species features based on broadscale habitat mapping from 2016. The pink sea fan *Eunicella verrucosa* may have appeared in other parts of the MCZ in the past 10 years. Natural England advise that pink sea fans are scoped into the MCZ Stage 1 assessment for Bideford to Foreland Point MCZ for all pressures as they could be found within 5 km of the cable route.	This feature has now been screened in for changes to suspended solids and smothering and siltation rate changes (light), and the criteria to screen out based on distance or broadscale habitat mapping has been removed from the assessment (as seen in **Table 7**, with pink sea fan included in **Table 16**). Some pressures have been screened out where there are no anticipated impact pathways between the Proposed Development and the pink sea fan *Eunicella verrucosa.*

Comments	How the response has been addressed
	This approach was agreed with JNCC and NE during consultation discussions on 30th October 2024.
Natural England does not agree with the decision to screen out Introduction of other substances (solid, liquid or gas) for both of the features of the South West Approaches to Bristol Channel MCZ. Boulder clearance and other clearance activities could cause solids to fall into the MCZ due to the proximity of the cable route to the MCZ. Natural England advise this impact is screened in for further assessment in the Stage 1 MCZ Assessment.	There will be a buffer of at least 20 m between all construction activities and any MCZ (**Table 3**). Boulders and any material removed during clearance activities will not be deposited within any MCZ. On this basis 'Introduction of other substances (solid, liquid or gas)' has been screened out of further Stage 1 assessment. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
Natural England advise the impacts changes in suspended solids (water clarity), smothering and siltation rate changes (light) and introduction of other substances (solid, liquid or gas) should be screened in for further assessment in the Stage 1 MCZ assessment for the feature subtidal sand in the South West Approaches to Bristol Channel MCZ.	Consideration of subtidal sand has now been screened into the Stage 1 assessment (**Table 16**) and the effects of changes in suspended solids (water clarity), and smothering and siltation rate changes (light) have been considered. Criteria to screen out features from further assessment based on distance has been removed from the assessment. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
Natural England welcomes the data presented within Volume 3 Appendix 8.1 of the Xlinks PEIR consultation. As sediment is modelled to fall within the Bideford to Foreland Point MCZ and South West Approaches to the Bristol Channel MCZ, Natural England requests evidence on the volume of sediment that can be expected to fall within these MCZs. Without this information, Natural England does not agree with conclusions of no capable impacts of smothering and siltation rate changes (light) on features of these MCZs in the Stage 1 Assessment. Natural England advises that volume of dispersed sediment along the cable route should be calculated to fully	Semi-empirical calculations for sediment transport have now been updated (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES) and results have been used to update the screening and Stage 1 assessment. This includes an indication of the extent of potential sediment dispersion on a mean neap tide as well as a peak spring tide. It should be noted that in Bideford Bay, no works that could result in release of sediment to the water column would be conducted during a peak spring tide (**Table 3**), which is

Comments	How the response has been addressed
understand the impacts of smothering and siltation rate changes (light) on protected features from these works	a requirement of the Outline Offshore CEMP (Document Ref. 7.9). This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
Natural England would like confirmation that the measures outlined within the MCZ assessment regarding bentonite frac-out will be included within a management plan that will be put in place during the construction period of this project	Measurements on how bentonite frac-out will be managed are included in the Outline Bentonite Breakout Plan (Document Ref. 7.20). A final Bentonite Breakout Plan will be agreed in discussion with stakeholders and produced by the HDD contractor, as per the requirement of the Outline Offshore CEMP (Document Ref. 7.9).
JNCC advise that debris from route preparation activities should not deposited in or near to the MCZs included in this assessment.	There will be a buffer of at least 20 m between construction activities and any MCZ. Boulders and any material removed during clearance activities will not be deposited within any MCZ. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
JNCC advise that boulder grab be used wherever possible as this reduces the likelihood of impacting sensitive benthic features. JNCC are concerned that the use of boulder plough in those areas directly outside the South-West Approaches to the Bristol Channel MCZ and East of Haig Fras MCZ have the potential to deposit boulders within the MCZs impacting the benthic features and communities within the sites. We therefore strongly advise that the use of boulder plough is mitigated.	This has now been clarified in the works description (Volume 1, Chapter 3: Project Description of the ES). There will be buffer of at least 20 m between the use of boulder plough and any MCZ, to ensure that no boulders will be deposited within any MCZ. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
JNCC advise that multiple passes at trenching should be attempted before additional cable protection is considered. A thorough cable burial risk assessment based on robust geotechnical data should be undertaken in order to ensure confidence in cable burial ability and to provide justification	This has now been clarified in the works description (Volume 1, Chapter 3: Project Description of the ES). In areas where trenching is not possible, the final option would be additional cable protection. An outline CBRA is provided as part of the application for development consent (Volume

Comments	How the response has been addressed
for any rock protection being applied for at the marine licence stage.	1, Appendix 3.4 of the ES). Burial will be the preferred option for the cable protection, and only when full target burial depth is not possible will additional protection be installed. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
South West Approaches to Bristol Channel MCZ. JNCC disagree with the applicant screening out changes in suspended solids (water clarity) and smothering and siltation rate changes for subtidal sand. Whilst we agree that there are limited areas of this feature within the designated site, there are still some small areas of this habitat along that north western edge that runs parallel to the cable corridor. Given that there is only a relatively small total area of this habitat within the site we would advise operators to mitigate impact on any areas of this habitat, for example by using installation methods that limit increased suspended sediment concentrations in proximity to the site.	Consideration of Subtidal Sand has now been screened into the Stage 1 assessment (**Table 16**) and the effects of changes in suspended solids (water clarity), smothering and siltation rate changes (light) have been screened in. Criteria to screen out features from further assessment based on distance has been removed from the assessment. Mitigation measures can be found in **Table 3**, with further information on mitigation (including confirmation of the securing mechanism) found in Volume 1, Appendix 3.1: Commitments Register of the ES.
South West Approaches to Bristol Channel MCZ. JNCC disagree with the applicant screening out introduction of other substances (solid, liquid or gas) for both the subtidal coarse sediment and subtidal sand features of the site. We note from Figures 1 and 4 that there is a portion of the cable that runs directly parallel to the designated site and if additional cable protection with a 7m wide berm is required there is potential for some overlap. We also advise that if a boulder plough is used in the area directly parallel to the site then there is potential for boulders to be deposited within the site. We advise the operator to carry out a thorough cable burial risk assessment based on extensive geotechnical data to ensure confidence in cable burial ability, particularly in these sensitive areas of seabed in close proximity to the designated site.	There will be buffer of at least 20 m between disturbance activities and any MCZ. Boulders and any material displaced during clearance activities will not be deposited within any MCZ. An outline CBRA is provided as part of the application for development consent (Volume 1, Appendix 3.4 of the ES). Burial will be the preferred option for the cable protection, and only when full target burial depth is not possible will additional protection be installed. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.

Comments	How the response has been addressed
South West Approaches to Bristol Channel MCZ. JNCC would like to add that impacts associated with changes in suspended solids (water clarity) and smothering and siltation rate changes (light) may impact the subtidal sand features of the site as well. JNCC would also like introduction of other solids to be screened into further assessment.	Subtidal sand has been screened in and included in the Stage 1 assessment. There will be a buffer of at least 20 m between the disturbance activities and any MCZ. Boulders and any material displaced during clearance activities will not be deposited within any MCZ. On this basis 'Introduction of other substances (solid, liquid or gas)' has been screened out of further Stage 1 assessment.
East of Haig Fras MCZ. JNCC disagree with the changes in suspended solids (water clarity) and smothering and siltation rate changes (light) being screened out for subtidal coarse sediment / subtidal mixed sediments mosaic and subtidal sands and would prefer the operator to use the project-specific SSC modelling to show that SSC levels are within background levels within the Stage 1 assessment for this feature and impact.	Project-specific SSC modelling has not been conducted. Semi-empirical calculations in Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES have been used to update the assessment in the Screening table (**Table 15**). Based on these data and interpretations, impacts for subtidal coarse sediment / subtidal mixed sediments mosaic and subtidal sands remain screened out of Stage 1 assessment. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
JNCC advise the operator should include details from the suspended sediment concentration (SSC) modelling to show that levels are within background levels. We recommend the applicant uses Cefas 2016 data to show the background levels of SSC3. We acknowledge that this might be presented within the PIER in which this MCZ assessment will be presented alongside. If this is the case please signpost this within the MCZ Assessment.	Semi-empirical calculations have been used to update the Screening table (**Table 15**) and Stage 1 assessment (**Table 16**). SSC modelling has not been conducted but available information from the semi-empirical calculations outlined in Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES has been used to inform assessment. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
JNCC disagree with the operator's conclusion that changes in suspended solids (water clarity) and smothering and siltation rate changes (light) are not capable of affecting the protected features of the South West Approaches to Bristol Channel MCZ	Primary and secondary mitigation measures are set out in **Table 3**. There will be buffer of at least 20 m between potential disturbance activities and any MCZ. Boulders and any material removed during

Comments	How the response has been addressed
assessment. We advise that primary and secondary mitigation may be used to reduce the likelihood of impact on the features of this site. For example, restricting pre-construction and construction activities to outside a certain distance from the designated site will limit the likelihood of impact on this site.	clearance activities will not be deposited within any MCZ. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.
JNCC advise the operator should carry out a cable burial risk assessment to understand the seabed characteristics within the areas of the cable route that runs parallel to the designated site. This may show that those pre-construction activities that will create the most increased SSC in an area might be restricted in this area. We would recommend the applicant comes up with seabed levelling plan which outlines exactly where this technique is needed and if this is in proximity to the designated site. Proposed mitigation might include micro-routing around these areas rather than levelling the seabed in these areas	An outline CBRA is provided as part of the application for development consent (Volume 1, Appendix 3.4 of the ES). This assessment has found that there are no known sandwaves or large sand ripples that would require pre-sweeping / broad-scale flattening. This approach was presented to JNCC and NE during consultation discussions on 30th October 2024.

4 MCZS WITHIN ZONE OF INFLUENCE OF THE PROPOSED DEVELOPMENT

4.1.1 Features of conservation interest (FOCI) in MCZs are marine features that are threatened, rare, or declining species and habitats, and these are a key focus used to identify MCZ's in England and Wales. Features can be Habitats of conservation interest (HOCI) or Species of conservation interest (SOCI). Where relevant they have been identified with their unique number in the designated features section of each MCZ. Where the feature is a broadscale habitat and there is no specific HOCI number available, the European Nature Information System (EUNIS) habitat classification system code has been provided.

4.1.2 A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC due to consideration of current speeds and sediment particle size, and a 5 km buffer area is considered extremely precautionary. The distance sediment could be transported in Bideford Bay, however, is up to 15.2 km in an east northeast and west southwest direction within Bideford Bay (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). This 15.2 km dispersal is only reached on a peak spring tide and on a mean neap tide the distance is anticipated to be approximately 5 km (see **Figure 7** and **Figure 8**, reproduced from Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES).

4.1.3 The interactions of the sediment dispersed in Bideford Bay with the Bideford to Foreland Point MCZ and the Hartland Point to Tintagel MCZ (**Figure 7** and **Figure 8**) have been considered to inform the MCZ assessment.

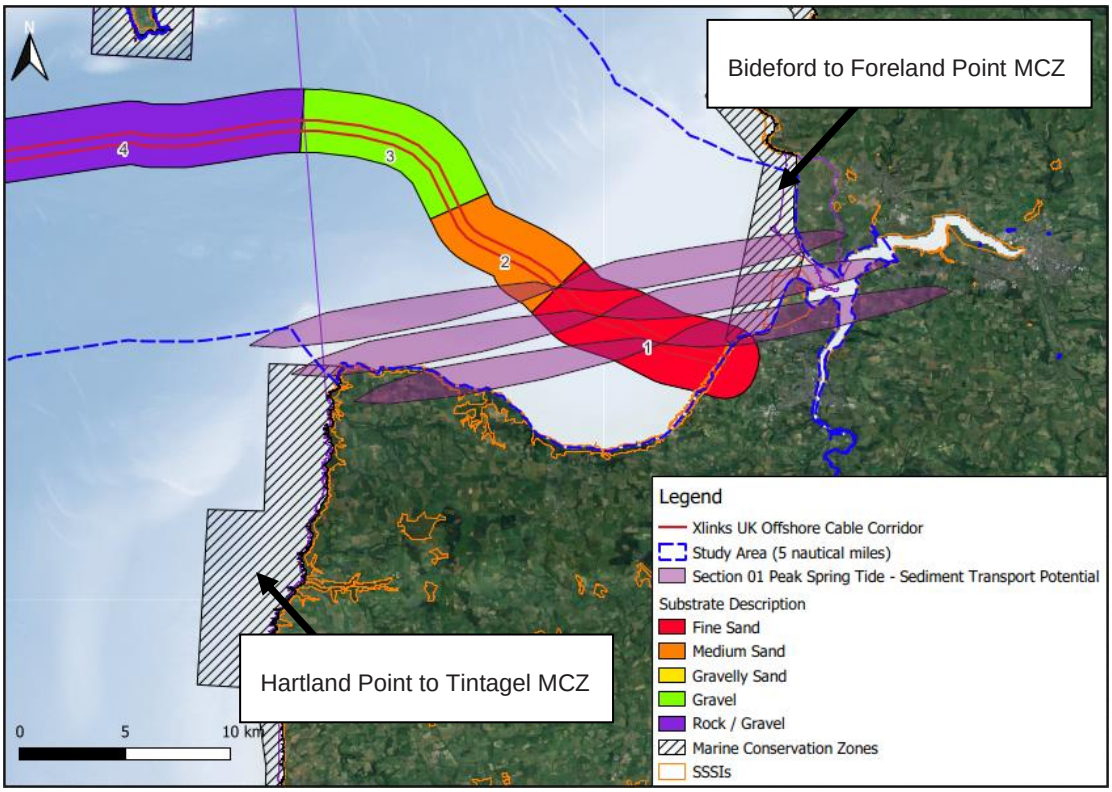

Figure 7. Peak Spring Tidal Excursion Ellipse at Section 1.

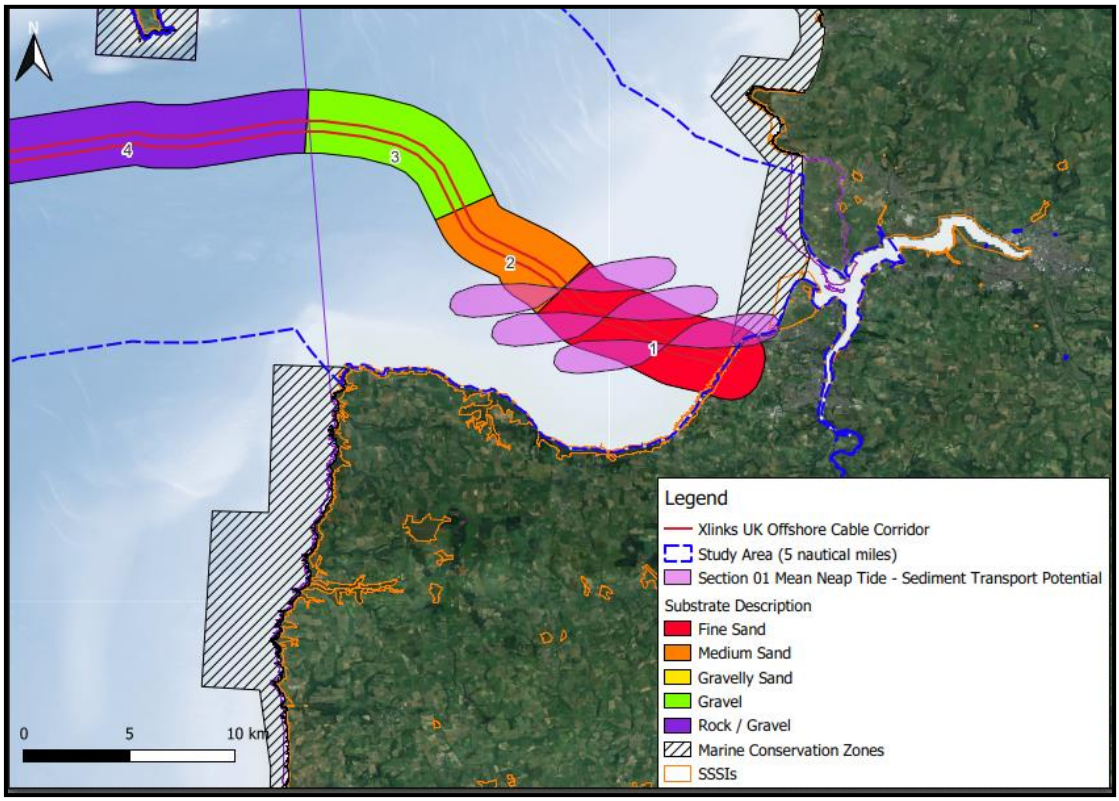

Figure 8. Mean Neap Tidal Excursion Ellipse at Section 1.

