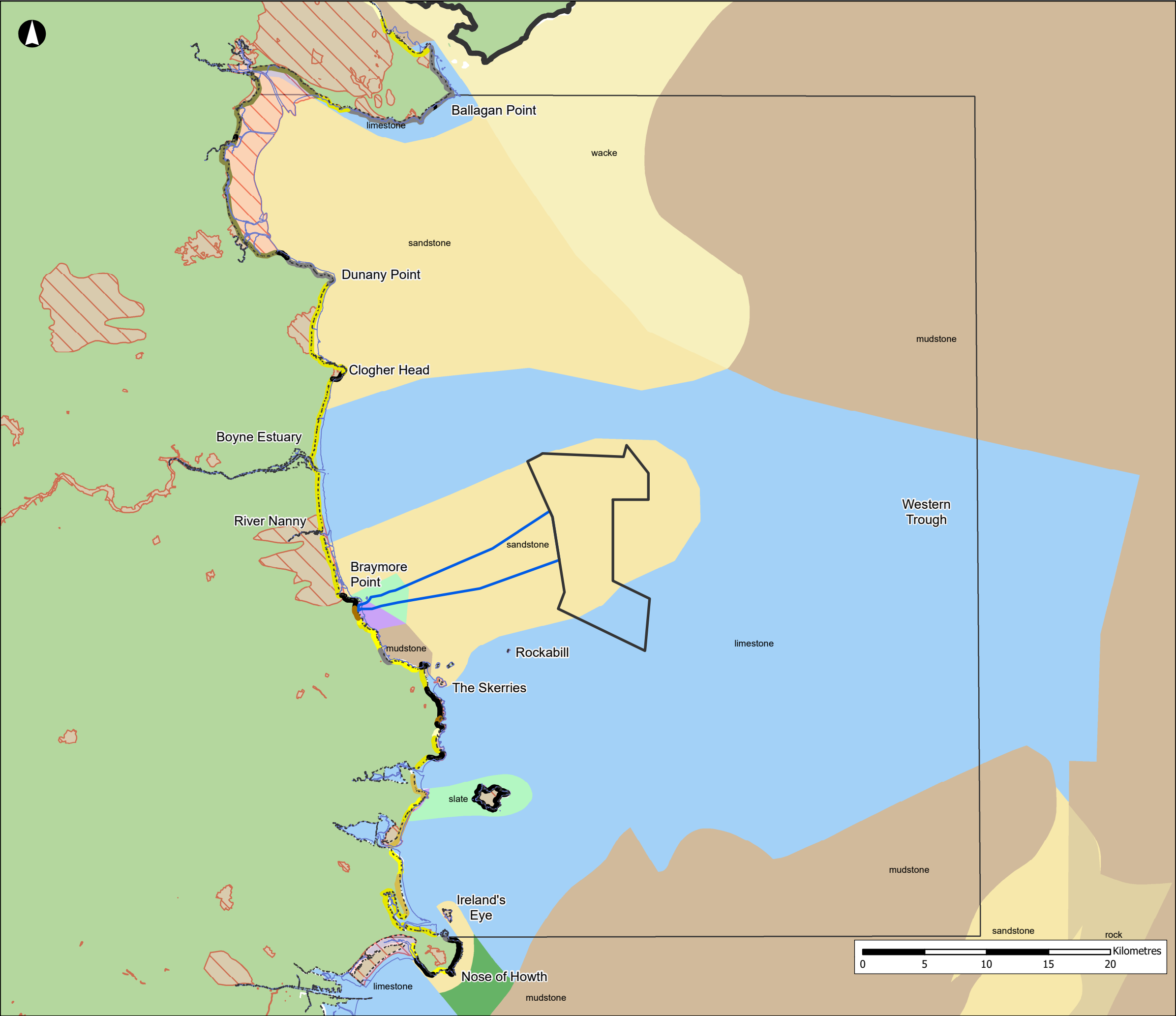


Volume 7A: Figures

Figures for Chapter 10 Marine Geology, Oceanography and Physical processes



Array Area

Offshore Export Cable Corridor

Study Area

Low Water Mark

High Water Mark

GSI Geological Heritage Site

Coastal Types (EMODnet):

Beach that is part of extensive non-cohesive sedimentary systems (barrier, spit, tombolo)

Beach with rocky platform

Erodible rock and/or cliff, with rock waste and sediments (sand or pebbles) at its base

Erosion-resistant rock and/or cliff, without loose eroded material in the fronting sea

Gravel beach fronting upland (> 1 km long)

Muddy coastline, including tidal flat, salt marsh

Pocket beaches (< 200 m long)

Sand beach fronting upland (> 1 km long)

Small beaches

Pre-Quaternary Lithology (EMODnet)

Fine Grained Igneous Rock

Limestone

Metamorphic Rock

Mudstone

Rock

Sandstone

Slate

Wacke

NISA

North Irish Sea Array

ARUP

GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Notable Geological Features within the Study Area

Job No: 281240

Date: May 2024

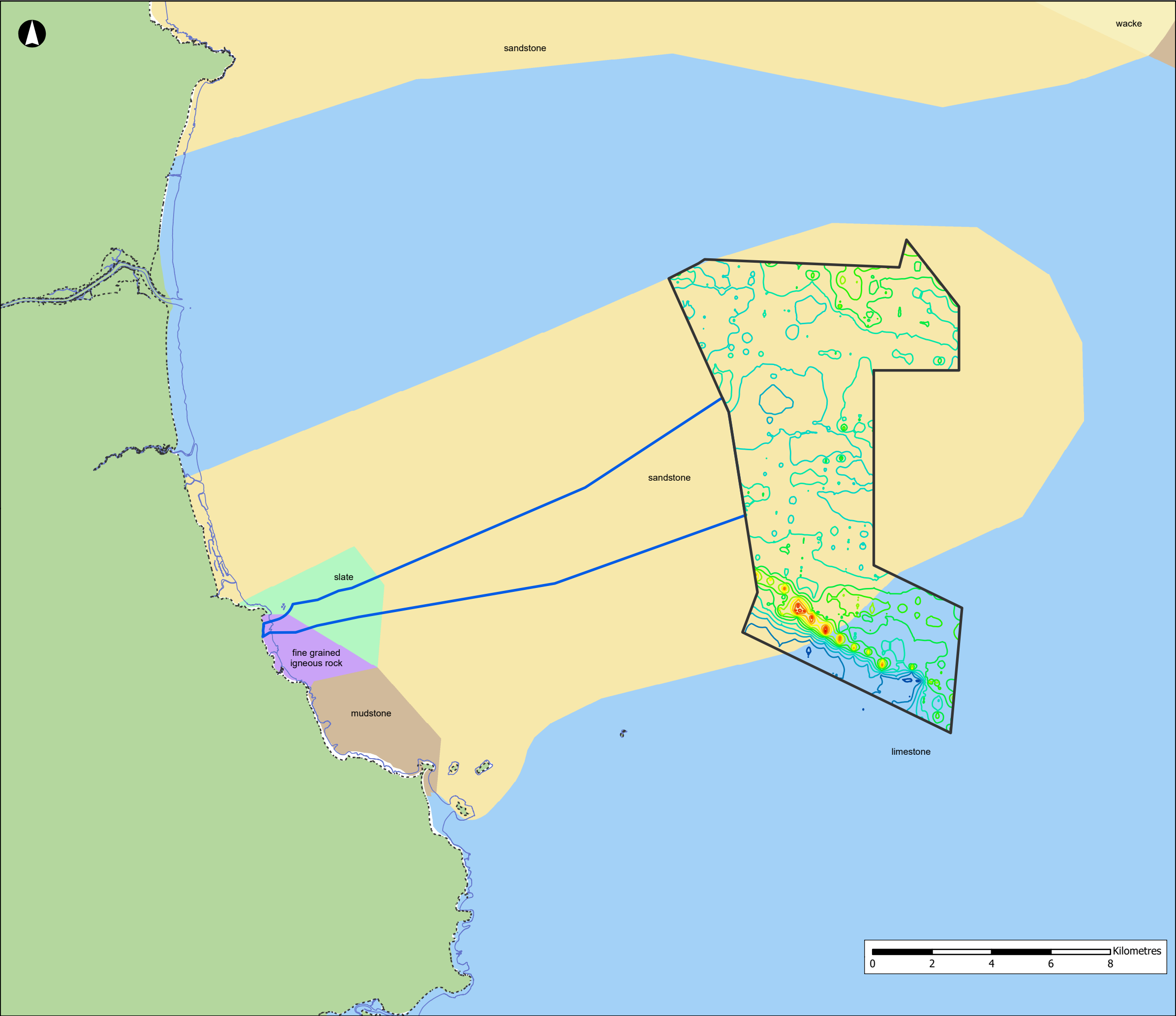
Scale: 1:300,000 @A3

Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.2



Array Area

Offshore Export Cable Corridor

Low Water Mark

High Water Mark

H50 Depth to Rockhead BSB (m)

5

10

15

20

25

30

35

40

45

50

55

60

65

Pre-Quaternary Lithology (EMODnet)

Fine Grained Igneous Rock

Limestone

Mudstone

Sandstone

Slate

Wacke

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North Irish Sea Array

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North Irish Sea Array Offshore Wind Farm

Figure Title

Depth to Rockhead across the Array Area

Job No: 281240

Date: May 2024

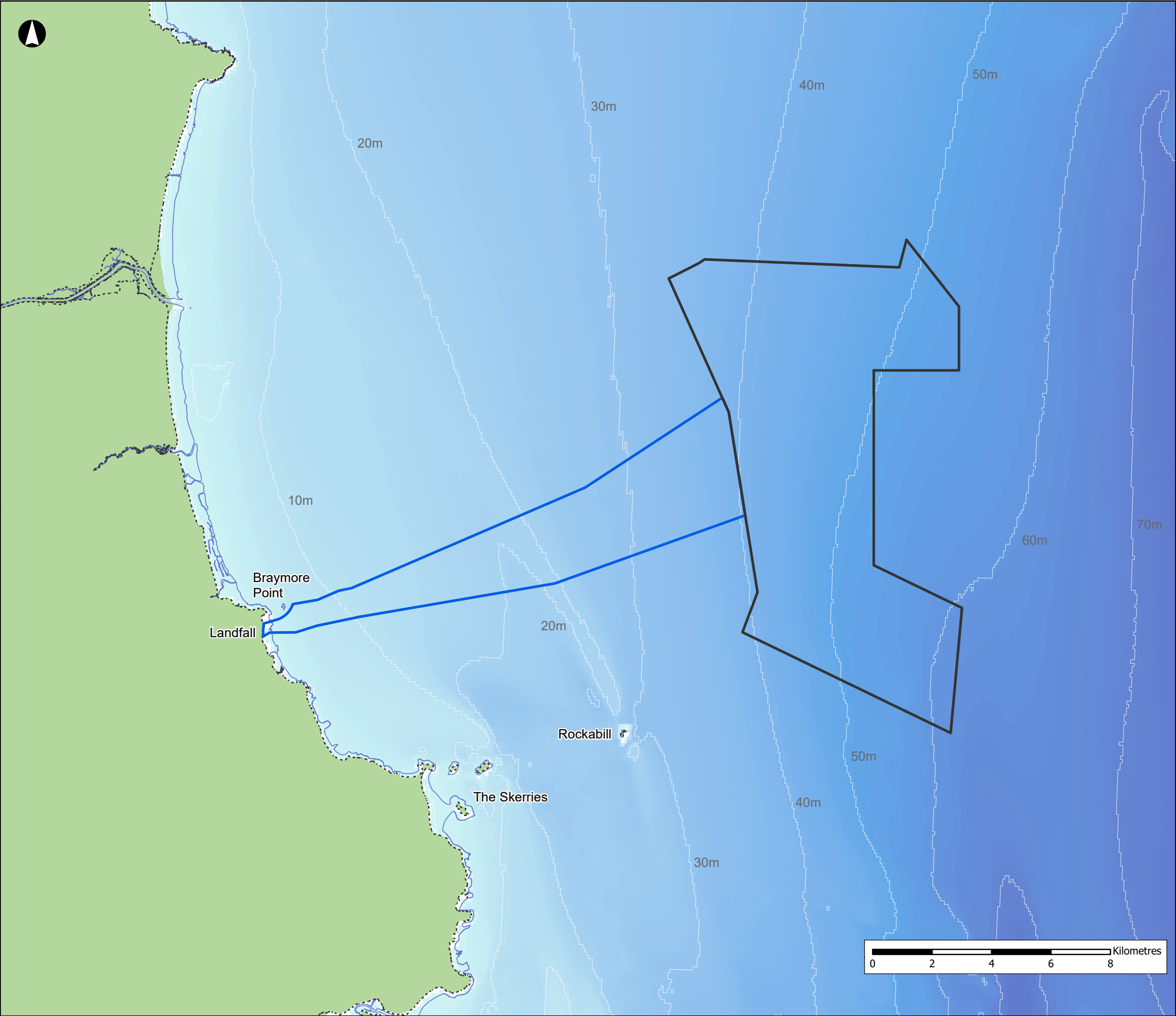
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.3



Array Area

Offshore Export Cable Corridor

Low Water Mark

High Water Mark

Bathymetry (m)

