

# Outer Dowsing Offshore Wind

## Environmental Statement

### Chapter 7 Marine Physical Processes

#### Volume 2 Figures Part 1 of 2

Date: March 2024

Document Reference: 6.2.7

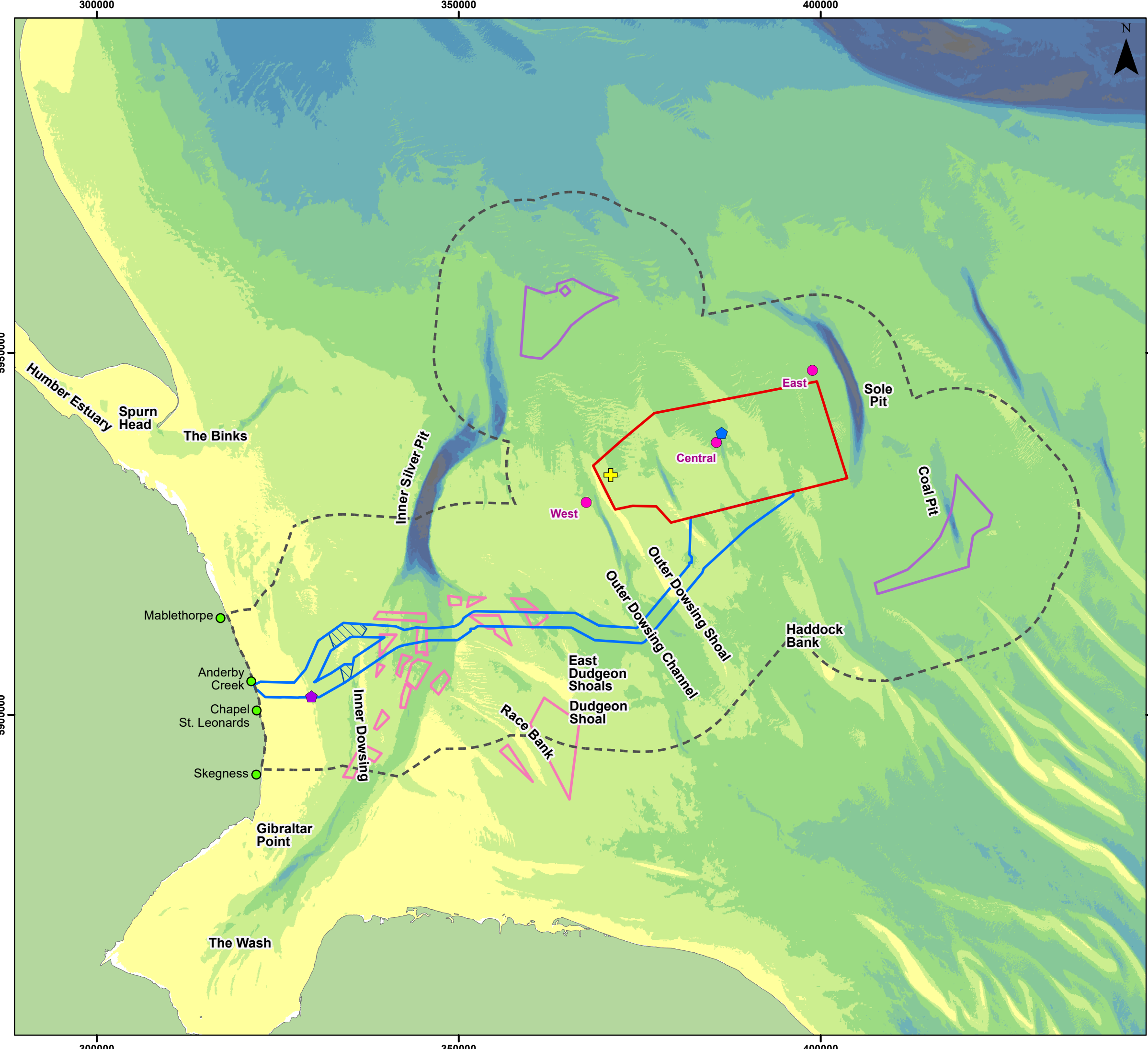
Pursuant to APFP Regulation: 5(2)(a)

Rev: 1.0

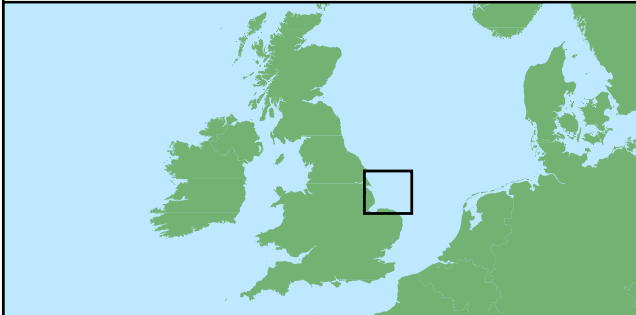
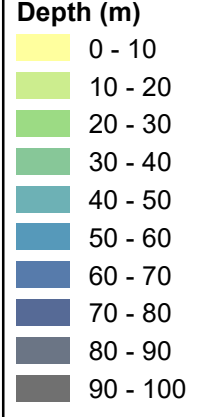
Company:	<b>Outer Dowsing Offshore Wind</b>	Asset:	<b>Whole Asset</b>			
Project:	<b>Whole Wind Farm</b>	Sub Project/Package:	Whole Asset			
Document Title or Description:	Chapter 7 Marine Physical Processes Figures					
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Rev 1.0	March 2024	DCO Application	GoBe	GoBe	Shepherd and Wedderburn	ODOW

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- ### Legend
- Array Area
  - Offshore Export Cable Corridor
  - ORCP Area
  - Artificial Nesting Structure Area
  - Biogenic Reef Restoration Area
  - Physical Processes Zone of Influence
  - + Cefas Dowsing WaveNet Site
  - ◆ Chapel Point Directional Waverider Buoy
  - ◆ Lidar Buoy SWLB059
  - Metocean Model Data Points

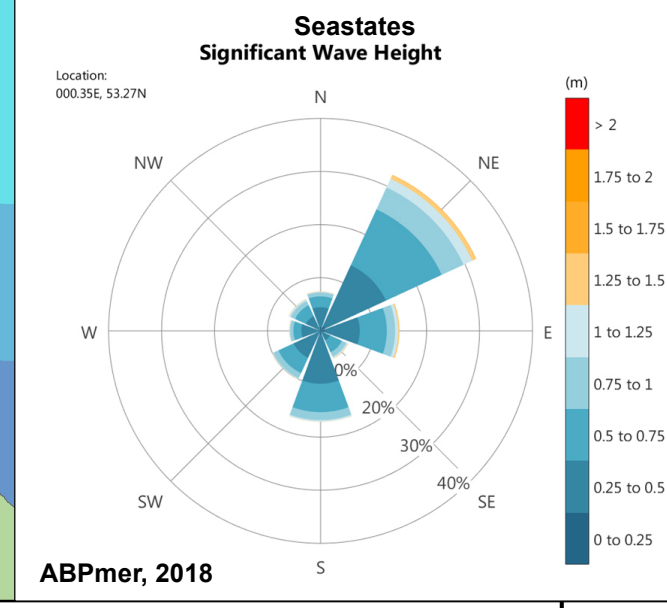
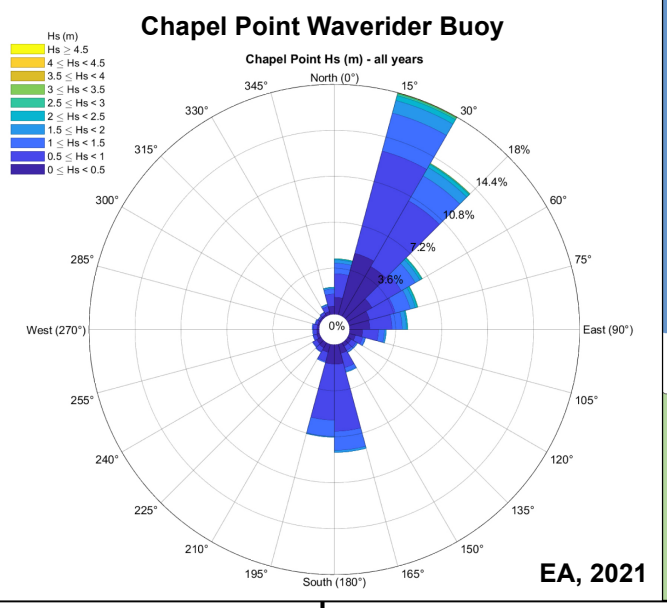
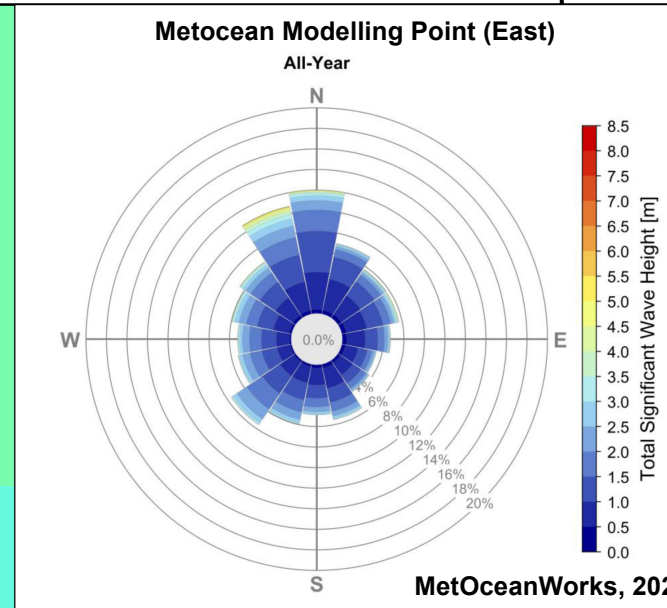
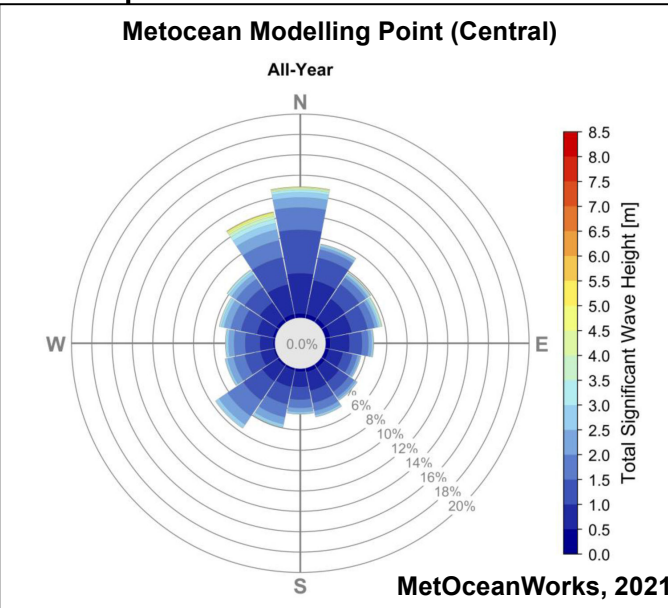
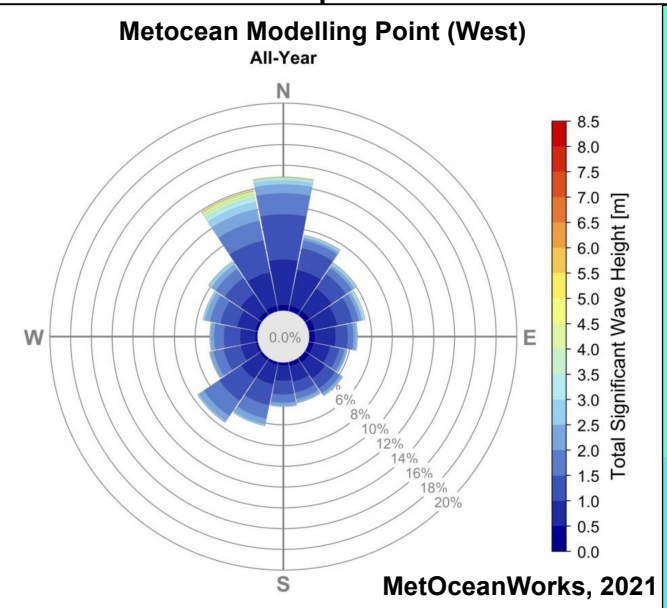
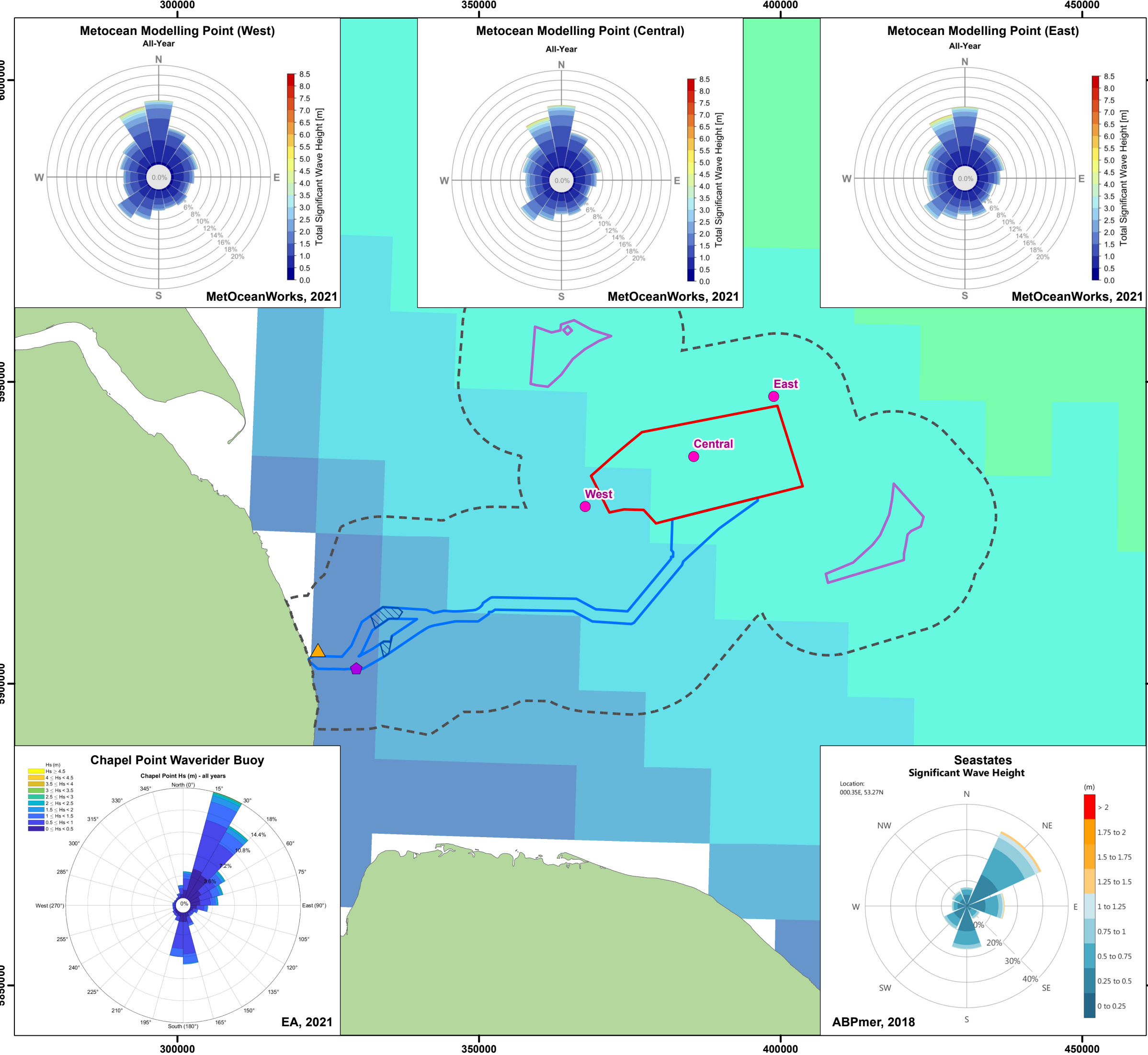