4.2 Bideford to Foreland Point MCZ

4.2.1 Bideford to Foreland Point MCZ is an inshore site located on the coast of north Devon in the southwest of England. The site protects an area of 104 km² (10361.31 ha) from Westward Ho!, past the mouth of the Taw Torridge estuary to Foreland Point, with subtidal sediments in depths of up to 36 metres. This site became an MCZ in January 2016 (Defra, 2016a). The MCZ is 0.5 km north of the Proposed Development's landfall site and HDD exit points for the Proposed Development.

4.2.2 Bideford to Foreland Point MCZ is important in contributing to the connectivity between other protected sites and protects a wide range of intertidal and subtidal habitats and species. This MCZ helps to fill a gap in the network for honeycomb worm reefs, which are formed from the closely-packed sand tubes constructed by these colonial worms. The reef structures resemble honeycomb and can extend for tens of metres across and up to a metre tall. They, in turn, are able to support a wide range of shore-dwelling species including anemones, snails, shore crabs and seaweeds. This site also protects a range of important and vulnerable species such as the pink sea fan coral which is a slow-growing colony of tiny anemone-like animals. Pink sea fans are themselves home to other creatures including a sea slug and a rare anemone (Defra, 2016a).

4.2.3 Many of the features in the relatively shallow waters of the Bideford to Foreland Point MCZ are likely affected by changing environments influenced by tidal movements, waves and extreme weather activity.

4.2.4 Designated features of Bideford to Foreland Point MCZ are as follows (Defra, 2016a) and the general locations of features determined at designation are indicated in **Figure 9** and **Figure 10**:

- Fragile sponge and anthozoan communities on subtidal rocky habitats (HOCI 7);
- High energy circalittoral rock (EUNIS code[1] A4.1);
- High energy infralittoral rock (EUNIS code A3.1);
- High energy intertidal rock (EUNIS code: A1.1);
- Honeycomb worm *Sabellaria alveolata* reefs (HOCI 8);
- Intertidal coarse sediment (EUNIS code: A2.1);
- Intertidal mixed sediments (EUNIS code: A2.4);
- Intertidal sand and muddy sand (EUNIS code: A2.2);
- Intertidal under boulder communities (HOCI 10);
- Littoral chalk communities (HOCI 11) ;
- Low energy infralittoral rock (EUNIS code: A3.3);
- Low energy intertidal rock (EUNIS code: A1.3);
- Moderate energy circalittoral rock (EUNIS code: A4.2);

[1] EUNIS codes from 2017 classification https://eunis.eea.europa.eu/habitats.jsp

- Moderate energy infralittoral rock (EUNIS code: A3.2);
- Moderate energy intertidal rock (EUNIS code: A1.2);
- Pink sea fan *Eunicella verrucosa* (SOCI 8);
- Spiny lobster *Palinurus elephas* (SOCI 24);
- Subtidal coarse sediment (EUNIS code: A5.1);
- Subtidal mixed sediments (EUNIS code: A5.4); and
- Subtidal sand (EUNIS code: A5.2)

4.2.5 The general management approach for each of these features with the exception of subtidal sand and spiny lobster *Palinurus elephas* is 'maintain in favourable condition', where favourable condition of a feature is defined as the following (Defra, 2016a):

- its extent is stable or increasing; and,
- its structure and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating.

4.2.6 The general management approach for subtidal sand and spiny lobster is 'recover to favourable condition'.

4.2.7 A section of the MCZ could be within the worst case footprint of the plume of suspended sediment potentially generated by Proposed Development activities during a peak spring tide, with a smaller area potentially affected on a mean neap tide (**Figure 7** and **Figure 8).**

4.2.8 As embedded mitigation however, no works in Bideford Bay that could result in release of sediment to the water column would be conducted during a peak spring tide or during significant wave activity (**Table 3**).

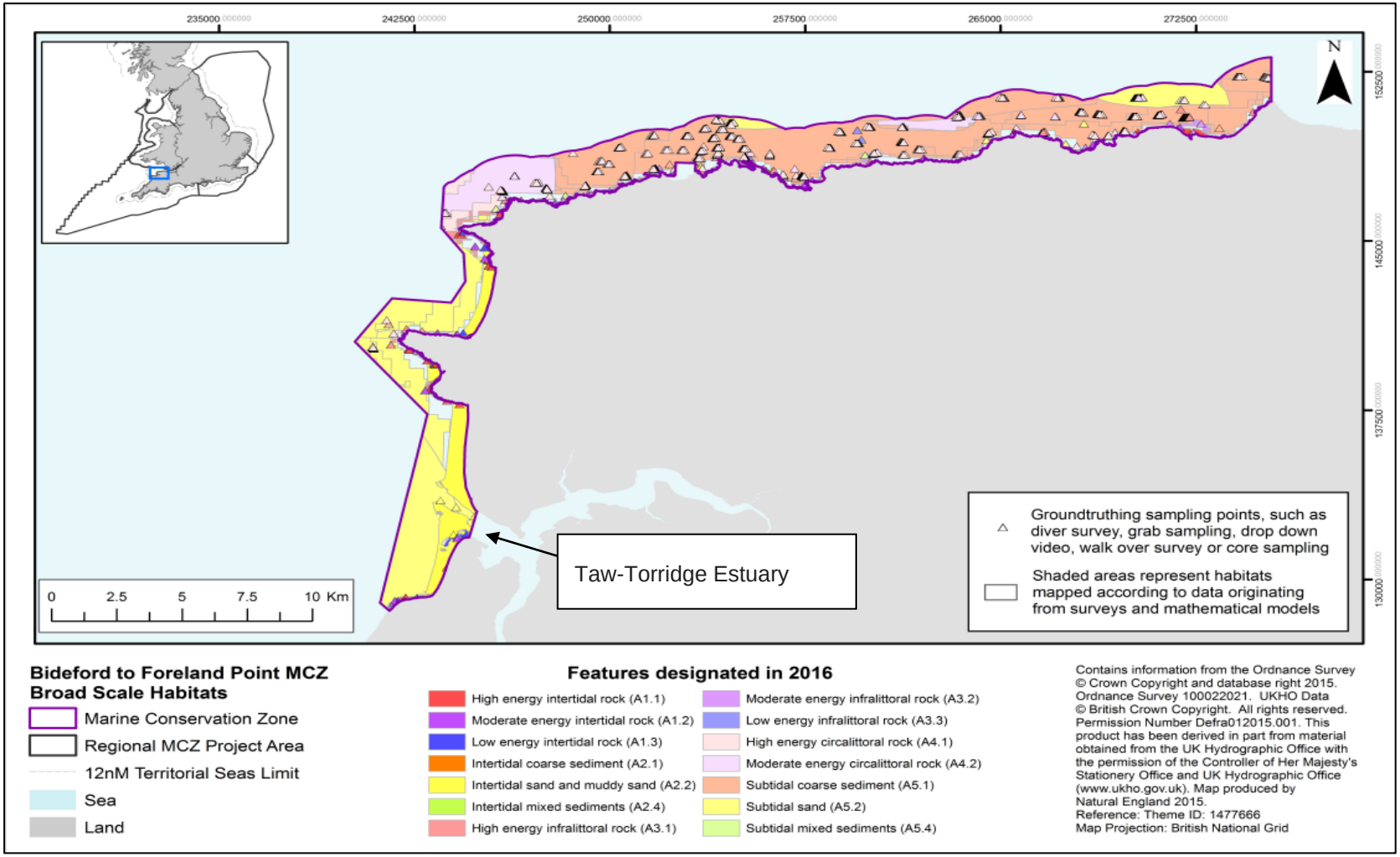

Figure 9. Broad Scale Habitats features of Bideford to Foreland Point MCZ (Defra, 2016a)

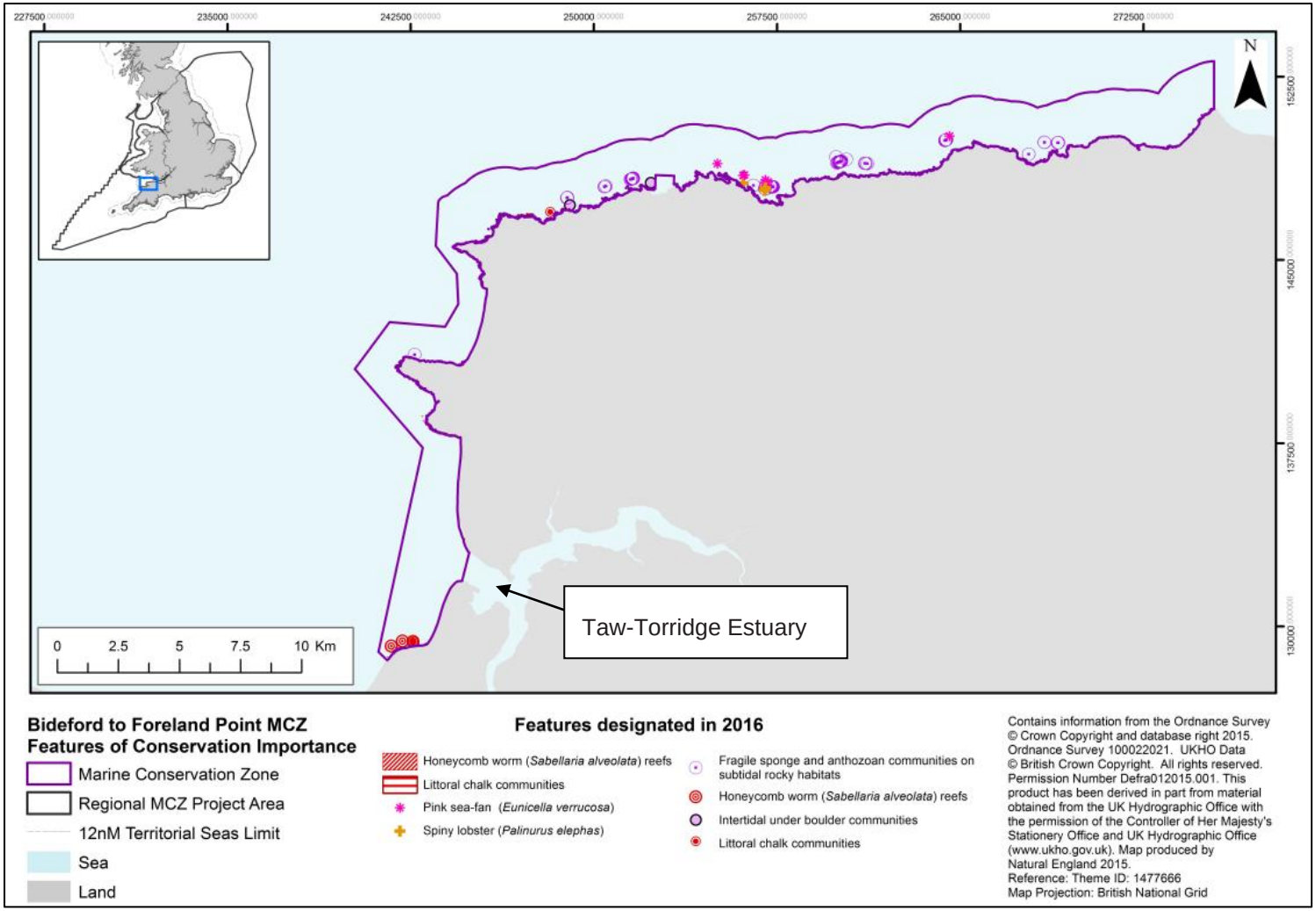

Figure 10. Features of Conservation Importance in Bideford to Foreland Point MCZ (Defra, 2016a)

4.3 Hartland Point to Tintagel MCZ

4.3.1 Hartland Point to Tintagel MCZ is an inshore site on the north coast of Devon and Cornwall in the southwest of England. The site covers 304 km^2 (30401ha) and extends from the shoreline to depths of approximately 50 metres. This site became an MCZ in January 2016 (Defra, 2016b). The MCZ is 11.5 km southwest of the OCC.

4.3.2 The site is crucial for connectivity of habitats along the north coast of Devon and Cornwall, contributing to the protection of large intertidal habitats.

4.2 The majority of the site contains rocky habitats in deeper waters (circalittoral rock) interspersed with sublittoral coarse sediments. This mosaic of habitat makes defining boundaries between habitats difficult. Where there is a stable rocky surface, marine creatures such as sponges, anemones and sea fan corals are found. Intertidal sand and rocky areas provide habitats for many species, including the honeycomb worm. These reefs are able to support a wide range of shore-dwelling species including anemones, snails, shore crabs and seaweeds. This site's reef-building tubeworm populations are considered to be one of the best in the UK. In deeper water offshore, the pink sea fan coral which is a slow-growing colony of tiny anemone-like animals, feeds from the water column and can provide shelter to other creatures (Defra 2016b).

4.3.1 Designated features of Hartland Point to Tintagel MCZ are as follows (Defra 2016b) and the general locations of features determined at designation are indicated on **Figure 11**Figure 9 and **Figure 12**:

- Coastal saltmarshes and saline reedbeds (EUNIS code: A2.5);
- Low energy intertidal rock (EUNIS code: A1.3);
- Moderate energy intertidal rock (EUNIS code: A1.2);
- High energy intertidal rock (EUNIS code: A1.1);
- Intertidal coarse sediment (EUNIS code: A2.1);
- Intertidal sand and muddy sand (EUNIS code: A2.2);
- Moderate energy infralittoral rock (EUNIS code: A3.2);
- High energy infralittoral rock (EUNIS code A3.1);
- Moderate energy circalittoral rock (EUNIS code: A4.2);
- High energy circalittoral rock (EUNIS code A4.1);
- Subtidal coarse sediment (EUNIS code: A5.1);
- Subtidal sand (EUNIS code: A5.2);
- Fragile sponge & anthozoan communities on subtidal rocky habitats (HOCI 7);
- Honeycomb worm (*Sabellaria alveolata*) reefs (HOCI 8); and
- Pink sea fan (*Eunicella verrucosa*) (SOCI 8).

4.3.2 The general management approach for the majority of these features is 'maintain in favourable condition', where favourable condition of a feature is defined as the following (Defra, 2016b):

- its extent is stable or increasing; and,
- its structure and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating.

4.3.3 The exceptions where general management approach is 'recover to favourable condition' include moderate and high energy circalittoral rock, subtidal coarse sediment, subtidal sand, fragile sponge & anthozoan communities on subtidal rocky habitats, and pink sea fan (*Eunicella verrucosa*).

4.3.4 An extremely small section of the MCZ could be within the maximum footprint of the plume of suspended sediment potentially generated by the Proposed Development during a (worst case) peak spring tide, but would be outside the zone of influence of a plume on a mean neap tide (**Figure 7** and **Figure 8).**

4.3.5 As embedded mitigation, no works in Bideford Bay that could result in release of sediment to the water column would be undertaken during a peak spring tide or during significant wave activity (**Table 3**).