0

100

NISA

North Irish Sea Array

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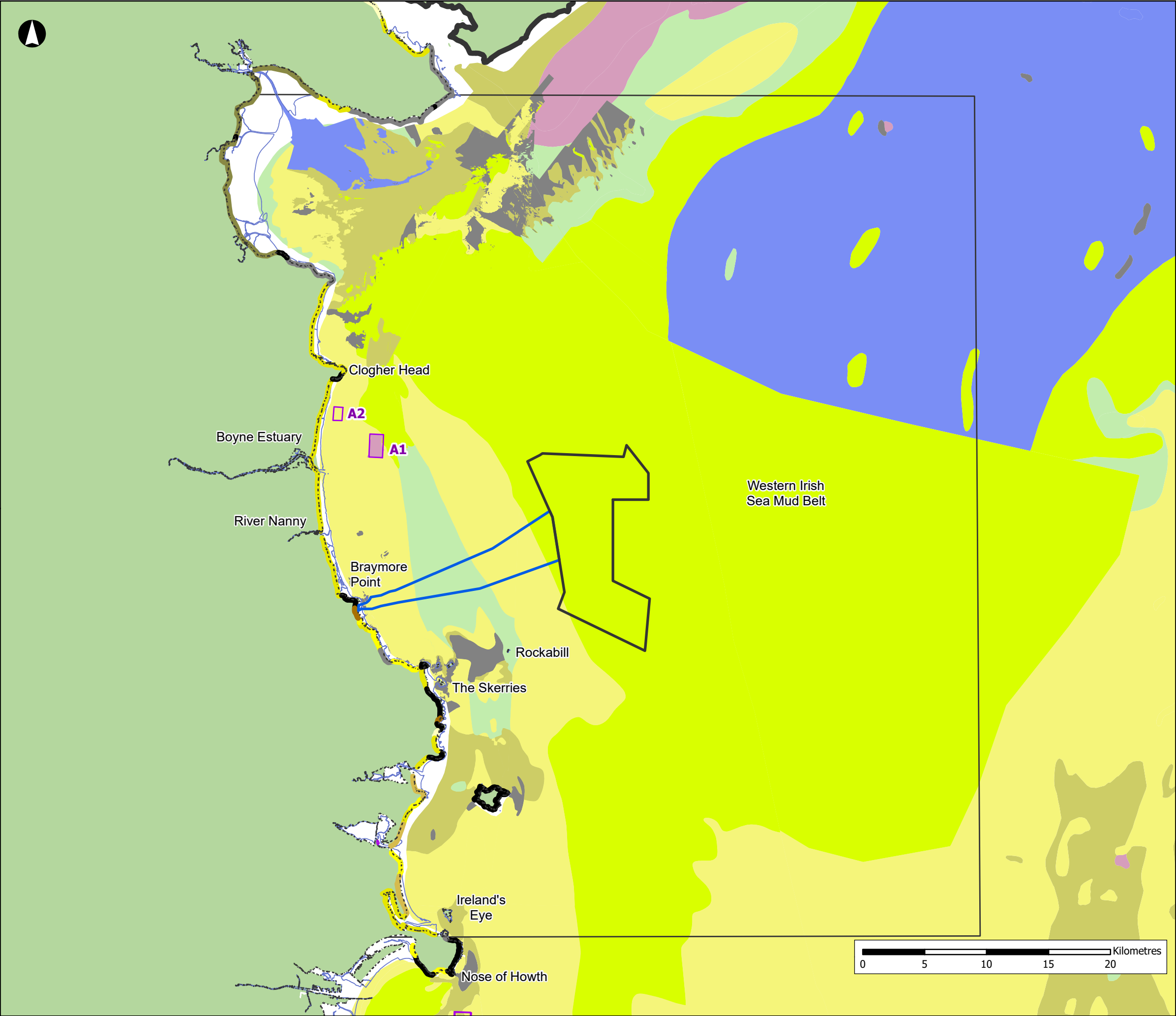
Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Bathymetry across the Array Area and along the ECC

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No: 10.4
Scale: 1:125,000 @A3	
Status: Issue	



Array Area

Offshore Export Cable Corridor

Study Area

Low Water Mark

High Water Mark

Disposal At Sea Sites (Active)

Coastal Types (EMODnet):

Beach that is part of extensive non-cohesive sedimentary systems (barrier, spit, tombolo)

Beach with rocky platform

Erodible rock and/or cliff, with rock waste and sediments (sand or pebbles) at its base

Erosion-resistant rock and/or cliff, without loose eroded material in the fronting sea

Gravel beach fronting upland (> 1 km long)

Muddy coastline, including tidal flat, salt marsh

Pocket beaches (< 200 m long)

Sand beach fronting upland (> 1 km long)

Small beaches

Sediment Classification

Folk-7

The Folk-7 sediment classification diagram is a ternary plot with vertices representing 100% Mud, 100% Sandy Mud, and 100% Muddy Sand. The diagram is divided into four main regions: Mud (bottom left), Sandy Mud (bottom middle), Muddy Sand (bottom right), and Sand (top right). The regions are further subdivided into smaller categories based on the percentage of Gravel (0% to 100%). The diagram shows that as the percentage of Gravel increases, the sediment type transitions from Mud to Sandy Mud, then to Muddy Sand, and finally to Sand.

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North Irish Sea Array

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North Irish Sea Array Offshore Wind Farm

Figure Title

Regional Description of Surficial Sediment

Job No: 281240

Date: May 2024

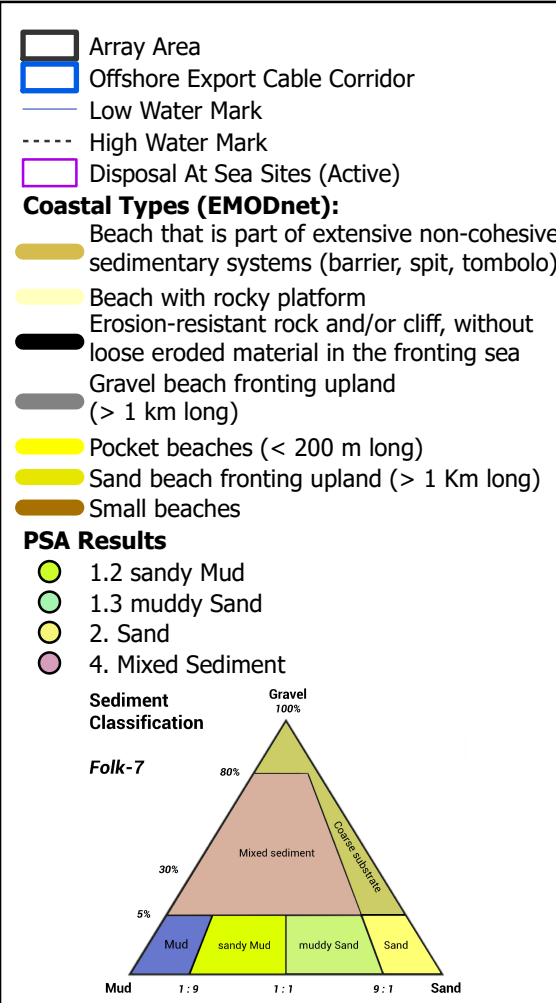
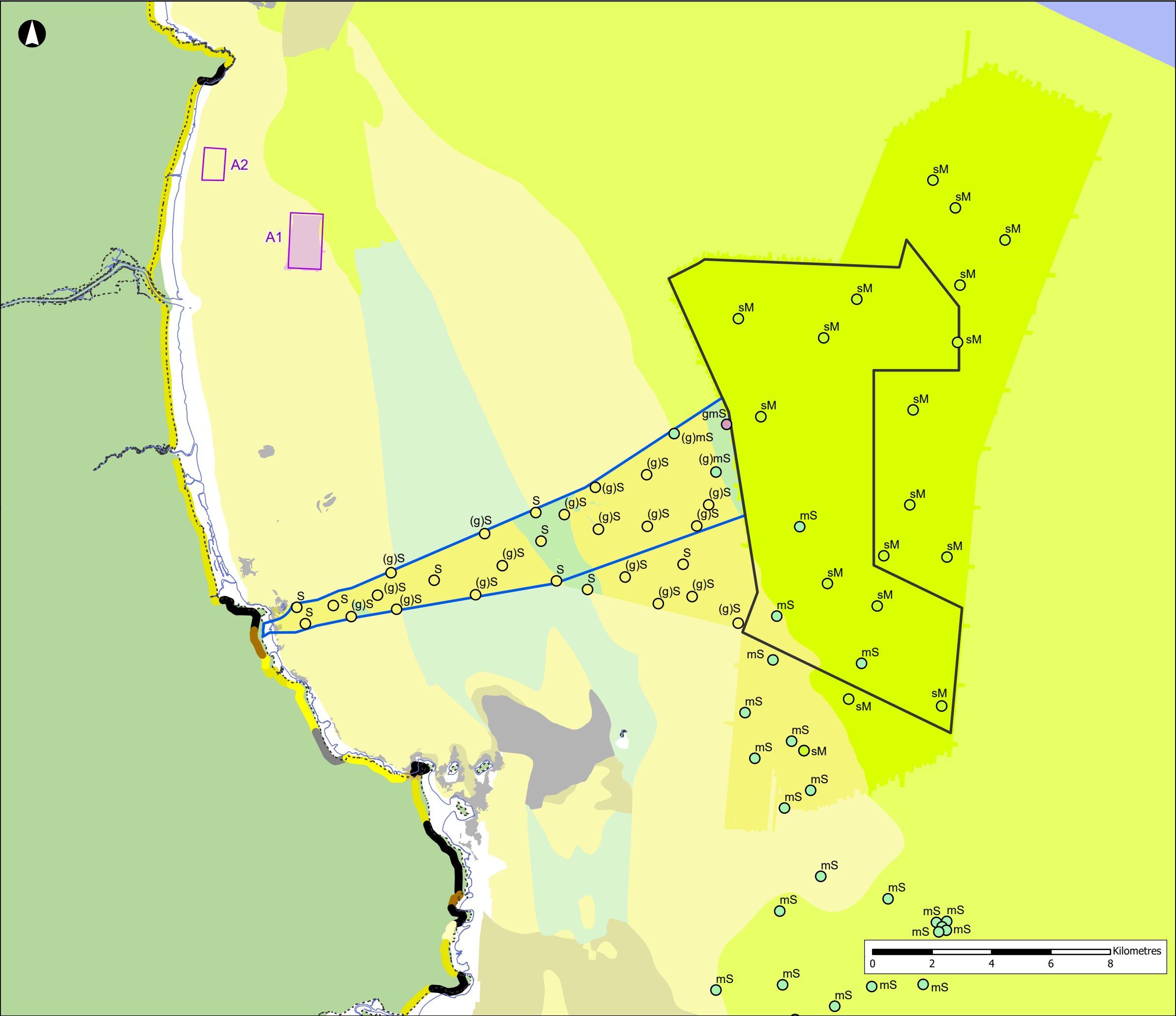
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.5



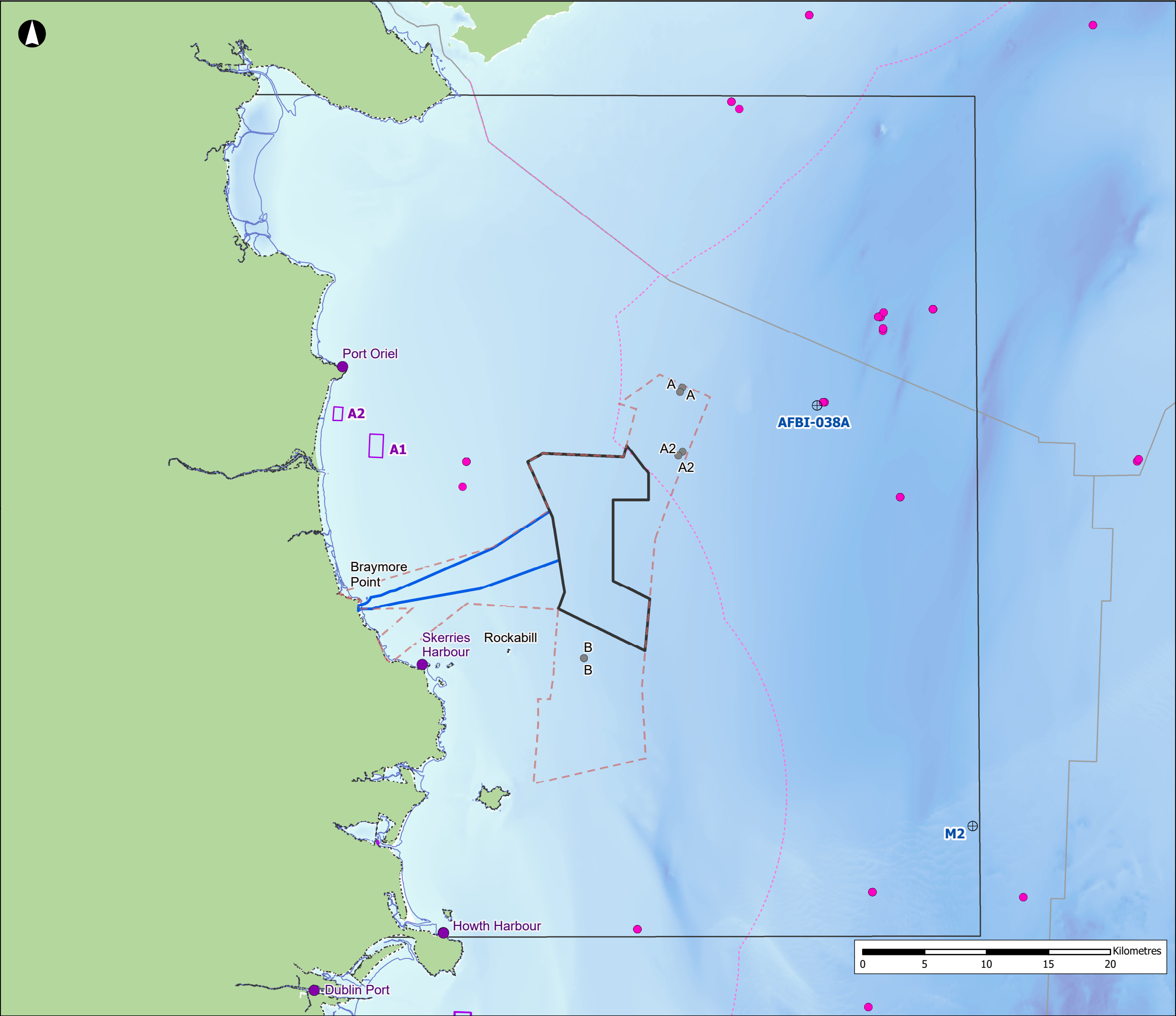
NISA
North Irish Sea Array

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**North Irish Sea Array
Offshore Wind Farm**

Figure Title
**Local Description of Surficial
Sediment**

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No:
Scale: 1:125,000 @A3	10.6
Status: Issue	



Array Area

Offshore Export Cable Corridor

MAC Boundary

Study Area

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Metocean Survey Deployment Sites

Wave Buoys

BODC Moorings

Tide Gauge Sites

Bathymetry (m)

0

200

NISA

North Irish Sea Array

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Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Metocean Data Sites