Coordinate System: WGS 1984 UTM Zone 31N  
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Environmental Statement  
 Marine Physical Processes Study Area  
 Figure 7.1



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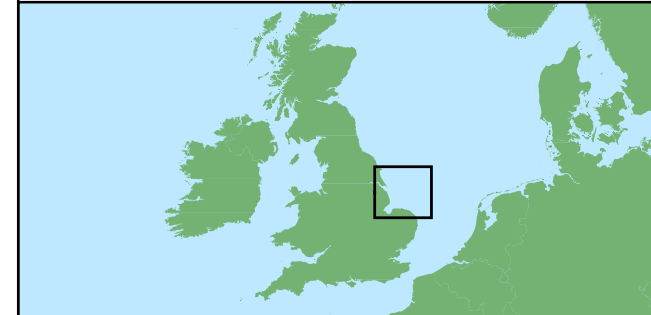


### Legend

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence
- MetOcean Model Data Points
- ◆ Chapel Point Directional Waverider Buoy
- ▲ Seastates Data (ABPmer, 2018)

#### Mean Winter Wave Height (m)

- <math>< 1.25</math>
- 1.25 - 1.5
- 1.5 - 1.75
- 1.75 - 2
- 2 - 2.25
- 2.25 - 2.5



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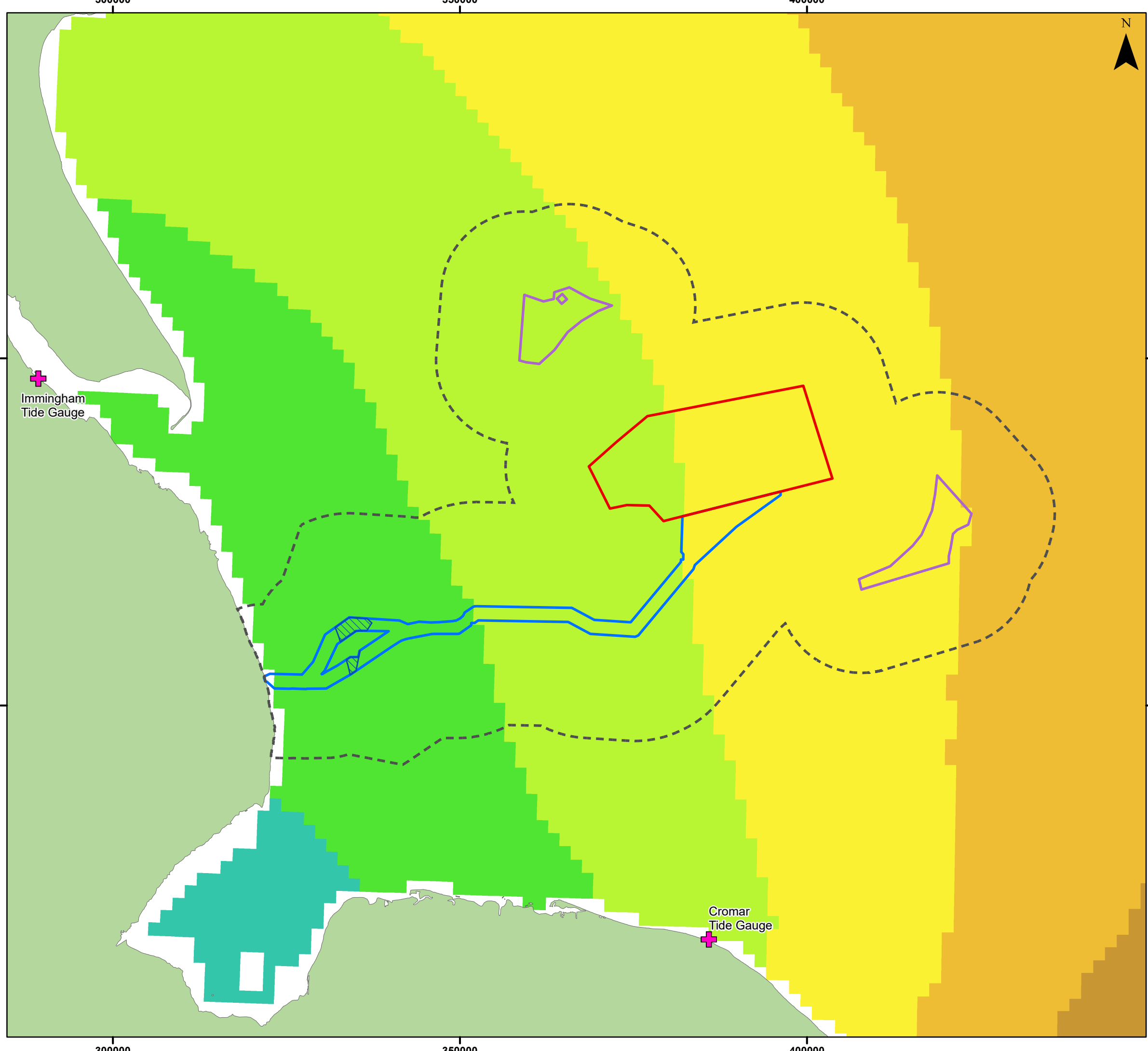
Environmental Statement

Wave Regime

Figure 7.2

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 EMDOnet 2020 bathymetry



**Legend**

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence
- + Tide Gauge Location

**Mean Spring Tidal Range (m)**

- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- 5.01 - 6
- 6.01 - 7

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Environmental Statement

Mean Spring Tidal Range  
(ABPmer *et al.*, 2008)

Figure 7.3

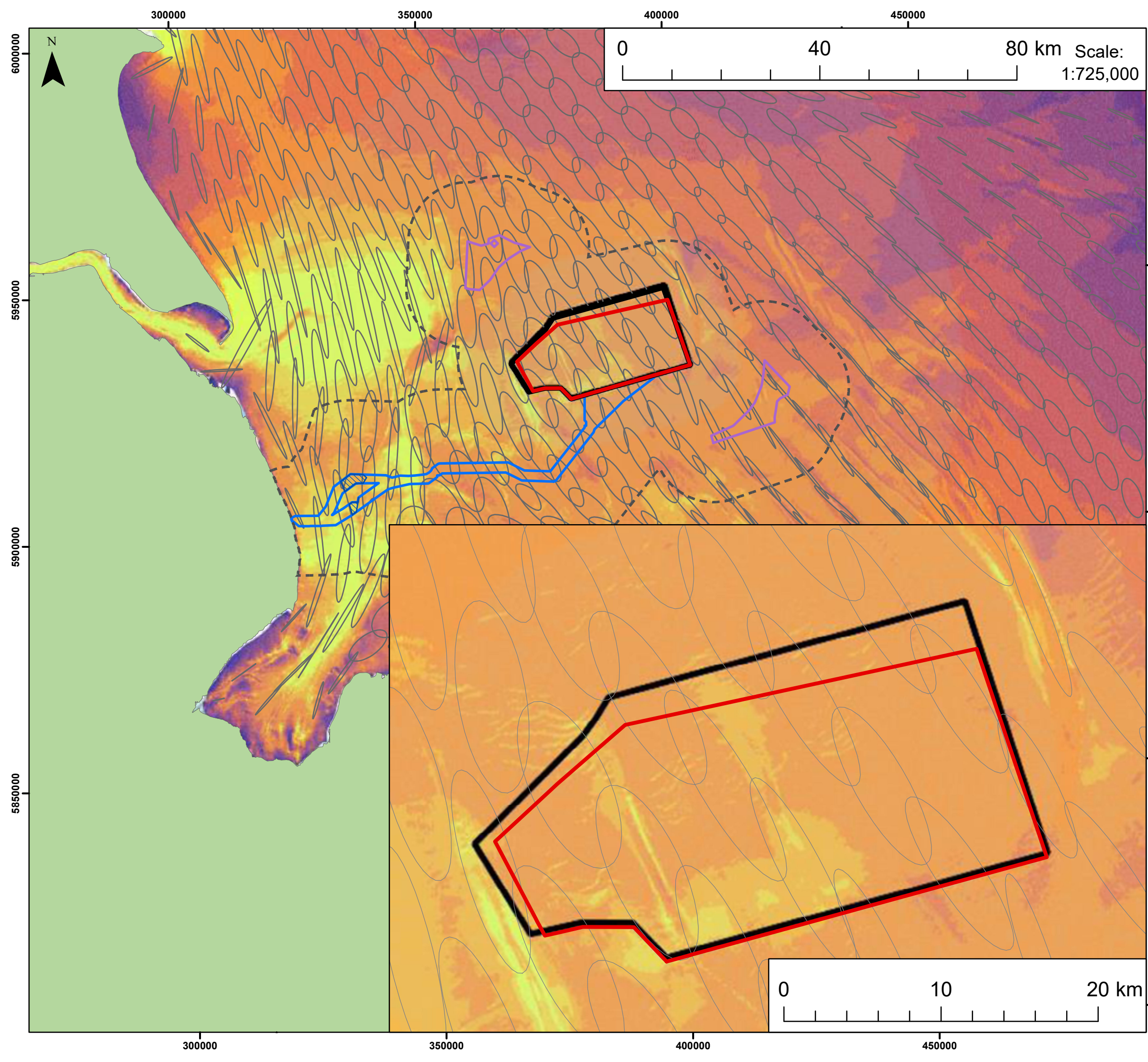
 OUTER DOWSING OFFSHORE WIND

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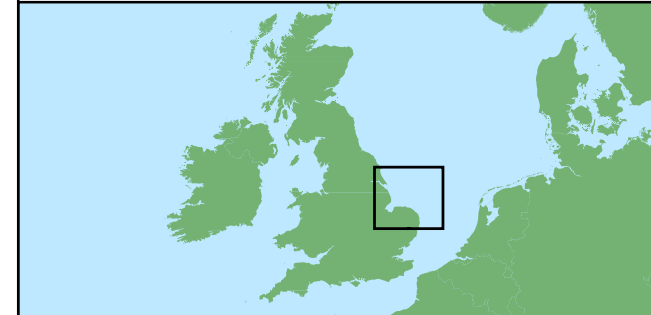


**Legend**

- Array Area
- AfL Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence

Depth-averaged Current Speed (m/s)

	0.4 - 0.5		0.4 - 0.5
	0.5 - 0.6		0.5 - 0.6
	0.6 - 0.7		0.6 - 0.7
	0.7 - 0.8		0.7 - 0.8
	0.8 - 0.9		0.8 - 0.9
	0.9 - 1		0.9 - 1
	1 - 1.2		1 - 1.2
	1.2 - 1.3		1.2 - 1.3
	1.3 - 1.4		1.3 - 1.4
	> 1.4		> 1.4



Coordinate System: WGS 1984 UTM Zone 31N

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**Environmental Statement**

Maximum Modelled Depth-Averaged Spring Tidal Current Speeds and Spring Tidal Ellipses (MetOceanWorks, 2021)

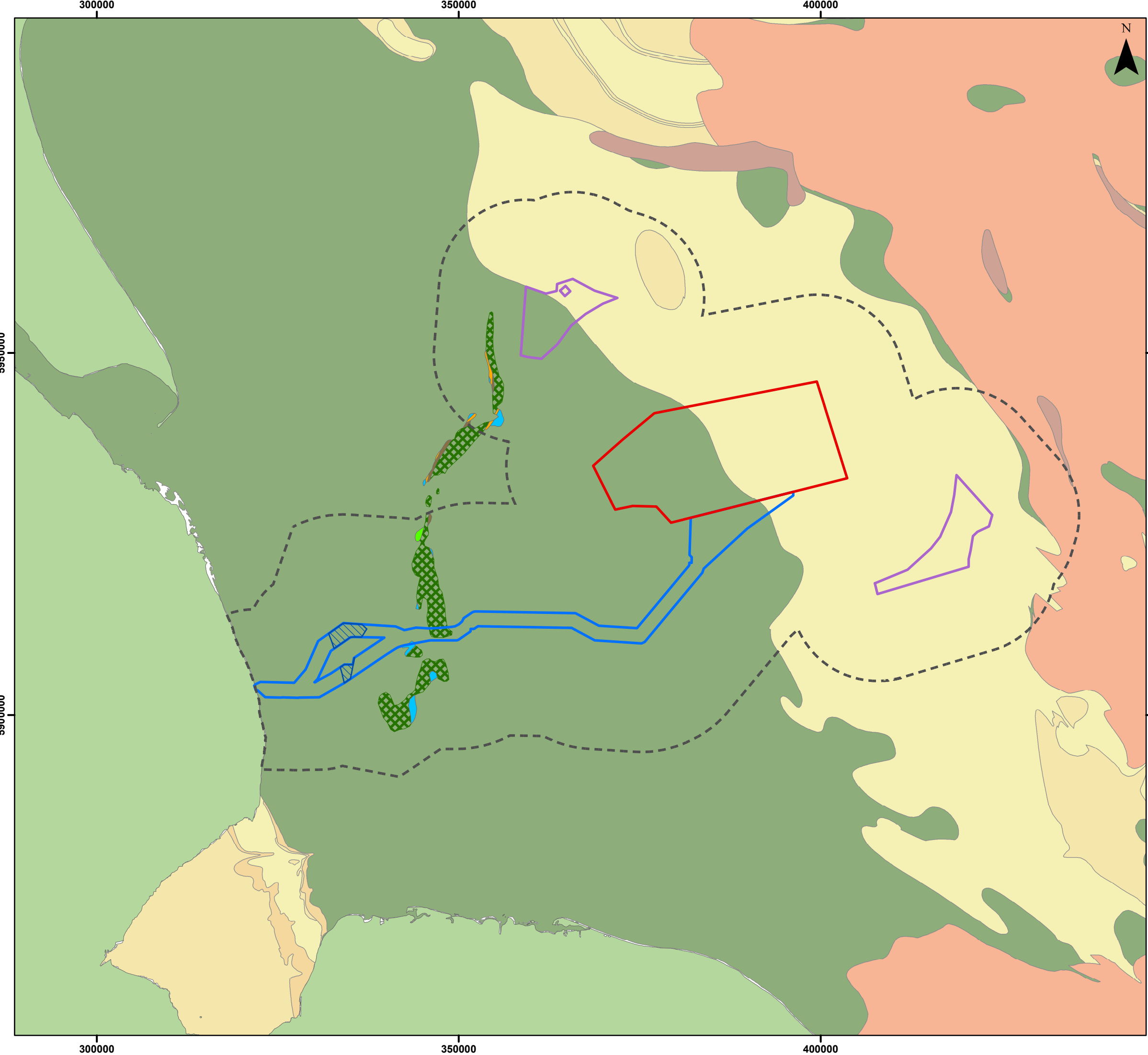
Figure 7.4

**OUTER DOWSING**  
OFFSHORE WIND

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**Legend**

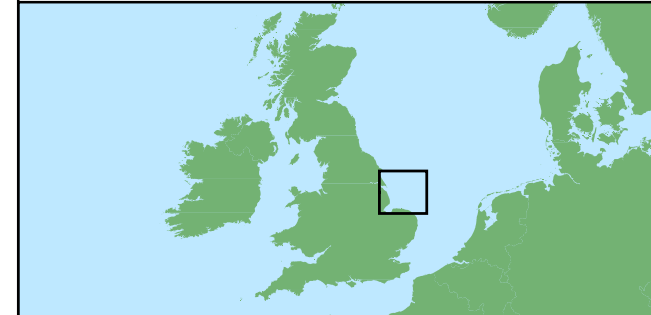
- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence