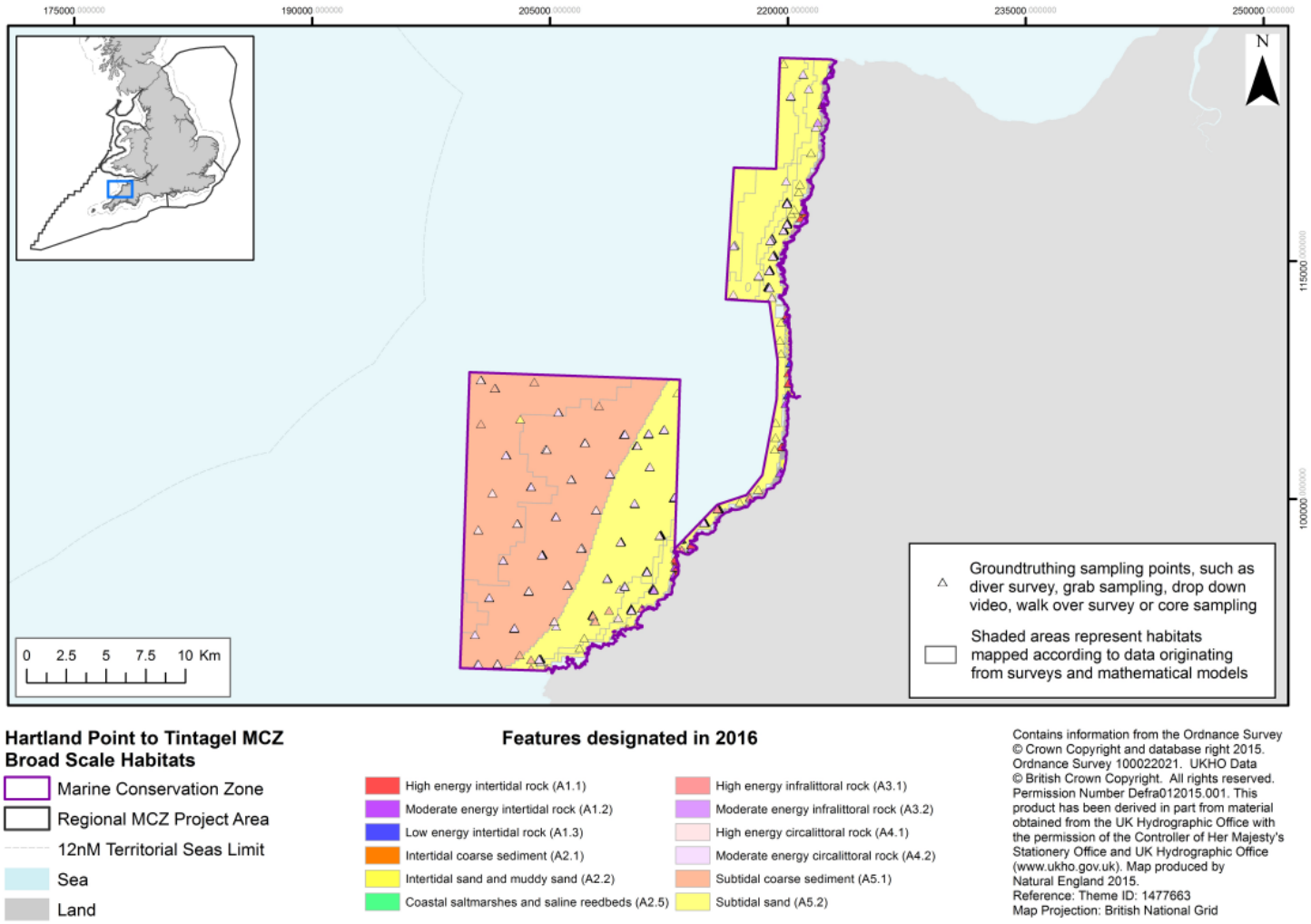

Figure 11. Broad Scale Habitats features of Hartland Point to Tintagel MCZ (Defra, 2016b)

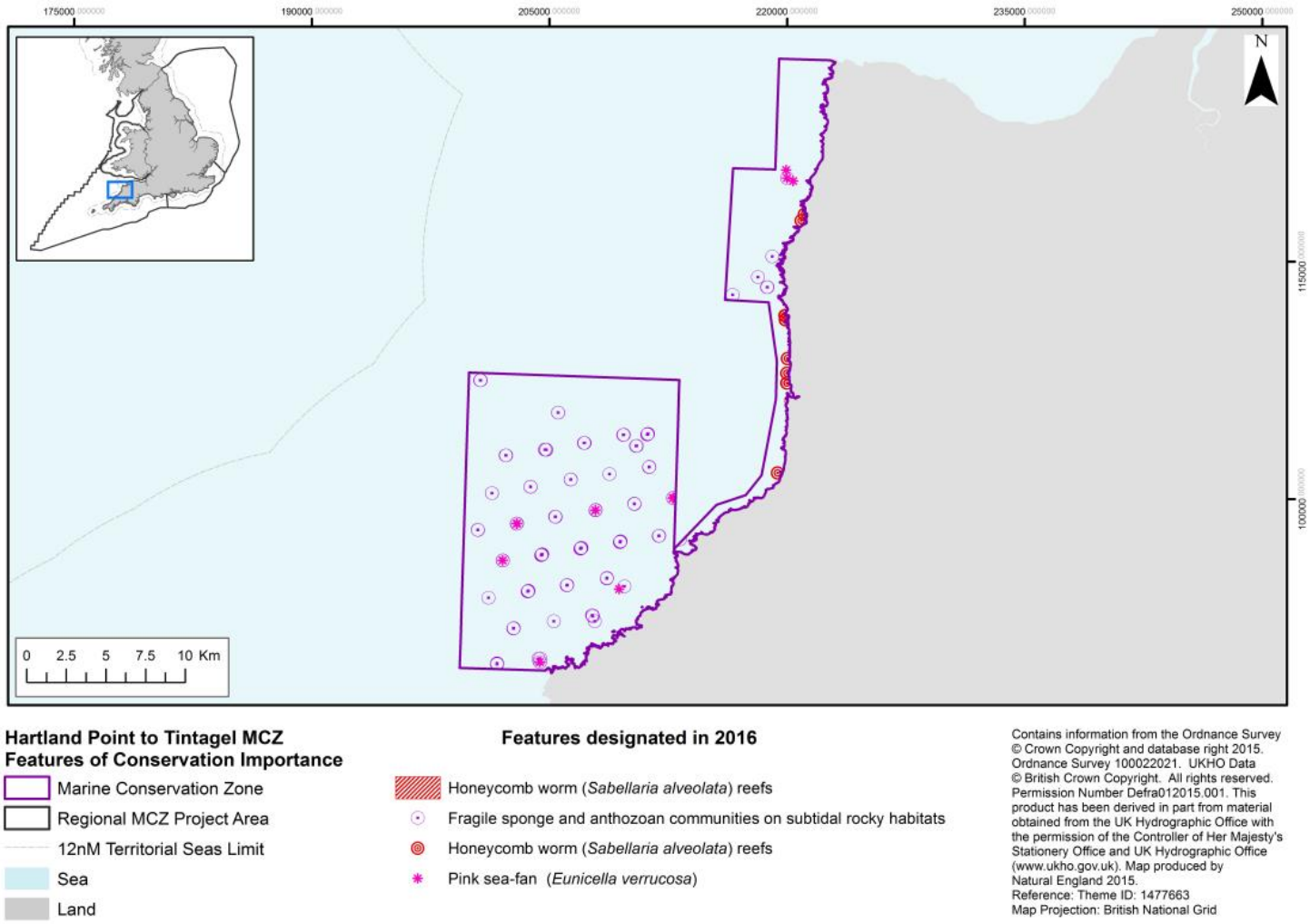

Figure 12. Features of Conservation Importance in Hartland Point to Tintagel MCZ (Defra, 2016b)

4.4 Lundy MCZ

4.4.1 Lundy was the first Marine Nature Reserve (MNR) in UK waters, designated in 1986. In 2010 Lundy was designated as England's first MCZ. The Marine and Coastal Access Act was passed in 2009 which automatically converted the Lundy MNR into an MCZ. The Lundy MCZ and the Lundy SAC have the same seaward boundary, covering an area of 3069 hectares. Many of the marine habitats and species within the site boundary are already protected under the SAC and Site of Special Scientific Interest (SSSI) designations (Defra, 2013).

4.4.2 Lundy MCZ is 3.5 km from the OCC and spiny lobster *P. elephas* is its only designated feature (Defra, 2013). The extent of the MCZ is indicated in **Figure 13.**

4.4.3 In the vicinity of Lundy MCZ, sediment suspended due to activities associated with the Proposed Development is anticipated to fall out of suspension within tens of metres of the OCC (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Therefore, sediment dispersion calculations confirm there is no pathway for sediment to be dispersed to the Lundy MCZ from the OCC.

4.4.4 However, as spiny lobster *P. elephas* is a mobile species this requires additional consideration in terms of potential interactions with the Proposed Development. The species is protected because the number of spiny lobsters has been falling, particularly in areas of South-west England (Defra, 2013).

4.4.5 The general management approach for spiny lobster *P. elephas* is 'recover to favourable condition'.

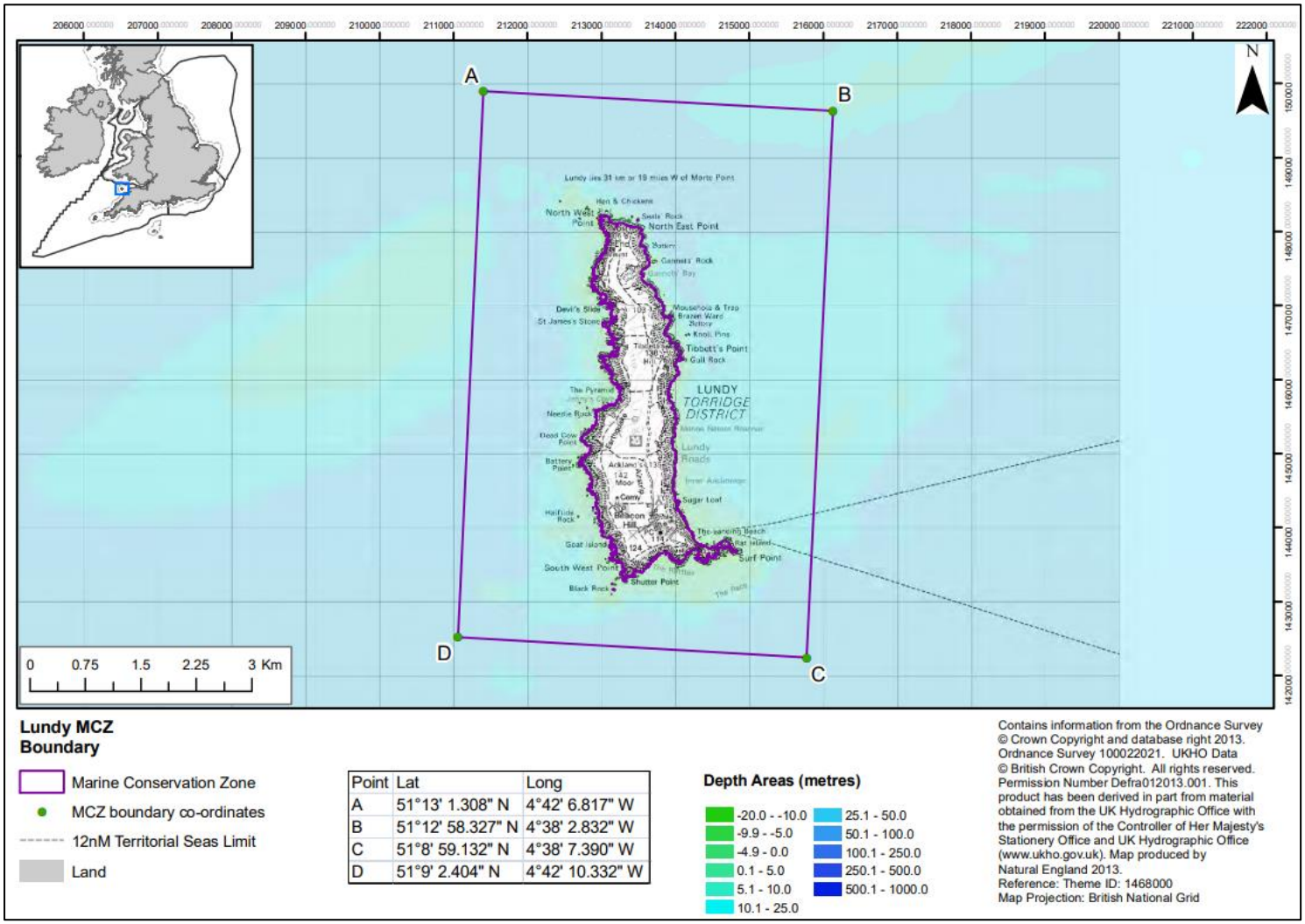

Figure 13. Lundy MCZ (Defra, 2013)

4.5 South West Approaches to Bristol Channel MCZ

4.5.1 The proposed OCC runs directly adjacent to the South West Approaches to Bristol Channel MCZ for 50 km (see **Figure 1** and **Figure 5**). Though it runs adjacent to it, the OCC does not overlap with the MCZ but the study area (5 km buffer either side of the OCC) extends into the MCZ (**Figure 1** and **Figure 5**).

4.5.2 It was designated in May 2019, as it was recommended as a new site to address the gaps in the subtidal coarse sediment and subtidal sand representation in the MPA network (Defra, 2019a). It covers an area of approximately 1,128 km^2, ranging from roughly 50 m to 100 m deep. The site is mostly characterised by subtidal coarse sediment (a mixture of shell fragments, gravels, shingles and cobbles), but also has areas of subtidal sand in the south-eastern end and central area of the MCZ (JNCC, 2020).

4.5.3 This habitat feature is diverse and provides a home for a wide variety of species that bury into the seabed, including worms, anemones, razor clams, anemones, sea cucumbers and sea urchins (Defra, 2019a).

4.5.4 The MCZ has the two following designated features (**Figure 14**):

- Subtidal coarse sediment (EUNIS code: A5.1);
- Subtidal sand (EUNIS code: A5.2).

4.5.5 The general management approach for both designated features is 'recover to favourable condition'.

4.5.6 In the vicinity of the South West Approaches to Bristol Channel MCZ, sediment disturbed due to activities associated with the Proposed Development is anticipated to fall out of suspension within tens of metres of the activity (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES).

4.5.7 Embedded mitigation measures include a buffer of at least 20 m between sediment generating activities and the MCZ boundary (**Table 3**).

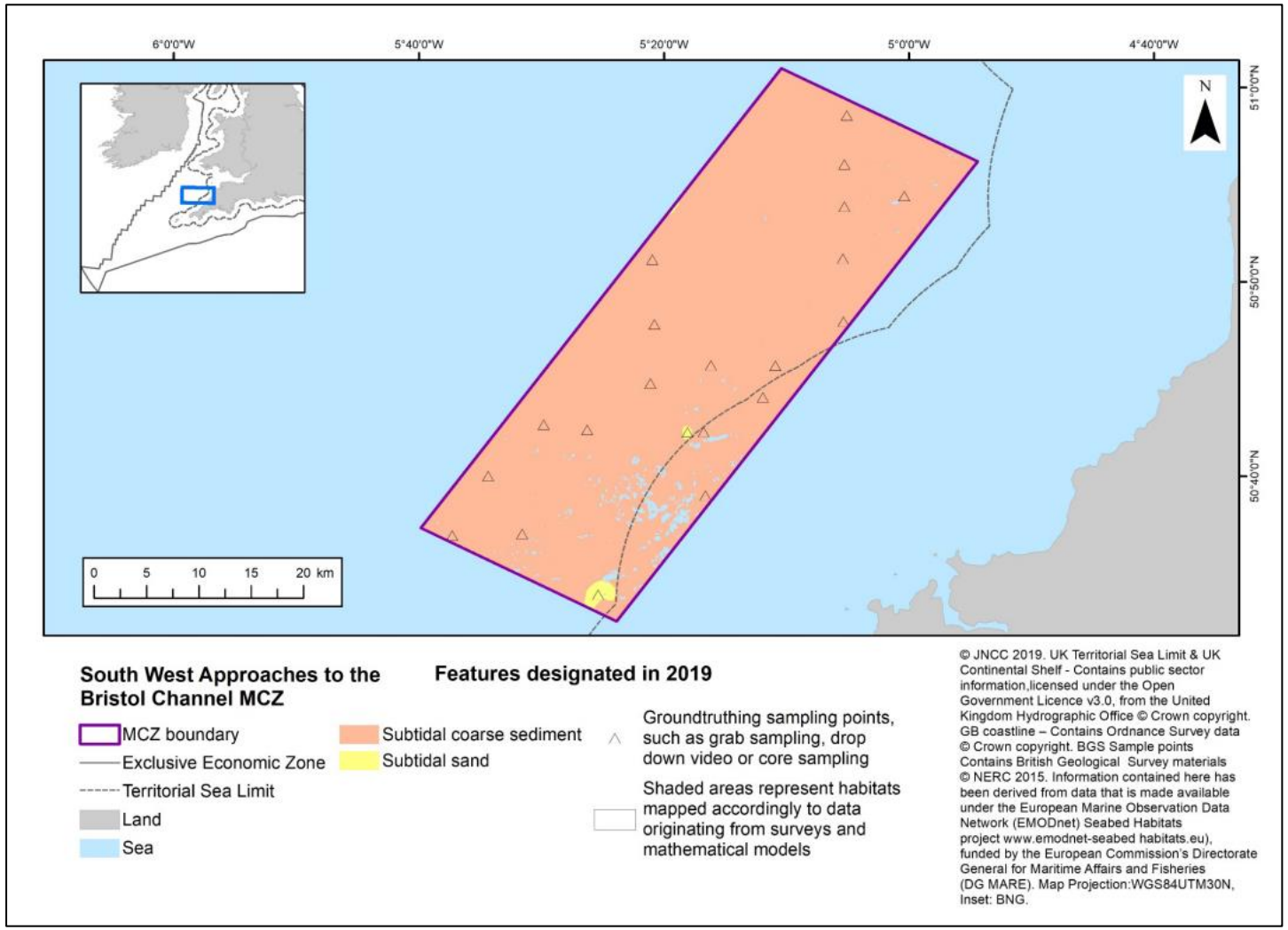

Figure 14. Features of South West Approaches to Bristol Channel MCZ (Defra, 2019b)

4.6 East of Haig Fras MCZ

4.6.1 The East of Haig Fras MCZ is approximately 650 m northwest of the OCC, approximately 67 km north-west of Land's End, in the Celtic Sea. The site has an area of around 400 km^2 and is situated on a plateau on the UK continental shelf. The site lies in waters between 50 and 100 m in depth, with small areas in the western part of the site dipping below 100 m deep (Defra, 2019b). The offshore cable corridor does not overlap with the East of Haig Fras MCZ but the study area (5 km buffer either side of the OCC) extends over the south east corner of the MCZ (**Figure 1** and **Figure 6**).

4.6.2 The MCZ was designated in December 2013, with subtidal mud added as an additional feature in January 2016. In May 2019 three more additional features were added including the fan mussel *Atrina fragilis*, high energy circalittoral rock and sea pen & burrowing megafauna communities (Defra, 2019b).