Job No: 281240

Datum: WGS84 Projection: UTM30N

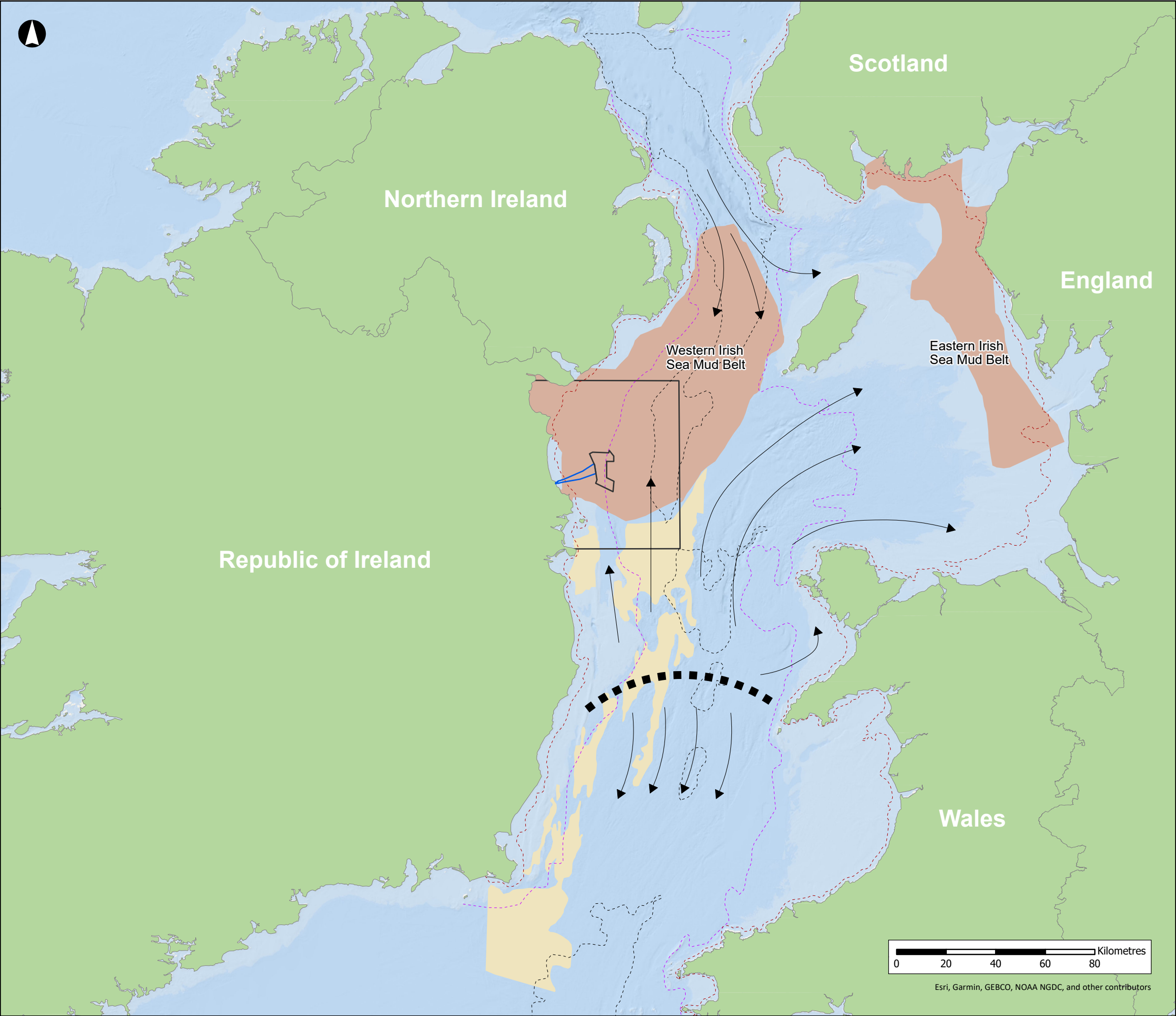
Date: May 2024

Figure No:

Scale: 1:300,000 @A3

10.7

Status: Issue



Array Area

Offshore Export Cable Corridor

Study Area

Sediment Wave Field

Mud Belts
(Sediment Transportation)

Depth (10m)

Depth (50m)

Depth (100m)

Sediment Transport Direction

Bedload Parting Zone

NISA

North Irish Sea Array

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North Irish Sea Array
Offshore Wind Farm

Figure Title

Generalised pattern of net
sediment transport across the
Irish Sea (Coughlan, 2015).

Job No: 281240

Datum: WGS84 Projection: UTM30N

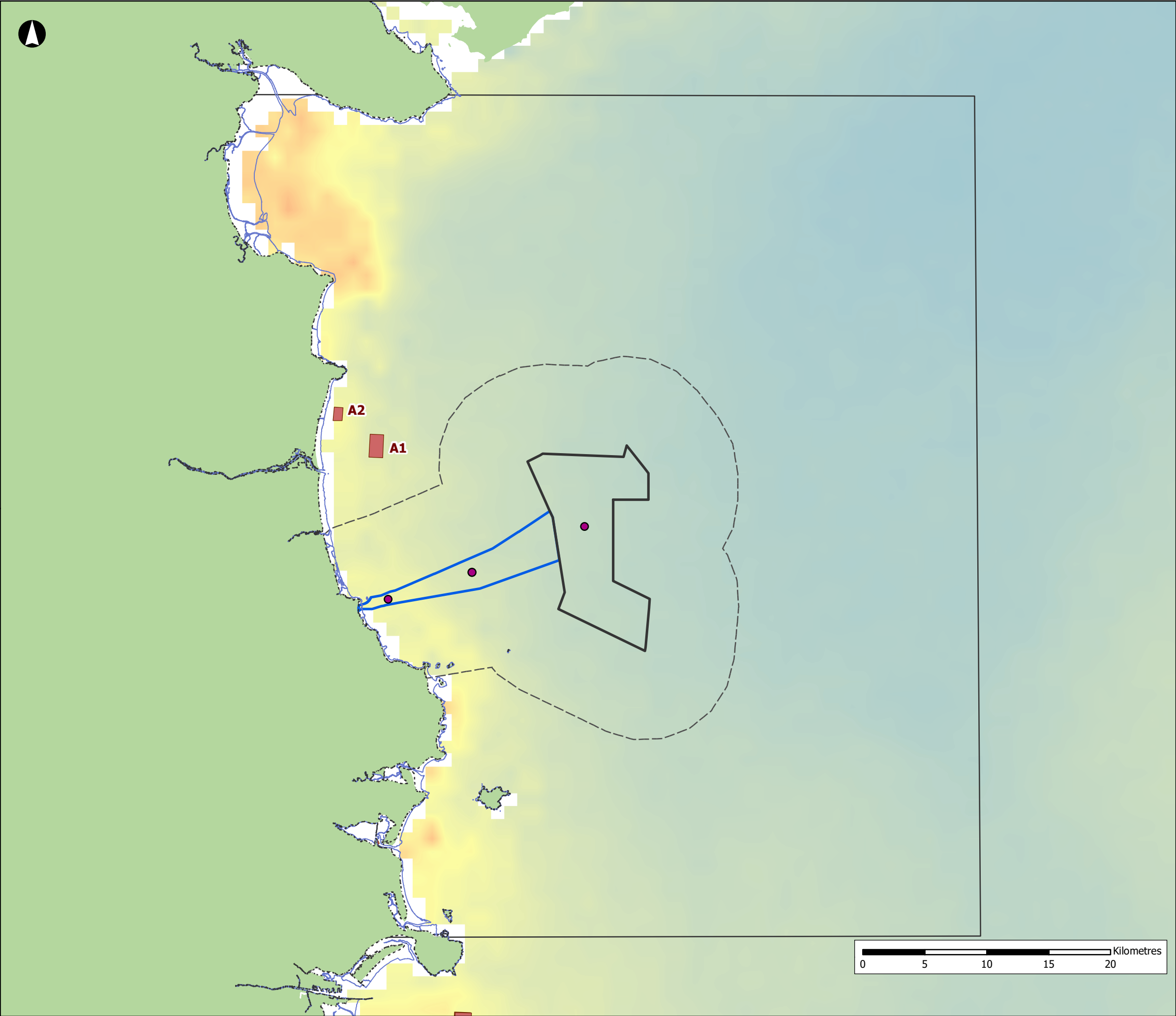
Date: May 2024

Figure No:

Scale: 1:1,500,000 @A3

10.8

Status: Issue



Array Area

Offshore Export Cable Corridor

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

Disposal At Sea Sites (Active)

SPM Sites

Sea Surface SPM (mg/l)

High : 20

Low : 0

NISA

North Irish Sea Array

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North Irish Sea Array Offshore Wind Farm

Figure Title

Monthly Mean Sea Surface SPM for January, based on Data from Cefas (2016)

Job No: 281240

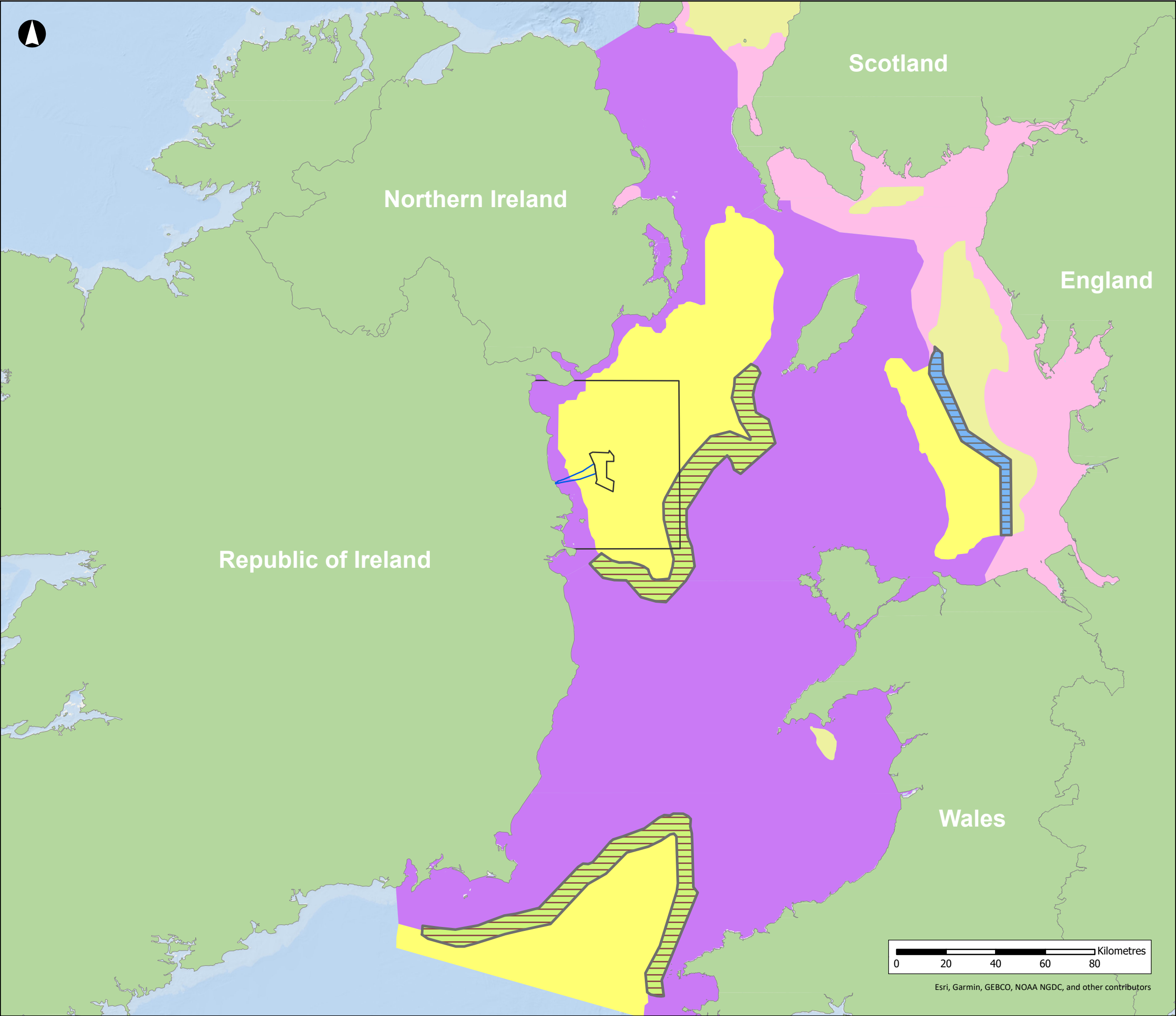
Date: May 2024

Scale: 1:300,000 @A3

Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No: 10.9



Array Area

Offshore Export Cable Corridor

Study Area

Sea Fronts:

Permanent Front

Seasonal Front

Water Column Types:

Mixed & High Salinity

Mixed & Low Salinity

Stratified & High Salinity

Stratified & Low Salinity

NISA

North Irish Sea Array

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**North Irish Sea Array
Offshore Wind Farm**

Figure Title

**Water Body Characterisation
across the Irish Sea (JNCC,
2004)**

Job No: 281240

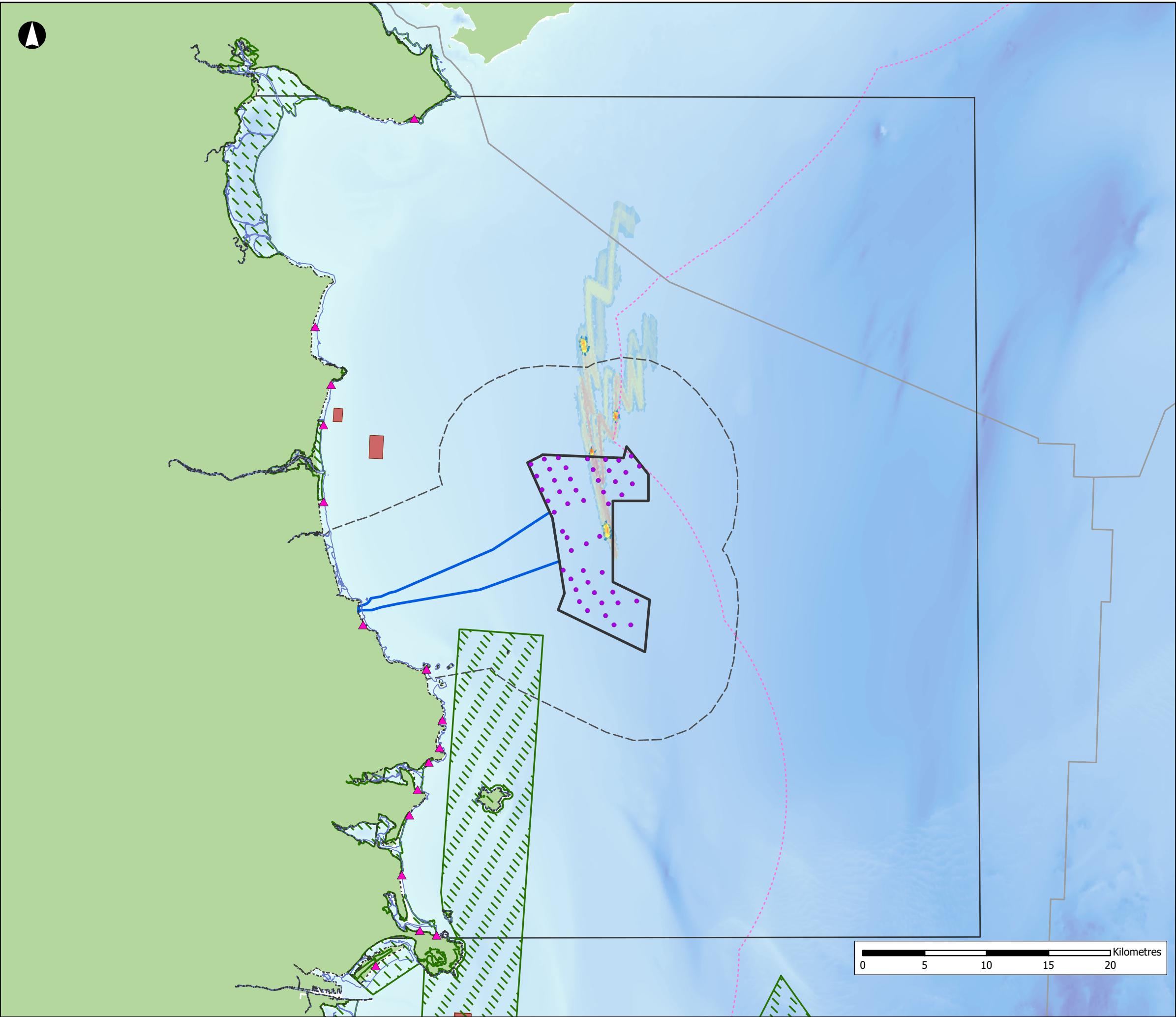
Date: May 2024

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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:
10.10