**Pre-Holocene Geology at/near Seabed (Tappin, 2011)**

- Mesozoic - Chalk Group - Early to Late Cret.
- Quaternary - Bolders Bank Formation
- Quaternary - Egmond Ground Formation
- Quaternary - Sand Hole Formation
- Quaternary - Swarte Bank Formation

**Bedrock Summary Lithologies (BGS)**

- Chalk
- Mesozoic interbedded
- Mesozoic mudstones
- Mesozoic sandstones and limestones
- Palaeozoic sedimentary
- Tertiary interbedded



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Environmental Statement

Regional Marine Geology

Figure 7.5

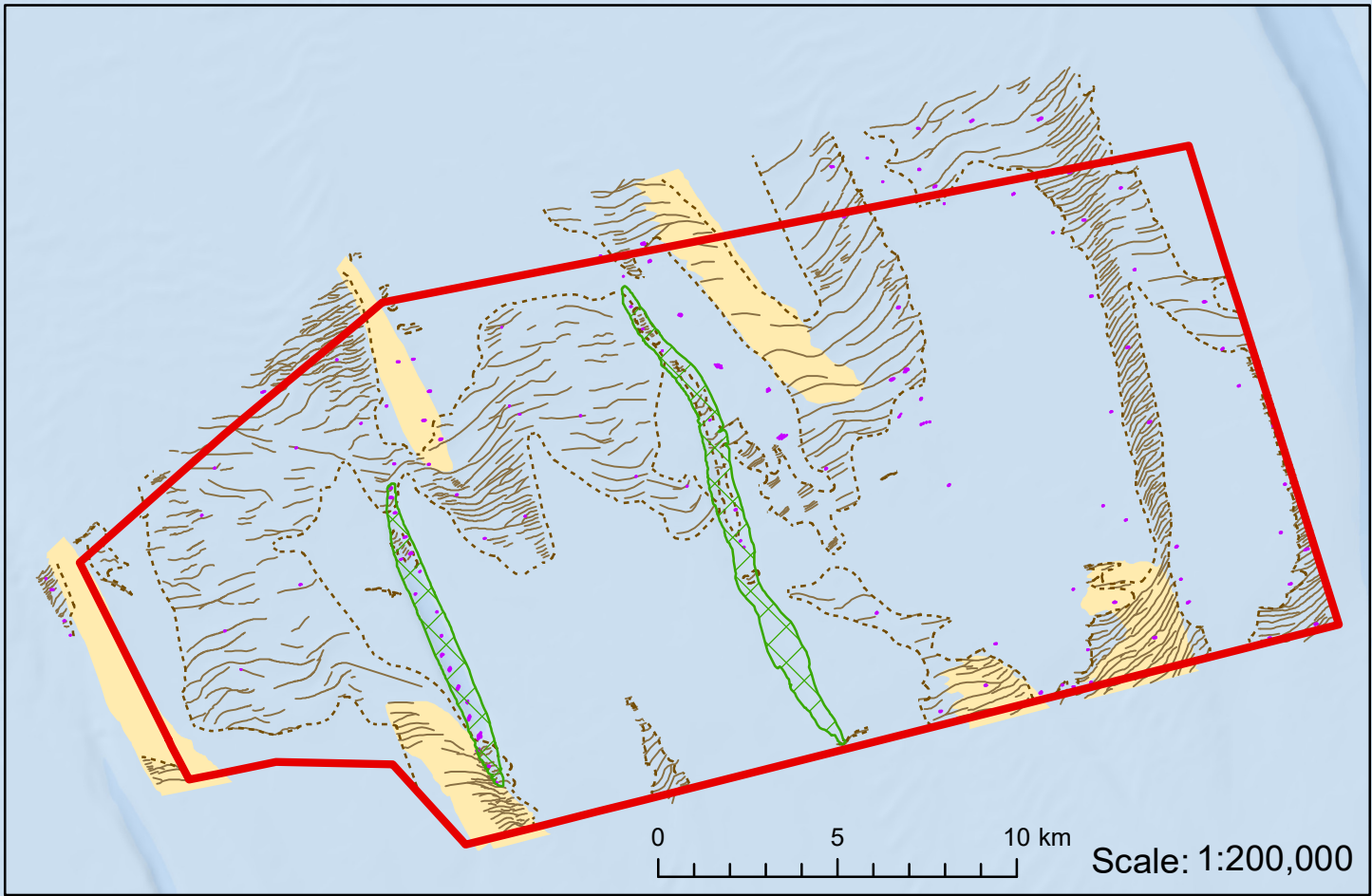
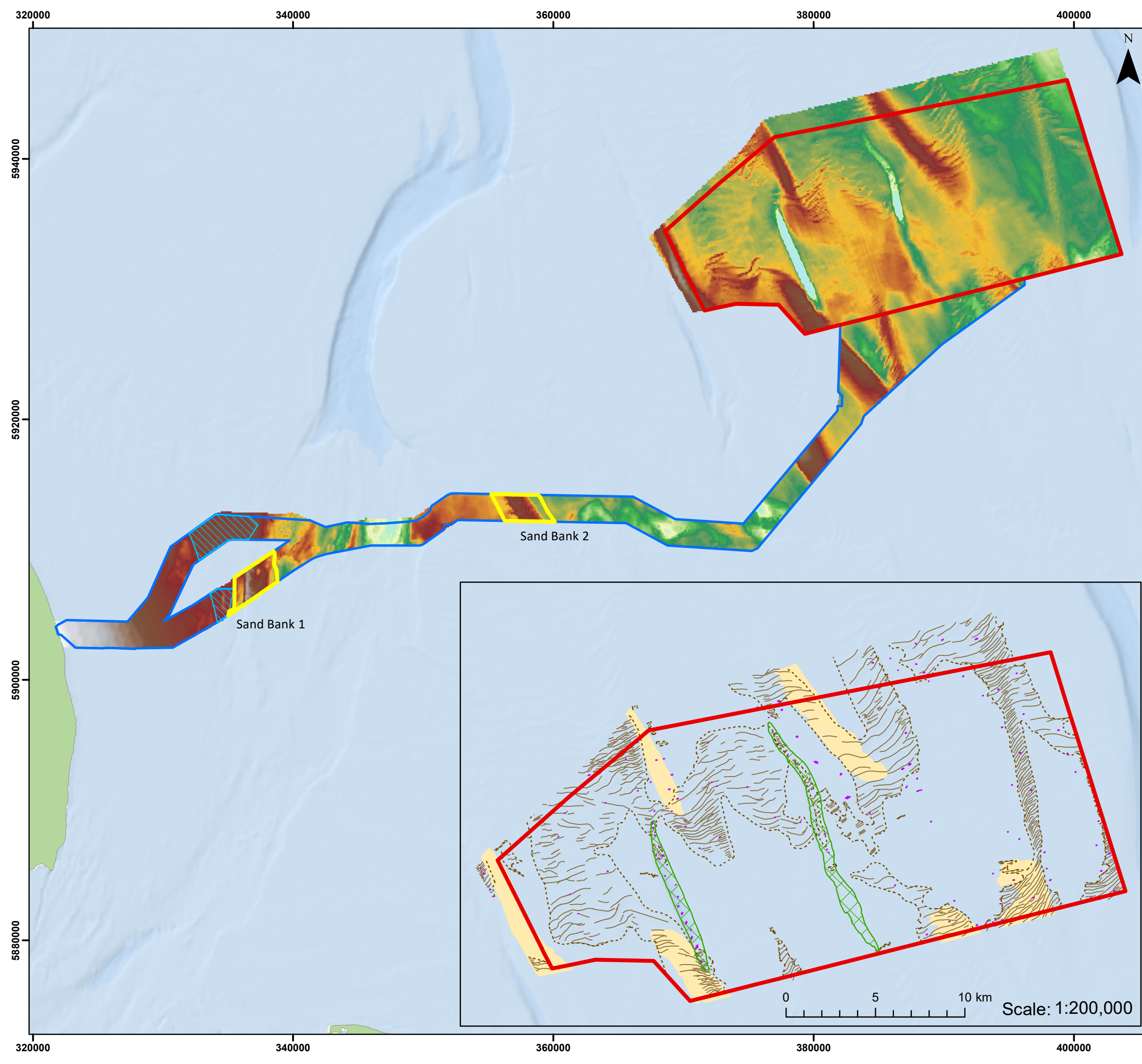


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**Legend**

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Sand Bank Zones
- Sandwaves Area
- Sandwaves Crest
- Sandbank
- Megaripples Crest
- Canyon

**Depth (m) (EMODnet, 2020)**

0  
32

Seafloor Morphology data provided by Enviros and is detailed in report 'Outer Dowsing Round 4 Draft Final Report - ENV21-21042-GTR4-04' May 2022

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0 5 10 km

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**Environmental Statement**

Morphology of Array Area, Offshore ECC and at Landfall

Figure 7.6

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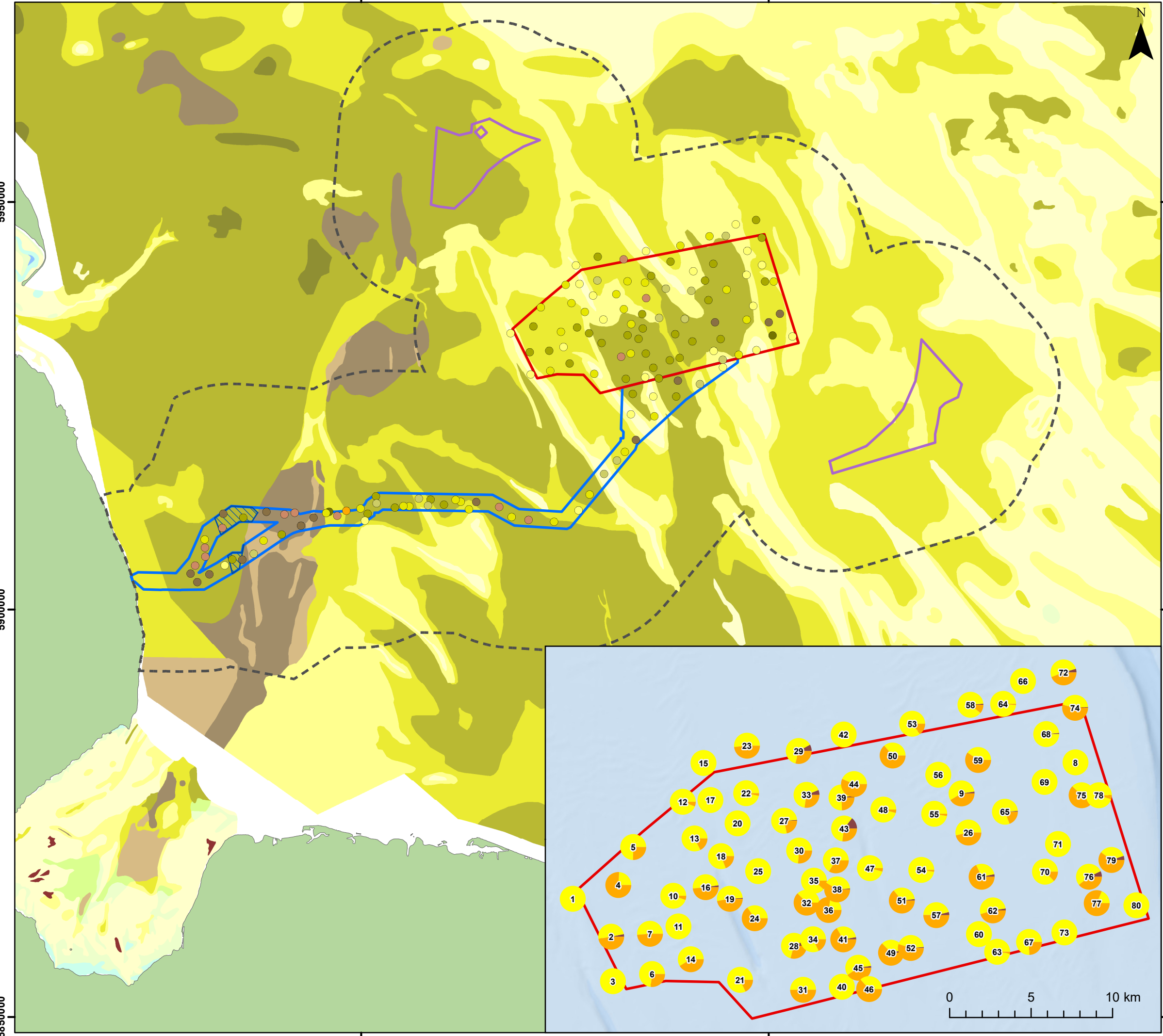
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350000

400000



### Legend

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence

#### Seabed Sediments (FOLK)

- 1.1.1 Mud
- 1.1.2 (gravelly) Mud
- 1.2.1 sandy Mud
- 1.3.1 muddy Sand
- 1.3.2 (gravelly) muddy Sand
- 2.1.1 Sand
- 2.1.2 (gravelly) Sand
- 3.1.1 gravelly Sand
- 3.2.1 sandy Gravel
- 3.3.1 Gravel
- 4.1.1 gravelly Mud
- 4.3.1 gravelly muddy Sand
- 4.4.1 muddy sandy Gravel
- 5. Rock and Boulders

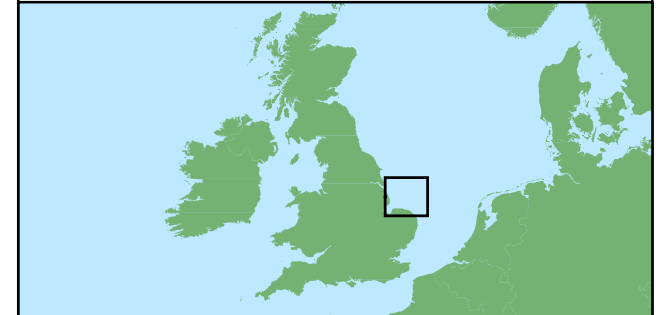
#### Benthic Samples - Folk Class (GEOxyz, August / November 2022)

- Sand
- Slightly Gravelly Sand
- Sandy Gravel
- Muddy Sandy Gravel
- Slightly Gravelly Muddy Sand
- Gravelly Muddy Sand
- Gravelly Sand
- Gravel

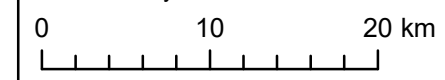
#### Sediment composition (%)

- Fines
- Sand
- Gravel

Seabed Sediments 1:250 000 – Europe  
© EMODnet Geology,  
European Commission, 2016



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#### Environmental Statement

Surficial Seabed Sediments (Folk, 1954)