4.6.3 The seabed in the MCZ is heterogeneous, with small patches of habitat blending into each other. Ridges composed of a mosaic of subtidal coarse and mixed sediments run north-east to south-west through the site. These sediment ridges are topped with rocky features, such as boulders and cobbles. Various sponges, anemones and hydroids have been observed on the coarser sediments and rocky habitats. The sediment ridges are separated by mobile sand or mud, with sandy habitat being more prevalent in the north west of the site (JNCC, 2023).

4.6.4 Various sponges, anemones, hydroids and bryozoans have been observed on the coarser sediments and rocky habitats, with cup corals and squat lobsters. Pea urchins *Echinocyamus pusillus* and brittlestars are some of the most common species living in and on the sediment. The MCZ is also home to a wide diversity of polychaete worm species (JNCC, 2023).

4.6.5 Additionally, the site is also known to support numerous fish species such as scaldfish, megrim and red gurnard (Defra, 2019b).

4.6.6 The designated features are as follows (**Figure 15**):

- Sea-pen and burrowing megafauna communities (Feature of Conservation Importance (HOCI 18);
- Fan mussel *Atrina fragilis* (SOCI 5);
- High energy circalittoral rock (EUNIS code: A4.1);
- Moderate energy circalittoral rock (EUNIS code: A4.2);
- Subtidal coarse sediment (EUNIS code: A5.1) / subtidal mixed sediments mosaic;
- Subtidal sand (EUNIS code: A5.2); and
- Subtidal mud (EUNIS code: A5.3).

4.6.7 The general management approach for all designated features in the East of Haig Fras MCZ is 'recover to favourable condition'.

4.6.8 A detailed assessment of sediment dispersion has been undertaken. This assessment considered the potential for sediments to remain in suspension if disturbed, and thus be transported away from the source of potential disturbance. The assessment had regard for the sediment particle size

along the Offshore Cable Corridor, as well as maximum (peak spring tide) current velocities, and secondary wave influences. The assessment is reported in Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES. In the vicinity of the East of Haig Fras MCZ, sediment disturbed due to activities associated with the Proposed Development is anticipated to fall out of suspension within tens of metres of the activity.

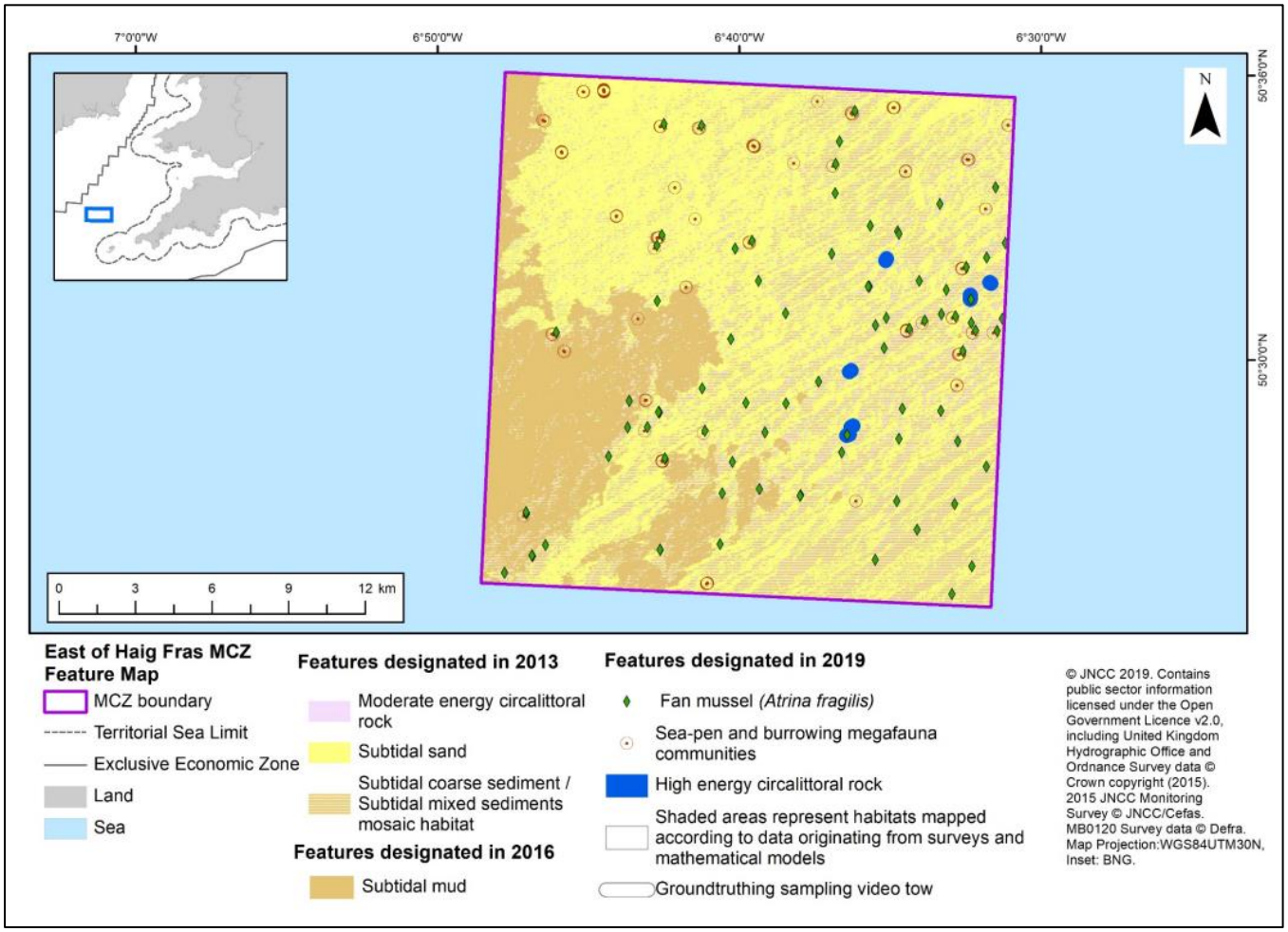

Figure 15. Features designated in East of Haig Fras MCZ (Defra, 2019b)

5 ASSESSMENT METHODOLOGY

5.1.1 The MCZ assessment was carried out in a sequential manner as indicated in the MMO guidance document 'Marine conservation zones and marine licensing' (MMO, 2013). At each stage of the process consideration was given to the feature or features (as relevant) for which the MCZ has been designated, the current status of the feature, and the general management approach for the feature (e.g. to maintain favourable condition or recover to favourable condition).

5.2 Screening

5.2.1 The screening stage is to determine if Section 126 of the Marine and Coastal Access Act (MCAA) (2009) should apply to the Proposed Development (within the DCO / Deemed Marine Licence application). This will apply if:

- The licensable activity is taking place within or near an area designated as an MCZ; and
- The activity is capable of affecting (other than insignificantly) either:
  - The protected features of the MCZ; or
  - The ecological or geomorphological processes on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.

5.2.2 In determining 'insignificance', the guidance notes that "the public authority will consider the likelihood of an activity causing an effect, the magnitude of the effect should it occur, and the potential risk any such effect may cause on either the protected features of an MCZ or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent" (MMO, 2013).

5.2.3 As part of this process, where an MCZ feature was not present at or in the vicinity of the OCC and a pathway to effect was not present, it has been screened out from further assessment.

5.3 Stage 1 Assessment

5.3.1 The conservation objectives for the MCZs indicated in **Section 74**, are to 'maintain in favourable condition' or 'recover to favourable condition' the protected habitats and species listed for the MCZs.

5.3.2 The Stage 1 assessment considered whether the condition in Section 126(6) would be met i.e. whether:

- There is no significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ; and
- The public authority can exercise its functions to further the conservation objectives stated for the MCZ (in accordance with s.125(2)(a)).

5.3.3 Within this stage of assessment 'hinder' is considered as any act that could, either alone or in combination:

- in the case of a general management approach of "maintain", increase the likelihood that the current status of a feature would go downwards (e.g. from favourable to degraded) either immediately or in the future (i.e. they would be placed on a downward trend), (MMO, 2013); or
- in the case of a general management approach of "recover", decrease the likelihood that the current status of a feature could move upwards (e.g. from degraded to favourable) either immediately or in the future (i.e. they would be placed on a flat or downward trend), (MMO, 2013).

5.3.4 Similarly, 'further' is considered as any act that could:

- in the case of a general management approach of "maintain", increase the likelihood that the current status of a feature would be maintained either immediately or in the future (MMO, 2013); or
- in the case of a general management approach of "recover", increase the likelihood that the current status of a feature could move upwards (e.g. from degraded to favourable) either immediately or in the future (MMO, 2013).

5.3.5 If the condition in Section 126(6) cannot be met, the Stage 1 assessment must also consider whether the condition in Section 126(7)(a) can be met. In doing so it is necessary to determine whether:

- there is no other means of proceeding with the act which would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ. This should include proceeding with it (a) in another manner, or (b) at another location.

5.3.6 If it is determined that the Proposed Development can satisfy the condition in Section 126(6), then no Stage 2 assessment is required and the marine licencing process will continue. If the conditions in Section 126(6) and 126(7) cannot be met then a Stage 2 assessment will be required.

5.4 Stage 2 Assessment

5.4.1 This stage, if required, would be undertaken by the decision making authority (SoS, informed by the MMO and SNCBs). The Stage 2 assessment would consider the information supplied by the applicant, together with the DCO application, advice from the SNCBs and any other relevant information to determine whether:

- the benefit to the public of proceeding with the act clearly outweighs the risk of damage to the environment that will be created by proceeding with it; and, if so, then whether;
- the applicant can satisfy the public authority that they will undertake or make arrangements for the undertaking of Measures of Equivalent Environmental Benefit (MEEB) to the damage which the act will, or is likely to have, in or on the MCZ.

5.4.2 The above determinations are addressed in sequence, that is, if the public benefit test is not 'passed' then a consideration of MEEB would not be made as the application would be rejected. In determining 'public benefit' the public authority will consider benefits at a national, regional or local level. Applications for activities that are of solely private benefit would not be considered to deliver a benefit to the public. In determining 'measures of

equivalent environmental benefit' the types of compensatory measures that might be considered under the Habitats Directive would also be appropriate to put forward here, although consideration will not be restricted to those.

6 PATHWAYS OF EFFECT

6.1.1 Potential effects of the Proposed Development on benthic marine ecology receptors have been assessed in the Benthic Ecology chapter of the ES (Volume 3, Chapter 1) which was prepared alongside this MCZ assessment.

6.1.2 Assessments used the conceptual 'source-pathway-receptor' model. The model was used to identify potential environmental impacts resulting from the Proposed Development. This process provides an easy-to-follow assessment route between impact sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of the model are defined as follows:

- Source – the origin of a potential impact (noting that one source may have several pathways and receptors).
- Pathway – the means by which an activity could affect a receptor.
- Receptor – the element of the receiving environment that is affected.

6.1.3 Where there is no pathway to a source of an effect, or the pathway is so long that the potential for an effect has dissipated to a negligible level before reaching the receptor, there is justification for the screening out of that particular receptor.

6.1.4 Where the receptor (for the purposes of this assessment, the site interest feature) only occurs in the area on a seasonal basis and/or that receptor is not expected to be present when a potential impact could occur, there is justification for the screening out of that particular receptor.

6.1.5 The sources of the potential effect in the assessment are based on the list of 'pressures' provided in the Advice on Operations (AoO) from NE for Bideford to Foreland Point MCZ[2] for 'Cables' (this was the only one of the relevant MCZs for which AoO was available and indicated a list of potential pressures). The AoO for 'Cables' covered HDD; power cable laying, burial and protection; power cable operation and maintenance; and power cable decommissioning). This list of pressures for Bideford to Foreland Point MCZ is also applicable to Hartland Point to Tintagel MCZ, Lundy MCZ, South-West Approaches to Bristol Channel MCZ and East of Haig Fras MCZ. Although 'pressures' is the terminology used in the AoO, the term 'impacts' has been used here to keep consistent with the terminology in the ES.

6.1.6 The list provided by AoO assumes any works would be conducted within an MCZ. For the Proposed Development none of the works for the OCC fall within any of the MCZs, therefore there will be no direct habitat loss for example, and the list of impacts has been reduced to those most applicable/relevant to effects that may extend into an MCZ from the OCC and have the potential for direct and indirect effects on features of the MCZ.

6.1.7 Impacts considered for the MCZ screening (initial MCZ assessment stage) were based on the most relevant Medium-High risk impacts indicated in the AoO as well as others which were identified as Low risk in the AoO but were included due to the activities required for the Proposed Development and

[2] AoOs were accessed via https://designatedsites.naturalengland.org.uk/

due to their consideration within Volume 3, Chapter 1: Benthic Ecology of the ES. Impacts were considered for the construction, operation and decommissioning phases as appropriate.

6.1.8 The overall list of impacts considered was as follows:

- changes in suspended solids (water clarity);
- smothering and siltation rate changes (light (i.e. deposition of sediment up to 5 cm));
- introduction or spread of invasive non-native species (INNS);
- introduction of other substances (solid, liquid or gas);
- pollution (e.g. hydrocarbon & PAH contamination);
- barrier to species movement; and
- underwater noise and vibration.

6.1.9 For some of these, terminology for impacts consistent with the AoO has been used which differs to the ES and in those instances the headings under which impacts in the ES have been considered are indicated in **Table 5**.

Table 5. MCZ assessment impact where terminology is different to ES impact.

ES assessed impact	AoO / MCZ equivalent assessed impact
Temporary increase in suspended sediments and sediment deposition	Covered under *changes in suspended solids (water clarity)* and *smothering and siltation rate changes (light (i.e. deposition up to 5 cm)).*
Changes to water quality (release of hazardous substances from sediments)	Covered under *introduction of other substances (solid, liquid or gas).*
Accidental Pollution	Covered under *pollution* (*e.g. hydrocarbon & PAH contamination)*

7 ASSESSMENT OF EFFECTS

7.1 Screening

7.1.1 Some of the MCZs considered are very large areas and in some instances certain features are only present in distinct areas of the MCZ. Consequently, MagicMaps (Defra, 2023) was used to identify the location of protected features within the MCZs. However, it is understood that the distribution and location of features can change over time. Consequently, all features of all MCZs within the ZoI of the Proposed Development were considered for the MCZ screening exercise. This is in line with the approach advocated in consultations with the SNCBs.

Bideford to Foreland Point MCZ

7.1.2 The protected features of the Bideford to Foreland Point MCZ and their general management approach are indicated in **Table 6**. The outcome of the pathway/receptor screening exercise (see **Section 5.2**) is provided in **Table 7**.

Table 6. Protected Features in the Bideford to Foreland Point MCZ.

Protected feature	General management approach
Fragile sponge and anthozoan communities on subtidal rocky habitats	Maintain in favourable condition
High energy circalittoral rock	
High energy infralittoral rock	
High energy intertidal rock	
Honeycomb worm *Sabellaria alveolata* reefs	
Intertidal coarse sediment	
Intertidal mixed sediments	
Intertidal sand and muddy sand	
Intertidal under boulder communities	
Littoral chalk communities	
Low energy infralittoral rock	
Low energy intertidal rock	

Protected feature	General management approach
Moderate energy circalittoral rock	
Moderate energy infralittoral rock	
Moderate energy intertidal rock	
Pink sea fan *Eunicella verrucosa*	
Subtidal coarse sediment	
Subtidal mixed sediments	
Spiny lobster *Palinurus elephas*	Recover to favourable condition
Subtidal sand	

Table 7. Potential exposure of features of the Bideford to Foreland Point MCZ to screened in impacts due to the Proposed Development.