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Suspended Sediment (mg/l)

<1 (trace level)

1 - 2 (normal variation)

2 - 5 (background level)

5 - 10 (background level)

10 - 20 (background level)

20 - 50 (4 * background)

50 - 100 (10 * background)

100 - 200 (20 * background)

200 - 500 (40 * background)

500 - 1000 (100 * background)

>1000 (200 * background)

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

Seabed Levelling Sediment

Plumes

Job No: 281240

Date: May 2024

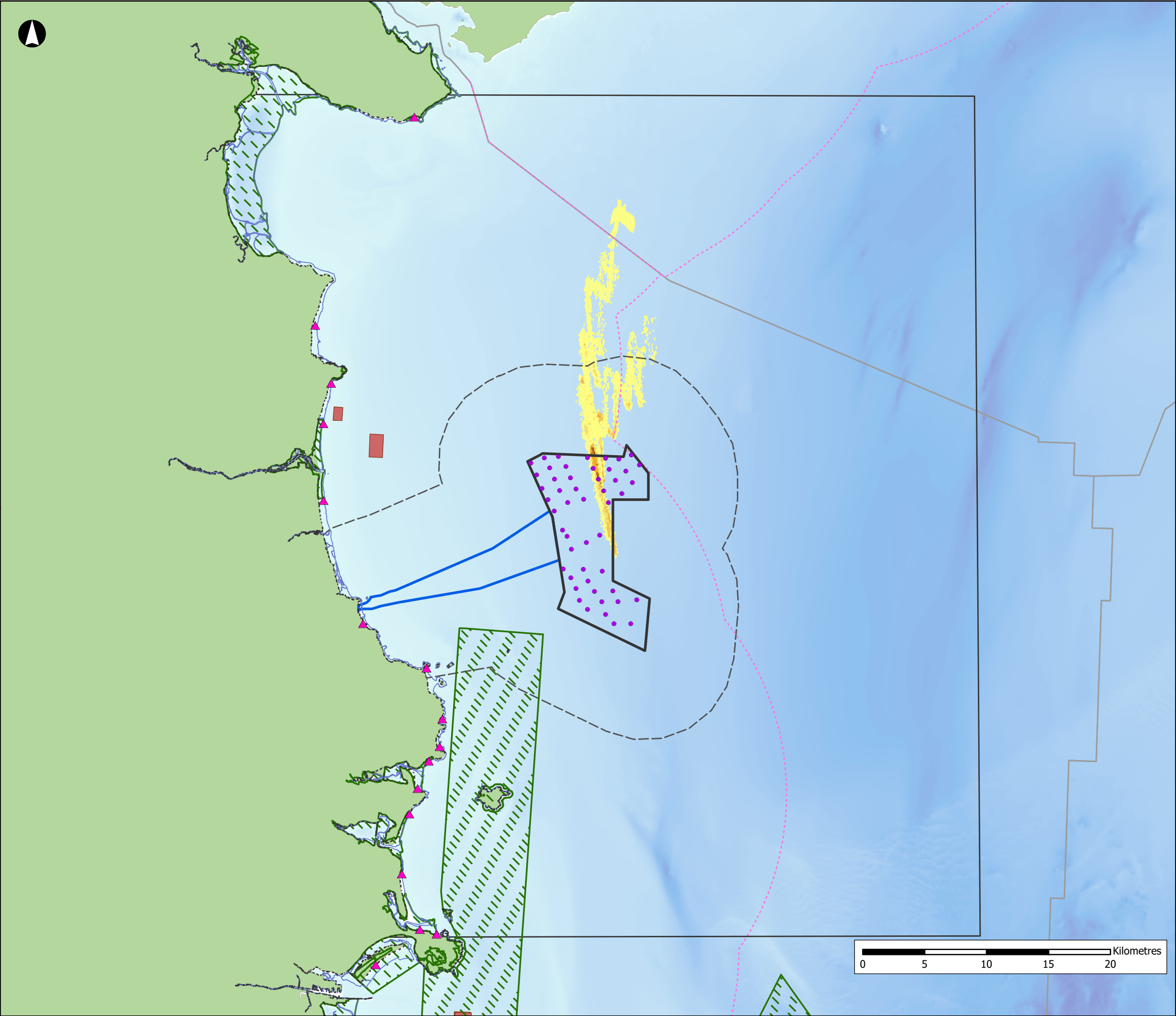
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.11



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Proposed Oriel OWF

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Deposition (mm)

<1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

GoBe

Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

Seabed Levelling Deposition

Job No: 281240

Date: May 2024

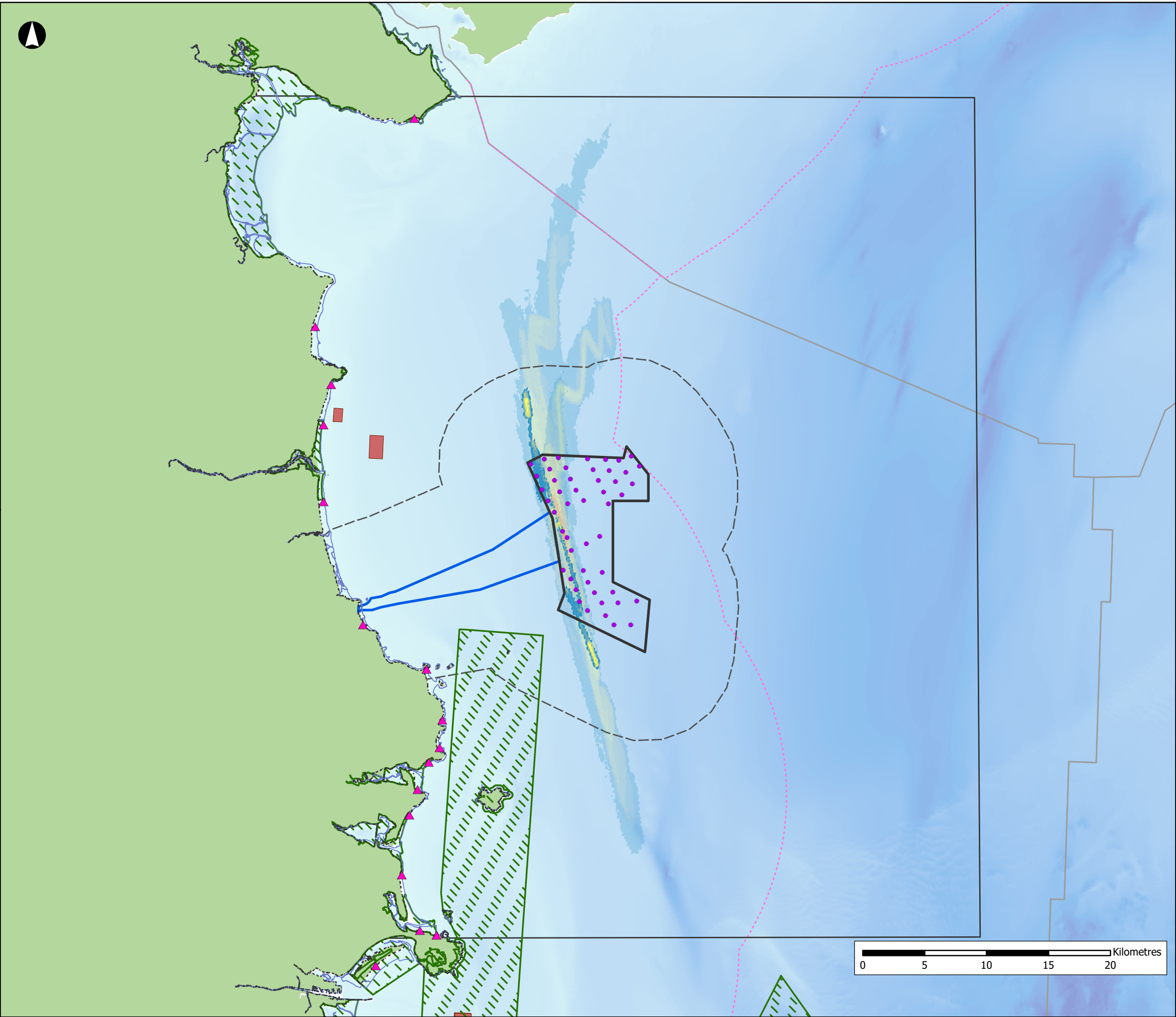
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.12



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Suspended Sediment (mg/l)

<1 (trace level)

1 - 2 (normal variation)

2 - 5 (background level)

5 - 10 (background level)

10 - 20 (background level)

20 - 50 (4 * background)

50 - 100 (10 * background)

100 - 200 (20 * background)

200 - 500 (40 * background)

500 - 1000 (100 * background)

>1000 (200 * background)

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

Foundation Drilling Sediment

Plumes

Job No: 281240

Date: May 2024

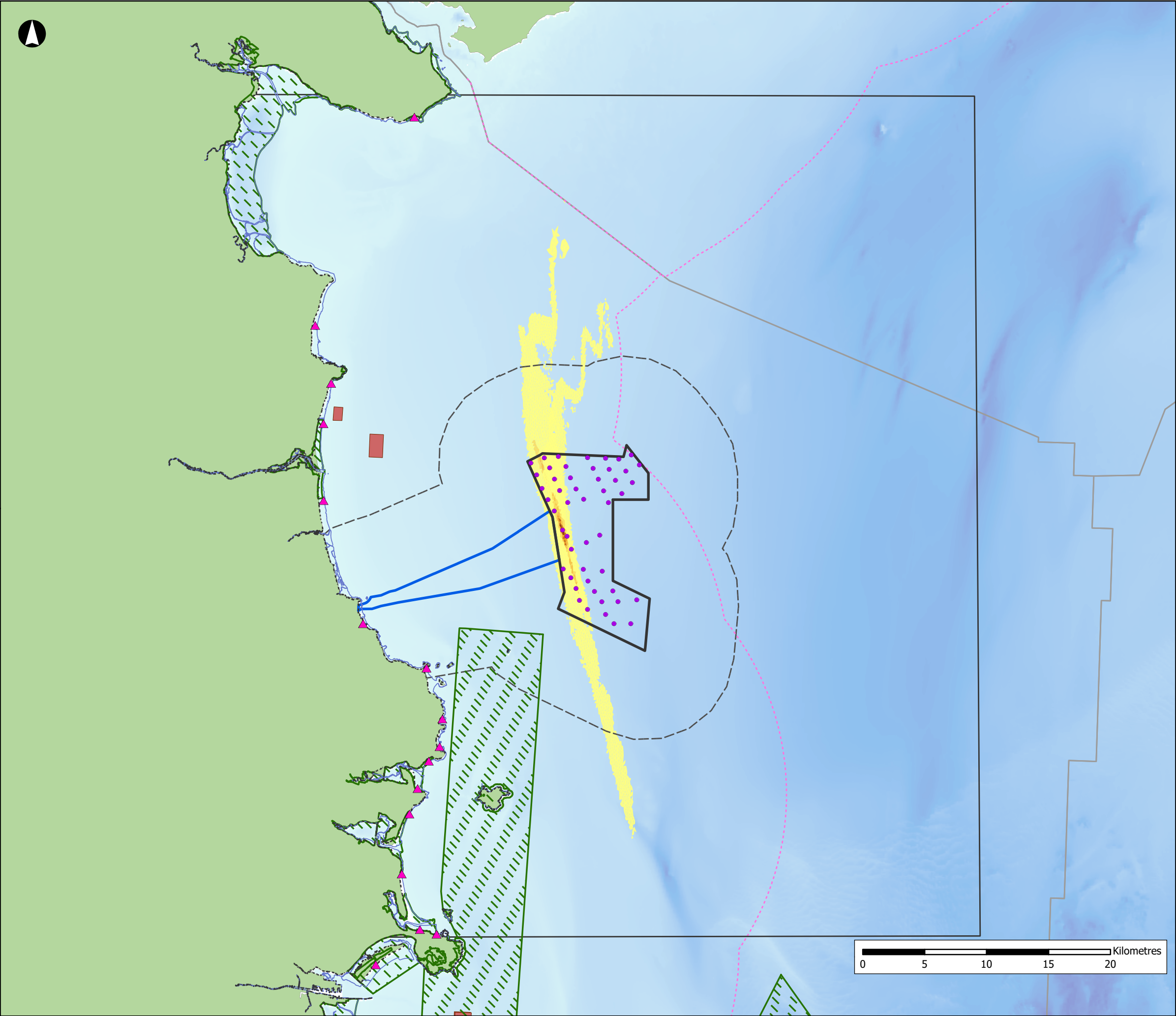
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.13



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Proposed Oriel OWF

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Deposition (mm)

<1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

Bathymetry (m)

0

200

NISA

North Irish Sea Array

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North Irish Sea Array Offshore Wind Farm

