

Mona Offshore Wind Farm
Fferm Wynt Alltraeth

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Mona Offshore Wind Farm
Array Area Geotechnical Survey Marine Licence (Variation)
Supporting Information Document

Latest revision						
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List of abbreviations

Abbreviation	Definition
AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
BHA	Bottom Hole Assembly
BWTS	Ballast Water Treatment System
CPT	Cone Penetrometer Testing
DCO	Development Consent Order
DESNZ	Department for Energy, Security and Net Zero
dML	deemed Marine Licence
EC	European Commission
ECC	Export Cable Corridor
EEC	European Economic Community
EIA	Environmental Impact Assessment
EQSD	Environmental Quality Standard Directive
ES	Environmental Statement
FLO	Fisheries Liaison Officer
GBS	Gravity Base Structure
GeS	Good Ecological Status
GES	Good Environmental Status
HRA	Habitats Regulations Assessment
ICES	International Council for the Exploration of the Sea
IMO	International Maritime Organization
INNS	Invasive Non-Native Species
JV	Joint Venture
LSE	Likely Significant Effect
MBES	Multi-Beam Echo Sounder
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zones
ML	Marine Licence
MLA	Marine Licence Application
MLT	Marine Licensing Team
MMO	Marine Management Organisation
MPA	Marine Protected Area
NRW	Natural Resources Wales
OFTO	Offshore Transmission Owner

Supporting Information Document

Abbreviation	Definition
PAD	Protocol for Archaeological Discoveries
PPE	Personal Protective Equipment
RCAHMMW	Royal Commission on the Ancient and Historical Monuments of Wales
SAC	Special Area of Conservation
SBES	Single-Beam Echo Sounder
SID	Support Information Document
SMNR	Sustainable Management of Natural Resources
SPA	Special Protection Area
SSC	Suspended Sediment Concentration
SSSI	Site of Special Scientific Interest
TRT	Thermal Resistivity Testing
TSHD	Trailing Suction Hopper Dredger
UK	United Kingdom
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generator

1 Introduction

The Mona Offshore Wind Project (hereafter referred to as Mona) is being developed by Mona Offshore Wind Limited (the “Applicant”), a wholly owned company of JERA Nex bp. Mona is located in the east Irish Sea and will have a transmission capacity of up to 1.5GW at the point of connection to the grid.

Mona was awarded a Development Consent Order (DCO) on the 4th of July 2025 by the Secretary of State (SoS) for the Department for Energy, Security and Net Zero (DESNZ)¹. The DCO includes a Deemed Marine Licence (dML) which covers the Generation Assets associated with Mona (including Wind Turbines Generators (WTGs), Offshore Substation Platforms (OSPs) inter-array cables (IACs) and interconnector cables (ICCs)). Mona was awarded a Marine Licence for Transmission Assets by Natural Resources Wales in September 2025.

A Marine Licence (ML) has been awarded for the undertaking of geotechnical works within the Mona Array Area (RML2602) between 01 April 2026 and 31 October 2028. The area of works is herein referred to as “the Survey Area” (see Figure 3-1). Geophysical surveys are also proposed covering the same area as the geotechnical surveys considered here, however these are non-licensable activities and therefore exemptions will be submitted for these works.

It should be noted that separate ML applications will be submitted for a geotechnical survey within the Export Cable Corridor (ECC) to inform the development of the Transmission Assets, and a geotechnical survey within the intertidal area, both of which are beyond the scope outlined for the Generation Assets above. The licence application for the ECC geotechnical survey will include a survey area which encompasses the Mona Export Cable Corridor (ECC), which is located in the east Irish Sea within Welsh waters, and extends into the array area up to the proposed location of the Mona Offshore Platforms (OSPs). The licence application for the intertidal works will not overlap with this applications survey area.

1.1 Document Purpose

The Applicant have been awarded a ML for the undertaking of geotechnical works within the Mona Array Area (RML2602), however due to changes in engineering constraints, Mona is seeking to vary the existing licence. This geotechnical scope is herein referred to as “the proposed works”. The proposed site investigation works, which includes a geotechnical survey, are anticipated to commence from 01 December 2026 within the Mona array area to inform the design of the WTG foundations, offshore substations and cable routing within the Generation Area. This document forms the Supporting Information Document (SID) for the proposed geotechnical survey works. It intends to provide Natural Resources Wales (NRW) and their statutory consultees with the necessary information to determine the Marine Licence Application.

