

MARESCONNECT LIMITED

MaresConnect Electricity Interconnector

Water Framework Directive Assessment



P2578_R6717_Rev0 | 24 May 2023

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DOCUMENT RELEASE FORM

MaresConnect Limited

P2578_R6717_Rev0

MaresConnect Electricity Interconnector

Water Framework Directive Assessment

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Rev No	Date	Reason	Author	Checker	Authoriser
Draft	05/05/2023	Draft Issue	VF	EH	EH
Rev 0	24/05/2023	Addressing client comments	VF	SLT	LHA

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1. INTRODUCTION

MaresConnect is a proposed 750-megawatt (MW) High Voltage Direct Current (HVDC) electricity interconnector linking the power markets of Ireland and Great Britain (GB). The construction of the Interconnector is scheduled to commence in 2025, with testing and full operation from 2028. MaresConnect Limited (MCL) are investigating the feasibility of developing the electricity Interconnector coming ashore along the north Wales coast between Colwyn Bay and Abergele.

MCL intend to carry out geophysical, geotechnical and environmental marine surveys of the proposed marine cable route. The objective of the survey campaign is to acquire all appropriate data for the confirmation of a preferred marine route. This includes: detailed mapping of nearshore shallow geological and seabed character; reconnaissance level mapping of seabed relief and features along marine sections; and baseline environmental mapping along the entire marine cable corridor. At present, there are a total of 15 potential route options and three potential landfall zone options, however, these will be reduced and one route (or a combination of sections of several route options) and a maximum of two landfall zones will be selected for survey. There is the possibility that small sections of other routes presented could be surveyed if sensitive habitats are identified, in order to provide alternative options to routeing in these areas. The final selections will be communicated to Natural Resources Wales (NRW) once a decision has been made.

As part of the Marine Licence Application (MLA) for the geotechnical and environmental survey works, NRW have requested the project complete a Water Framework Directive (WFD) assessment. The aim of the WFD is for all water bodies to be at good status, meaning activities will be assessed to see if they will:

- cause or contribute to deterioration of status, and/or
- jeopardise the water body achieving good status.

This report includes the screening, scoping and impact assessment required for the WFD assessment.

2. SCREENING

A Method Statement for the proposed survey activities has been included with the MLA (Document Reference: P2578-R6143). The survey activities will include geophysical surveys along the selected route (encompassing a 500 m wide corridor centred on the route), with geotechnical and environmental samples collected at periodic intervals (1 km for vibrocore samples and every 5 km or when there is a change in habitat type for environmental grab samples) along the route. The exact locations of the sample sites is currently unknown as this will be determined following interpretation of the results of the geophysical survey. At each selected landfall site (up to two), a maximum of four boreholes may also be drilled in the intertidal area, with an additional marine borehole located at approximately the 4 m depth contour (the exact location will be informed by the geophysical survey).

As the geophysical survey is exempt from marine licencing, and it will not physically interact with the seabed, it has been screened out of the assessment. All activities that interact with the seabed (vibrocore sampling, grab sampling and boreholes) have been screened into the assessment.

3. SCOPING

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	MaresConnect Limited
Application reference number (where applicable)	N/A
Name of activity	MaresConnect Interconnector Marine Survey
Brief description of activity	<p>Geophysical, geotechnical and environmental surveys of one of the proposed MaresConnect interconnector cable routes. The objective of the survey campaign is to acquire all appropriate data for the confirmation of a preferred route. This includes detailed mapping of nearshore shallow geological and seabed character; mapping of seabed relief and features along offshore sections; and baseline environmental mapping along the entire marine cable corridor. Vibrocore samples, cone penetrometer testing, and grab samples will be acquired along the route at regular intervals, whilst boxcores and boreholes may also be sampled in select locations.</p> <p>There are currently 15 proposed routes and three proposed landfalls for the MaresConnect interconnector, however only one of these routes (or a combination of sections of several route options) and up to two landfall zones will be selected for</p>