Figure Title

Foundation Drilling Deposition

Job No: 281240

Date: May 2024

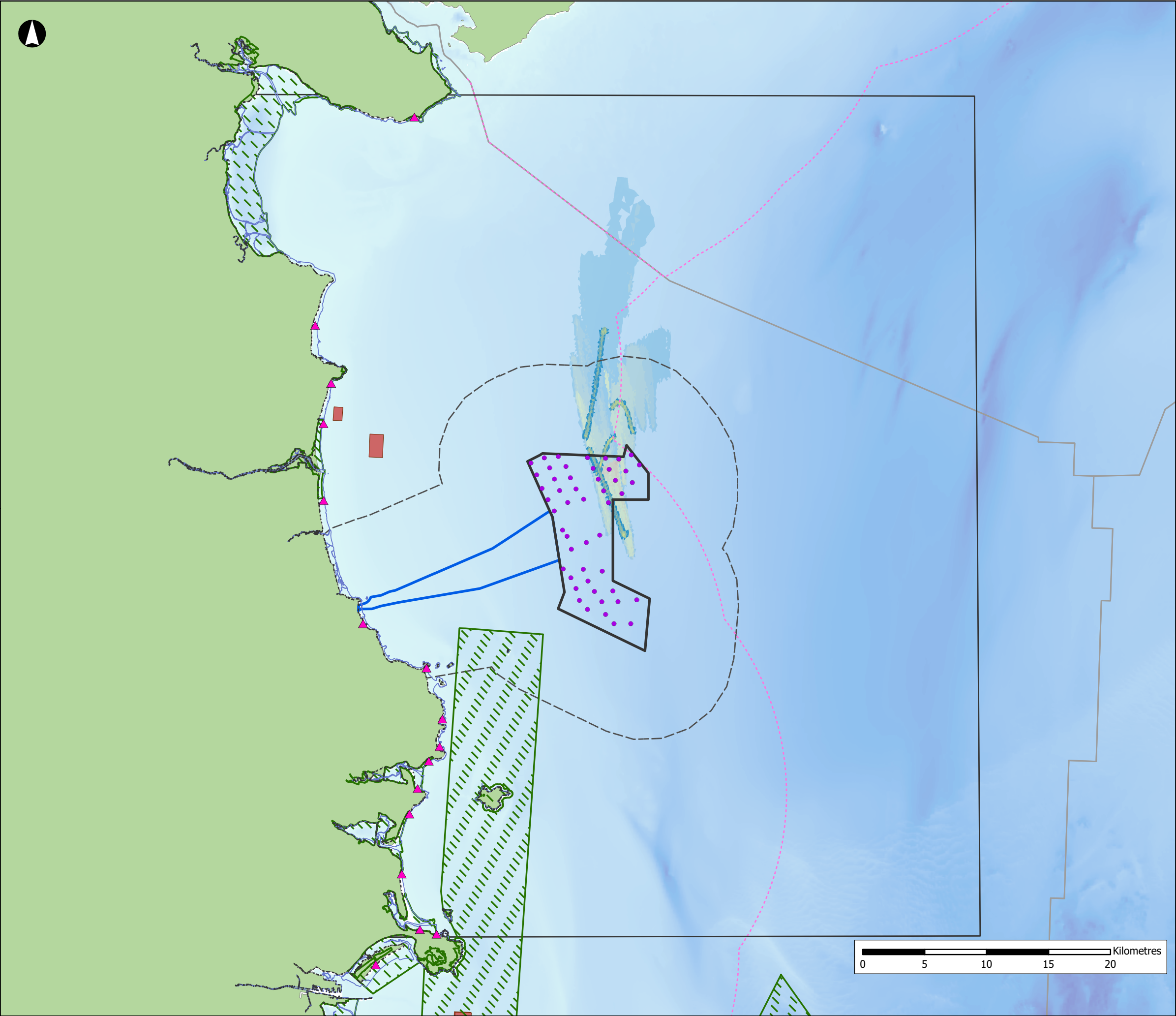
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.14



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Suspended Sediment (mg/l)

<1 (trace level)

1 - 2 (normal variation)

2 - 5 (background level)

5 - 10 (background level)

10 - 20 (background level)

20 - 50 (4 * background)

50 - 100 (10 * background)

100 - 200 (20 * background)

200 - 500 (40 * background)

500 - 1000 (100 * background)

>1000 (200 * background)

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

Array Cabling Sediment Plumes

Job No: 281240

Date: May 2024

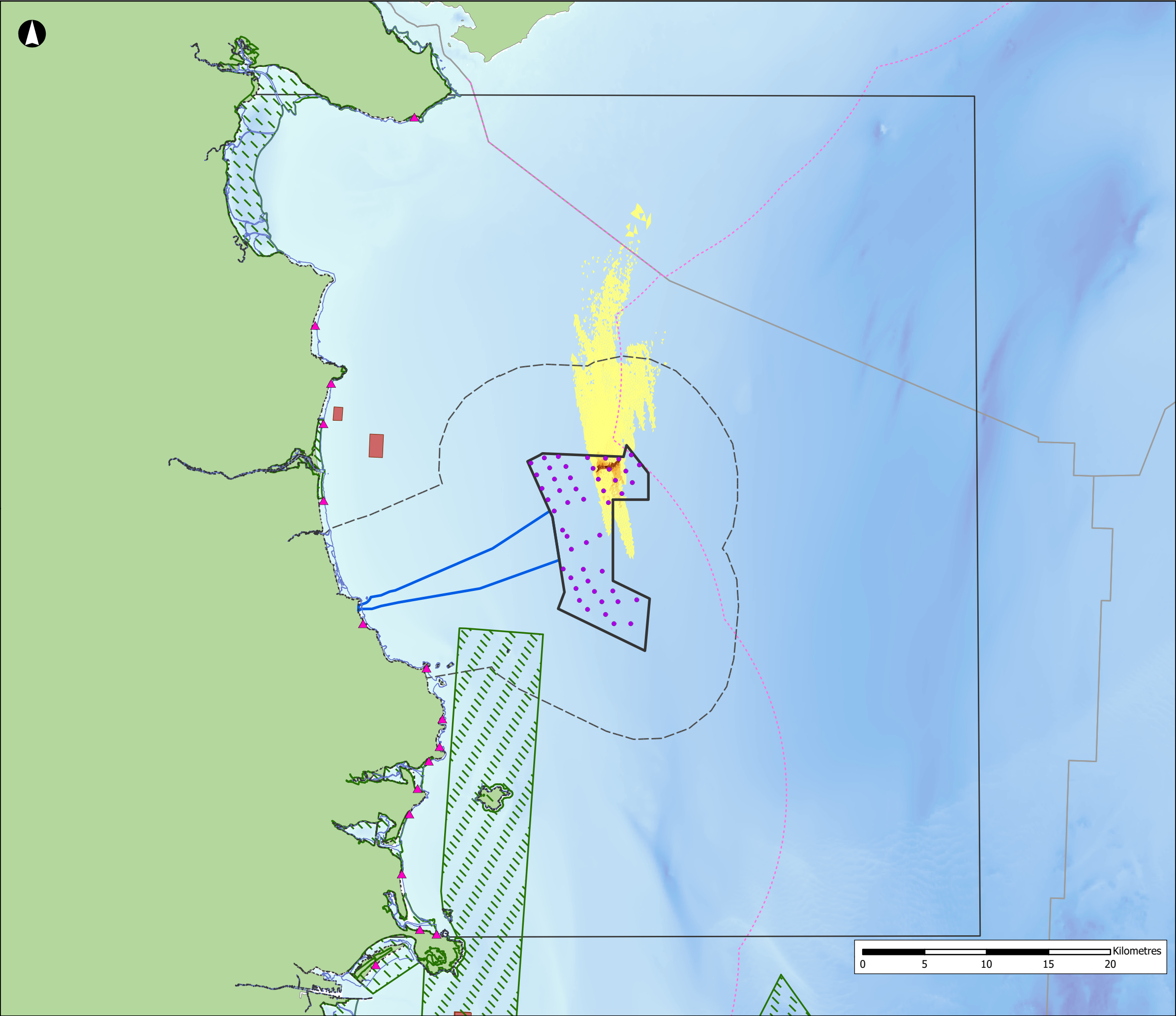
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.15



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Deposition (mm)

<1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Array Cabling Sediment Deposition

Job No: 281240

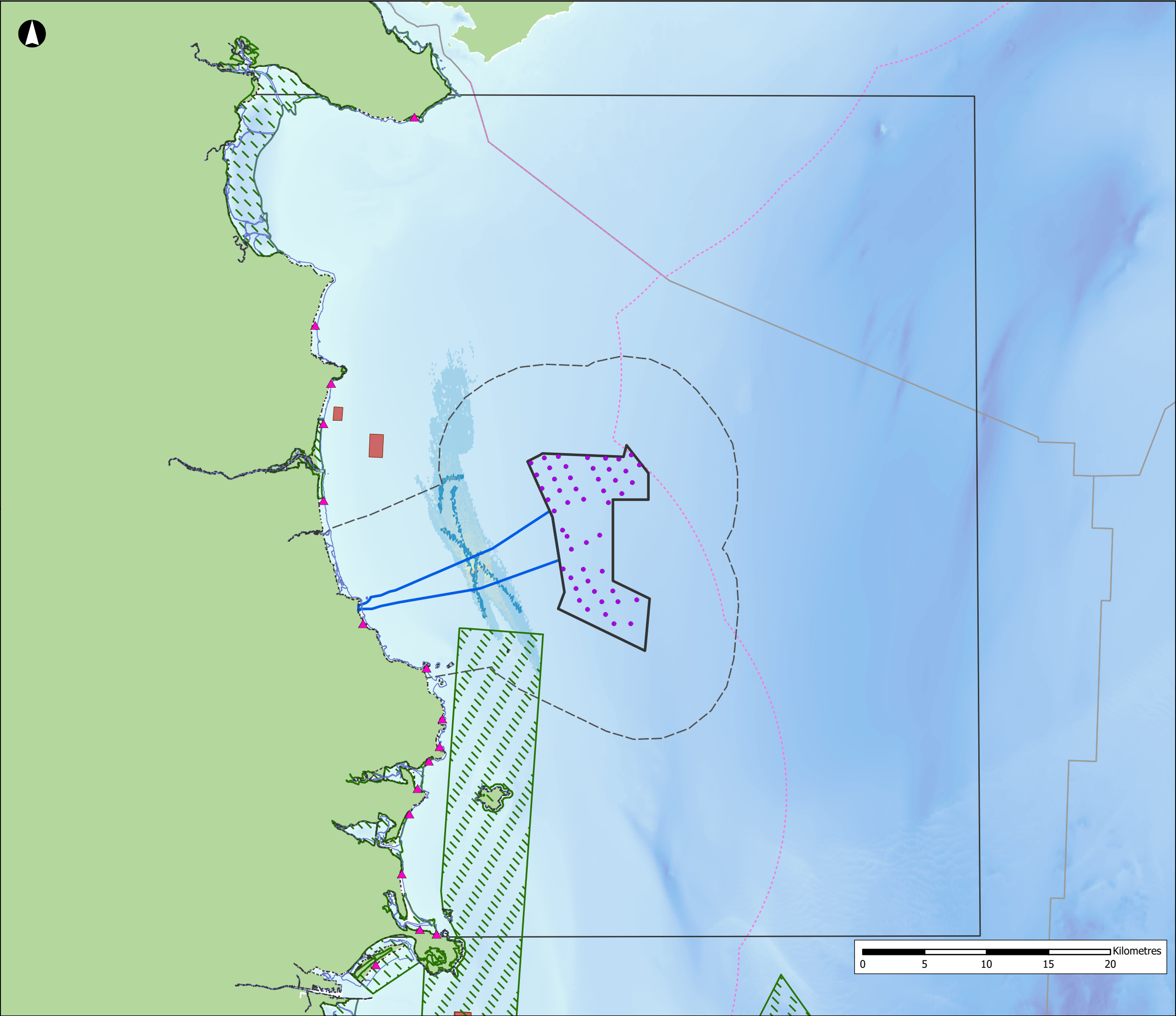
Date: May 2024

Scale: 1:300,000 @A3

Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No: 10.16



Array Area

Offshore Export Cable Corridor

WTG Layout

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Suspended Sediment (mg/l)

<1 (trace level)

1 - 2 (normal variation)

2 - 5 (background level)

5 - 10 (background level)

10 - 20 (background level)

20 - 50 (4 * background)

50 - 100 (10 * background)

100 - 200 (20 * background)

200 - 500 (40 * background)

500 - 1000 (100 * background)

>1000 (200 * background)

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

ECC Cabling Sediment Plumes

Job No: 281240

Date: May 2024

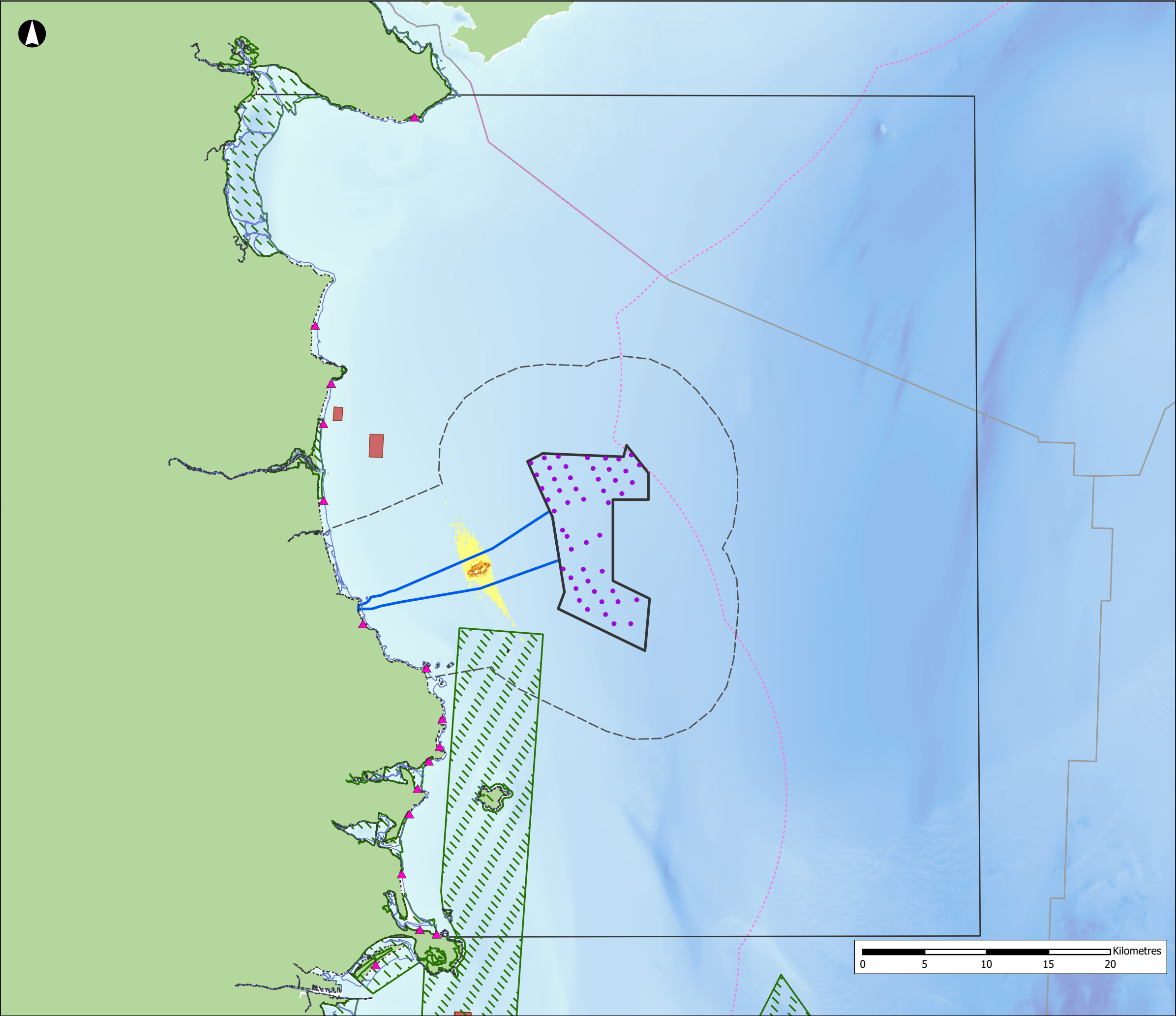
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.17