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Fragile sponge and anthozoan communities on subtidal rocky habitats	Changes in suspended solids (water clarity)	**No.** Semi-empirical calculations indicate that sediment disturbed by activities associated with the Proposed Development, could enter into (and remain in) suspension within Bideford Bay, travelling east northeast and west southwest up to a maximum of 15.2 km from disturbance activities, including the construction of the exit pits required for the HDD. This maximum distance assumes construction activities take place during a peak spring tide current velocity window and/ or significant wave action, with the associated sediment plumes expected to remain generally close to the seabed, i.e. within 2 m of the bed (this assumption is based on findings within BERR, 2008). Sediment dispersal into the MCZ is only likely to occur during peak spring tide current velocities (representing approximately <3% of overall time) (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). However, as part of embedded mitigation put in place for the Proposed Development (**Table 3**) all activities in Bideford Bay which could potentially disturb sediment will avoid peak spring tides and significant wave activity to limit any potential for sediment mobilisation. This would include activities associated with the excavation / sediment clearance at the x4 (no.) HDD exit pits and trenching works. Consequently, the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur. Typical background suspended sediment concentrations vary along the OCC, ranging from <1 mg/l to approximately 11 mg/l (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES) – based on monthly average satellite-derived surface concentrations i.e. which will not capture peak events or near-bed concentrations. Potential suspended sediment concentrations associated with route preparation (construction) activities, based on the Environment Agency's SeDiChem Tool could be:	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		- Mass flow excavation (10-400 mg/l) (in the short-term/ nearfield). - Surface plough (30 mg/l) For construction at the HDD exit pits, potential suspended sediment concentrations based on the Environment Agency's SeDiChem Tool could be: - Backhoe excavator sediment removal (10-50 mg/l) Based on cable burial and protection activities during the Proposed Development, potential suspended sediment concentrations based on the Environment Agency's SeDiChem Tool could be: - Water jetting (10-400 mg/l) – jetting depth averaged values - Mechanical cutter (10-50 mg/l) Based on findings within BERR (2008) and semi-empirical calculations, suspended sediment concentrations are expected to reduce with distance from source and be negligible at the maximum distances stated. Sediment transport excursion ellipses (e.g. **Figure 7**) do not consider the concentration of suspended sediment. As tidal currents transport sediment away from the disturbance activity (e.g. ploughing of trench), the suspended sediment concentration will reduce (due to advection and/ or dispersion) as distance from the activity increases (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Even if sediment were transported into the MCZ, it has been calculated that the maximum continuous duration that it is possible for sediment to remain in suspension due to tidal current velocities is 6 hours (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Representative biotopes for fragile sponge and anthozoan communities on subtidal rocky habitats are generally not sensitive to 'Changes in suspended solids (water clarity)' (Volume 3, Chapter 1: Benthic Ecology of the ES). Overall, considering the information above and calculations outlined in Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES, any increase in suspended solid concentrations due to the Proposed	

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		Development activities at the MCZ is considered likely to be within the natural background range of concentrations experienced by this feature (e.g. as experienced during spring tide and storm events), and any effects on this feature are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. as experienced during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment disturbed during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). This is an order of magnitude below the 5 cm deposition threshold for 'light' smothering for MarLIN (Marine Life Information Network) MarESA (Marine Evidence-based Sensitivity Assessment). Representative biotopes for fragile sponge and anthozoan communities on subtidal rocky habitats are generally not sensitive or have low sensitivity to 'Smothering and siltation rate changes (light)' (Volume 3, Chapter 1: Benthic Ecology of the ES). HDD will be deployed to route the cable under the intertidal zone. Drilling muds are used in a closed system to minimise loss to the environment, however, it is possible that muds (including bentonite) could accidentally break out during drilling operations (worst case, unlikely assessment), which may occur in intertidal or subtidal areas (in addition to modest unavoidable releases when the borehole breaks through the seabed). Bentonite will be used during HDD which is a low toxicity drilling mud and any break outs will be quickly diluted (seawater degrades the bentonite fluid, causing it to flocculate and allowing faster dispersal).	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		However, any potential break outs or accidental spills of bentonite will be managed via an 'Outline Bentonite Breakout Plan' (Document Ref. 7.20) and subsequent final Bentonite Breakout Plan finalised by the HDD contractor such that any accidental loss of bentonite to the environment is likely insignificant and any effects on this feature are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** Implementation of appropriate control measures will minimise this risk. An Outline Offshore Biosecurity Plan (Document Ref. 7.19) has been developed and will be implemented by the Proposed Development. Vessels will comply to Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 where applicable. Therefore, potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. Bentonite (non-toxic) break outs would be quickly diluted (seawater degrades the bentonite fluid, causing it to flocculate and allowing faster dispersal). Bentonite breakout management will be included within the 'Outline Bentonite Breakout Plan' (Document Ref. 7.20) which will be finalised by the final HDD contractor. The detailed Bentonite Breakout Plan will set out the measures that would be adopted in the event of a Breakout during the landfall HDD. Any effects of bentonite fluid on this feature are considered to be insignificant due to distance of the feature from the cable route and anticipated dilution / dispersal of any bentonite in the water column. Chemicals may be released from sediments when they are disturbed. However, potential effects on MCZ FOCI are anticipated to be minimal as chemical concentrations in the sediments are relatively low. The disturbed sediments will not be different in chemical characteristic to any of the wider baseline sediments that will routinely be disturbed and reworked as part of normal/baseline regular (current) and storm disturbance events, that the MCZ FOCI will be fully habituated to. Furthermore any localised and temporary increases in chemical concentrations in the water column associated with project activities will be rapidly diluted with negligible	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		increases in chemical concentrations anticipated for waters in the MCZ (Volume 3, Chapter 8: Physical Processes of the ES).	
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** Pollution will be controlled by adhering to relevant MARPOL guidance for pollution prevention and marine pollution legislation for which compliance is required by law. All vessels will be MARPOL compliant and will adhere to a SOPEP where appropriate. Published guidelines and best working practices will be followed to ensure that the likelihood of accidental spills is extremely low. An Offshore Construction Environmental Management Plan (CEMP), including pollution prevention measures will be produced (an outline offshore CEMP is presented as part of the application for DCO (Document Ref. 7.9)). Therefore, potential mechanisms of effect will be reduced as far as reasonably practical and any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development. MarLIN (Marine Life Information Network) MarESA (Marine Evidence-based Sensitivity Assessment) benchmark for this impact is 'a permanent or temporary barrier to species movement over ≥50% of water body width or a 10% change in tidal excursion'.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. Underwater noise levels in the vicinity of the MCZ will be very low (there is no pile driving associated with the Proposed Development). Vibration levels from HDD activities at the HDD exit points and the landfall site will be low. HDD will take place on a (worst case) 24-hour operating period, intermittently over a period of several months, but during only a small proportion of this time would there be potential vibration within intertidal and subtidal habitats. The HDD borehole will pass 20 m beneath sea bed level. Overall, any effects on benthic receptors including this feature are anticipated to be insignificant (further detail relating to the effects of underwater noise and vibration on benthic invertebrate species is provided in Volume 3, Chapter 1: Benthic Ecology of the ES).	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
High energy circalittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this (and temporary only), effects on high energy circalittoral rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	(solid, liquid or gas)	applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
High energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature on a regular basis (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the levels	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		of deposition due to the Proposed Development are well below this, effects on high energy infralittoral rock are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
High energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on high energy intertidal rock are considered to be insignificant	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Honeycomb worm *Sabellaria alveolata* reefs	Changes in suspended solids (water clarity)	**No.** There needs to be an adequate supply of suspended sediment in order for *Sabellaria alveolata* to be able to build their tubes. *Sabellaria alveolata* has very low sensitivity to increases in suspended sediment concentrations (Jackson, 2008). In addition, the text above related to this impact for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered to be within the natural background range of concentrations experienced by *Sabellaria alveolata* reef in the MCZ, especially as works will not occur during peak spring tide periods. Overall, any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**
	Smothering and siltation rate changes (light)	**No.** The transport of sediment potentially suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). *Sabellaria alveolata* is not sensitive to smothering (Jackson, 2008). In addition, any smothering and siltation due to the Proposed Development activities is considered likely to be within the range of natural background levels of smothering and siltation experienced by this feature. As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on *S. alveolata* are considered to be insignificant. HDD will be deployed to route the cable under the intertidal zone. Any smothering and siltation would be associated with cable burial activities and localised to the vicinity of the cable trenches and the HDD exit pits. The text relating to use of drilling muds for	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		this impact for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of this assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Intertidal coarse sediment	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would remain suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on intertidal coarse sediment are considered to be insignificant	**Screened out of this assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon &	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	PAH contamination)		
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of this assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Intertidal mixed sediments	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of this assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on intertidal mixed sediments are considered to be insignificant.	**Screened out of this assessment.**
	Introduction or spread of invasive	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature.	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	non-native species (INNS)	Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of this assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of this assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Intertidal sand and muddy sand	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of this assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on intertidal sand and muddy sand are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Intertidal under boulder communities	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of this assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and any smothering and siltation effects arising from Proposed Development activities are considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on intertidal under boulder communities are considered to be insignificant.	**Screened out of this assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and. larval dispersal will not be affected by the Proposed Development.	**Screened out of this assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
Littoral chalk communities	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of this assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on littoral chalk communities are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of this assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and. will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Low energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on low energy intertidal rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Low energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on low energy infralittoral rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Low energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on low energy intertidal rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Moderate energy circalittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on moderate energy circalittoral rock are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Moderate energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on moderate energy infralittoral rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Moderate energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations arising from the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on moderate energy intertidal rock are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	non-native species (INNS)	reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Pink sea fan *Eunicella verrucosa*	Changes in suspended solids (water clarity)	**Yes.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature, however, it is noted that the distribution of pink sea fan recorded in 2016 (**Figure 10**) may differ from the current distribution, with individuals potentially being present nearer to the Proposed Development. In addition, *E. verrucosa* has been described as slow growing in the British Isles (Picton & Morrow, 2005), with short-lived larvae (Weinberg & Weinberg, 1975) and with recovery likely to be slow following population collapses (Readman, 2017). Consequently, this species has been screened through to Stage 1 to assess potential effects in more detail and determine the potential significance of any effects of this impact on pink sea fan.	**Screened into further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**Yes.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. In addition, the transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). However, it is noted that the distribution of pink sea fan recorded in 2016 (Figure 10) may differ from the current distribution, with individuals potentially being present nearer to the Proposed Development. In addition, *E. verrucosa* has been described as slow growing in the British Isles (Picton & Morrow, 2005), with short-lived larvae (Weinberg & Weinberg, 1975), and with recovery likely to be slow following population collapses (Readman, 2017). Consequently, this species has been screened through to Stage 1 to assess potential effects in more detail and determine the potential significance of any effects of this impact on pink sea fan.	**Screened into further assessment**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon &	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	PAH contamination)		
	Barrier to species movement	**No.** Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Subtidal coarse sediment	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on subtidal coarse sediment are considered to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	non-native species (INNS)	Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Subtidal mixed sediments	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on subtidal mixed sediment are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g. Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Spiny lobster *Palinurus elephas*	Changes in suspended solids (water clarity)	**No.** Spiny lobster has been recorded over 20 km from the ZoI of the Proposed Development. It is a mobile species and individuals have high site fidelity and limited movement (Foles *et al*. 2011) with movement mainly restricted to 2.5 km/yr (Goñi & Latrouite, 2005). Taking a precautionary approach, however, it has been assumed that some individuals could potentially be present in the vicinity of the ZoI within the Bideford to Foreland Point MCZ. This species does have medium sensitivity to increases in suspended solids (Gibson-Hall *et al*. 2020), however, the text for this impact for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by spiny lobster. Overall, spiny lobster in the MCZ is considered likely to be found in higher numbers a considerable distance from the ZoI of the Proposed Development (**Figure 10**), with very low numbers (if any) within the ZoI. Any effects on this feature are considered likely to be insignificant in relation to the population of this species within the MCZ.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No.** The text above relating to limited movement of spiny lobsters is applicable here and this species has low sensitivity to smothering and siltation rate changes (light) (i.e. deposition up to 5cm depth) (Gibson-Hall *et al*. 2020). In addition, smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experienced by spiny lobsters in the MCZ (the species would be accustomed to similar levels of suspended sediment). HDD will be deployed to route the cable under the intertidal zone. Any smothering and siltation would be most likely associated with cable burial activities and localised to the vicinity of the cable trenches and the HDD exit pits. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). The threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this. Overall, any effects on spiny lobster are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Spiny lobsters have high site fidelity and limited movement (Follesa *et al*. 2011) with movement mainly restricted to 2.5 km/yr (Goñi & Latrouite, 2005). Overall, it is considered that there is no potential to cause a barrier to their movement due to activities associated with the Proposed Development.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Underwater noise and vibration	**No**. Underwater noise levels in the vicinity of the MCZ will be negligible (there is no pile driving associated with the Proposed Development). There could be some vibration arising due to the HDD, however, the main spiny lobster records in the MCZ has been recorded over 20 km from the ZoI of the Proposed Development (**Figure 10**), and only a limited number of individuals are anticipated to be within the ZoI of vibration from the Proposed Development, if any. In addition, spiny lobsters are considered to have low sensitivity to underwater noise (Gibson-Hall *et al*. 2020). Overall, any effects on the spiny lobster population of the MCZ are considered to be insignificant.	**Screened out of further assessment.**
Subtidal sand	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of any sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering for MarESA is 5 cm, and the levels of deposition due to the Proposed Development are an order of magnitude below this, effects on subtidal sand are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of INNS for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Is an activity capable of affecting (other than insignificantly) either:	(i) the protected features of an MCZ?	**Yes.** Impacts associated with changes in suspended solids (water clarity) and smothering and siltation rate changes (light) could affect pink sea fan (*E. verrucosa*).	
	(ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent?	**No -** no processes were identified by which Proposed Development activities could affect ecological or geomorphological processes on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent. (This includes disturbance of sediments which has specifically been considered and the scale of disturbance deemed insignificant in the context of geomorphological processes.)	
Conclusion		It has been determined that the Proposed Development is capable of potentially affecting a limited number of the protected features of the Bideford to Foreland Point MCZ.	**Yes. An MCZ stage 1 assessment will need to be undertaken (in relation to potential impacts screened in to further assessment).**

Hartland Point to Tintagel MCZ

7.1.3 The protected features of the Hartland Point to Tintagel MCZ and their general management approach are provided in **Table 8**. The outcome of the pathway/receptor screening exercise (see **Section 5.2**) is provided in **Table 9**.

Table 8. Protected Features in the Hartland Point to Tintagel MCZ

Protected feature	General management approach
Coastal saltmarshes and saline reedbeds	Maintain in favourable condition
Low energy intertidal rock	
Moderate energy intertidal rock	
High energy intertidal rock	
Intertidal coarse sediment	
Intertidal sand and muddy sand	
Moderate energy infralittoral rock	
High energy infralittoral rock	
Honeycomb worm *Sabellaria alveolata*reefs	
Moderate energy circalittoral rock	Recover to favourable condition
High energy circalittoral rock	
Subtidal coarse sediment	
Subtidal sand	
Fragile sponge & anthozoan communities on subtidal rocky habitats	
Pink sea fan *Eunicella verrucosa*	

Table 9. Potential exposure of features of the Hartland Point to Tintagel MCZ to screened in impacts due to the Proposed Development.