	survey. The longest route continues through the North Wales water body for 8.55 km, so this route has been used for assessment to represent a worst-case scenario.
Location of activity (central point XY coordinates or national grid reference)	Please see attached shapefiles for route corridors.
Footprint of activity (ha)	<p>For activities that interact with the seabed, the footprint within the North Wales coastal water body will be as follows:</p> <ul style="list-style-type: none"> - Vibrocore samples every 1 km – a maximum sediment removal of 1.28 m³ (0.16 m³ per sample) - Grab sample stations every 5 km or when there is a change in habitat type (two additional samples have been added as a contingency) – a maximum sediment removal of 0.9 m³ (0.1 m³ per sample, three samples per station) - Boreholes – a maximum of up to four intertidal and one marine borehole at each selected landfall site, a maximum sediment removal of 2.5 m³ (0.25 m³ per sample, and exact locations to be determined by the geophysical survey, but the marine borehole will be in the vicinity of the landfall at approximately the 4 m depth contour). - A maximum total of 4.68 m³ of sediment removed within the North Wales water body
Timings of activity (including start and finish dates)	Exact timings for the survey are currently unavailable, however, the project is applying for a marine licence from March 2024 – December 2025 and the survey could take place at any point within this period. The anticipated survey duration is expected to be five months for the full survey campaign in both Welsh and Irish waters.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	As detailed above
Use or release of chemicals (state which ones)	No chemical release

Water body ¹	Description, notes or more information
WFD water body name	North Wales
Water body ID	GB641011650000
River basin district name	Western Wales
Water body type (estuarine or coastal)	Coastal
Water body total area (ha)	146.25
Overall water body status (2021)	Moderate
Ecological status	Moderate
Chemical status	Moderate
Target water body status and deadline	Good by 2033
Hydromorphology status of water body	Not assessed
Heavily modified water body and for what use	Yes: "Wider environment - nature protection and other ecological uses"
Higher sensitivity habitats present	Blue mussel beds, polychaete reef, saltmarsh
Lower sensitivity habitats present	Intertidal soft sediments, subtidal soft sediments
Phytoplankton status	Moderate
History of harmful algae	Not reported
WFD protected areas within 2km	Liverpool Bay Special Protection Area (SPA) Menai Strait and Conwy Bay Special Area of Conservation (SAC) Rhos-on-Sea Shellfish Waters Colwyn Bay bathing waters

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	Requires impact assessment	Impact assessment not required	No - The proposed marine survey will not affect water flow, tidal patterns or the morphological features of the water body.
Could significantly impact the hydromorphology of any water body	Requires impact assessment	Impact assessment not required	No – The small amount of sediment removed during the survey, which will total a maximum of 4.68 m ³ within the North Wales water body, will not significantly impact hydromorphology.
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	No – the planned activities are not the same use as the heavily modified water body.

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger	Yes to one or more – requires impact assessment	No to all – impact assessment not required	No – The maximum footprint of the geotechnical activity within the North Wales water body will be less than 0.5 km ² – a maximum amount of 4.68 m ³ of sediment will be removed.
1% or more of the water body's area			No – The activities will not cover more than 1% of the North Wales water body's area.

Within 500m of any higher sensitivity habitat			Yes – Some of the proposed routes are located within 500 m of mapped instances of polychaete reef and blue mussel beds.
1% or more of any lower sensitivity habitat			No – Samples collected will not affect more than 1% of any lower sensitivity habitat.

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Continue with questions	Go to next section	No – the survey is not in an estuary and the proposed works will not impact fish.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)	Requires impact assessment	Impact assessment not required	N/A
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	N/A

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment	Impact assessment not required	No – the proposed survey will result in localised sediment suspension, however this will disperse quickly and will not continually affect any of the listed receptors.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	Yes - The phytoplankton status of the North Wales water body is assessed as moderate.
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No – the North Wales water body does not have a history of harmful algae.

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	No – No chemical will be discharged during the proposed marine survey.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	No – Based on the small amount of sediment that will be removed during the survey works (a maximum of 4.68 m ³)

			it is not anticipated that any sediment contaminants will be disturbed.
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If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment ⁵	Impact assessment not required	No – No chemicals will be released and there is no mixing zone for the survey works.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment	Impact assessment not required	Yes - the project will cross the Liverpool Bay SPA and Menai Strait and Conwy Bay SAC within the North Wales water body. The project may cross the Colwyn Bay bathing water area depending on the selected route. The project is located a minimum distance of 395 m from the Rhos-on-Sea shellfish area, but may be located further away (or outside of the 2 km boundary) depending on the selected survey corridor.