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Tidal Excursion Buffer

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Bathing Water Locations

Special Areas of Conservation

Deposition (mm)

<1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

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Project

North Irish Sea Array

Offshore Wind Farm

Figure Title

ECC Cabling Sediment

Deposition

Job No: 281240

Date: May 2024

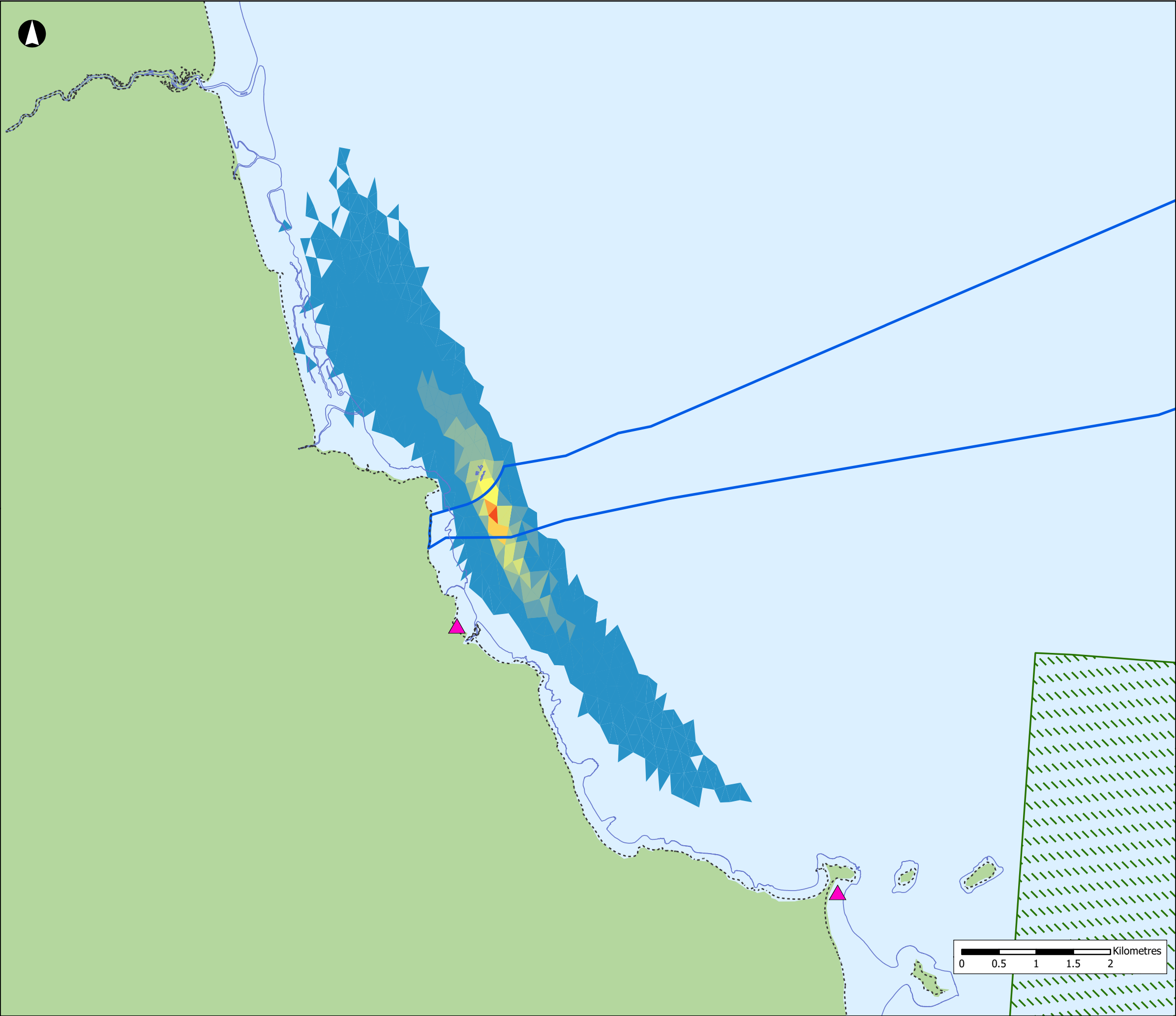
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.18



Offshore Export Cable Corridor

Low Water Mark

High Water Mark

Bathing Water Locations

Special Areas of Conservation

Suspended Sediment (mg/l)

<1 (trace level)

1 - 2 (normal variation)

2 - 5 (background level)

5 - 10 (background level)

10 - 20 (background level)

20 - 50 (4 * background)

50 - 100 (10 * background)

100 - 200 (20 * background)

200 - 500 (40 * background)

500 - 1000 (100 * background)

>1000 (200 * background)

NISA

North Irish Sea Array

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**North Irish Sea Array
Offshore Wind Farm**

Figure Title

HDD Exit Pits Sediment Plumes

Job No: 281240

Date: May 2024

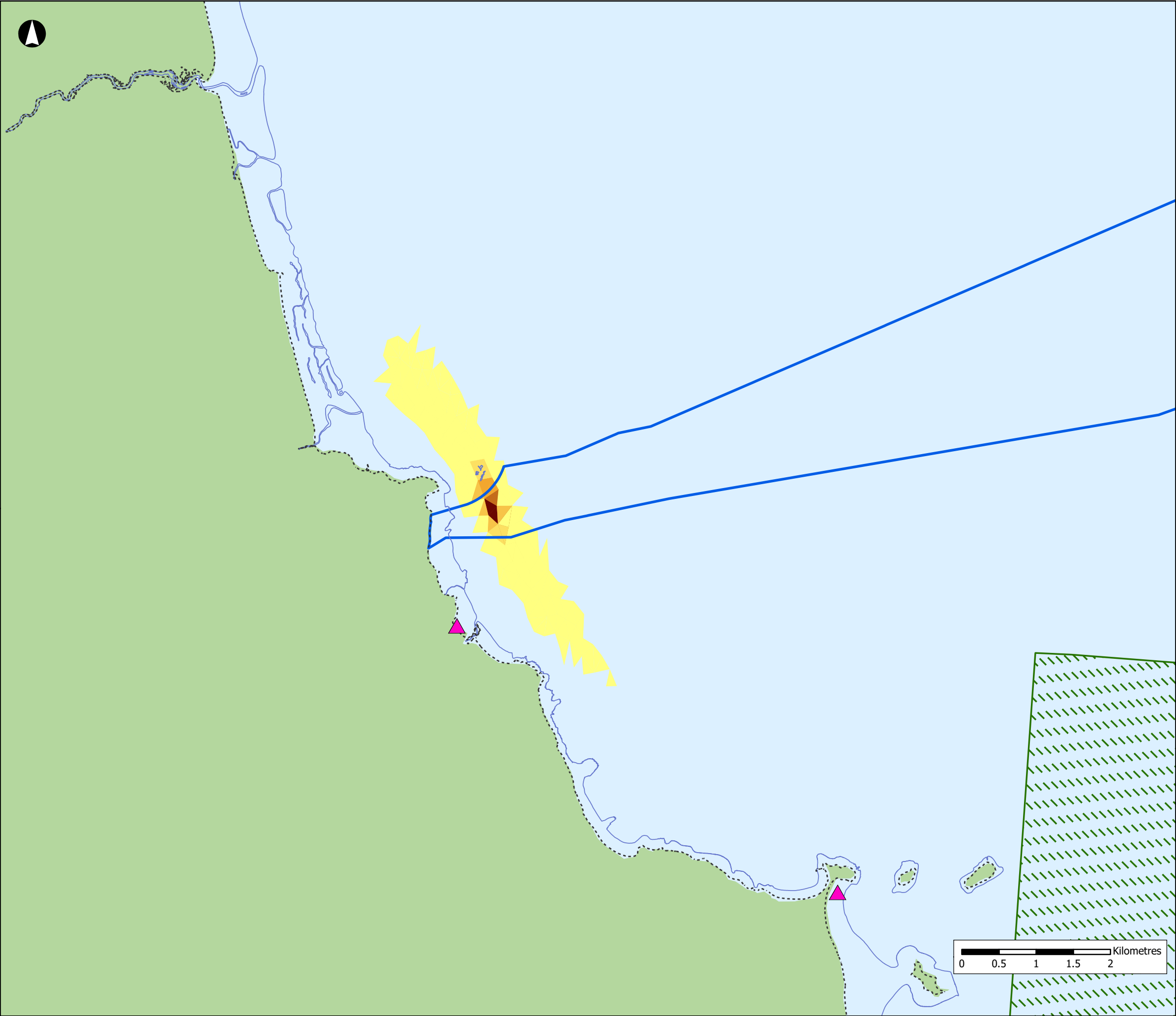
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.19



- Offshore Export Cable Corridor
 - Low Water Mark
 - High Water Mark
 - Bathing Water Locations
 - Special Areas of Conservation
- Deposition (mm)**

- <1
- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 20
- 20 - 50
- 50 - 100

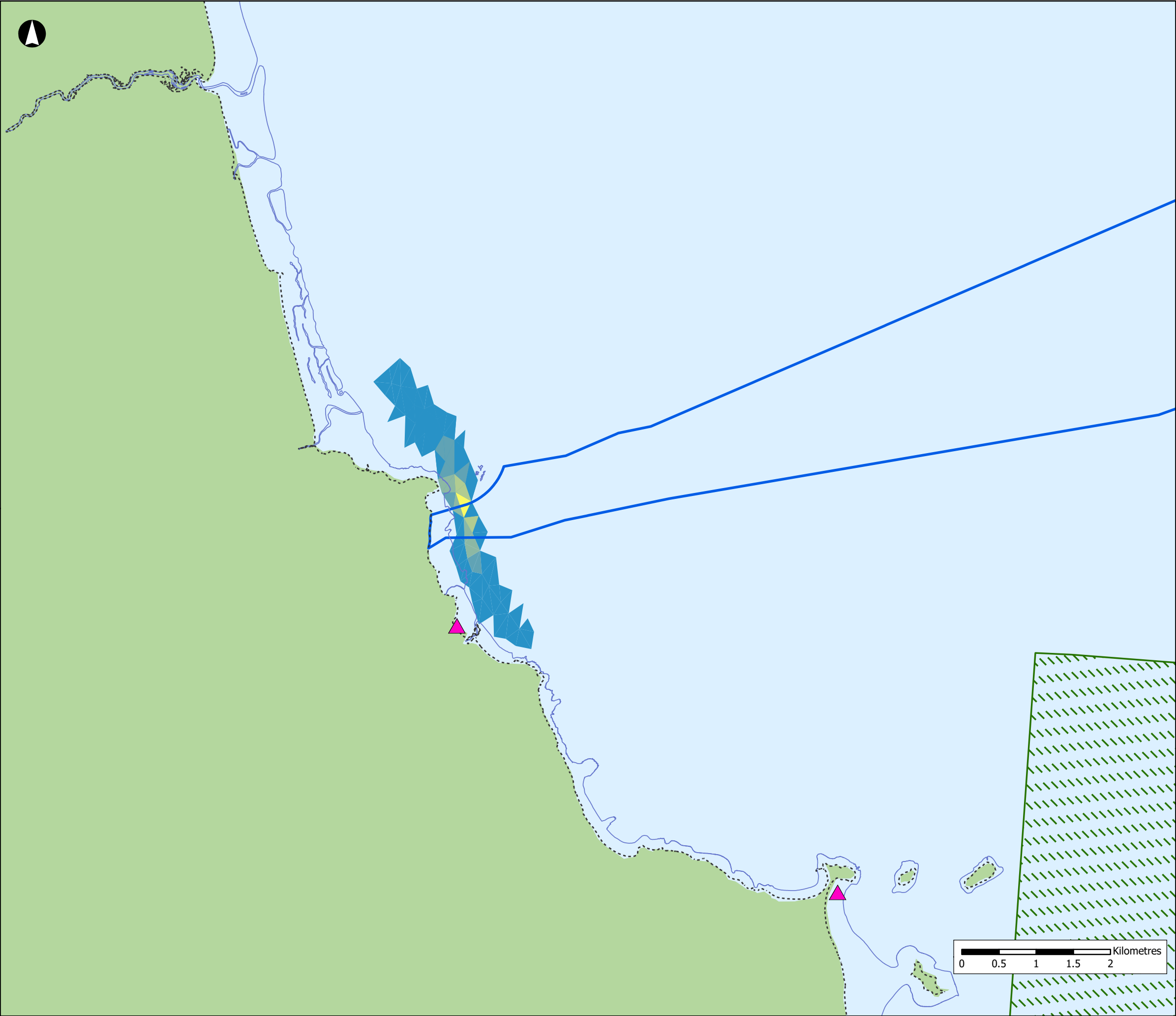
NISA
North Irish Sea Array

ARUP GoBe

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**North Irish Sea Array
Offshore Wind Farm**

Figure Title
**HDD Exit Pits Sediment
Deposition**

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No: 10.20
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Status: Issue	



