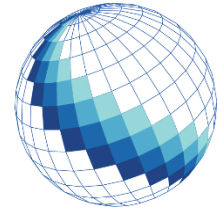
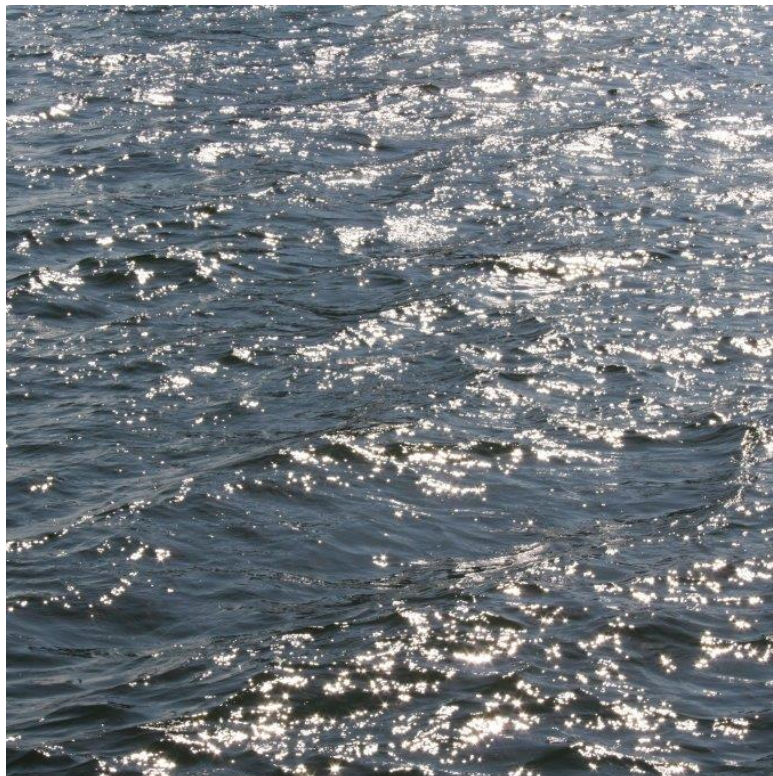


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Mona Offshore Wind Farm Geotechnical Site Investigations 2022: Water Framework Directive Compliance Assessment



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1. Introduction

bp and EnBW (Energie Baden-Württemberg) are seeking marine licences to carry out a deep geotechnical survey within the Mona offshore wind farm Round 4 bidding area, located in the Irish Sea. As part of the marine licence application for Natural Resources Wales (NRW), NRW require a Water Framework Directive (WFD) compliance assessment is completed for the proposed works.

Under the WFD, all proposed schemes with the potential to impact upon WFD-designated water bodies must be assessed to ensure:

- No deterioration of the current status or potential of any WFD quality elements; and
- Future attainment of 'good' status or other objectives of any WFD quality elements is not prevented.

This report follows guidance provided in NRW Operational Guidance Note (OGN) 072 (NRW, 2018) for the production of a WFD compliance assessment report.

2. Method Statement

The proposed works are for a deep geotechnical survey in relation to the Round 4 preferred bidders, bp and EnBW joint venture offshore wind farms, Mona and Morgan, located in the Irish Sea. The survey works are required to inform the engineering design to support the offshore windfarm developments. The offshore geotechnical site investigation will include removal of sediments and rock material from drilled boreholes (marine licensable activity) and Cone Penetration Tests (CPT) (non-marine licensable activity) within the Morgan and Mona Round 4 offshore wind bidding area.

This NRW marine licence application is for the borehole samples to be taken within the Mona offshore wind bidding area only, which is predominately located within Welsh offshore waters.

Geotechnical Site Investigations

Up to 16 boreholes will be taken within the Mona Offshore Wind Farm bidding area site, to a maximum depth of 80 m below seabed (bsb). The Mona Round 4 offshore bidding area is located beyond the 12 nautical mile (nm) limit, at approximated 30 km from the north Wales coast.

The geotechnical site investigation boreholes will be undertaken using the American Petroleum Institute (API) mode. Drilling is performed using soil boring equipment through a central moon pool using a topdrive power swivel. The equipment includes a fixed derrick rig, mud mixing and pumping unit, and other tools and accessories required to carry out the survey. A heave motion compensator is fitted to the power swivel to ensure the drill bit maintains a uniform pressure on the base of the borehole during drilling operations. An ample supply of drilling mud is provided; a spare string of drill pipe, sufficient spare parts and other supplies required to avoid delays are available.