⁶ *Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.*

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

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

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	No - The introduction of invasive non-native species (e.g. through biofouling) is managed under the Wildlife and Countryside Act 1981 within the UK. Guidance from the IMO, specifically the “2011 Guidelines For The Control And Management Of Ships' Biofouling To Minimize The Transfer Of Invasive Aquatic Species” will be followed to prevent the spread of invasive non-native species on vessels and equipment used during the survey.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	
Biology: habitats	Yes	The drilling of vibrocore samples or boreholes may take place within 500 m of polychaete reef and blue mussel beds.
Biology: fish	No	

Water quality	Yes	The phytoplankton status of the North Wales water body is assessed as moderate.
Protected areas	Yes	The survey will cross two SACs, may cross (or will be within 2 km) of the Colwyn Bay bathing water area and may be within 2 km of the Rhos-on-Sea shellfish waters depending on the selected route.
Invasive non-native species	No	

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.

4. IMPACT ASSESSMENT

4.1 Scoping summary

This section details the impact assessment of the proposed survey activity on the following receptors identified during the scoping stage as being at risk:

- Biology: habitats; and
- Protected areas.

The risk assessment follows the advice from the Environment Agency (Environment Agency, 2017) as recommended by NRW.

4.2 Biology: habitats

The scoping stage identified that some of the proposed survey corridors are located within 500 m of mapped locations of the higher sensitivity habitats polychaete reef and blue mussel beds. These are located within the intertidal area at two of the selected landfall sites, as shown in Figure 4-1 (Drawing reference: P2579-HAB-009). One of the survey corridors shows a spatial overlap of 9.5 m with a blue mussel bed.

The blue mussel beds and polychaete reefs (Honeycomb worm; *Sabellaria alveolata*) have only been identified in the intertidal zone within the vicinity of the proposed survey routes within the North Wales water body. As a result, no vibrocore or grab samples will be taken within 500 m of these habitats as these are part of the marine survey scope and will not be conducted within the intertidal area. There is however a possibility that boreholes could be drilled within 500 m of these identified habitats.

The boreholes will be drilled to inform the design of the horizontal directional drilling (HDD) at the selected landfall site. Whilst the borehole locations are not currently known, they will be sited to avoid the blue mussel beds the survey corridor will cross so as not to damage the feature. Blue mussel beds are assessed as having a medium sensitivity to the pressures of penetration or disturbance of the substratum subsurface and smothering and siltation rate changes (light) (Tillin et al., 2022). Honeycomb worm is assessed as having a very low sensitivity to increases in suspended sediment and is not sensitive to smothering (Jackson, 2008). The closest survey corridor to mapped polychaete reef is located 435 m away, so will not impact the substratum associated with the reef as there is no pressure-receptor pathway.

Whilst the distance from the blue mussel beds to the proposed borehole location is currently not known, the pressure will be mitigated as it will not be located close enough to the mussel bed to cause disturbance to the substratum subsurface of the bed. This will be ensured through tool box talks with the selected survey contractor to communicate the importance of the feature and the requirement for avoidance of this feature during the survey. The proposed boreholes will remove 0.25 m³ of sediment per borehole, and any sediment disturbed and subsequently suspended during tidal movements in the intertidal area is expected to disperse quickly due to the high-energy environment. The survey works will be temporary and any sediment suspension is expected to be short-term and negligible in comparison to usual background levels, so will not impact either feature. It is therefore not expected that there will be any potential impact on the reef or mussel beds from the survey activities. No further mitigation will be required.

4.3 Water quality

The phytoplankton status of the North Wales water body is assessed as moderate, so has been scoped in for further assessment.

There is the potential that any suspended sediment caused by the geotechnical and environmental survey could affect phytoplankton levels through a reduction in light availability (Schallenberg and Burns, 2004). However, the temporary nature of the survey, combined with the small seabed footprint of sampling activity, means any sediment suspension and associated effects on light penetration will be highly localised and short-term with any changes expected to be restricted to a single tidal cycle. As a result, it is not considered that the survey will pose a risk to the phytoplankton status of the North Wales water body.