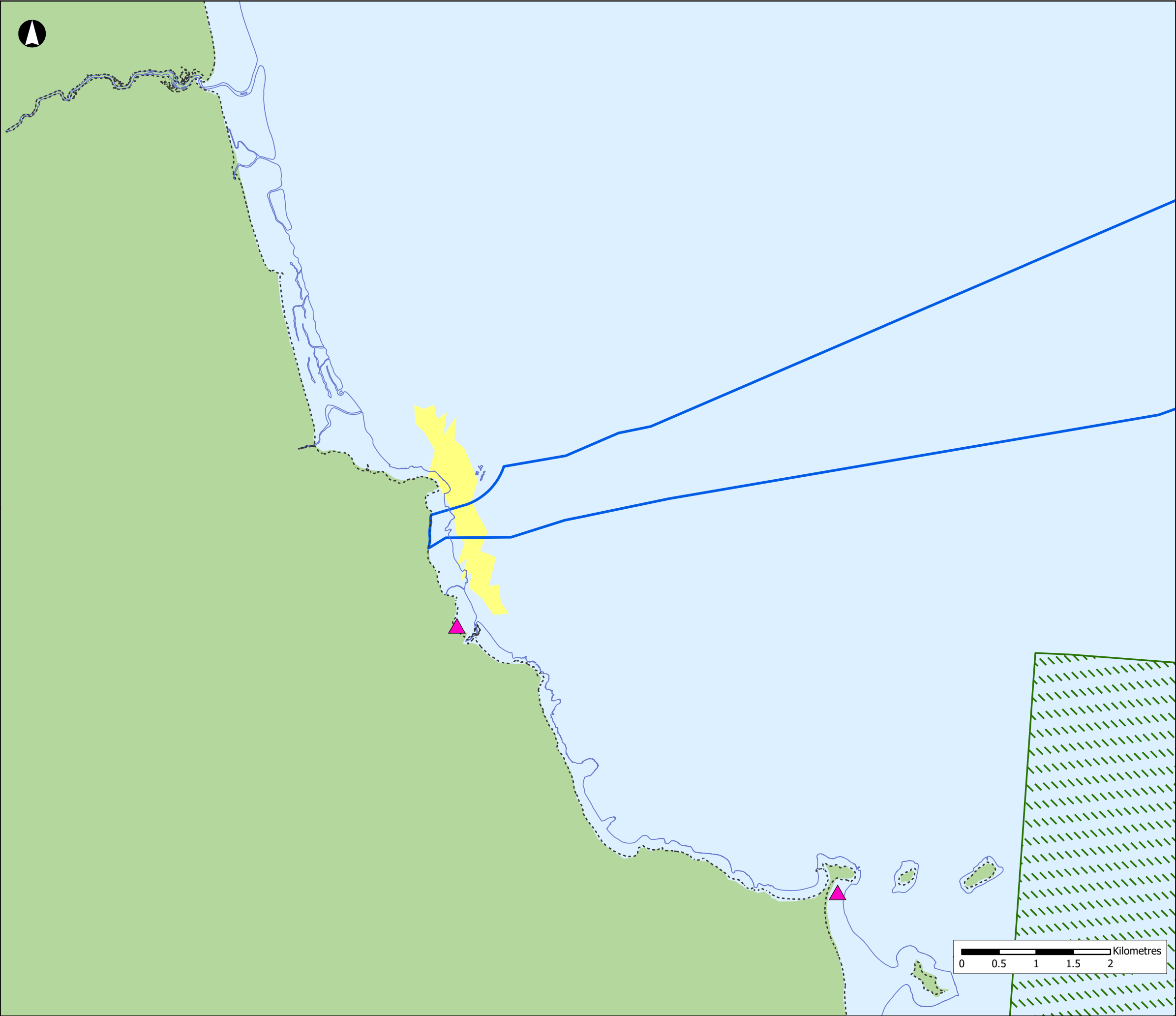
NISA
North Irish Sea Array

ARUP **GoBe**

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North Irish Sea Array
Offshore Wind Farm

Figure Title
Bentonite Plumes

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No:
Scale: 1:50,000 @A3	10.21
Status: Issue	



Offshore Export Cable Corridor

Low Water Mark

High Water Mark

Bathing Water Locations

Special Areas of Conservation

Bentonite Deposition (mm)

<1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

NISA

North Irish Sea Array

ARUP

GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Bentonite Deposition

Job No: 281240

Date: May 2024

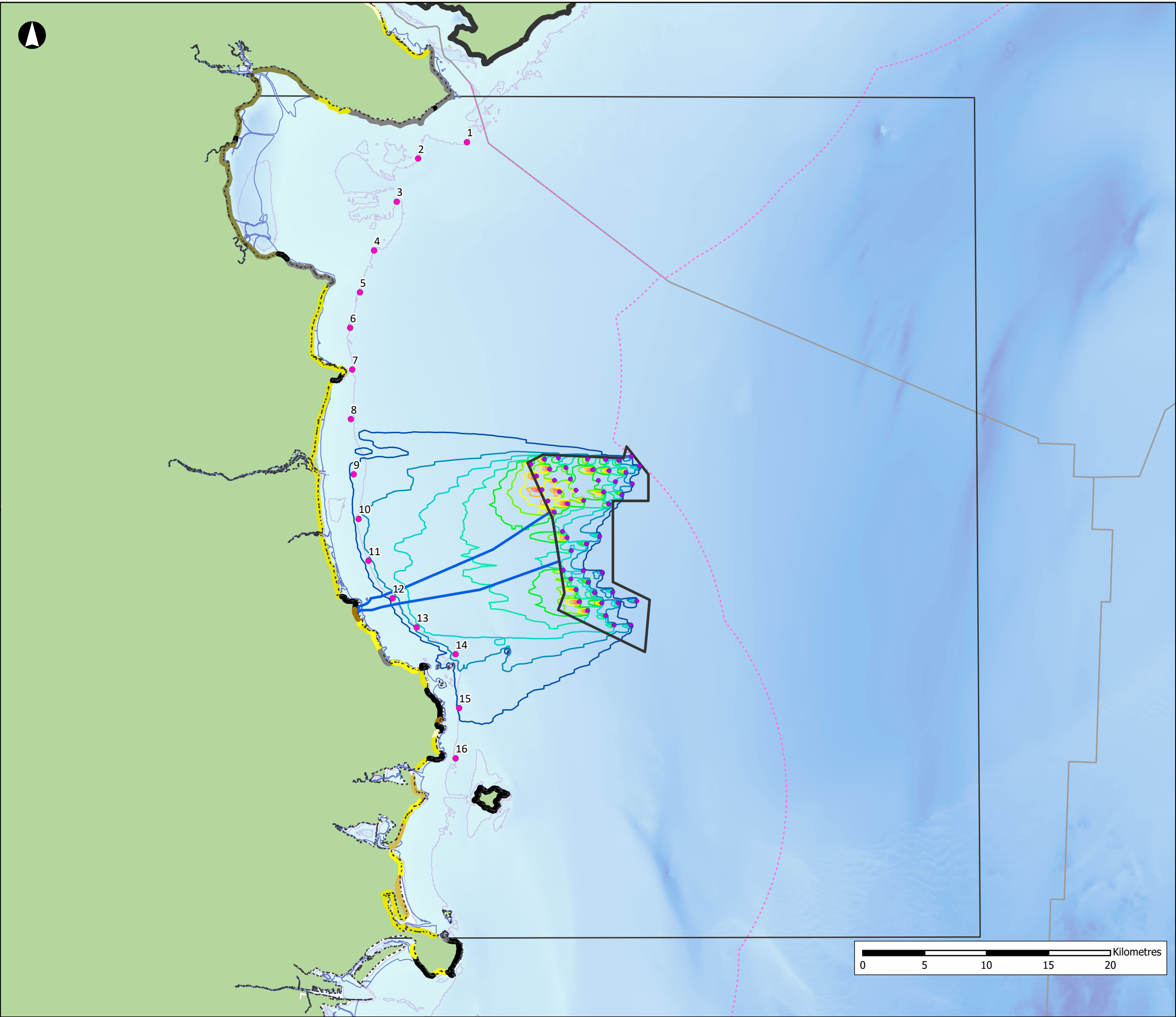
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.22



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Nearshore Sites

10m Contour

Coastal Types (EMODnet):

Beach that is part of extensive non-cohesive sedimentary systems (barrier, spit, tombolo)

Beach with rocky platform

Erodible rock and/or cliff, with rock waste and sediments (sand or pebbles) at its base

Erosion-resistant rock and/or cliff, without loose eroded material in the fronting sea

Gravel beach fronting upland (> 1 km long)

Muddy coastline, including tidal flat, salt marsh

Pocket beaches (< 200 m long)

Sand beach fronting upland (> 1 km long)

Small beaches

Reduction in Wave Height (m)

-0.65 - -0.60

-0.6 - -0.55

-0.55 - -0.50

-0.5 - -0.45

-0.45 - -0.40

-0.4 - -0.35

-0.35 - -0.30

-0.3 - -0.25

-0.25 - -0.20

-0.2 - -0.15

-0.15 - -0.10

-0.1 - -0.05

-0.05 - 0.00

Bathymetry (m)

0

200

NISA

North Irish Sea Array

ARUP

GoBe

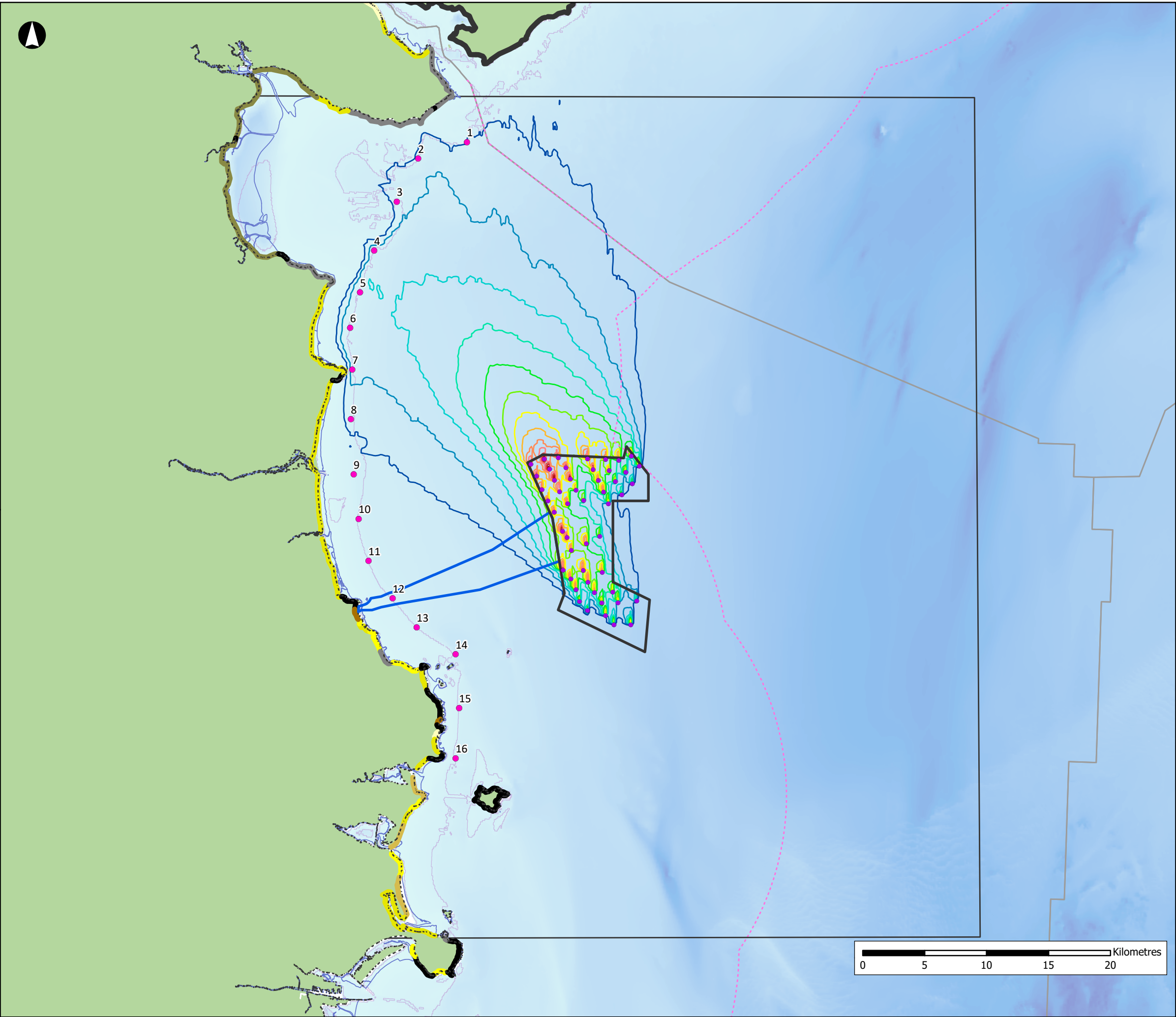
Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Wave Height Reduction from East-North-East

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No:
Scale: 1:300,000 @A3	10.23
Status: Issue	



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Nearshore Sites

10m Contour

Coastal Types (EMODnet):

Beach that is part of extensive non-cohesive sedimentary systems (barrier, spit, tombolo)

Beach with rocky platform

Erodible rock and/or cliff, with rock waste and sediments (sand or pebbles) at its base

Erosion-resistant rock and/or cliff, without loose eroded material in the fronting sea

Gravel beach fronting upland (> 1 km long)

Muddy coastline, including tidal flat, salt marsh

Pocket beaches (< 200 m long)

Sand beach fronting upland (> 1 km long)

Small beaches

Reduction in Wave Height (m)

-0.65 - -0.60

-0.6 - -0.55

-0.55 - -0.50

-0.5 - -0.45

-0.45 - -0.40

-0.4 - -0.35

-0.35 - -0.30

-0.3 - -0.25

-0.25 - -0.20

-0.2 - -0.15

-0.15 - -0.10

-0.1 - -0.05

-0.05 - 0.00

Bathymetry (m)

0

200

NISA

North Irish Sea Array

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Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Wave Height Reduction from South-South-East