To ensure maximum core recovery, industry standard water-based drilling fluid with bentonite will be used, which is environmentally inert. This is an effective solution in most geotechnical drilling applications with good gel strength and shear thinning properties.

The SEADEVIL™ combined with the Fugro extended marine core barrel (FXMCB) is proposed as the primary coring solution. This proven system delivers quality data whilst maximising vessel up time in this high energy environment. Geobor S piggyback coring is the secondary coring solution to utilised for the final month at the end of fieldwork to target particular rock units, for up to 8 of the boreholes.

Timings and Sequence of Works

The geotechnical site investigations are planned to be undertaken between 01 May 2022 and October 2022. A maximum of 5 months duration, inclusive of weather downtime.

It is anticipated the boreholes will take approximately 129 days and the CPTs will take 20 days. This is the total duration for both the Morgan and Mona bidding areas (English and Welsh waters).

Consents are being sought to cover a 12-month period from 01 April 2022 to 31 March 2023 as a worst-case scenario to ensure sufficient contingency and reduce the need for subsequent licence variations, should works be delayed.

3. Screening and Scoping

NRW OGN 072 provides details of certain activities that are not considered to present a risk of deterioration of water body status, of preventing a water body from achieving its objective. It is stated that “*Sediment (grab) samples where the total sample volume across all samples in the total application is no more than 4 cubic metres. The density of grab samples should not exceed 50 samples within any one hectare*” can be screened out to assessment. However, the sediment samples proposed for this application (drilled boreholes and CPTs) are not considered to qualify as “*sediment (grab) samples*”. In accordance, the proposed activities are taken forward to the Scoping stage.

The scoping assessment is completed using the scoping template provided by UK Government (UK Gov, 2017), in conjunction with NRW guidance (NRW, 2018). A completed assessment can be found overleaf. This determines that an impact assessment of the works is required in relation to water quality and WFD protected areas.

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; and
- 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	EnBW and bp
Application reference number (where applicable)	Unknown
Name of activity	Deep Geotechnical Survey of Mona Offshore Windfarms Round 4 Bidding Area 2022
Brief description of activity	<p>Geotechnical Site Investigations – deep boreholes</p> <p>Number of boreholes – 16</p> <p>Diameter (mm) – 229</p> <p>Maximum depth (m) - 80</p>

	<p>Approximate Total volume collected per sample (m3) – 3.3</p> <p>Approximate Total volume collected (m3) – 52.8</p>
Location of activity (central point XY coordinates or national grid reference)	Full coordinates in appendix A – Indicative Mona bidding area boundary coordinates within attached spreadsheet
Footprint of activity (ha)	Up to 50 m ²
Timings of activity (including start and finish dates)	The boreholes and CPTs are planned to be undertaken between May and October 2022. It is anticipated that within this window the boreholes will take approximately 129 days to complete and the CPTs will take approximately 20 days, depending on weather, inclusive of the survey within English and Welsh waters. However, a licence is requested from 01 April 2022 extending until end of 31 March 2023 to allow contingency in the programme should the survey be delayed, for example, due to bad weather downtime.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	Up to 16 geotechnical site investigation boreholes will be taken within the Mona offshore wind farm Round 4 bidding area. Boreholes will be up to 80 m deep and with a maximum of 229 mm diameter.
Use or release of chemicals (state which ones)	Only use of bentonite within drilling fluids

Water body ¹	Description, notes or more information
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WFD water body name	North Wales – located approximately 30 km from the nearest point of the Mona offshore wind Round 4 bidding area where works will be undertaken.
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 (2015)	Moderate
Ecological status	Ecological
Chemical status	Fail
Target water body status and deadline	Good; 2021
Hydromorphology status of water body	Not assessed
Heavily modified water body and for what use	Yes: <i>“Wider environment - nature protection and other ecological uses”</i>
Higher sensitivity habitats present	Saltmarsh; blue mussel beds
Lower sensitivity habitats present	Subtidal geogenic reef; intertidal soft sediments like sand and mud
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); The Dee Estuary SPA; Dee Estuary SAC. Conwy, Llandudno Shellfish Waters; Dee (west) Shellfish Waters; Rhos-on-Sea Shellfish Water. 1x nitrate vulnerable area (#14)

Water body ¹	Description, notes or more information
WFD water body name	Anglesey North – located approximately 26 km from the nearest point of Mona offshore wind Round 4 bidding area where works will be undertaken.
Water body ID	GB641010620000
River basin district name	Western Wales
Water body type (estuarine or coastal)	Coastal
Water body total area (ha)	126.03
Overall water body status (2015)	Moderate
Ecological status	Good
Chemical status	Fail