1.2 Changes and Impacts from the Varied Parameters

This SID considers the original potential impacts and the changes in parameters from the original RML2602 Application. Full details on the parameters relevant to this variation are found within Section 3, however a high level summary includes:

- An increase in the number of boreholes, resulting in a larger total volume of sediment removed;
- An additional size of Cone Penetration Testing (CPT), resulting in three sizes rather than two;
- The addition of Borehole Geological Logging (a non-intrusive method);
- An increase in the depth of shallow sampling resulting in an overall increase in the volume of sediment removed,
- The addition of one survey vessel (now a total of four); and
- A change in the anticipated programme start date; updated to start from 01 December 2026.

Each section of this SID has been reviewed and updated as appropriate in line with these updated parameters. Rather than presenting a comparison to the original ML in every section, this SID presents a full assessment in line with the updated parameters. All proposed mitigation and monitoring remains unchanged from the original ML (RML2602).

¹ Mona Offshore Wind Farm Development Consent Order 2025 (as amended). Available at: [The Mona Offshore Wind Farm Order 2025](#)

1.3 Document Structure

The structure of this document alongside a description of its contents are outlined in Table 1-1.

Table 1-1: Document structure and contents

Section	Title	Description
1	Introduction	This section provides brief introduction to the proposed works and outlines the purpose of this document.
2	Legislative and Policy Context	This section outlines the relevant legislation and policy associated with the proposed works.
3	Description of Works	This section details the nature of the proposed works in terms of the locations, durations and techniques involved.
4	Supporting Environmental Appraisal	This section provides a high-level account of the receiving environment and a consideration of potential effects from the proposed works.
5	Habitats Regulation Assessment (HRA)	This section considers the proposed works in the context of the Habitats Regulations.
6	Marine Conservation Zone Assessment	This section considers the potential impacts of the proposed works on Marine Conservation Zones.
7	Sites of Special Specific Interest	This section considers the potential impacts of the proposed works on Sites of Special Specific Interest.
8	Water Framework Directive (WFD) Assessment	This section summarises the compliance in the context of the WFD (noting based on distance to water bodies, no WFD assessment has been completed).
9	Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan	This section provides detail around mitigation and management of biosecurity and invasive non-native species, which is used as part of the Marine INNS Biosecurity Risk Assessment and Management Plan (presented in full within Appendix B).
10	Best Practice and Proposed Mitigation Measures	This section provides detail on the proposed mitigation measures and processes to be followed as part of the proposed works.
11	Conclusion	This section summarises and concludes the SID.
12	References	This section provides detail on all the references used within this document.
Appendix A	Marine Plan Policy Assessment	This appendix provides an assessment of the proposed works alignment with policies outlined in the Welsh Marine Plan.
Appendix B	Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan	This appendix provides an assessment of the potential impacts of the proposed works with respect to biosecurity and invasive non-native species.

2 Legislative and Policy Context

2.1 Legislation

2.1.1 Marine Licensing

The Marine and Coastal Access Act 2009 (MCAA) introduced planning and management systems for overseeing activities in the marine environment. Notably, this included the requirement to obtain marine licences for certain activities conducted at sea. It created a strategic marine planning system that seeks to promote the efficient and sustainable use and protection of the marine environment through Marine Policy Statements, and a series of Marine Plans (see Section 2.2 and Appendix A). The Act provides the framework for a Marine Licensing system, with the Welsh Government as the licensing authority for the Welsh inshore and offshore region. The NRW Marine Licensing Team (MLT) administer MLs. As the proposed survey involves the placement of objects on the seabed and the removal of sediment from the seabed which exceeds the allowances permitted under 'Exemptions', under Section 66 of the MCAA a ML is required.

2.1.2 The Habitats Regulations

The European Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, also referred to as the 'Habitats Directive', has the primary aim of maintaining biodiversity within Member States. The Habitats Directive is transposed into Welsh law by The Conservation of Habitats and Species Regulations 2017 (as amended), otherwise known as the 'Habitats Regulations'.

The Habitats Regulations identify several habitats or species whose conservation interest requires the designation of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), which form a set of protected sites within the United Kingdom (UK) referred to as the National Site Network.

The Survey Area extends across Welsh inshore and offshore waters. Where a plan or project that is not directly connected with or necessary to the management of a protected site is likely to have a significant effect on that site, either alone or in combination with other plans or projects, the competent authority must undertake an Appropriate Assessment (AA) of the implications of the plan or project for the site in view of its conservation objectives. This requirement is established under regulation 63 of the Conservation of Habitats and Species Regulations 2017 and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017, as applicable.

A Likely Significant Effect (LSE) is defined, in this context, as any effect that may be reasonably foreseen, as a consequence of the project, that may affect the conservation objectives of its qualifying interests. It must be noted that this is in the absence of mitigation and excludes trivial or inconsequential effects.