4.4 Protected areas

The survey works will take place within, or within 2 km of, the following WFD protected areas:

- Liverpool Bay Special Protection Area (SPA)
- Menai Strait and Conwy Bay Special Area of Conservation (SAC)
- Rhos-on-Sea shellfish waters
- Colwyn Bay bathing waters

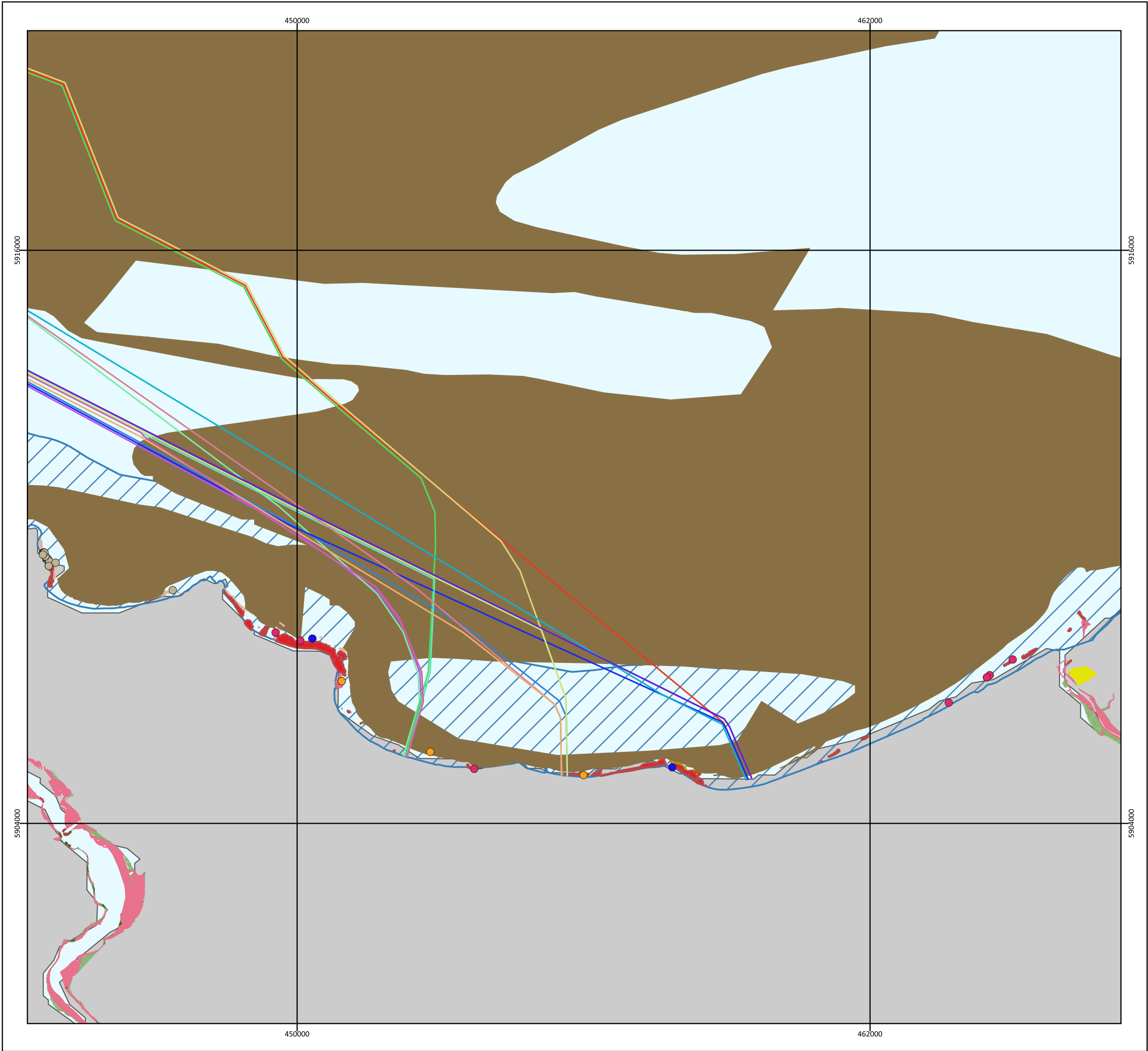
Liverpool Bay SPA is designated for its waterbird assemblage, breeding populations of little tern (*Sterna albifrons*), and common tern (*Sterna hirundo*), and overwintering populations of red-throated diver (*Gavia stellata*), little gull (*Hydrocoloeus minutus*), and common scoter (*Melanitta nigra*).