Target water body status and deadline	Good; 2021
Hydromorphology status of water body	Not reported
Heavily modified water body and for what use	No
Higher sensitivity habitats present	Polychaete reef; saltmarsh.
Lower sensitivity habitats present	Subtidal soft sediments like sand and mud; subtidal geogenic reef.
Phytoplankton status	Not reported
History of harmful algae	Not reported
WFD protected areas within 2km	Designated bathing waters: Cemaes; Traeth Lligwy; Benllech; St Davids – Benllech; Llanddona. Red Wharf Bay, Moelfe; North Anglesey Marine SAC; Anglesey Terns SPA; Liverpool Bay SPA; Menai Strait and Conwy Bay SAC.

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	Works expected to be associated with negligible changes in hydrological processes and seabed morphology due to distance from coastal waterbodies. As such, there is no risk of changes to hydromorphology.
Could significantly impact the hydromorphology of any water body	Requires impact assessment	Impact assessment not required	Borehole collection will result in removal of benthic sediment. However, the overall total volume of sediment will not exceed 53 m ³ and the area of the works is approximately 30 km from the coast of North Wales. This is considered insufficient to affect local hydromorphology.
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	Activities do not take place in a water body that is heavily modified for the same use as the proposed activities.

Section 2: Biology

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			Footprint <0.5 km ²
1% or more of the water body's area			Footprint <1% of water body extent

Within 500m of any higher sensitivity habitat	Yes to one or more – requires impact assessment	No to all – impact assessment not required	The works are located approximately 26km from the nearest coastal waterbody and sensitive habitat.
1% or more of any lower sensitivity habitat			Footprint <1% of 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	The works are not located near an estuary. Works are located beyond 12 nm from the coast, at approximately 30 km from the north Wales coast.
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

Section 3: Water quality

Consider if water quality is at risk from your activity.

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	Borehole removal will result in highly localised short-term increase in suspended sediment concentration/turbidity and release of water based drilling fluids with bentonite. However, this is expected to disperse rapidly and environmentally inert.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	No
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No

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 chemicals on the EQSD will be intentionally released into the marine environment. Water based drilling fluids with bentonite, which is environmental inert, may be used for the borehole works. Bunding, storage facilities and spill kits will be employed to contain and prevent the accidental release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	Sediments may be disturbed during borehole removal. In view of the distance from the coast and extensive geographic area of the Mona offshore wind Round 4 bidding area (approximately 500 km ²) in which works are proposed, it can be excluded that this will involve disturbance of sediments containing contaminants above Cefas Action Level 1.

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	Impact assessment not required	No mixing zone associated with these works.

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

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	No WFD protected areas are located within 2 km of the proposed works.

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

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	All equipment, materials, machinery and PPE used will be in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing non-native species into the marine environment.

Summary

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	
Biology: habitats	No	
Biology: fish	No	
Water quality	No	
Protected areas	No	No WFD protected areas or other Marine Protected Areas (MPA) are located within 2km of the proposed works.
Invasive non-native species	No	It is determined that the proposed works present negligible risk of spread or introduction of INNS.

4. Compliance Assessment

The outcome of the WFD Screening and Scoping (Section 3) concluded that there is no potentially significant impact from the proposed works that may prevent any WFD quality element within any water body achieving good status or which may cause deterioration. Therefore, no further compliance assessment has been undertaken.

5. Conclusion

This assessment has considered the potential risks to WFD receptors from the proposed environmental, geotechnical and geophysical survey works. All receptors were scoped out of assessment, primarily due to the offshore location of the proposed works (beyond 12 nm).

Pathways to potential impacts were limited to sediment mobilisation from borehole removal, and associated changes in turbidity and/ or contaminant levels and release of water based drilling fluids containing bentonite. However, given the temporary and small magnitude of predicted changes within the offshore area, the proposed survey is not expected to pose any risk of deterioration in water body status, or of adverse effects on WFD protected areas.

It is concluded that the proposed works do not pose any risk to the status or objectives of local WFD water bodies. The impacts assessed have all been determined to have a negligible impact at the scale of the overall water body and as such the proposed activities are considered to be compliant with the WFD.

6. References

NRW (Natural Resources Wales), 2018. OGN 072 Guidance for assessing activities and projects for compliance with the Water Framework Directive.

UK Gov (UK Government), 2017. Guidance: Water Framework Directive assessment: estuarine and coastal waters. Available at: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters#scoping-identify-risks-to-receptors> [Accessed December 2020].

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