This SID provides the competent authority with the information required to determine whether an AA is necessary and, where required, to inform that assessment. Further consideration of protected sites is provided in Section 5.

2.1.3 Water Framework Directive

The Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament) is transposed into Welsh law through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The WFD aims to achieve a good quality status for all rivers, lakes, transitional waters (estuaries), coastal waters, groundwater and groundwater dependant wetlands. As such, the main aims of the WFD are to:

- Prevent deterioration and enhance the status of aquatic ecosystems, including groundwater;
- Promote sustainable water use;
- Reduce pollution; and
- Contribute to the mitigation of floods and droughts.

Consideration of the proposed works and its alignment with the WFD is discussed further in Section 6.

2.2 Policy Context

2.2.1 Welsh National Marine Plan

The Marine Policy Statement, adopted by all UK administrations in March 2011, provides a policy framework for the preparation of Marine Plans and establishing how decisions affecting marine areas should be made. It aims to ensure that marine resources are used in a sustainable way and in line with the following high-level objectives:

- Promote sustainable economic development;
- Enable the UK to move towards a low-carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapt to their effects;
- Ensure a sustainable marine environment that promotes healthy, functioning marine ecosystems and protects marine habitats, species and heritage assets; and
- Contribute to the societal benefits of the marine area, including the sustainable use of marine resources to address local social and economic issues.

The Marine Plans translate the Marine Policy Statement into detailed policy and guidance for particular areas, intended to inform and guide decisions on marine developments by conserving and enhancing the environments, reducing costs, increasing certainty for developers and boosting economic and employment benefits.

The Welsh National Marine Plan was published in 2019 and introduces a framework to support sustainable decision making for the marine environment and several policies specific to the renewable energy sector. It sets out thirteen high level marine objectives, which have been considered in relation to the proposed works within Table 2-1 below. A full Welsh National Marine Plan Signposting Assessment has also been undertaken to show consideration of the specific Marine Plan Policies relative to renewable energy developments, and this is provided in Appendix A to support this Marine Licence variation.

Table 2-1: Marine Plan objectives

Theme	Objective	Objective detail	Description of consideration
Overarching	1	Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, supporting the Sustainable Management of Natural Resources (SMNR) through decision making and by taking account of the cumulative effects of all uses of the marine environment.	The proposed works are being undertaken as part of the wider Mona offshore wind development, and have been designed to support evidence-based decisions for the construction of the offshore wind farm (OWF). This aligns with the well-being goals in Wales, through promoting a resilient, low carbon economy, whilst undertaking sustainable planning. Consideration of cumulative effects of the proposed works alongside other projects and plans has been considered within Sections 4 and 5 of this SID.
Achieving a sustainable marine economy	2	Contribute to a thriving Welsh economy by encouraging economically productive activities and profitable and sustainable businesses that create long-term employment at all skill levels.	The proposed works provide essential data to inform the design and delivery of Mona offshore wind development, which will provide an economically productive and sustainable activity within the Welsh Marine Area. The lifetime of the project will enable long-term skill development, and support the transition to a sustainable, low carbon economy.
	3	Support the opportunity to sustainably develop marine renewable energy resources with the right development in the right place, helping to achieve the UK's energy security and carbon reduction objectives, whilst fully considering other's interests, and ecosystem resilience.	The proposed works provide essential data to inform the design and delivery of the Mona offshore wind development. The proposed works therefore allow for the construction of marine renewable energy in a responsible and sustainable way, and therefore support the UK's energy security and carbon reduction objectives.
	4	Provide space to support existing and future sustainable economic activity through managing multiple uses, encouraging the coexistence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing the displacement of existing activities.	Consideration has been given to other projects and plans, with the proposed works planned to avoid interference. A project-specific FLO will develop and issue Notice to Mariners (NtM) and Kingfisher notifications and the vessel will display the appropriate navigational signals at all times. Further information on other marine users is provided within Section 4 of this SID.
	5	Recognise the significant value of coastal tourism and recreation to the Welsh economy and well-being and ensure such activity and potential for future growth are appropriately safeguarded.	The proposed works are short-term and temporary. There will be no adverse effects on tourism, thereby safeguarding the potential for future growth.
Ensuring a strong, healthy and just society	6	Contribute to supporting the development of vibrant, more equitable, culturally and linguistically distinct, cohesive and resilient coastal communities.	The proposed works provide essential data to inform the design and delivery of the Mona OWF, which will generate jobs within the Welsh Marine Area. In turn, supporting the development of coastal communities.