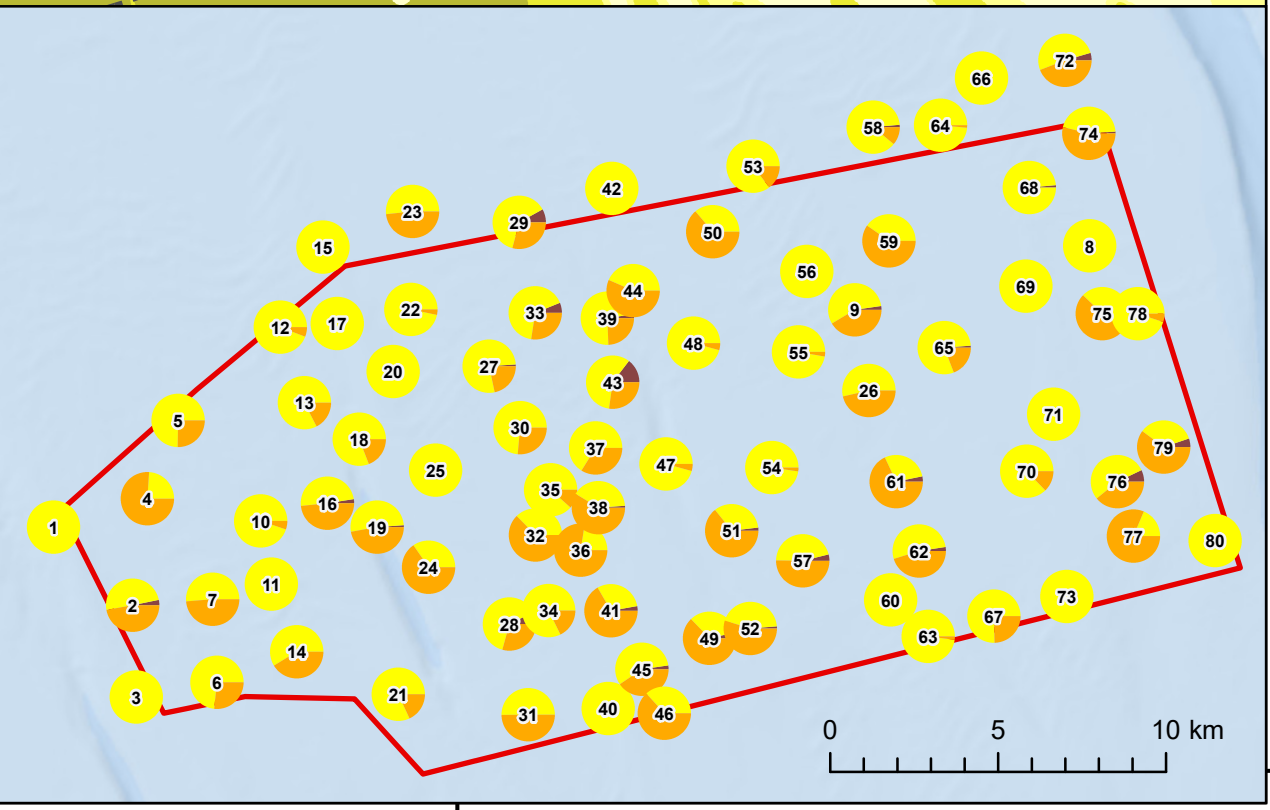
Figure 7.7



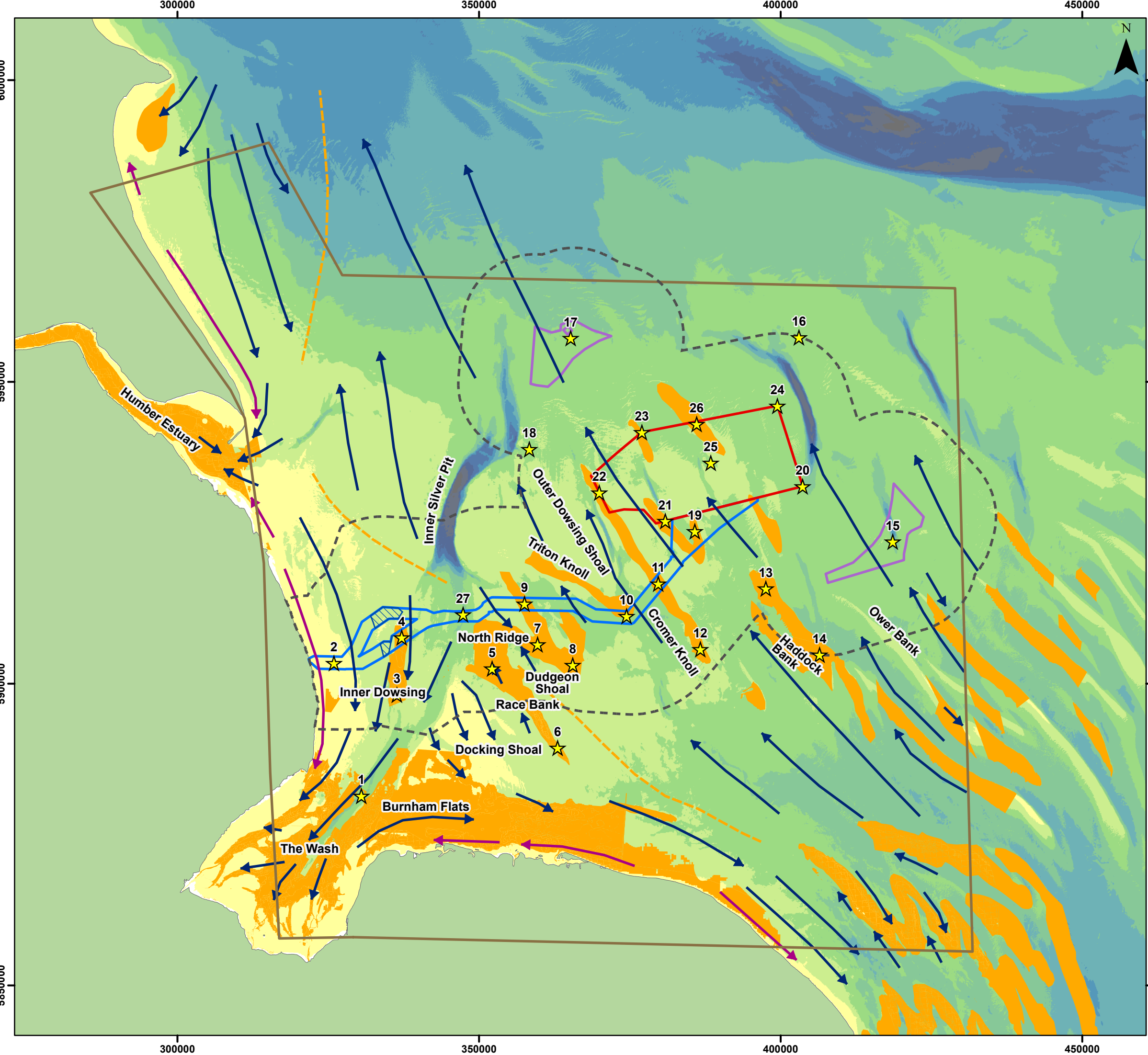
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contributorsEMDnet Geology



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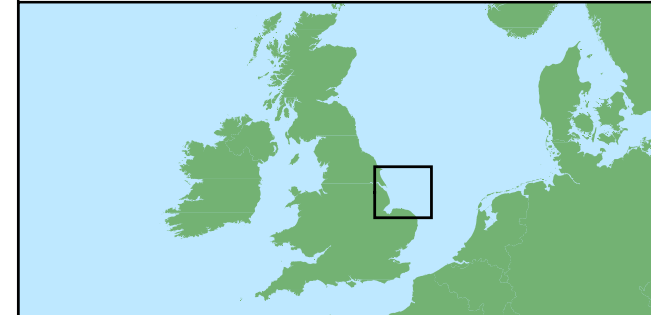
### Legend

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence
- Longshore Transport
- Bed Load Transport
- Bed Load Parting
- SEA Boundary
- ★ HD Model Timeseries Extraction Points
- Annex I Sandbanks (JNCC)

**Depth (m)**

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100

Longshore Transport, Bed Load Transport and Bed Load Parting from Kenyon and Cooper, 2005



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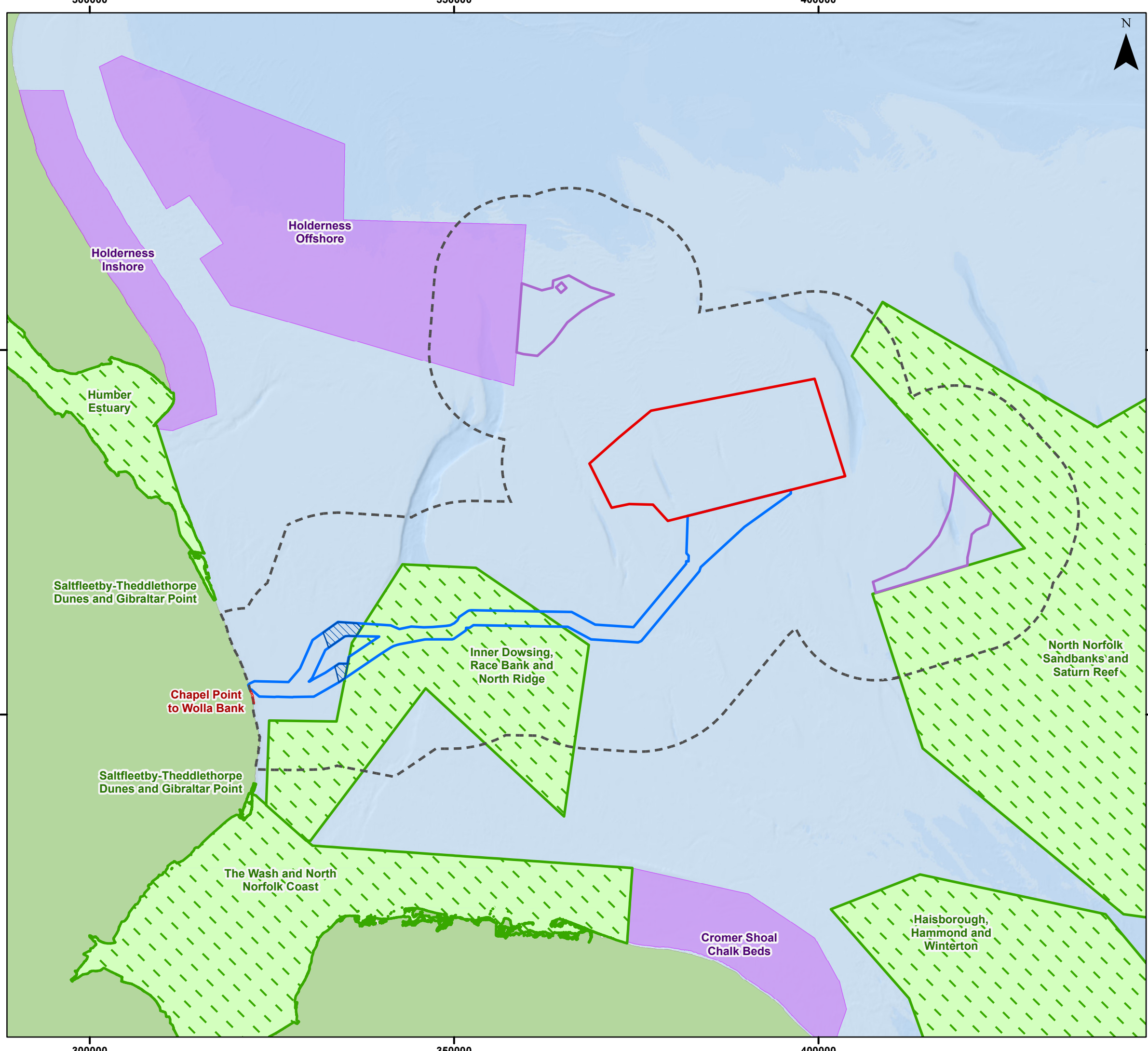
Environmental Statement  
 Bedload Sediment Pathways  
 (adapted from Kenyon and Cooper, 2005)

Figure 7.8

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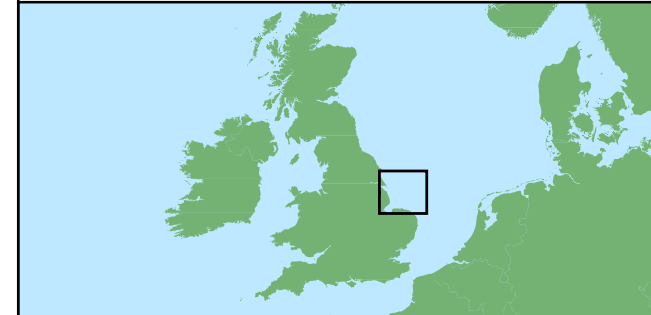
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 EMDOnet Geology 2016

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**Legend**

- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Physical Processes Zone of Influence
- Marine Conservation Zones
- Special Areas of Conservation
- Site of Special Scientific Interest