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Coastal saltmarshes and saline reedbeds	Changes in suspended solids (water clarity)	**No.** Semi- empirical calculations suggest that sediment disturbed by activities associated with the Proposed Development, could enter into (and remain in) suspension within Bideford Bay, travelling east northeast and west southwest up to a maximum of 15.2 km from disturbance activities, including the construction of the exit pits required for the HDD. This maximum distance assumes construction activities take place during a peak spring tide current velocity window and/ or significant wave action, with the associated sediment plumes expected to remain generally close to the seabed, i.e. within 2 m of the bed (this assumption is based on findings within BERR, 2008). Sediment dispersal into the MCZ is only likely to occur during peak spring tide current velocities (representing approximately <3% of overall time) (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). However as part of embedded mitigation put in place for the Proposed Development (**Table 3**) all activities in Bideford Bay which could potentially disturb sediment will avoid peak spring tides and significant wave activity to limit any potential for sediment mobilisation. This would include activities associated with the excavation / sediment clearance at the x4 (no.) HDD exit pits and trenching works. Consequently, the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and any smothering and siltation arising due to the Proposed Development activities is likely to be within the natural background levels of smothering and siltation experienced by this	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		feature (e.g. as experienced during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities has been conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). This is an order of magnitude below the 5 cm deposition threshold for 'light' smothering for MarLIN (Marine Life Information Network) MarESA (Marine Evidence-based Sensitivity Assessment). HDD activities are over 15 km away from the MCZ and any smothering and siltation impacts would likely be limited to cable burial activities and localised to the vicinity of the cable trenches and the HDD exit pits. Embedded mitigation dictates that all potential sediment disturbance activities in Bideford Bay will avoid peak spring tides and significant wave activity to limit any potential for sediment dispersal; including the excavation / sediment clearance at the x4 (no.) HDD exit pits and trenching work (**Table 3**). Consequently, it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ. Furthermore, coastal saltmarshes and saline reedbed features are considered to have extremely low sensitivity to temporary (and light) smothering and siltation. Any impacts associated with smothering and siltation rate changes (light) are considered likely to be insignificant, for this feature and this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** Implementation of appropriate control measures will minimise this risk. An Outline Offshore Biosecurity Plan (Document Ref. 7.19) has been developed and will be implemented by the Proposed Development. Vessels will comply with the Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 where applicable. Therefore potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Introduction of other substances (solid, liquid or gas)	**No**. Bentonite (non-toxic) break outs would be quickly diluted (seawater degrades the bentonite fluid, causing it to flocculate and allowing faster dispersal). Bentonite breakout management will be included within the 'Outline Bentonite Breakout Plan' (Document Ref. 7.20) which will be completed by the final HDD contractor. The detailed Bentonite Breakout Plan will set out the measures that would be adopted in the event of a Breakout during the landfall HDD. Any effects of bentonite fluid on this feature are considered to be insignificant due to distance of the feature from the cable route and anticipated dilution / dispersal of the bentonite in the water column. Chemicals may be released from sediments when they are disturbed. However, potential effects on MCZ FOCI are anticipated to be minimal as chemical concentrations in the sediments are relatively low. The disturbed sediments will not be different in chemical characteristic to any of the wider baseline sediments that will routinely be disturbed and reworked as part of normal/baseline regular (current) and storm disturbance events, that the MCZ FOCI will be fully habituated to. Furthermore, any localised and temporary increases in chemical concentrations in the water column associated with project activities will be rapidly diluted with negligible increases in chemical concentrations anticipated for waters in the MCZ (Volume 3, Chapter 8: Physical Processes of the ES).	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** Pollution will be controlled by adhering to relevant MARPOL guidance for pollution prevention and marine pollution legislation for which compliance is required by law. All vessels will be MARPOL compliant and will adhere to a SOPEP where appropriate. Published guidelines and best working practices will be followed to ensure that the likelihood of accidental spills is extremely low. An Offshore Construction Environmental Management Plan (CEMP), including pollution prevention measures will be produced (an outline offshore CEMP is presented as part of the application for DCO (Document Ref. 7.9)). Therefore, potential mechanisms of effect will be reduced as far as reasonably practical and any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development. MarLIN (Marine Life Information Network) MarESA (Marine Evidence-based Sensitivity Assessment) benchmark for this impact is 'a permanent or temporary barrier to species movement over ≥50% of water body width or a 10% change in tidal excursion'.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. Underwater noise levels in the vicinity of the MCZ will be very low (there is no pile driving associated with the Proposed Development). Vibration levels from HDD activities at the HDD exit points and the landfall site will be low. HDD will take place on a (worst case) 24-hour operating period, intermittently over a period of several months, but during only a small proportion of this time would there be potential vibration within intertidal and subtidal habitats and none expected to propagate to these features. The HDD borehole will pass 20 m beneath sea bed level. Overall, any effects on coastal saltmarshes and saline reedbeds are anticipated to be insignificant (further detail relating to the effects of underwater noise and vibration is provided in Volume 3, Chapter 1: Benthic Ecology of the ES).	**Screened out of further assessment**
Low energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on low energy intertidal rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Moderate energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on moderate energy intertidal rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	
High energy intertidal rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and	**Screened out of this assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on high energy intertidal rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of this assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Intertidal coarse sediment	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on intertidal coarse sediment are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Intertidal sand and muddy sand	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on intertidal sand and muddy sand are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**
	Introduction or spread of invasive non-	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	native species (INNS)	mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Moderate energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on moderate energy infralittoral rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
High energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Even should sediments reach this site, as the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on high energy infralittoral rock are considered likely to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Honeycomb worm *Sabellaria alveolata* reefs	Changes in suspended solids (water clarity)	**No.** There needs to be an adequate supply of suspended sediment in order for *Sabellaria alveolata* to be able to build their tubes. *Sabellaria alveolata* has very low sensitivity to increases is suspended sediment concentrations (Jackson, 2008). In addition, the text above related to this impact for ''Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered to be within the natural background range of concentrations experienced by *Sabellaria alveolata* reef in the MCZ, especially as works which could disturb sediment will not occur during peak spring tides as part of embedded mitigation (**Table 3**) so increases in suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No.** The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). *Sabellaria alveolata* is not sensitive to smothering (Jackson, 2008). In addition, any smothering and siltation due to the Proposed Development activities is considered likely to be within the range of natural background levels of smothering and siltation experienced by this feature. HDD is over 15 km away and any smothering and siltation would be associated with cable burial activities and localised to the vicinity of the cable trenches and the HDD exit pits. As no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ. Overall, effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Fragile sponge and anthozoan communities on subtidal rocky habitats' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	
Moderate energy circalittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on moderate energy circalittoral rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
High energy circalittoral rock	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on high energy circalittoral rock are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Subtidal coarse sediment	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on subtidal coarse sediment are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**
	Introduction or spread of invasive non-	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	native species (INNS)	mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Subtidal sand	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on subtidal sand are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon &	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	PAH contamination)		
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Fragile sponge & anthozoan communities on subtidal rocky habitats	Changes in suspended solids (water clarity)	**No.** The text for changes in suspended solids (water clarity) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature and any increase in suspended solid concentrations due to the Proposed Development activities is considered likely to be within the natural background range of concentrations experienced by this feature at this location. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation (**Table 3**), the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects are considered likely to be insignificant.	**Screened out of further assessment**
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of 1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). As the threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this, effects on fragile	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		sponge & anthozoan communities on subtidal rocky habitats are considered to be insignificant. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Pink sea fan *Eunicella verrucosa*	Changes in suspended solids (water clarity)	**No**. Semi- empirical calculations suggest that sediment disturbed by activities associated with the Proposed Development, is expected to go into (and remain in) suspension within Bideford Bay, travelling east northeast and west southwest up to a maximum of 15.2 km for the construction of the exit pits required for the HDD (but only	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		if construction activities were to take place during a peak spring tide current velocity window and/ or significant wave action) with the associated sediment plumes expected to remain close to the seabed, i.e. within 2 m of the bed. This assumption is based on findings within BERR (2008). Therefore sediment into this MCZ is only likely to occur during peak spring tide current velocities (representing approximately <3% of overall time of the worst-case months tested) (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). However, as part of embedded mitigation all works in Bideford Bay which could potentially disturb sediment will avoid peak spring tides and significant wave activity to limit any potential for sediment mobilisation. These activities would include the excavation / sediment clearance at the x4 (no.) HDD exit pits and trenching works. Consequently, the worst case sediment plume extent of 15.2 km in Bideford Bay is not expected to occur and increased suspended sediment concentrations are unlikely to reach this MCZ. Overall, any effects on this feature are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No**. The text above for 'changes in suspended solids (water clarity)' applies and smothering and siltation due to the Proposed Development activities is considered likely to be within the natural background levels of smothering and siltation experience by this feature (e.g. during peak spring tide and storm events) and sediment would be suspended for less than 6 hours. The transport of sediment suspended during cable trenching activities was conservatively estimated to be deposited over the bed with a maximum thickness of <1.5 mm in Bideford Bay depending on distance from source and stage of the tidal cycle (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). The threshold for 'light' smothering is 5 cm, and the activities of the Proposed Development are an order of magnitude below this. In addition, as no works which could disturb sediment would be conducted during peak spring tides as part of embedded mitigation ((**Table 3**), it is likely that any increases in suspended sediment in the water column due to the works (and any associated smothering) would not reach this MCZ.	**Screened out of further assessment**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		Overall, effects on this feature are considered to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment**
	Barrier to species movement	**No.** Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for ''Coastal saltmarshes and saline reedbeds' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment**
Is an activity capable of affecting (other than insignificantly) either:	(i) the protected features of an MCZ?	**No** - none of the impacts above could have a significant effect on the protected features	
	(ii) any ecological or geomorphological process on which	**No -** no processes were identified by which the activities could affect any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent. (This includes disturbance of sediments which has specifically been considered and the scale of disturbance deemed insignificant in the context of geomorphological processes.)	

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
	the conservation of any protected feature of an MCZ is (wholly or in part) dependent?		
Conclusion		It has been determined that the Proposed Development is not capable of potentially affecting any of the protected features of the Hartland Point to Tintagel MCZ.	**No. An MCZ stage 1 assessment has not been undertaken.**

Lundy MCZ

7.1.4 The protected features of the Lundy MCZ and their general management approach are provided in **Table 10**. The outcome of the pathway/receptor screening exercise (see **Section 5.2**) is provided in **Table 11**.

Table 10. Protected Features in the Lundy MCZ.

Protected feature	General management approach
Spiny lobster *Palinurus elephas*	Recover to favourable condition

Table 11. Potential exposure of features of the Lundy MCZ to screened in impacts due to the Proposed Development.

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
Spiny lobster (*Palinurus elephas*)	Changes in suspended solids (water clarity)	**No.** Lundy MCZ is 3.5km from the Proposed Development. A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Spiny lobster have high site fidelity and limited movement (Follesa *et al*. 2011) with movement mainly restricted to 2.5 km/yr (Goñi & Latrouite, 2005). Consequently, it is considered that few individuals would move to the immediate vicinity of the Proposed Development and any effects of the Proposed Development on the spiny lobster population of Lundy MCZ would be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No.** The text above relating to limited movement of spiny lobsters is applicable here. Along this section of the OCC, sediment is assumed to settle immediately back in the vicinity of the trench or within tens of metres (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). In addition, this species has low sensitivity to smothering and siltation rate changes (light) (i.e. deposition up to 5cm depth) (Gibson-Hall *et al*. 2020). Overall, it is considered that any effects of the Proposed Development on the spiny lobster population of Lundy MCZ would be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** Implementation of appropriate control measures will minimise this risk. An Outline Offshore Biosecurity Plan will be implemented (an Outline Offshore Biosecurity Plan (Document Ref. 7.19) is presented as part of the application for DCO alongside this MCZ assessment). Vessels will comply with the Merchant	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 where applicable. Therefore potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	
	Introduction of other substances (solid, liquid or gas)	**No**. Lundy MCZ is over 30 km from the HDD exit point and landfall site so there is no risk of exposure to bentonite. Chemicals may be released from sediments when they are disturbed. However, potential effects on MCZ FOCI are anticipated to be minimal as chemical concentrations in the sediments are relatively low (generally below Cefas Action Level 1 which is indicative of low levels of contamination i.e. would not expect to exhibit any ecological influence). The disturbed sediments will not be different in chemical characteristic to any of the wider baseline sediments that will routinely be disturbed and reworked as part of normal/baseline regular (current) and storm disturbance events, that the MCZ FOCI will be fully habituated to. Furthermore disturbed sediments are not anticipated to be transported to this MCZ (thus regardless of contamination status there is no identified pathway for impact on the MCZ feature) and any localised and temporary increases in chemical concentrations in the water column associated with project activities will be rapidly diluted with negligible increases in chemical concentrations anticipated for waters in the MCZ (Volume 3, Chapter 8: Physical Processes of the ES). Overall, any effects of the Proposed Development on the spiny lobster population of Lundy MCZ would be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** Embedded mitigation measures are in place. Pollution will be controlled by adhering to relevant MARPOL guidance for pollution prevention and marine pollution legislation for which compliance is required by law. All vessels will be MARPOL compliant and will adhere to a SOPEP where appropriate. Published guidelines and best working practices will be followed to ensure that the likelihood of accidental spills is extremely low. An Offshore Construction Environmental Management Plan (CEMP), including pollution prevention measures will be produced (an outline offshore CEMP is presented as part of the application for	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
		DCO (Document Ref. 7.9)). Therefore potential mechanisms of effect have been reduced as far as reasonably practical and any effects on this feature are considered to be insignificant.	
	Barrier to species movement	**No.** Lundy MCZ is 3.5 km from the Proposed Development. A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. There is therefore no pathway for sediment dispersion to reach Lundy (from any point of the OCC) (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). Spiny lobster have high site fidelity and limited movement (Follesa *et al.* 2011) with movement mainly restricted to 2.5 km/yr (Goñi & Latrouite, 2005). There is no pathway for the Proposed Development to impact spiny lobster movements. Consequently, it is considered any effects on movement of spiny lobster from the MCZ due to the Proposed Development would be insignificant.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. Underwater noise levels in vicinity of the MCZ will be negligible (there is no pile driving associated with the Proposed Development). Lundy MCZ is over 30 km from the HDD exit point and landfall site, therefore there is no pathway to effect due to the HDD. In addition, spiny lobsters are considered to have low sensitivity to underwater noise (Gibson-Hall *et al*. 2020). Overall, any effects of the Proposed Development on the spiny lobster population of Lundy MCZ due to underwater noise and vibration would be insignificant.	**Screened out of further assessment.**
Is an activity capable of	(i) the protected features of an MCZ?	**No**. None of the impacts above could have a significant effect on the spiny lobster feature.	

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of Stage 1 assessment
affecting (other than insignificantly) either:	(ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent?	**No**. No processes were identified by which the activities could affect any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent. (This includes disturbance of sediments which has specifically been considered and the scale of disturbance deemed insignificant in the context of geomorphological processes.)	
Conclusion		It has been determined that the Proposed Development is not capable of potentially affecting the spiny lobster feature of the Lundy MCZ.	**No. An MCZ stage 1 assessment has not been undertaken.**

South West Approaches to Bristol Channel MCZ

7.1.5 The protected features of the South West Approaches to Bristol Channel MCZ and their general management approach are indicated in **Table 12**. The outcome of the pathway/receptor screening exercise (see **Section 5.2**) is provided in **Table 13**.

Table 12. Protected Features in the South West Approaches to Bristol Channel MCZ.

Protected feature	General management approach
Subtidal coarse sediment	Recover to favourable condition
Subtidal sand	

Table 13. Potential exposure of features of the South West Approaches to Bristol Channel MCZ to screened in impacts due to the Proposed Development.

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
Subtidal coarse sediment	Changes in suspended solids (water clarity)	**Yes.** As the proposed OCC is in the immediate vicinity of the South West Approaches to Bristol Channel MCZ there is potential for elevated levels of suspended solids within the MCZ and the subtidal coarse sediments present in the MCZ adjacent to the OCC (**Figure 5** and **Figure 14**). Further consideration is required to determine if this could be significant.	**Screened in to further assessment.**
	Smothering and siltation rate changes (light)	**Yes**. As the proposed OCC is in the immediate vicinity of the South West Approaches to Bristol Channel MCZ there is potential for smothering and siltation rate changes within the MCZ and the subtidal coarse sediment present in the MCZ adjacent to the OCC (**Figure** 5 and **Figure 14**). Further consideration is required to determine if this could be significant.	**Screened in to further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** Implementation of appropriate control measures will minimise this risk. An Outline Offshore Biosecurity Plan has been developed (Document Ref. 7.19) and will be implemented by the Proposed Development. Vessels will comply with the Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 where applicable. Therefore potential mechanisms of introduction and spread of INNS have been reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. South West Approaches to Bristol Channel MCZ is over 60 km from the HDD exit point and landfall site so there is no risk of exposure to bentonite. Any effects of this impact are considered to be insignificant. As part of embedded mitigation for the Proposed Development, there will be a 20 m buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ. Consequently, no solid substances are anticipated be moved from the OCC and	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		into the MCZ. Similarly, any cable protection measures (if required) will be within the OCC and will not cross the border of the MCZ. Chemicals may be released from sediments when they are disturbed. However, potential effects on MCZ FOCI are anticipated to be minimal as chemical concentrations in the sediments are relatively low. The disturbed sediments will not be different in chemical characteristic to any of the wider baseline sediments that will routinely be disturbed and reworked as part of normal/baseline regular (current) and storm disturbance events (that the MCZ FOCI will be fully habituated to). Furthermore any localised and temporary increases in chemical concentrations in the water column associated with project activities will be rapidly diluted with negligible increases in chemical concentrations anticipated for waters in the MCZ (Volume 3, Chapter 8: Physical Processes of the ES). Overall, any impacts on this feature are considered likely to be insignificant.	
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** Embedded mitigation measures are in place. Pollution will be controlled by adhering to relevant MARPOL guidance for pollution prevention and marine pollution legislation for which compliance is required by law. All vessels will be MARPOL compliant and will adhere to a SOPEP where appropriate. Published guidelines and best working practices will be followed to ensure that the likelihood of accidental spills is extremely low. An Offshore Construction Environmental Management Plan (CEMP), including pollution prevention measures will be produced (an outline offshore CEMP is presented as part of the application for DCO (Document Ref. 7.9)). Therefore potential mechanisms of effect have been reduced as far as reasonably practical and any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
	Underwater noise and vibration	**No**. Underwater noise levels in vicinity of MCZ will be very low (there is no pile driving associated with the Proposed Development). South West Approaches to Bristol Channel MCZ is over 60 km from the HDD exit points and landfall site where HDD will occur. Overall, any effects of this impact are considered to be insignificant.	**Screened out of further assessment.**
Subtidal sand	Changes in suspended solids (water clarity)	As the proposed OCC is in the immediate vicinity of the South West Approaches to Bristol Channel MCZ there is potential for elevated levels of suspended solids within the MCZ and within any subtidal sand areas present in the MCZ adjacent to the OCC (**Figure 5** and **Figure 14**). Further consideration is required to determine if this could be significant.	**Screened in to further assessment.**
	Smothering and siltation rate changes (light)	As the proposed OCC is in the immediate vicinity of the South West Approaches to Bristol Channel MCZ there is potential for elevated levels of suspended solids within the MCZ and within any subtidal sand areas present in the MCZ adjacent to the OCC (**Figure 5** and **Figure 14**). Further consideration is required to determine if this could be significant.	**Screened in to further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Subtidal coarse sediment' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. South West Approaches to Bristol Channel MCZ is over 60 km from the HDD exit point and landfall site so there is no risk of exposure to bentonite. Any effects of this impact are considered to be insignificant. The text relating to introduction of other substances (solid, liquid or gas) for 'Subtidal coarse sediment' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Subtidal coarse sediment' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The South West Approaches to Bristol Channel MCZ is over 60 km from the HDD exit points and landfall site where HDD will occur. The text relating to underwater noise and vibration for 'Subtidal coarse sediment' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Is an activity capable of affecting (other than insignificantly) either:	(i) the protected features of an MCZ?	**Yes.** Impacts associated with changes in suspended solids (water clarity) and smothering and siltation rate changes (light) could affect subtidal coarse sediment protected features.	
	(ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent?	**No.** No processes were identified by which the activities could affect any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.	
Conclusion		It has been determined that the Proposed Development is capable of potentially affecting a limited number of the protected features of the South West Approaches to Bristol Channel MCZ.	**Yes. An MCZ stage 1 assessment will need to be undertaken (in relation to potential impacts screened in to further assessment).**

East of Haig Fras MCZ

7.1.6 The protected features of the East of Haig Fras MCZ and their general management approach are provided in **Table 14**. The outcome of the pathway/receptor screening exercise (see **Section 5.2**) is indicated in **Table 15**.