Job No: 281240

Date: May 2024

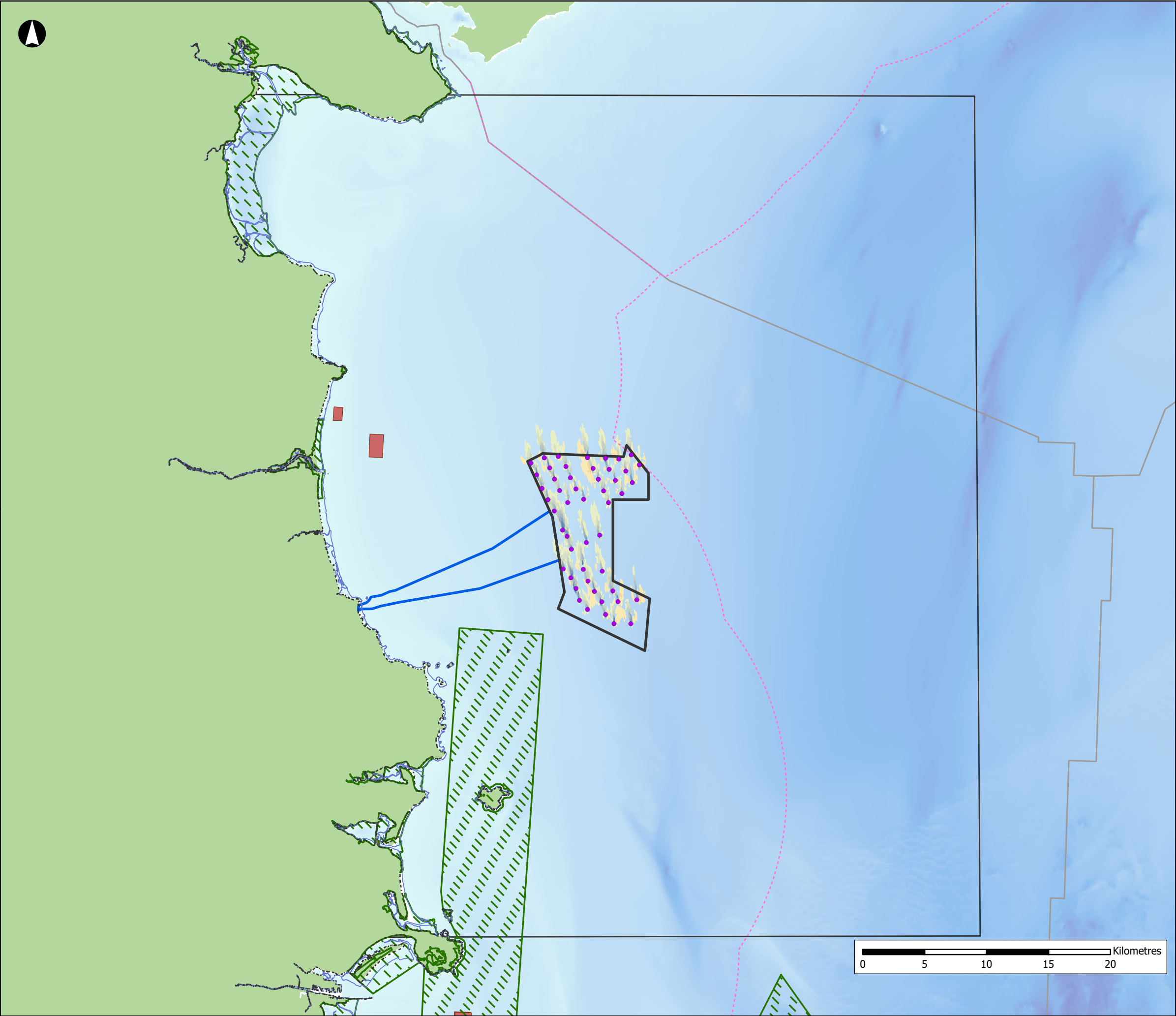
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Status: Issue

Datum: WGS84 Projection: UTM30N

Figure No:

10.24



Array Area

Offshore Export Cable Corridor

WTG Layout (Project Option 2)

Study Area

Low Water Mark

High Water Mark

EEZ Boundary

National EEZ (12nm)

Disposal At Sea Sites (Active)

Special Areas of Conservation

Change in Flow Speed (m/s)

< -0.02

-0.02 - -0.018

-0.018 - -0.016

-0.016 - -0.014

-0.014 - -0.012

-0.012 - -0.01

-0.01 - -0.008

-0.008 - -0.006

-0.006 - -0.004

-0.004 - -0.002

nil

0.002 - 0.004

0.004 - 0.006

0.006 - 0.008

0.008 - 0.01

0.01 - 0.012

0.012 - 0.014

0.014 - 0.016

0.016 - 0.018

0.018 - 0.02

> 0.02

Bathymetry (m)

0

200

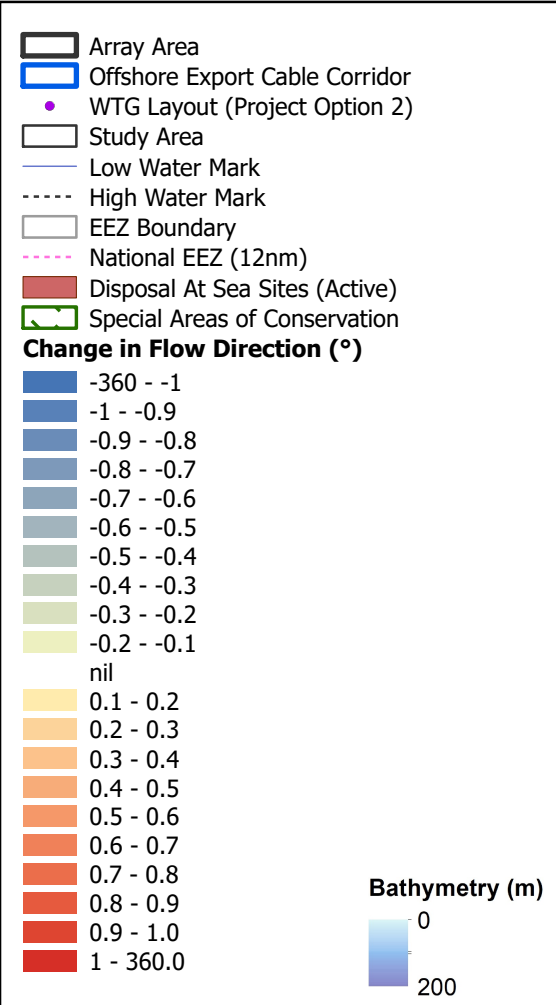
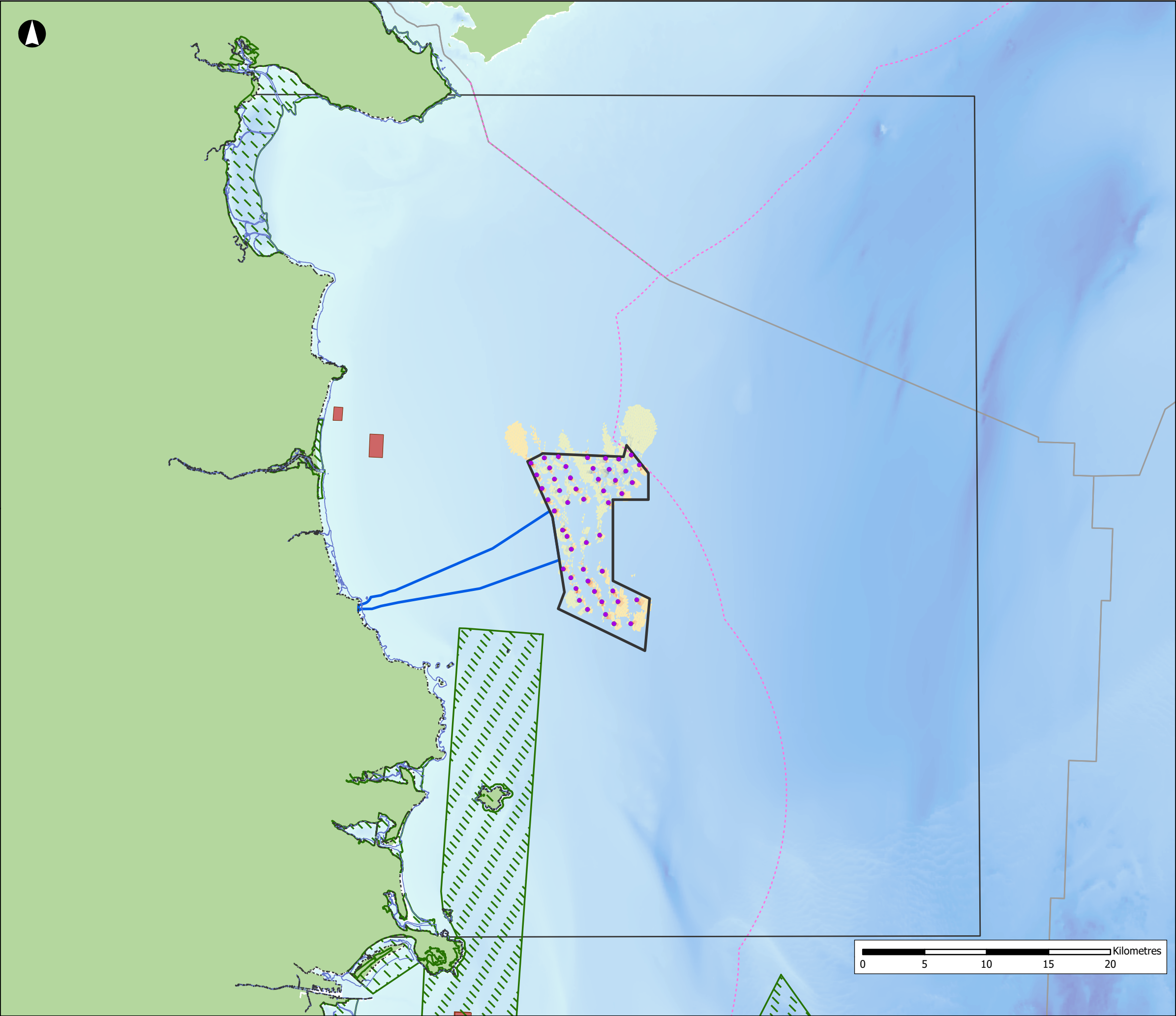
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**North Irish Sea Array
Offshore Wind Farm**

Figure Title
**Tidal Modifications - Change in
Peak Flood Flow Speed on
Spring Tide**

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No: 10.25
Scale: 1:300,000 @A3	
Status: Issue	



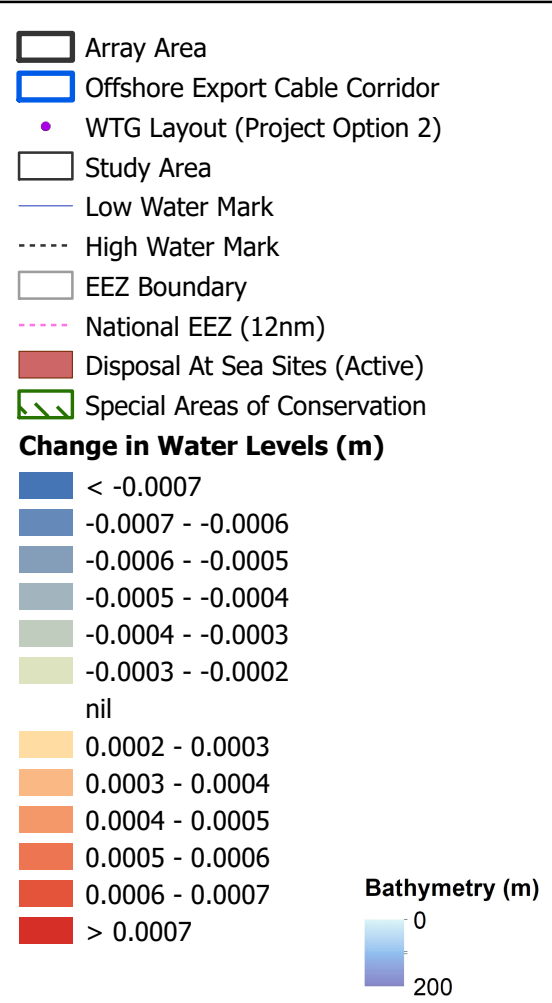
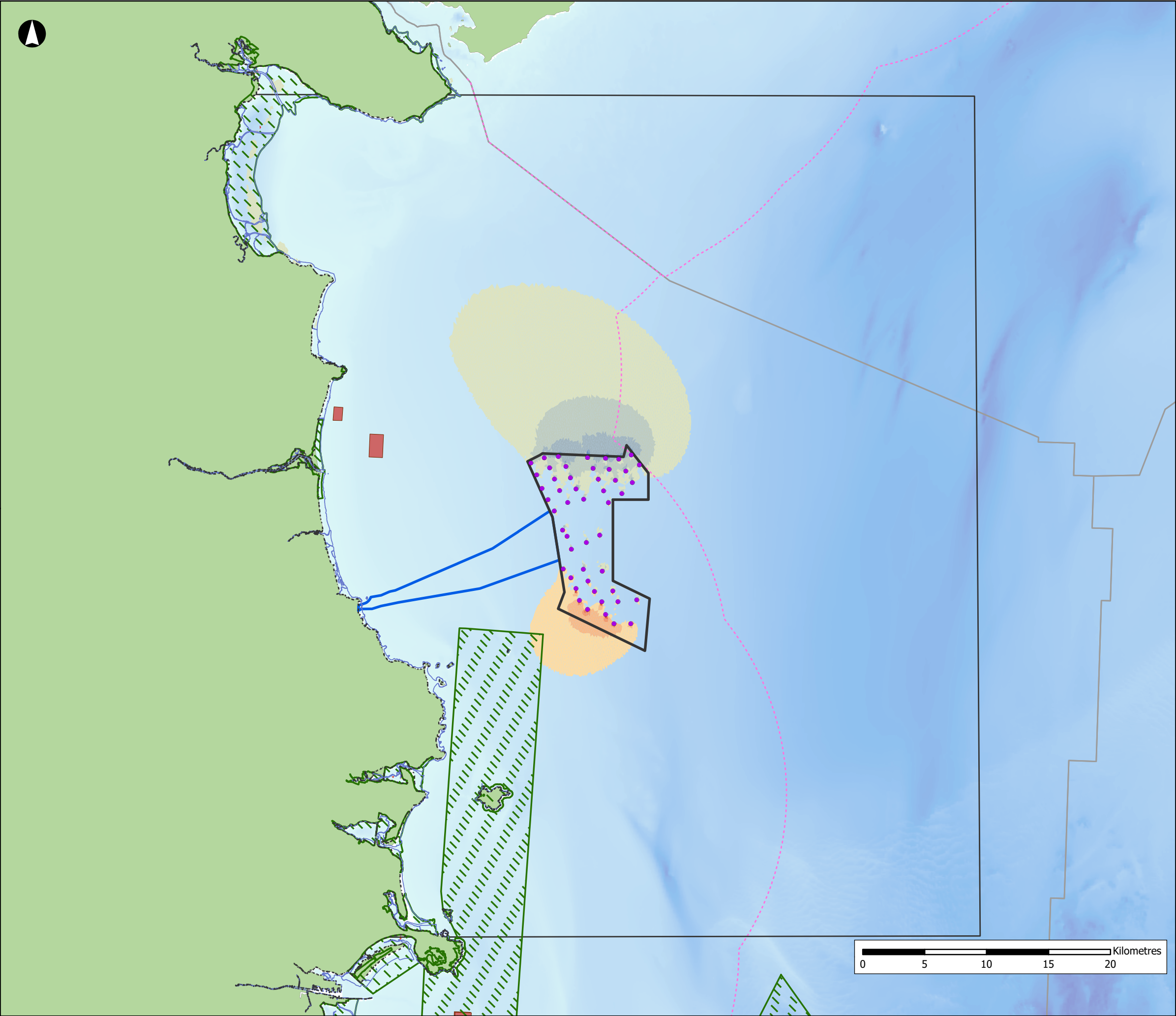
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Figure Title
Tidal Modifications - Change in
Peak Flood Flow Direction on
Spring Tide

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No:
Scale: 1:300,000 @A3	10.26
Status: Issue	



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Offshore Wind Farm**

Figure Title
**Tidal Modifications - Change in
Surface Elevation at Peak Flood
on Spring Tide**

Job No: 281240	Datum: WGS84 Projection: UTM30N
Date: May 2024	Figure No:
Scale: 1:300,000 @A3	10.27
Status: Issue	