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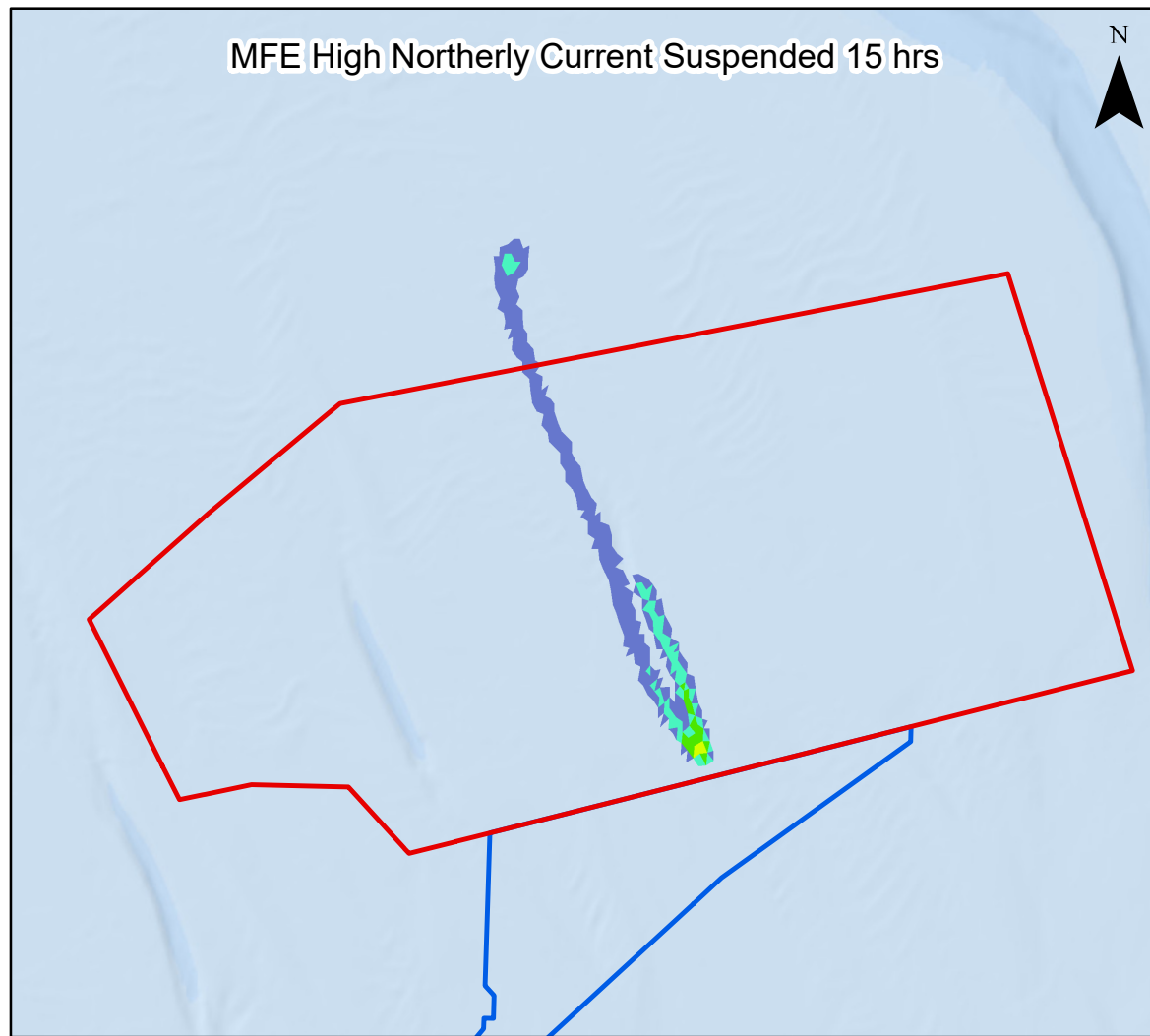
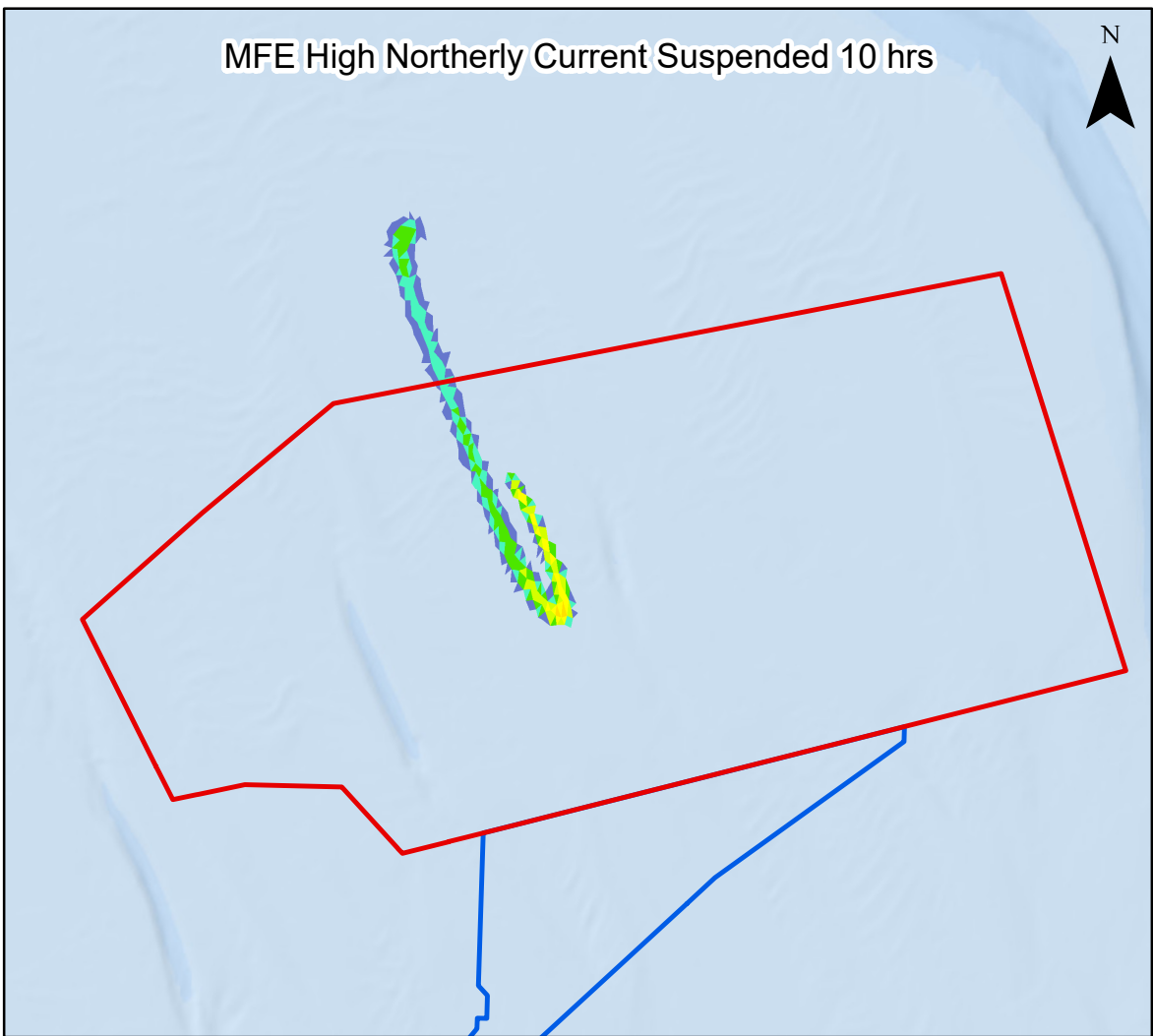
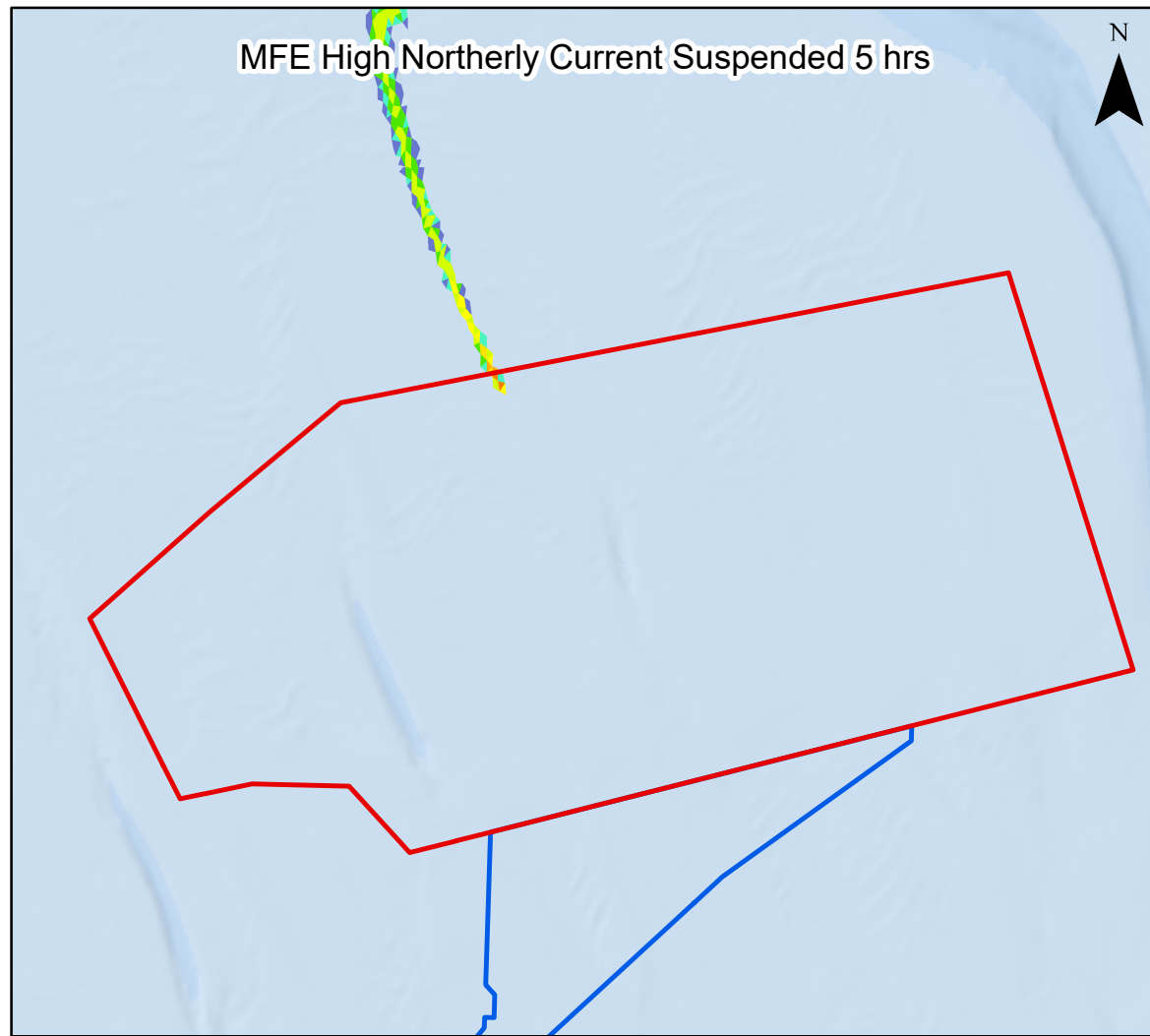
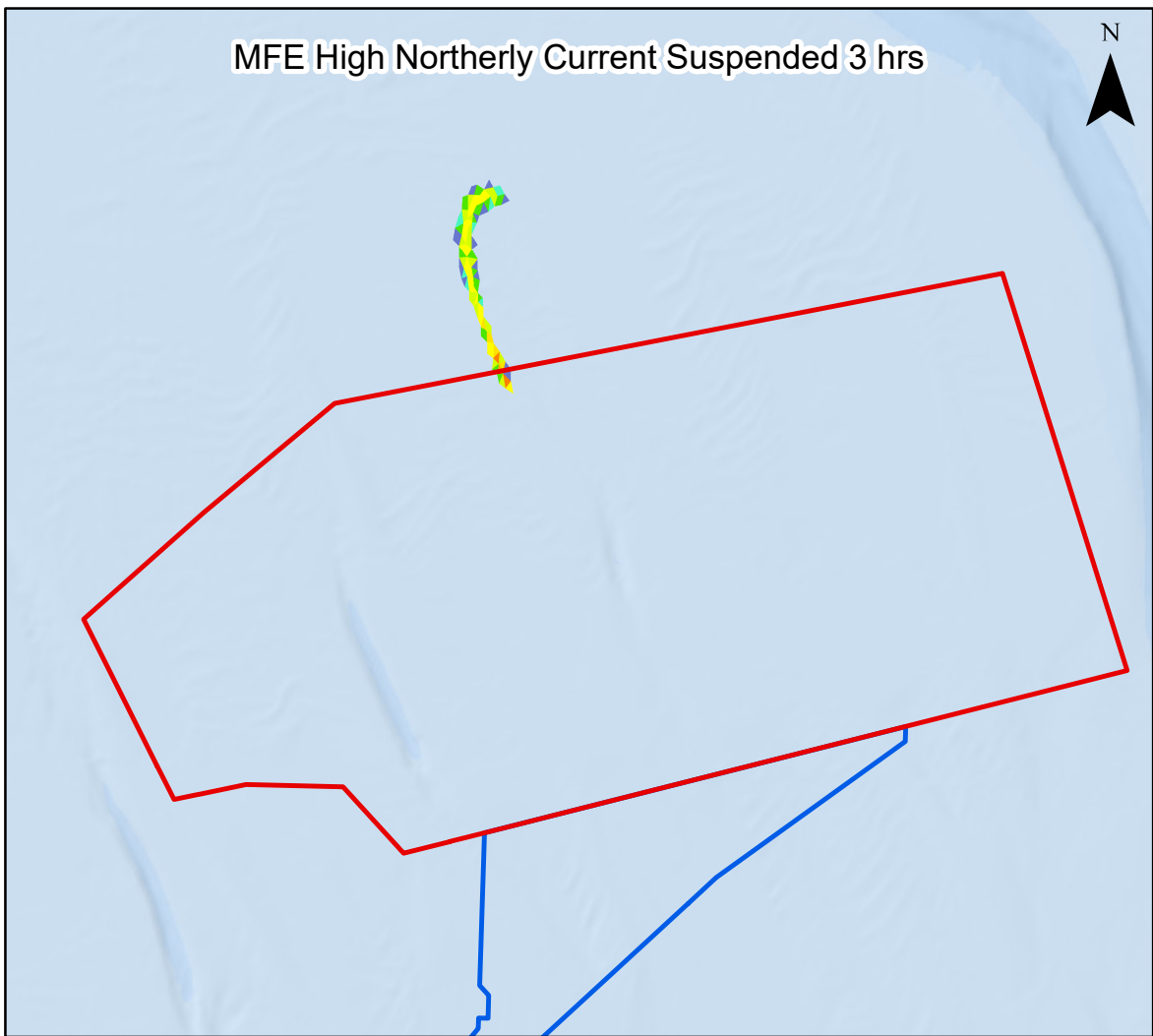
Environmental Statement  
 Designated Sites of relevance to  
 Marine Physical Processes  
 Figure 7.9



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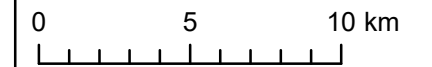
- Array Area
- Offshore Export Cable Corridor

**Suspended Sediment Concentrations (mg/l)**

- 1 - 4.99
- 5 - 9.99
- 10 - 19.99
- 20 - 49.99
- 50 - 99.99
- 100 - 149.99
- 150 - 249.99
- 250 - 499.99
- 500 - 999.99
- <1000