Table 14. Protected Features in the East of Haig Fras MCZ.

Protected feature	General management approach
Sea-pen and burrowing megafauna communities	Recover to favourable condition
Fan mussel *Atrina fragilis*	
High energy infralittoral rock	
Moderate energy circalittoral rock	
Subtidal coarse sediment / subtidal mixed sediments mosaic	
Subtidal sand	
Subtidal mud	

Table 15. Potential features of the East of Haig Fras MCZ to screened in impacts due to the Proposed Development.

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
Sea-pen and burrowing megafauna communities	Changes in suspended solids (water clarity)	**Yes.** Considered potentially present at locations near the OCC (**Figure 6** and **Figure 15**). There is a potential pathway of effect on this feature which requires further consideration, so it has been screened in to Stage 1 assessment on a precautionary basis.	**Screened in to further assessment.**
	Smothering and siltation rate changes (light)	**Yes**. Considered potentially present at locations near the OCC (**Figure 6** and **Figure 15**). There is a potential pathway of effect on this feature so it has been screened in to Stage 1 assessment on a precautionary basis.	**Screened in to further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** Implementation of appropriate control measures will minimise this risk. An Outline Offshore Biosecurity Plan has been developed (Document Ref. 7.19) and will be implemented by the Proposed Development. Vessels will comply with the Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 where applicable. Therefore potential mechanisms of introduction and spread of INNS have been reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. East of Haig Fras MCZ is over 180 km from the HDD exit points and landfall site so there is no risk of exposure to bentonite. As part of embedded mitigation for the Proposed Development, there will be a 20 m buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ. Consequently, no solid substances are anticipated be moved from the OCC and into the MCZ. Similarly, any cable protection measures (if required) will be within the OCC and will not cross the border of the MCZ. Chemicals may be released from sediments when they are disturbed. However, potential effects on MCZ FOCI are anticipated to be minimal as chemical concentrations in the sediments are relatively low. The disturbed sediments will	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		not be different in chemical characteristic to any of the wider baseline sediments that will routinely be disturbed and reworked as part of normal/baseline regular (current) and storm disturbance events (that the MCZ FOCI will be fully habituated to). Furthermore any localised and temporary increases in chemical concentrations in the water column associated with project activities will be rapidly diluted with negligible increases in chemical concentrations anticipated for waters in the MCZ (Volume 3, Chapter 8: Physical Processes of the ES). Overall, any impacts on this feature are considered likely to be insignificant.	
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** Embedded mitigation measures are in place. Pollution will be controlled by adhering to relevant MARPOL guidance for pollution prevention and marine pollution legislation for which compliance is required by law. All vessels will be MARPOL compliant and will adhere to a SOPEP where appropriate. Published guidelines and best working practices will be followed to ensure that the likelihood of accidental spills is extremely low. An Offshore Construction Environmental Management Plan (CEMP), including pollution prevention measures will be produced (an outline offshore CEMP is presented as part of the application for DCO (Document Ref. 7.9)). Therefore potential mechanisms of effect have been reduced as far as reasonably practical and any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. Underwater noise levels in vicinity of MCZ will be very low (there is no pile driving associated with the Proposed Development). East of Haig Fras MCZ is over 180 km from the HDD exit points and landfall site where HDD will occur. Overall, any effects of this impact on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
Fan mussel *Atrina fragilis*	Changes in suspended solids (water clarity)	**Yes.** Considered potentially present at locations near the OCC (**Figure 6** and **Figure 15**). There is a potential pathway of effect on this feature which requires further consideration, so it has been screened in to Stage 1 assessment on a precautionary basis.	**Screened in to further assessment.**
	Smothering and siltation rate changes (light)	**Yes**. Considered potentially present at locations near the OCC (**Figure 6** and **Figure 15**). There is a potential pathway of effect on this feature so it has been screened in to Stage 1 assessment on a precautionary basis.	**Screened in to further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No.** The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and larval dispersal will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
High energy infralittoral rock	Changes in suspended solids (water clarity)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes;	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No**. The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Moderate energy circalittoral rock	Changes in suspended solids (water clarity)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No**. The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Subtidal coarse sediment / subtidal mixed sediments mosaic	Changes in suspended solids (water clarity)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No**. The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Subtidal sand	Changes in suspended solids (water clarity)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Smothering and siltation rate changes (light)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	
	Introduction or spread of invasive non-native species (INNS)	**No**. The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	**No**. The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Subtidal mud	Changes in suspended solids (water clarity)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
		the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	
	Smothering and siltation rate changes (light)	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. Taking into account the likely extent of this habitat in the MCZ and the low sensitivity of this feature to this temporary and short-term impact, any effects are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction or spread of invasive non-native species (INNS)	**No**. The text relating to introduction or spread of invasive non-native species (INNS) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Potential mechanisms of introduction and spread of INNS will be reduced as far as reasonably practical and any effects on this feature are considered likely to be insignificant.	**Screened out of further assessment.**
	Introduction of other substances (solid, liquid or gas)	**No**. The text relating to introduction of other substances (solid, liquid or gas) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
	Pollution (e.g., Hydrocarbon & PAH contamination)	**No.** The text relating to pollution (e.g., Hydrocarbon & PAH contamination) for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**

Protected Feature	Impact	Potential for greater than insignificant impact	Screened in / out of further assessment
	Barrier to species movement	**No**. Not considered a relevant impact for this feature as the feature itself is not mobile and will not be affected by the Proposed Development.	**Screened out of further assessment.**
	Underwater noise and vibration	The text relating to underwater noise and vibration for 'Sea-pen and burrowing megafauna communities' is also applicable for this feature. Overall, any effects on this feature are considered to be insignificant.	**Screened out of further assessment.**
Is an activity capable of affecting (other than insignificantly) either:	(i) the protected features of an MCZ?	**Yes.** Impacts associated with changes in suspended solids (water clarity) and smothering and siltation rate changes (light) could affect sea-pen and burrowing megafauna communities and Fan mussel *Atrina fragilis* protected features.	
	(ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent?	**No.** No processes were identified by which the activities could affect any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.	
Conclusion		It has been determined that the Proposed Development is capable of potentially affecting a limited number of the protected features of the East of Haig Fras MCZ.	**Yes. An MCZ stage 1 assessment will need to be undertaken (in relation to potential impacts screened in to further assessment).**

7.2 Stage 1 Assessment

7.2.1 Following the results of the MCZ screening stage (**Section 7.1**), the following MCZs and designated features were taken forward to Stage 1 Assessment:

Bideford and Foreland Point MCZ

- Pink sea fan *Eunicella verrucosa*

South West Approaches to Bristol Channel MCZ

- Subtidal coarse sediment
- Subtidal sand

East of Haig Fras MCZ

- Sea-pen and burrowing megafauna communities
- Fan mussel *Atrina fragilis*

7.2.2 The impacts taken forward to assessment for each of these features were:

- Changes in suspended solids (water clarity); and
- Smothering and siltation rate changes (light (i.e. <5cm deposition)).

7.2.3 The Stage 1 Assessment is presented as **Table 16** below. Within this table, for each combination of impact and MCZ feature being considered, further detail is provided to determine if features could be potentially affected by the Proposed Development. The table indicates if effects could be significant or insignificant and whether conservation objectives of the feature for the MCZ would be hindered or not.

Table 16. Stage 1 Assessment for relevant MCZ features.

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
Bideford to Foreland Point MCZ						
Changes in suspended solids (water clarity). Smothering and siltation rate changes (light).	Pink sea fan *Eunicella verrucosa*	General management approach is maintain to favourable condition. The specific maintain targets related to the impacts are as follows: Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement is not significantly altered or constrained, and Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) in areas where this species is, or could be, present.	**No.** A semi-empirical assessment of sediment transport (taking into account of the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). These calculations have indicated that the distribution of resuspended sediment could reach up to 15.2 km in an east northeast and west southwest direction within Bideford Bay (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). This 15.2 km dispersal is only reached on a peak spring tide and on a mean neap tide the distance is approximately 5 km (see **Figure 7** and **Figure 8**) reproduced from Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). However as part of embedded mitigation for the Proposed Development (**Table 3**) all potential sediment disturbance activities in Bideford Bay will avoid peak spring tides and significant wave activity to limit any potential for sediment mobilisation. These activities would include the excavation / sediment clearance at the x4 (no.) HDD exit pits and trenching works. Consequently any dispersal of sediment into the Bideford to Foreland Point MCZ would have a smaller footprint than that indicated in **Figure 7**. Sediment that is released from cable trenching activities is estimated to be deposited with a maximum thickness of up to <1.5 mm depending on the timing of the trenching activities within the tidal cycle and subsequent distance of transport in suspension (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Most of the sediment, however, is expected to be deposited within the vicinity of the trench (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES) and would not be transported past the boundary of the MCZ. The activities would also be highly transient – e.g. trenching would proceed at approximately 150 m/hr. The MarLIN MarESA for pink sea fan indicates this species is 'not sensitive' to 'Changes in suspended solids (water clarity)' or to 'smothering and siltation changes (light)' (resistance is indicated to be 'high', and resilience is 'high') (Readman & Hiscock, 2017). While siltation may inhibit feeding, colonies of the sea fan *Eunicella verrucosa* produce mucus to clear themselves of silt (Readman and Hiscock, 2017.) and it is probably tolerant of increases in suspended sediment (Hiscock *et al.* 2004). Any sediment released into the water column will be rapidly dispersed in the water column likely rapidly reaching background levels to which the feature is habituated (available surface, monthly	Potential overlap of impacts from other projects but determined no effect on pink sea fan *Eunicella verrucosa* in combination with other projects, see **Section 7.3**.	No mitigation (beyond the Proposed Development's embedded mitigation) is proposed for this impact as no significant effect has been determined on the protected feature of the MCZ.	The conservation objective for pink sea fan *Eunicella verrucosa* is to recover to favourable condition The Proposed Development will not hinder the achievement of this objective for the Bideford to Foreland Point MCZ.

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
			mean background suspended sediment concentrations of <1 mg/l to approximately 11 mg/l are known, with peak background concentrations and concentrations at seabed level expected to be substantially higher due to frequent natural disturbance by wave and current action (including during storm events), particularly closer to shore) (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). Also data sources have identified that pink seas fans within the MCZ are generally distributed along the north coast of the MCZ, beyond the ZoI of the Proposed Development. It is noted that these are not necessarily up to date mapping data, however, if any pink sea fans were within the ZoI of the Proposed Development they would be anticipated to represent an extremely small proportion of the population of pink sea fans in the MCZ. Overall, effects of 'changes in suspended solids (water clarity)' and 'smothering and siltation rate changes (light)' on pink sea fan are anticipated to be insignificant.			
South West Approaches to Bristol Channel MCZ						
Changes in suspended solids (water clarity). Smothering and siltation rate changes (light).	Subtidal coarse sediment	General management approach is recover to favourable condition. However, specific maintain and recover targets have not been set (JNCC 2020).	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. There is therefore potential for increases in suspended sediment levels and light smothering to occur within a very small section of the MCZ immediately adjacent to the OCC (within tens of metres). In addition, as part of embedded mitigation for the Proposed Development, there will be a 20 m buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ (**Table 3**). This will further minimise the potential for suspended sediment to be transported beyond the boundary of the MCZ. Proposed development activities would be highly temporary and transient (e.g. adjacent trenching is expected to proceed at speeds of approximately 150 m/hr). Any sediment released into the water column will be rapidly dispersed in the water column likely rapidly reaching background levels to which the feature is habituated.	Potential overlap of impacts from other projects but determined no effect on subtidal coarse sediment in combination with other projects, see **Section 7.3**.	No mitigation (beyond the Proposed Development's embedded mitigation) is proposed for this impact as no significant effect has been determined on the protected feature of the MCZ.	The conservation objective for subtidal coarse sediment is to recover to favourable condition. The Proposed Development will not hinder the achievement of this objective for the South West Approaches to Bristol Channel MCZ.

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
			MarLIN MarESAs for different circalittoral coarse sediments[3], generally indicate that they have 'low sensitivity' to 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' or are indicated as being 'not sensitive' (Volume 3, Chapter 1: Benthic Ecology of the ES). In addition, the extent of this habitat is extensive within the MCZ and any highly localised effects due to the Proposed Development are not anticipated to have a significant effect on the MCZ feature overall. Overall, effects of 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' on subtidal coarse sediment are anticipated to be insignificant.			
Changes in suspended solids (water clarity). Smothering and siltation rate changes (light).	Subtidal sand	General management approach is recover to favourable condition. However, specific maintain and recover targets have not been set (JNCC 2020).	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. There is therefore potential for increases in suspended sediment levels and light smothering to occur within a very small section of the MCZ immediately adjacent to the OCC (within tens of metres). In addition, as part of embedded mitigation for the Proposed Development, there will be a 20 metre buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ (Table 3). This will further minimise the potential for suspended sediment to be transported beyond the boundary of the MCZ. Proposed development activities would be highly temporary and transient (e.g. adjacent trenching is expected to proceed at speeds of approximately 150 m/hr). Any sediment released into the water column will be rapidly dispersed in the water column likely rapidly reaching background levels to which the feature is habituated. MarLIN MarESAs for different subtidal sand habitats[4], generally indicate that they have 'low sensitivity' to 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' or are indicated as being 'not sensitive' (Volume 3, Chapter 1: Benthic Ecology of the ES)..	Potential overlap of impacts from other projects but determined no effect on subtidal coarse sediment in combination with other projects, see **Section 7.3**.	No mitigation (beyond the Proposed Development's embedded mitigation) is proposed for this impact as no significant effect has been determined on the protected feature of the MCZ.	The conservation objective for subtidal sand is to recover to favourable condition. The Proposed Development will not hinder the achievement of this objective for the South West Approaches to Bristol Channel MCZ.

[3] https://www.marlin.ac.uk/habitats/habitat/44/subtidal_coarse_sediment_cobble_pebble_gravel_coarse_sand

[4] https://www.marlin.ac.uk/habitats/habitat/48/subtidal_sands_and_muddy_sands

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
			Overall, effects of 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' on subtidal sand are anticipated to be insignificant.			
East of Haig Fras MCZ						
Changes in suspended solids (water clarity) Smothering and siltation rate changes (light)	Sea-pen and burrowing megafauna communities	General management approach is recover to favourable conditions for this feature. However, specific maintain and recover targets have not been set (JNCC 2021).	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. In addition, as part of embedded mitigation for the Proposed Development, there will be a 20 m buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ (**Table 3**). This will further minimise the potential for suspended sediment to be transported beyond the boundary of the MCZ. The feature is found sporadically around the MCZ and spatial information about this habitat in the MCZ is lacking. A key consideration is that sea pen and burrowing megafauna communities (in circalittoral fine mud specifically) have high resilience and are overall considered 'not sensitive' to 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' in the MarLIN MarESA (Hill *et al*. 2023). Evidence to support the rating is that *Pennatula phosphorea* and *Funiculina quadrangularis* studies found species recovered within 72-96 hours after experimental smothering using pots or creel (Kinnear *et al.* 1996; Eno *et al.* 2001). Hiscock (1983) observed *Virgularia mirabilis* secretes copious amounts of mucus, which could keep the polyps clear of silt and is also likely to be able to self-clean. It is probable therefore that deposition of even up to 5 cm of fine sediment will have little effect other than to temporarily suspend feeding and the energetic cost of burrowing. If increases in suspended sediment levels affect feeding, once siltation levels return to normal, feeding will be resumed therefore recovery will be immediate. Similarly, burrowing megafauna are unlikely to be affected adversely by changes in suspended sediment in the water column. The impact of the Proposed Development is predicted to be of local, short-term duration (any suspended sediment will disperse quickly) and highly intermittent (activities highly transient).	Potential overlap of impacts from other projects but determined no effect on sea-pen and burrowing megafauna in combination with other projects, see **Section 7.3**.	No mitigation (beyond the Proposed Development's embedded mitigation) is proposed for this impact as no significant effect has been determined on the protected feature of the MCZ.	The conservation objective for sea-pen and burrowing megafauna communities is to recover to favourable condition. The Proposed Development will not hinder the achievement of this objective for the East of Haig Fras MCZ.