The Menai Strait and Conwy Bay SAC is designated for Annex I habitats sandbanks which are slightly covered by sea water all the time (H1110), mudflats and sandflats not covered by seawater at low tide (H1140), reefs (H1170), large shallow inlets and bays (H1160), and submerged or partially submerged sea caves (H8330).

Several of the potential route options cross the Conwy Bay bathing water area and the closest route option is located approximately 395 m from the Rhos-on-Sea shellfish waters area.

The geotechnical and environmental survey could be a risk to these sites based on penetration and/or disturbance of the substrate or smothering and siltation rate changes (Light). These pressures were assessed for the Menai Strait and Conwy Bay SAC in the Habitats Regulations Assessment Screening (Document Reference: P2578-R6146), where it was concluded there would be no likely significant effects on the site. These pressures may have an impact on prey species for the designated species of the Liverpool Bay SPA. The temporary nature of the survey, combined with the small seabed footprint of sampling, means any disturbance of the sediment and associated suspension will be highly localised and short-term with any changes expected to be restricted to a single tidal cycle. Similarly, the footprint of the survey activities is very small in comparison to the size of the site and available foraging area for the designated species. As a result, it is not considered that the survey activities will have any impacts upon the conservation objectives of the identified European sites.

As discussed previously, any sediment suspension is expected to be highly localised and temporary. It is therefore not considered that this will have an impact on the shellfish or bathing waters within 2 km of the survey activities.



ENVIRONMENTAL SCOPING REPORT – WELSH MARINE ROUTE

BENTHIC HABITATS

Environment (Wales) Act (2016) Section 7 Priority
Marine Habitats and WFD Coastal Waterbodies

Drawing No: P2578-HAB-009

A

Legend

North Wales Coastal Waterbody

Cable Routes

W1I1

W1I2

W1I3

W1I4

W1I5

W2I1

W2I2

W2I3

W2I4

W2I5

W3I1

W3I2

W3I3

W3I4

W3I5

Intertidal Underboulder

Honeycomb Worm Sabellaria Alveolata

Blue Mussel Bed

Peat Clay

Intertidal Mudflats

Mixed Muddy Sediments

Intertidal Underboulder

Estuarine Rock

Saltmarsh

Saline Lagoon

Honeycombe Worm Sabellaria Alveolata

Seagrass Bed

Blue Mussel Bed

N

Environment (Wales) Act (2016) Section 7 Priority Marine Habitats

Peat Clay

Intertidal Mudflats

NOT TO BE USED FOR NAVIGATION

maresconnect

intertek

0 1 2 3 4 km

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© Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Exclusive Economic Zone (EEZ), version 11. Available online at <http://www.marineregions.org/>. <https://doi.org/10.14284/387>; Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right. Derived in part from data provided under licence by the British Geological Survey © NERC; © The GEBCO Digital Atlas published by the British Oceanographic Data Centre on behalf of IOC and IHO, 2003; Information contained here has been derived from data that is made available under the European Marine Observation Data Network (EMODnet) Seabed Habitats project (www.emodnet-seabedhabitats.eu), funded by the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG MARE); Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.; © MaresConnect 2023

5. CONCLUSION

The WFD assessment has considered the impacts of the proposed MaresConnect marine survey on all receptors listed in the scoping template. The receptors of biology (habitats), water quality and protected areas were scoped in for further risk assessment.

The risk assessment concluded that due to the temporary nature and small area of seabed affected by the proposed geotechnical and environmental survey works, there would be no risk of deterioration of any quality elements of the North Wales water body or jeopardisation of the North Wales water body from reaching 'Good status'.

REFERENCES

1 Environment Agency (2017). Water Framework Directive assessment: estuarine and coastal waters [online]. Available at: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters#impact-assessment-consider-impacts-and-mitigation> [Accessed April 2023].

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3 Schallenberg, M. and Burns, C.W., 2004. Effects of sediment resuspension on phytoplankton production: teasing apart the influences of light, nutrients and algal entrainment. *Freshwater Biology*, 49(2), pp.143-159.

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