Coordinate System: WGS 1984 UTM Zone 31N



Scale: 1:250,000

A3 Page Size

**Environmental Statement**

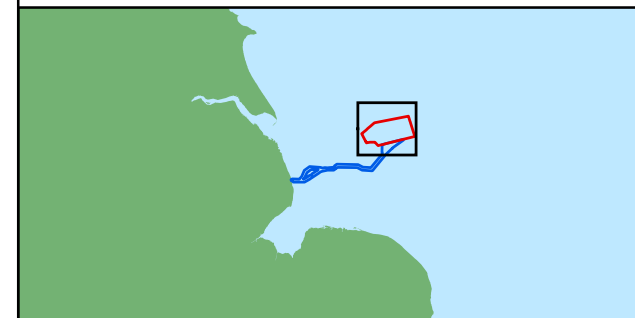
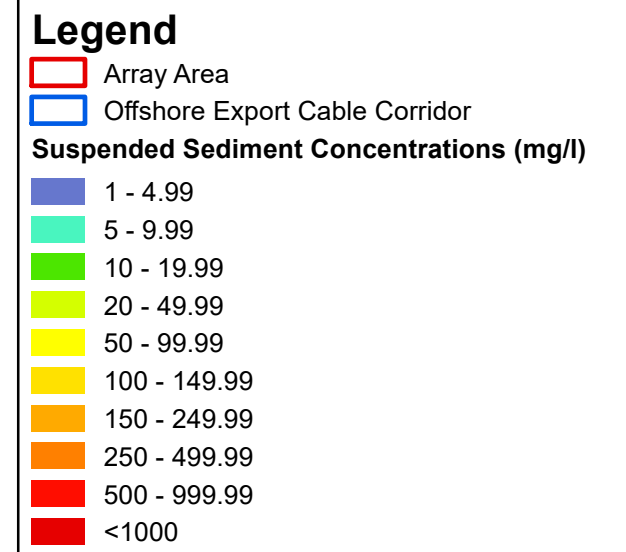
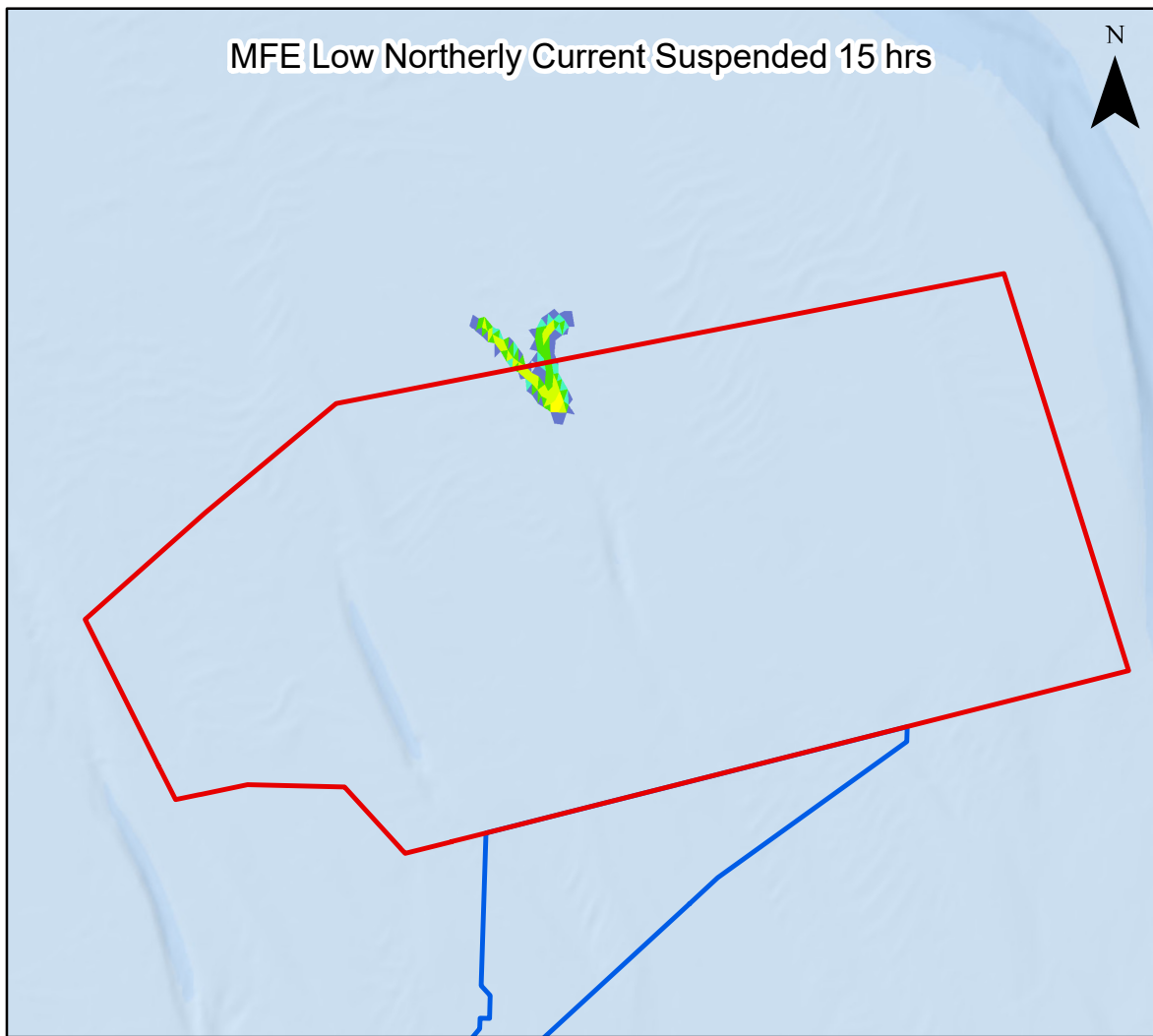
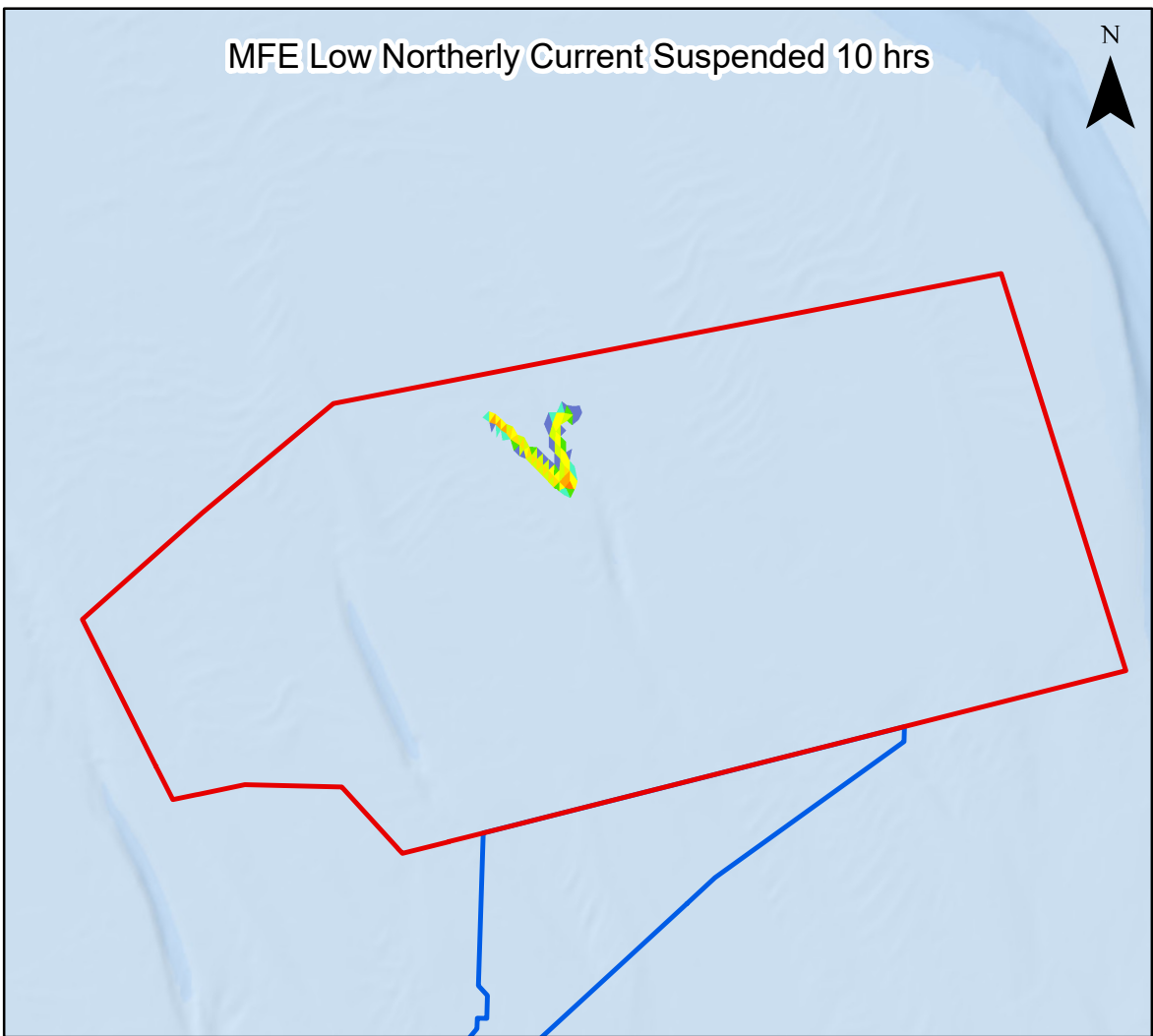
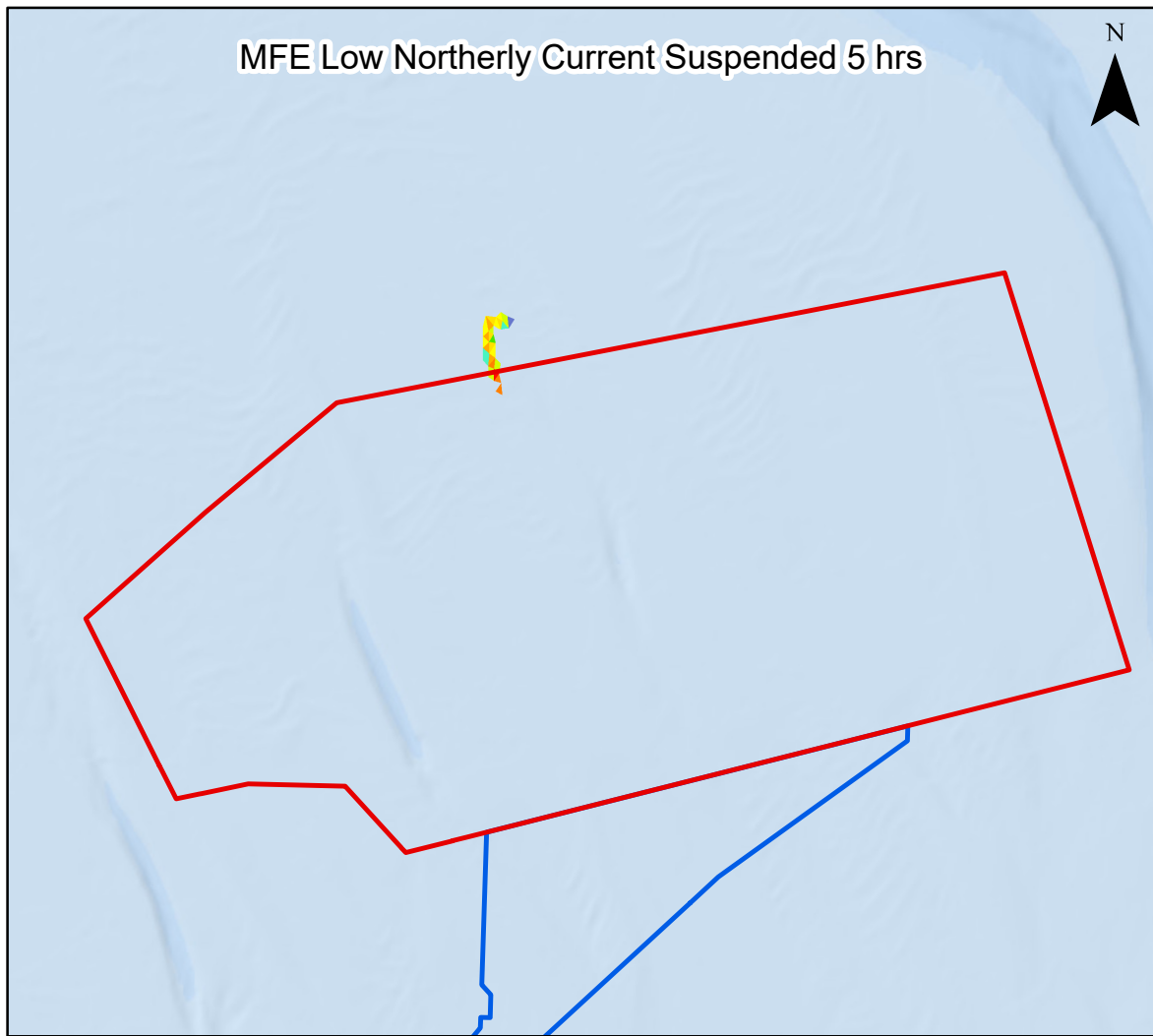
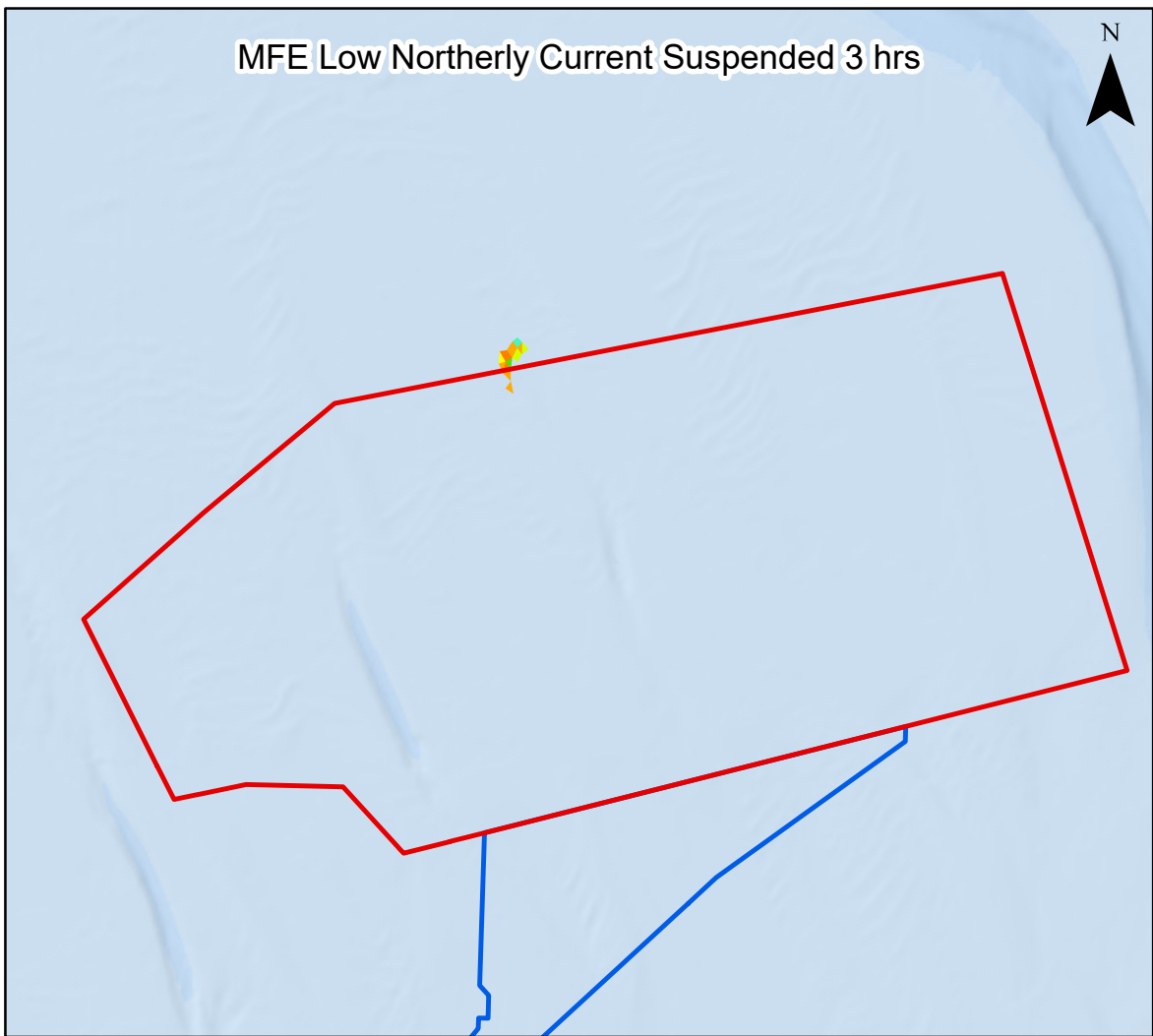
Suspended sediment concentrations 3, 5, 10 and 15 hours after the start of Mass Flow Excavator activities within the Project array area during a high spring ebb tide  
Figure 7.10



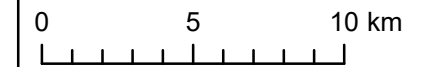
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**Environmental Statement**

Suspended sediment concentrations 3, 5, 10 and 15 hours after the start of Mass Flow Excavator activities within the Project array area during a low neap ebb tide