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
			Taking the above information into account, effects of 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' on sea-pen and burrowing megafauna communities are anticipated to be insignificant.			
Changes in suspended solids (water clarity) Smothering and siltation rate changes (light)	Fan mussel *Atrina fragilis*	General management approach is recover to favourable conditions. However specific maintain and recover targets have not been set (JNCC 2021).	**No.** A semi-empirical assessment of sediment transport (taking into account the influence of currents, waves and sediment resuspension) has been conducted for the Proposed Development (Volume 3, Chapter 8: Physical Processes; Volume 3, Appendix 8.1: Sediment Dispersion Technical Note of the ES). These calculations have indicated that there is anticipated to be negligible dispersion of resuspended sediment (tens of metres) for the majority of the OCC (including the section of the OCC in the vicinity of this MCZ) due to consideration of current speeds and sediment particle size. There is therefore potential for increases in suspended sediment levels and light smothering to occur within a very small section of the MCZ immediately adjacent to the OCC (within tens of metres). In addition, as part of embedded mitigation for the Proposed Development, there will be a 20 m buffer between any trenching or boulder removal activities, or other activities which could move solid substances in the OCC, and the MCZ (**Table 3**). This will further minimise the potential for suspended sediment to be transported beyond the boundary of the MCZ. Information on fan mussels (*Atrina* spp. and *Pinna* spp.) is limited. They are found sporadically around the MCZ. Fan mussel has low resilience and is considered to have 'medium' sensitivity in the MarLIN MarESA for 'Changes in suspended solids' and 'Changes in smothering and siltation rates (light)' (Tyler-Walters & Wilding, 2022). Information on these species on MarLIN indicates that *Atrina* sp. are well adapted to a sedimentary habitat and the occasional resuspension of sediment due to storms, as they are able to cleanse themselves quickly and have a waste canal for the removal of sediment from the mantle cavity. Short-term (i.e. 3 day) increases in suspended sediment, similar to that created by storms and storm runoff, are likely to result in a loss of condition but not mortality. The period of potential continuous impact at any one location due to the Proposed Development is anticipated to be a lot less than 3 days. With smothering and siltation rate changes *A. fragilis* cannot burrow upwards through sediment (Yonge, 1953). However, one-third to one-half of the animal can protrude above the surface which, in adults, can be up to 10-15 cm above the sediment surface. Therefore, adult fan mussels are unlikely to be affected by light smothering (up to 5 cm depth). As sediment would only be transported tens of metres and levels of deposition would reduce with increased distance from source it is anticipated only areas in the immediate vicinity of the trenching could be subject to deposition level of greater than 5 cm, and this would not be experienced within the boundary of the MCZ.	Potential overlap of impacts from other projects but determined no effect on fan mussel in combination with other projects, see **Section 7.3**.	No mitigation (beyond the Proposed Development's embedded mitigation) is proposed for this impact as no significant effect has been determined on the protected feature of the MCZ.	The conservation objective for fan mussel is to recover to favourable condition. The Proposed Development will not hinder the achievement of this objective for the East of Haig Fras MCZ.

Impact	MCZ Feature	Favourable condition targets for relevant attribute based on conservation objectives	Capable of affecting either the protected features of the MCZ or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant?	Will there be effects in combination with other plans or projects, on attribute and/or feature	Can impacts be mitigated?	Will the conservation objectives be hindered?
			Taking the above information into account, effects of 'Changes in suspended solids (water clarity)' and 'Smothering and siltation rate changes (light)' on fan mussels are anticipated to be insignificant.			

7.3 Cumulative Effects Assessment

7.3.1 The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Proposed Development together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this MCZ assessment are based upon the results of a screening exercise undertaken initially for the ES (Volume 1, Appendix 5.3: Cumulative Effects Assessment Screening Matrix of the ES). Each project has been considered on a case-by-case basis for screening in or out of assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

7.3.2 All projects and plans identified have been allocated into 'tiers' reflecting their current stage within the planning and development process (as advocated under the Planning Act, 2008 and for consistency with the Proposed Development's EIA).

- Tier 1
  - Under construction;
  - Permitted application;
  - Submitted application; and
  - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact.
- Tier 2
  - Scoping report has been submitted.
- Tier 3
  - Scoping report has not been submitted;
  - Identified in the relevant Development Plan; and
  - Identified in other plans and programmes.

7.3.3 This tiered approach is adopted to provide a clear assessment of the Proposed Development alongside other projects, plans and activities.

7.3.4 The specific projects, plans and activities scoped into the CEA, along with distances to the Proposed Development are outlined in **Table 17.** The locations of such projects, plans and activities are presented on Figure 1.2 of Volume 1, Appendix 5.3: CEA Screening Matrix of the ES.

7.3.5 Note for consistency with the ES, all schemes / projects identified within 30 km of the OCC are presented. A search radius of 30 km is considered highly precautionary in the context of this MCZ assessment.

7.3.6 It is noted that the RIAA (Document Ref. 7.16), that is presented as an application document alongside this MCZ assessment, includes cumulative consideration of Hinkley Point C, however that project is not relevant for consideration within the cumulative considerations presented in this MCZ assessment as potential cumulative effects with Hinkley Point C are in relation to fish (primarily migratory fish), and no fish species are listed as features of the MCZs considered in this assessment.

Table 17. Plans/projects considered for cumulative effects assessment.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
Tier 1							
New dwelling and flood defence wall flanking River Torridge	Permitted	4.5	It is proposed to construct a new four bedroom, three-storey residential dwelling with ground floor parking, driveway, and landscaped border. As part of this development, it is proposed to modify and extend the existing flood defence wall which runs for a 40 metre (m) length along the eastern site boundary. These works are required to provide necessary flood protection to the proposed dwelling. .	2024-2025	2025 onwards	No overlap with construction of Proposed Development (no temporal overlap), however there will be overlap with Operation of the Proposed Development.	During Operation of the Proposed Development some cable inspection surveys may be required (up to once a year for the first 5 years, and then approximately every 5 years for the remainder of the operational life of the cables (anticipated 50 years). Maintenance and repair work may be required. Impact generated by these aspects of the Proposed Development are anticipated to be minimal. No cumulative effects are anticipated that could affect MCZ features.
Aqua Botanika Nearshore seaweed cultivation of native species	Pending	27.4	A Kelp Farm on ropes with buoys anchored to the seabed or to blocks in roughly 50 m frequencies, main ropes connecting the buoys in each direction	2024	2024 onwards	No overlap with Construction of the Proposed Development, however there will be overlap	Due to the distance to the project no cumulative effects are anticipated that could affect MCZ features.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
			creating a grid. Growing ropes are then connected to main ropes to run parallel at 10 m centres. Proposal is for multiple bays which equate to an area of 100 hectares.			with Operation of the Proposed Development.	
Shellfish cultivation pilot at seaweed farm	Permitted	1	Algapelago Marine Limited intend to trial a shellfish cultivation pilot to establish the commercial feasibility of shellfish cultivation at their existing site in Bideford Bay. The shellfish pilot study will last four years, to enable species to reach full market size. Two species are in scope for the cultivation pilot trials: i) *Mytilus edulis* - spat sourced from natural settlement and ii) *Pecten maximus* - spat sourced from Scallop Ranch Ltd. The pilot trial is anticipated to run from August 2024 - August 2028.	August 2024	August 2024 - August 2028.	No overlap with Construction of Proposed Development, however there will be overlap with Operation of the Proposed Development.	During Operation of the Proposed Development some cable inspection surveys may be required (up to once a year for the first 5 years, and then approximately every 5 years for the remainder of the operational life of the cables (anticipated 50 years). Maintenance and repair work may be required. Impact generated by these aspects of the Proposed Development are anticipated to be minimal. No cumulative effects are anticipated that could affect MCZ features.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
			Infrastructure: Algapelago intend to install 4 x 200m submerged longlines for the propagation of shellfish. All infrastructure will be deployed within Algapelago's existing licenced area.				
TwinHub Floating Offshore Wind Demonstration Project	Under construction	29.5	Wave Hub Limited is seeking consent to construct and deploy two semisubmersible platforms with two turbines each in order to generate up to 32MW power from renewable floating offshore wind energy. The Site already consists of existing cables and onshore infrastructure which was originally granted consent in 2007. No further work to existing infrastructure is anticipated. Assembly is planned to be completed and both platforms will be sequentially floated to site	Unknown (however target delivery window ends in Q4 2024)	Unknown (however target delivery window ends in March 2028 and the project lifeline is 30 years giving a potential operational timeframe of 2028-2058)	Overlap with Construction and Operation of Proposed Development.	Due to the distance to the project no cumulative effects are anticipated that could affect MCZ features.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
			to the anchors and mooring lines during Q4 2024. Commissioning will take place during Q1 2025 with a commercial operation date in Q2 2025.				
White Cross Floating Offshore Windfarm	Permitted	7.8 (with the Offshore Cable Corridor overlapping / directly adjacent to the White Cross Cable Corridor)	Proposed offshore windfarm located in the Celtic Sea with a capacity of up to 100 MW. The Windfarm Site is located over 52 km off the North Cornwall and North Devon coast (west north-west of Hartland Point), in a water depth of 60 m – 80 m. The Windfarm Site covers 50 km^2. The current wind turbine design envelope for the project is a WTG capacity of 12-24 MW, 6-8 three bladed horizontal axis turbines with a rotor diameter of 220-300 m. Construction is anticipated to commence in mid 2024	Mid 2024	2026-2054	Overlap with Construction and Operation of Proposed Development.	Due to the distance to the White Cross potential array site, there are no cumulative effects anticipated in that regard. There is potential close proximity with a section of the White Cross export cable corridor. The two project teams will remain in close consultation to ensure a) sensible spacing of cables to avoid any interaction; and b) avoidance of temporal overlap in the same region. The relevant section of the OCC includes that nearest to the Lundy MCZ, however cumulative effect considerations do not pose any greater impact

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
			with the site anticipated to be operational by 2026."				significance than the Proposed development assessment alone and no cumulative effects are anticipated that could affect MCZ features.
Celtic Interconnector	Permitted	Crosses offshore cable corridor	700 MW high-voltage direct current submarine power cable under construction between the southern coast of Ireland and the north-west coast of France. The UK elements of the Celtic Interconnector comprise: • A submarine cable within the UK EEZ approximately 211 km in length placed on or beneath the seabed. It passes approximately 30km west of the Isles of Scilly and approximately 75 km west of Land's End, but does not enter UK Territorial Waters.	2025 • 2024 – Marine Surveys • 2025 – Commencement of Offshore marine cable installation • 2026 – Completion of offshore marine cable installation	Commence in 2026/2027	No overlap with Construction of Proposed Development, however there will be overlap with Operation of the Proposed Development.	During Operation of the Proposed Development some cable inspection surveys may be required (up to once a year for the first 5 years, and then approximately every 5 years for the remainder of the operational life of the cables (anticipated 50 years)). Maintenance and repair work may be required. Impact generated by these aspects of the Proposed Development are anticipated to be minimal. No cumulative effects are anticipated that could affect MCZ features.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
			• Secondary rock protection using rock placement (if required), where target depth of cable lowering is not fully achieved or at cable crossings, with a linear extent of between 0km and 80 km or 0 to 270 tonnes. • A fibre optic link shall be laid along the cable route for operational control, communication and telemetry purposes.				
Tier 2							
None identified							
Tier 3							
The Crown Estate's Celtic Sea Floating Offshore Wind Leasing Round 5 - Project Development Area	Future planned development	20.1	Project Development Area (PDA) 2 sits within Welsh and English Governance and is one of three suitable PDAs identified within the Celtic Sea for floating offshore wind development, each of which	Unknown (the schedule for PDA 2 is unknown, however, geophysical investigations	Unknown	As the schedule for PDA 2 is currently unknown, there is the potential for overlap with both the Construction and Operational	Due to the distance to the PDA no cumulative effects are anticipated that could affect MCZ features.

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
2 (PDA2)			having a potential capacity of up to 1.5 GW. Currently in the early stages of the project, the schedule for PDA 2 is unknown, however, pre-consent surveys are planned as follows:. • Geophysics: summer 2023 / summer 2024 • Shallow geotechnical: summer 2024 • Digital aerial surveys for birds and marine mammals: 2 years from September 2023 • Metocean: 1 year of data acquisition with deployments planned for spring 2024	are taking place from 2023-2025).		phases of the Proposed Development	
The Crown Estate's Celtic Sea Floating Offshore Wind Leasing	Future planned development	Overlaps with portion of the offshore cable corridor	PDA 3 sits within English Governance and is one of three suitable PDAs identified within the Celtic Sea for floating offshore wind development, each of	Unknown (the schedule for PDA 3 is unknown,	Unknown	As the schedule for PDA 3 is currently unknown, there is the potential for overlap with	Limited detail is available, however, the planned geotechnical works would be in 2024 which would not overlap with Construction of the Proposed Development and other

Project	Status	Distance from Proposed Development (nearest point, km)	Description	Dates of Construction (if known)	Dates of Operation (if known)	Overlap with the Proposed Development?	Any cumulative effects?
Round 5 - Project Development Area 3 (PDA3)			which having a potential capacity of up to 1.5 GW. • Geophysics: summer 2023 / summer 2024 • Shallow geotechnical: summer 2024 • Digital aerial surveys for birds and marine mammals: 2 years from September 2023 • Metocean: 1 year of data acquisition with deployments planned for spring 2024.	however, geophysical investigations are taking place from 2023-2025).		both the Construction and Operational phases of the Proposed Development	surveys (e.g. geotechnical, aerial surveys and metocean surveys) are not anticipated to interact with benthic ecology features. Once the Proposed Development is Operational there would be minimum potential for interactions with the projects in terms of benthic ecology. Overall, no cumulative effects are anticipated that could affect MCZ features.

8 SUMMARY

8.1.1 This MCZ assessment has been prepared alongside the Proposed Development's Environmental Impact Assessment studies. When considering benthic ecology features it was determined in the Environmental Statement that the impact with the greatest Zone of Influence (ZoI) would be dispersion of suspended sediment.

8.1.2 A semi- empirical approach was used to estimate the ZoI for suspended sediment dispersion (Volume 3, Appendix 8.1: Sediment source concentrations and assessment of disturbance of the ES). These calculations have indicated that disturbed sediments could, under worst case assumptions, be dispersed up to 15.2 km in an east northeast and west southwest direction within Bideford Bay. This 15.2 km dispersal would only ever be associated with a peak spring tide. On a mean neap tide the distance is predicted to be approximately 5 km. Suspended sediment concentrations are expected to reduce with distance from the disturbance source (and be negligible at the maximum distances stated). However, ensuring a worst case scenario assessment, a 15.2 km MCZ assessment study area has been applied in the Bideford Bay area.

8.1.3 As part of embedded mitigation for the Proposed Development all potential sediment disturbance activities in Bideford Bay will avoid peak spring tides and significant wave activity to limit the potential for sediment mobilisation (**Table 3**). These restrictions would apply to the excavation / sediment clearance at the x4 (no.) HDD exit pits and to trenching works. Therefore an extent of 15.2 km is unlikely to be reached by the sediment plume in Bideford Bay.

8.1.4 Along the remaining length of the Offshore Cable Corridor sediment is assumed to settle immediately in the vicinity of the disturbance activity and not be dispersed more than tens of metres (a precautionary 5 km buffer has been applied to the rest of the OCC within this assessment).

8.2 Screening

8.2.1 The following MCZs were identified for MCZ Assessment Screening consideration:

- Bideford to Foreland Point;
- Hartland Point to Tintagel;
- Lundy;
- South West Approaches to Bristol Channel; and
- East of Haig Fras.

8.2.2 The potential impacts assessed for the Screening stage were identified using the NE AoO for the Bideford to Foreland Point MCZ, covering all activities related to subsea cables as described in **Section** 6 (this was the only MCZ for which AoO was available, indicating a list of potential pressures for 'Cables'). The impacts which were identified and assessed for all of the MCZs within the assessment were as follows:

- changes in suspended solids (water clarity);
- smothering and siltation rate changes (light (i.e. deposition up to 5 cm));

- introduction or spread of INNS;
- introduction of other substances (solid, liquid or gas);
- pollution (e.g. hydrocarbon & PAH contamination);
- barrier to species movement; and
- underwater noise and vibration.

8.2.3 If there was no potential for a significant impact then the impact pathway for a specific feature was not considered any further. If there was potential for a significant impact then the impact pathway for a specific feature was taken forward to Stage 1 assessment.

8.3 Stage 1 Assessment

8.3.1 The MCZs and feature combinations for which potentially significant effects were identified (at Screening) which were taken forward to Stage 1 assessment were:

Bideford and Foreland Point MCZ

- Pink sea fan (*Eunicella verrucosa*)

South West Approaches to Bristol Channel MCZ

- Subtidal coarse sediment
- Subtidal sand

East of Haig Fras MCZ

- Sea-pen and burrowing megafauna communities
- Fan mussel *Atrina fragilis*

8.3.2 The only impacts taken forward to assessment for each of these features were:

- Changes in suspended solids (water clarity)
- Smothering and siltation rate changes (light (i.e. <5cm deposition))

8.3.3 A more detailed assessment was conducted for impacts on these features for the Stage 1 assessment and it was concluded that the Proposed Development will not hinder the achievement of the objectives for the features considered for these MCZs. Consequently, no Stage 2 assessment is required.

8.3.4 Cumulative effects with other projects/plans were also considered. Eight projects/plans were considered and it was concluded that no in-combination impacts were expected that would change the outcome of the assessment.

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