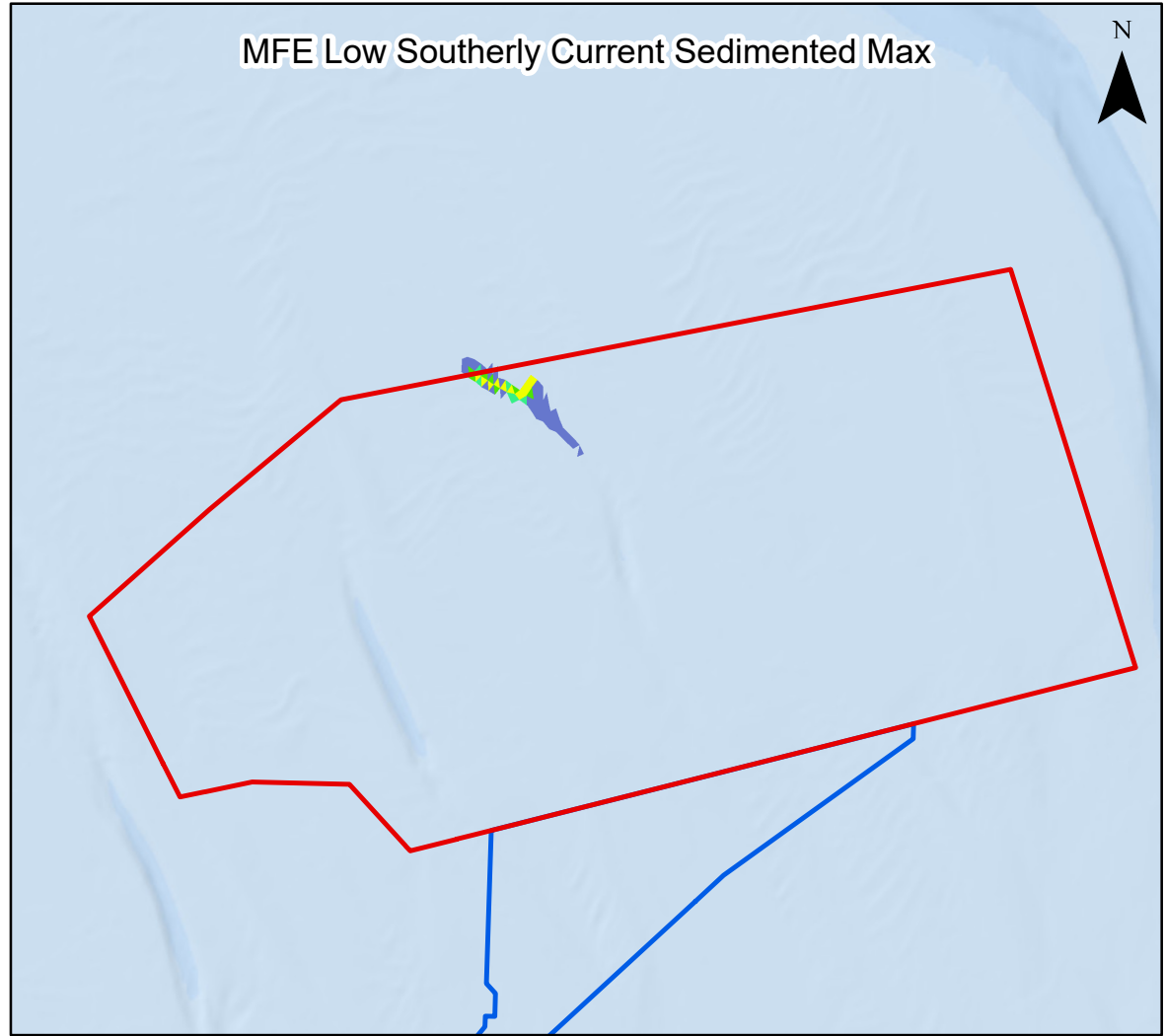
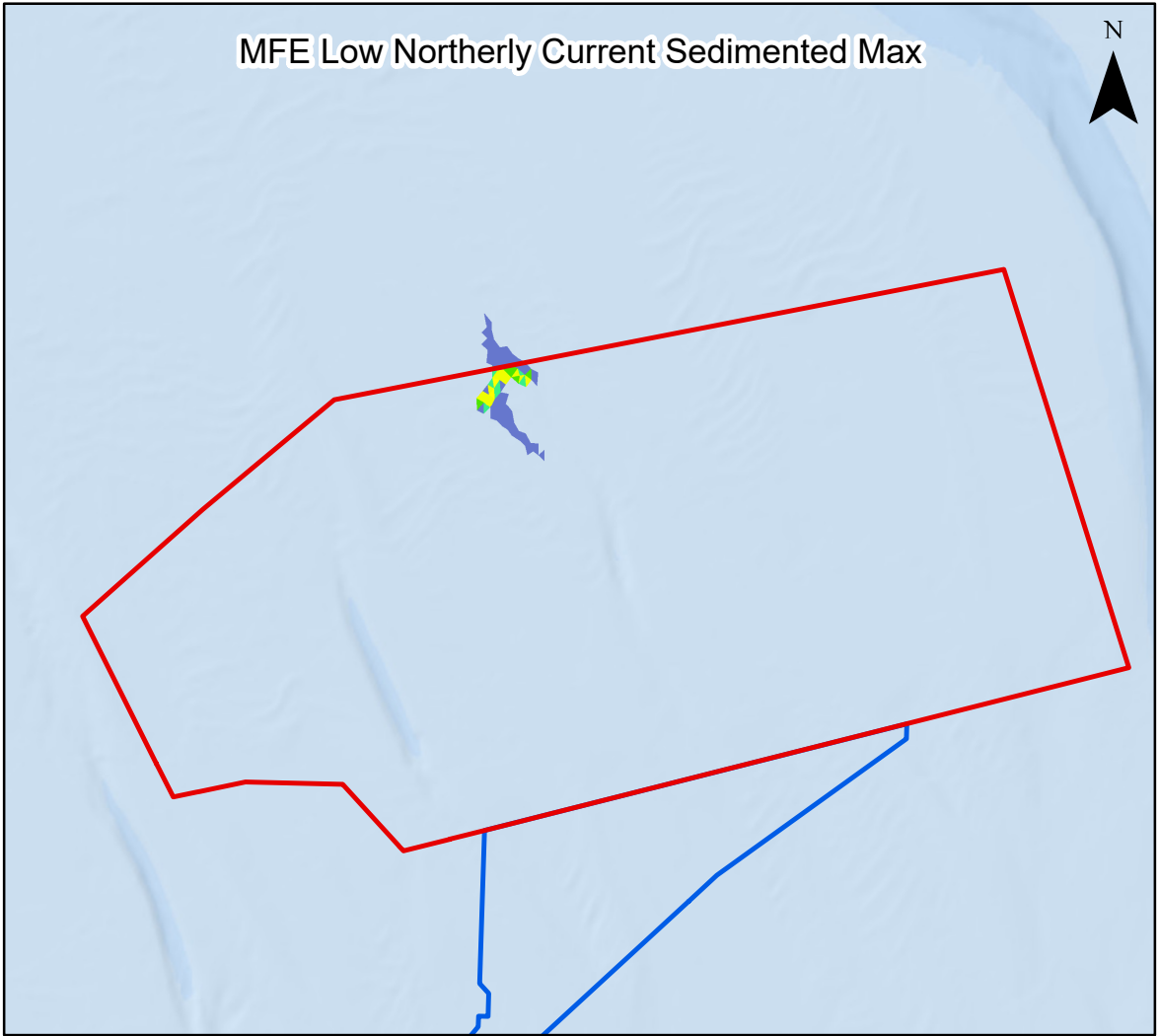
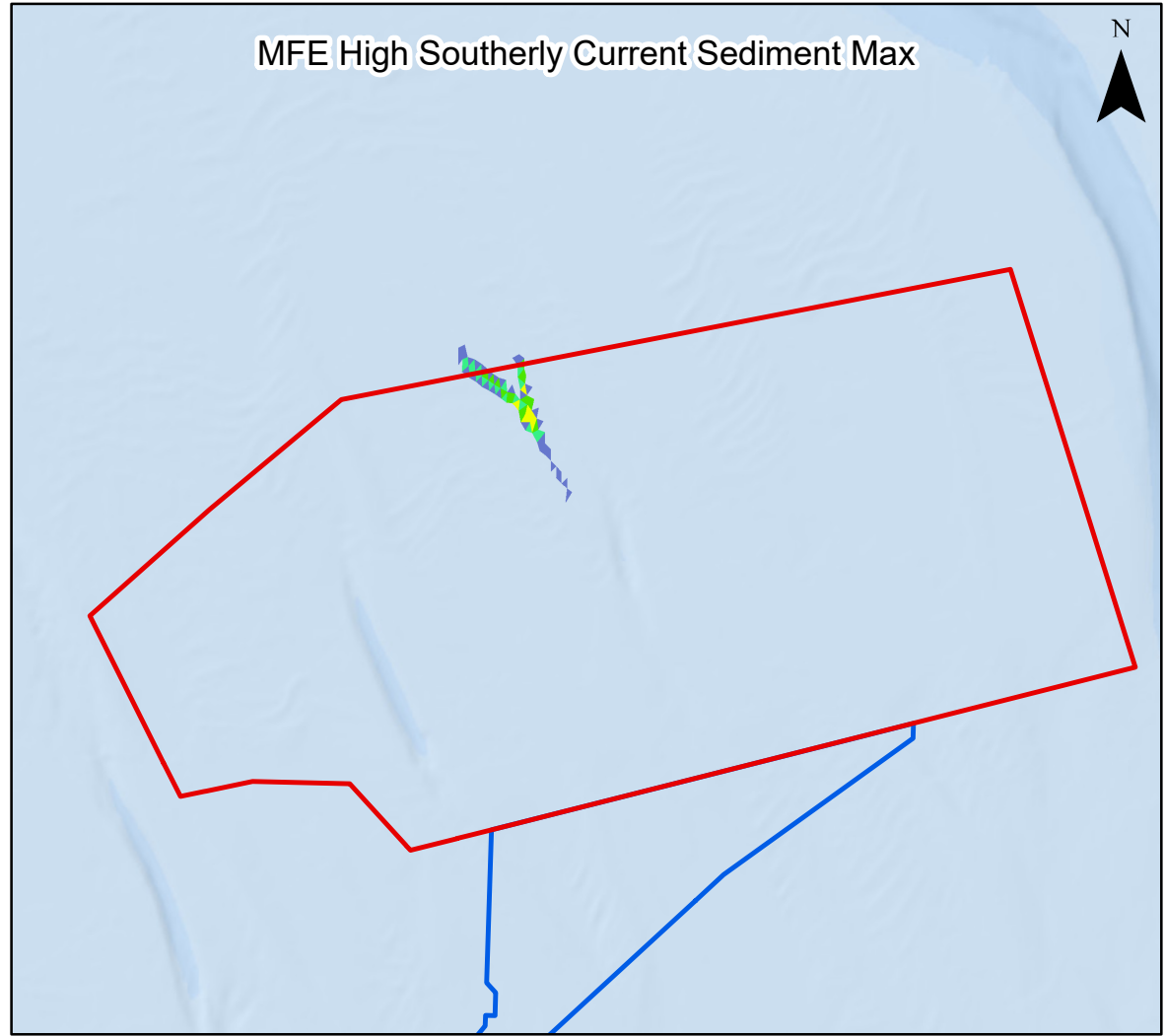
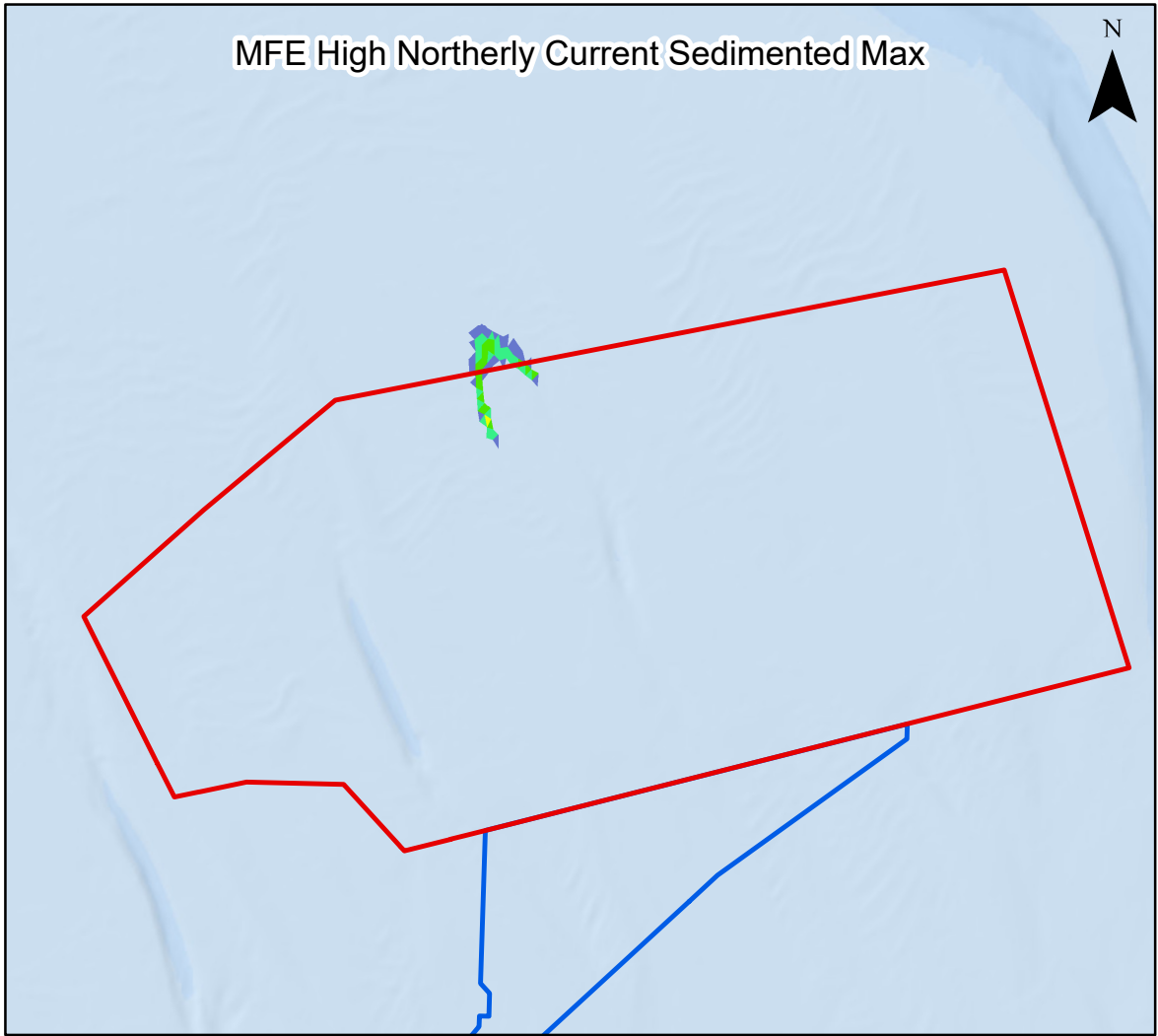
Figure 7.11



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**Legend**

- Array Area
- Offshore Export Cable Corridor

**Deposited Sediment (mm)**

- 1 - 4.99
- 5 - 9.99
- 10 - 19.99
- 20 - 49.99
- 50 - 99.99
- 100 - 149.99
- 150 - 249.99
- 250 - 499.99
- >500



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 0 5 10 km  
 Scale: 1:250,000 A3 Page Size

**Environmental Statement**

Maximum sediment deposition 20 hours after the start of Mass Flow Excavator activities within the Project array area, for a range of tidal conditions

Figure 7.12

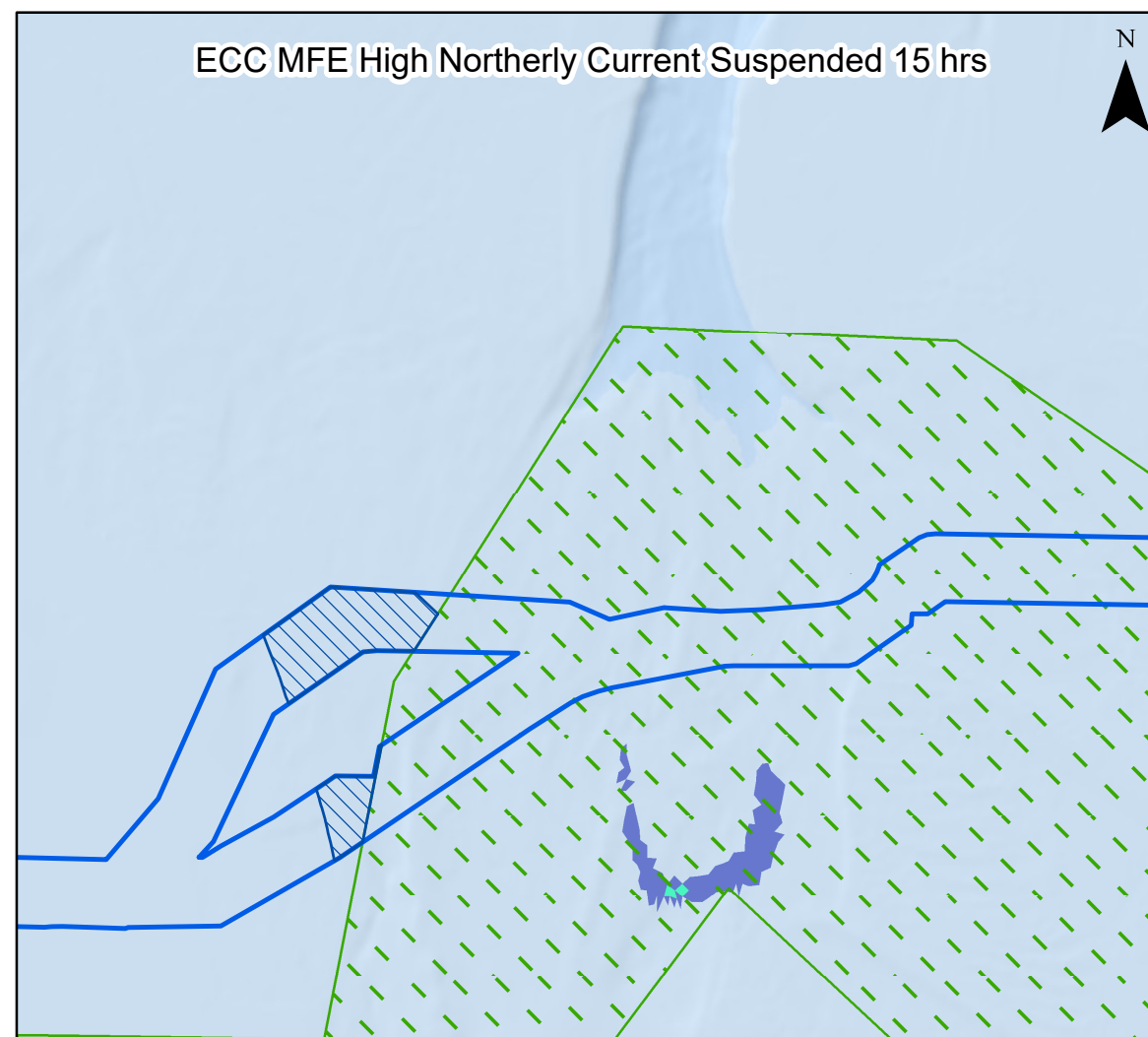
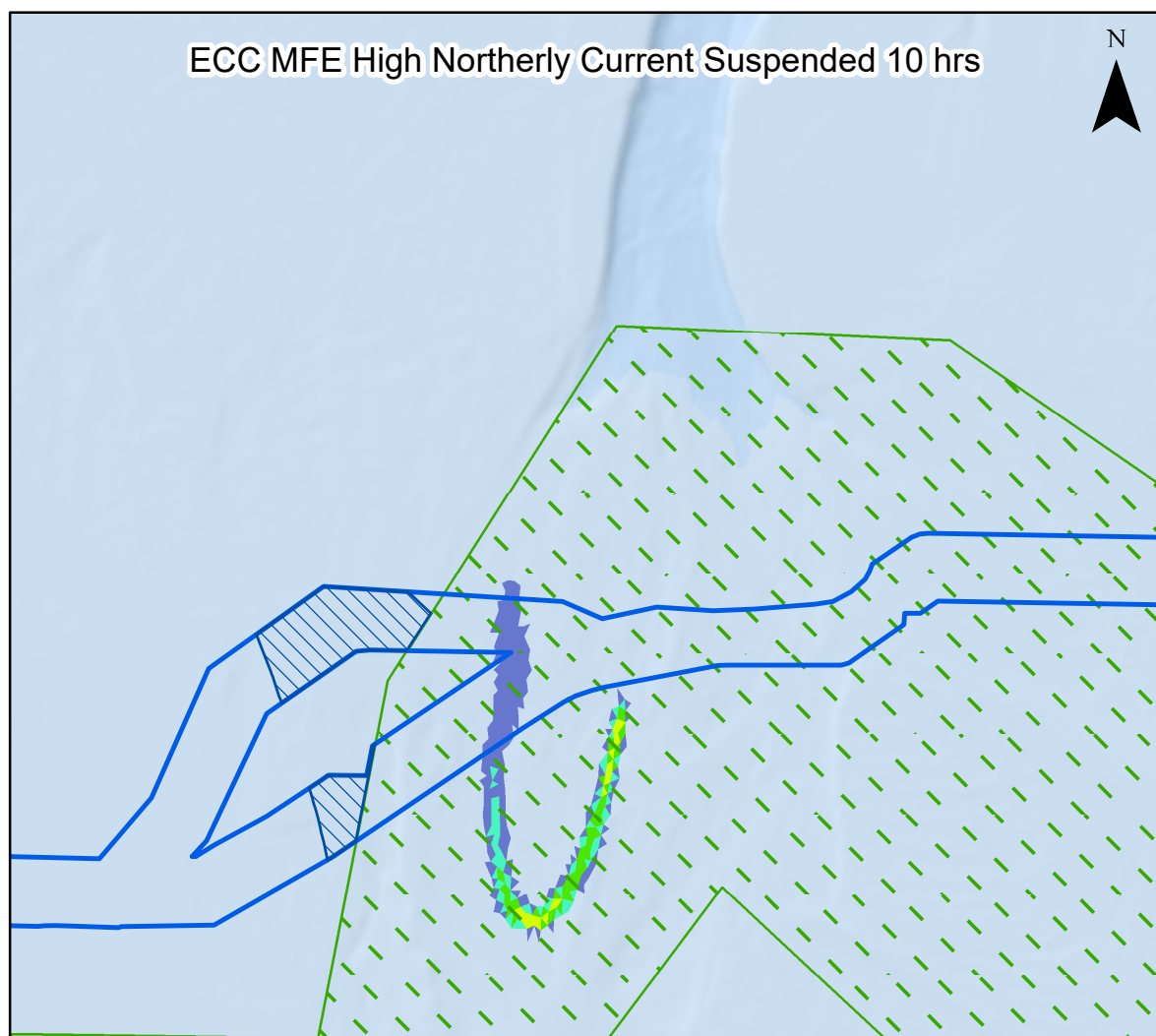
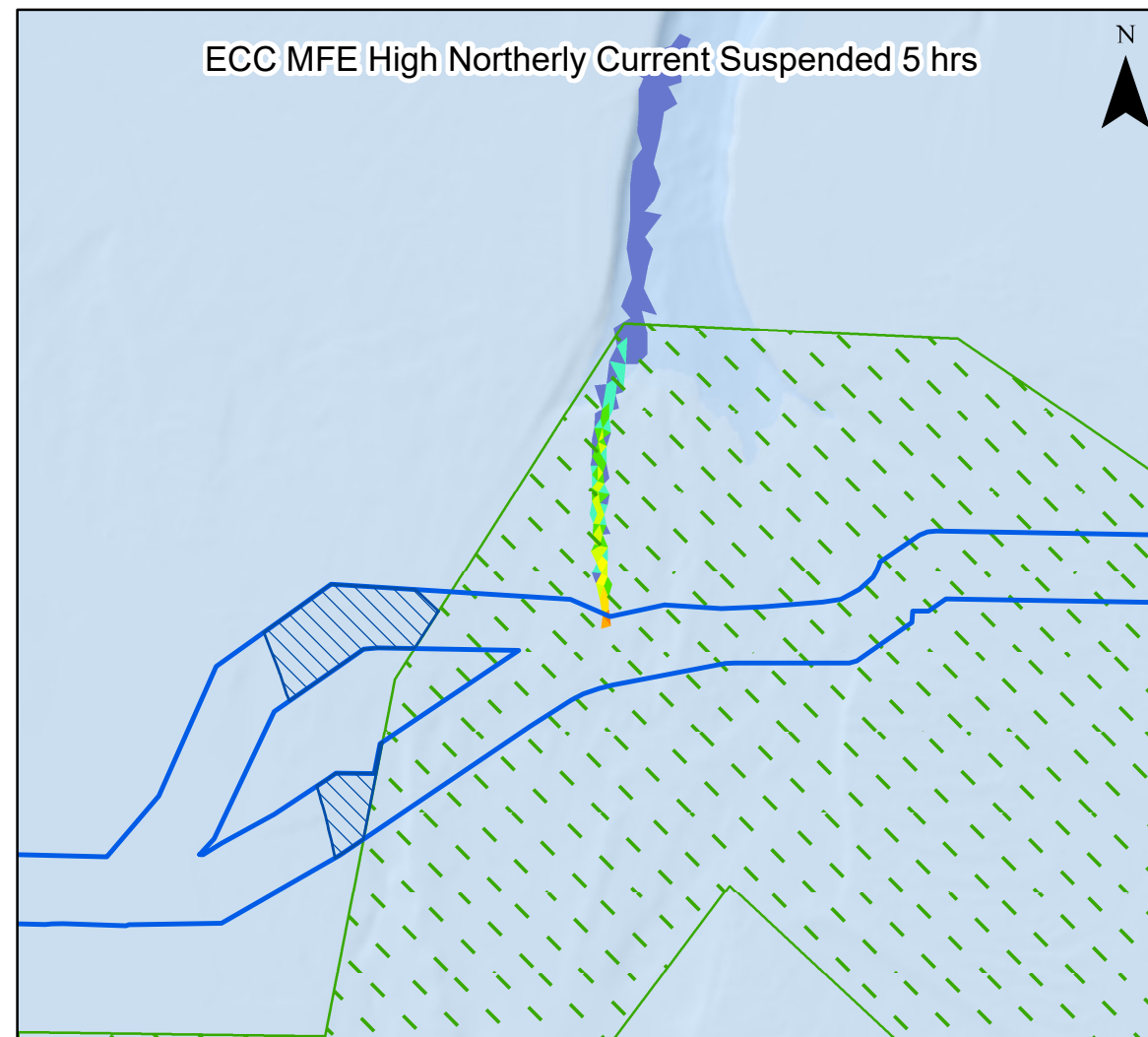
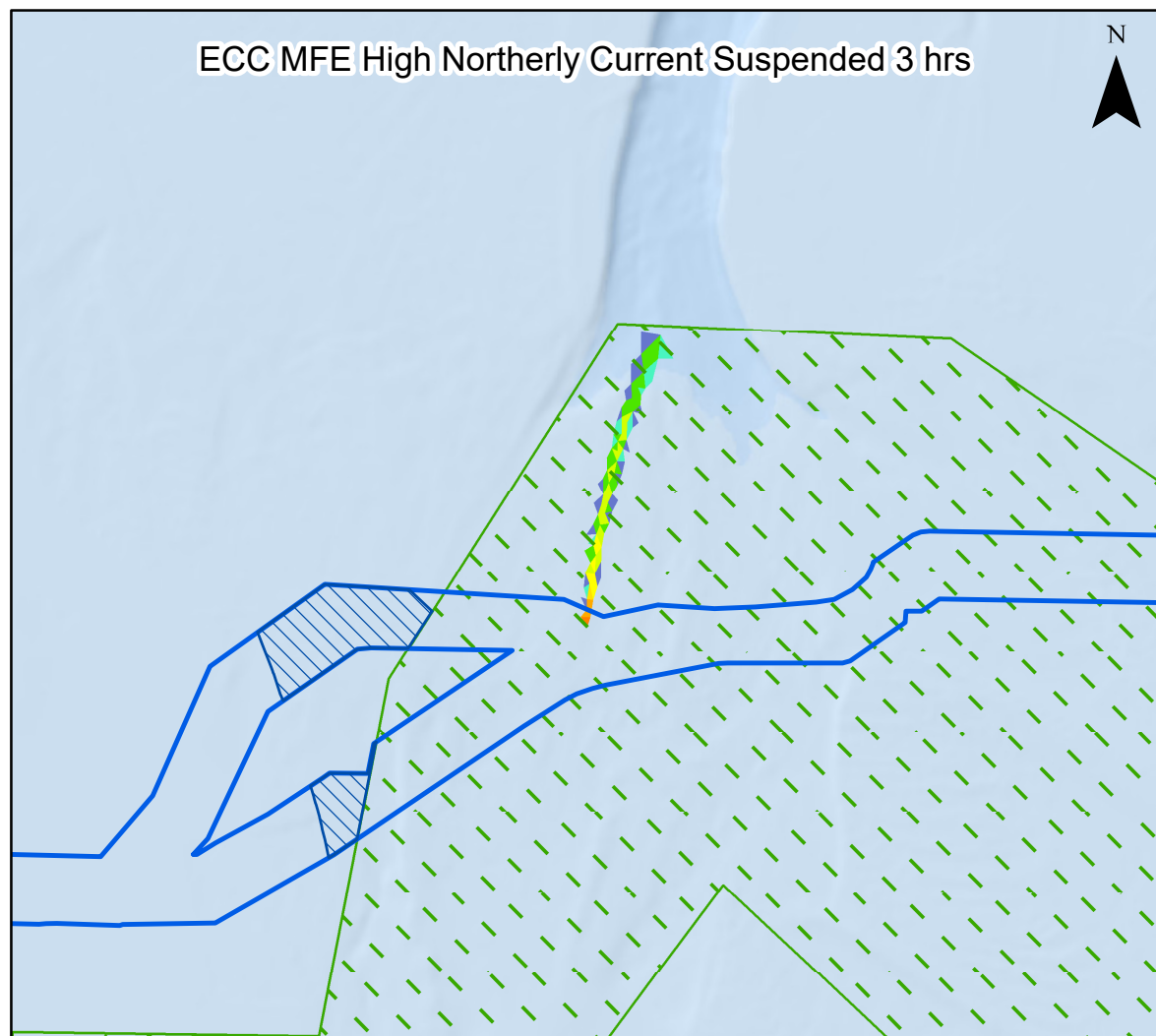


**OUTER DOWSING**  
OFFSHORE WIND



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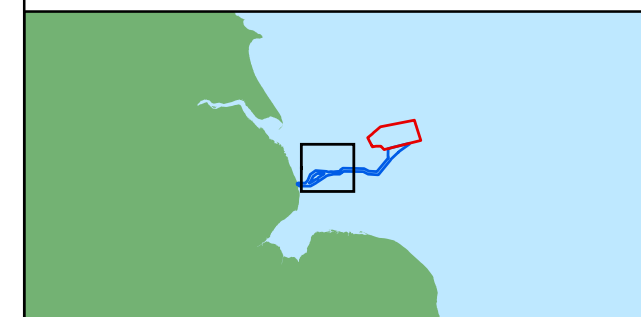


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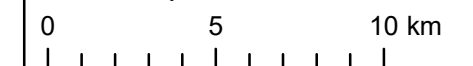
- Array Area
- Offshore Export Cable Corridor
- ORCP Area
- Special Areas of Conservation

**Suspended Sediment Concentrations (mg/l)**

- 1 - 4.99
- 5 - 9.99
- 10 - 19.99
- 20 - 49.99
- 50 - 99.99
- 100 - 149.99
- 150 - 249.99
- 250 - 499.99
- 500 - 999.99
- <1000



Coordinate System: WGS 1984 UTM Zone 31N



Scale: 1:225,000

A3 Page Size

**Environmental Statement**

Suspended sediment concentrations 3, 5, 10 and 15 hours after the start of Mass Flow Excavator activities along the offshore ECC during a high spring ebb tide

Figure 7.13



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