Theme	Objective	Objective detail	Description of consideration
	7	Support enjoyment and stewardship of our coasts and seas and their resources by encouraging equitable and safe access to a resilient marine environment, whilst protecting and promoting valuable landscapes, seascapes and historic assets.	The proposed works are short-term and temporary, and will not change the seascape of the Welsh Marine Area. Heritage assets have been considered in Section 4 of this SID.
	8	Improve understanding and enable action supporting climate change adaptation and mitigation.	The proposed works provide essential data to inform the design and delivery of the wider Mona offshore wind development. Mona is a renewable energy development which form part of the UK's plans to achieve energy security and meet its carbon reduction objectives.
Living within environmental limits	9	Support the achievement and maintenance of Good Environmental Status (GES) and Good Ecological Status (GeS).	Effects of the proposed works on the marine environment have been considered in Section 4 of this SID. No significant impacts have been identified, and any effects have been minimised where possible through appropriate mitigation.
	10	Protect, conserve, restore and enhance marine biodiversity to halt and reverse its decline including supporting the development and functioning of a well-managed and ecologically coherent network of Marine Protected Areas (MPAs) and resilient populations of representative, rare and vulnerable species.	Consideration of designated sites in the vicinity of the proposed works have been considered within Sections 5 of this SID. No significant impacts have been identified, and any effects have been minimised where possible with appropriate mitigation.
	11	Maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations.	Effects of the proposed works on the marine environment have been considered in Section 4 of this SID. No significant impacts have been identified, and any effects have been minimised where possible through appropriate mitigation.
Promoting good governance	12	Support proportionate, consistent and integrated decision making through implementing forward-looking policies as part of a plan-led, precautionary, risk-based and adaptive approach to managing Welsh seas.	The assessment provided within this SID is proportionate to the scale of potential impacts from the proposed works.
Using sound science responsibly	13	Develop a shared, accessible marine evidence base to support use of sound evidence and provide a mechanism for the unique characteristics and opportunities of the Welsh Marine Area to be better understood.	The proposed works provide essential data to inform the design and delivery of the wider Mona offshore wind development, which has undertaken environmental assessments of the Welsh Marine Area, with the results made publicly available within the Mona ES. Additionally, all data collected as part of these surveys will be shared with the relevant authorities (in this case NRW) which can be used to inform other project decisions.

3 Description of Works

3.1 Overview

The objective of the geotechnical survey is to establish the characteristics and properties of the different seabed substrates within the Array Area to inform the design of the Mona Offshore Windfarm. Data will be acquired to investigate the seabed conditions relevant to the design of the foundations of the WTGs OSPs and cable routing.

The surveys proposed within this MLA for the Mona Array Area consist of:

- Deep geotechnical surveys including:
 - Boreholes;
 - CPT;
 - Pore Pressure Dissipation Tests (PPDT);
 - High Pressure Dilatometer (HPD); and
 - Borehole Geological Logging.
- Shallow geotechnical surveys, including:
 - Vibrocores or equivalent shallow sampling methodology;
 - CPT; and
 - Thermal Resistivity Testing (TRT).

As the CPTs, PPDTs, HPDs, TRTs and borehole geological logging do not involve the removal of any seabed sediment, these are considered non-licensable activities under the Marine and Coastal Access Act (see Section 2); these activities have been included in this SID for completeness and for information only.

It should also be noted that the samples taken from the geotechnical survey will be used to inform seabed conditions only and not sediment contaminant analysis, which has already been undertaken to inform disposal site characterisation. The Mona Array Area - Site Characterisation Report (document reference J19) was submitted alongside the EIA and award of the DCO has subsequently consented the use of disposal site for dredge and disposal activities associated with the construction of the OWF. As such no further sediment contaminant analysis is required.

3.2 Methodology

The deep geotechnical sampling and testing within the Survey Area will be undertaken using a combination of borehole, CPT, PPDT, HPD, and borehole geological logging, while shallow geotechnical sampling and testing within the Survey Area will be undertaken with a combination of vibrocores or equivalent shallow sampling methodology, CPT and TRT. As a part of the operation a seabed frame is deployed, of which the size may vary dependent on the contractor's equipment.

Boreholes

Drilling is performed from a dynamically positioned vessel, equipped with a derrick and heave-compensated top drive, using soil boring equipment which is lowered through a central moonpool on the vessel. At the start of a borehole the seabed frame is lowered onto the seabed. The seabed frame acts as a fixed entry/re-entry point to locate the borehole and as a reaction force for downhole testing and sampling. The drill string is lowered until the Bottom Hole Assembly (BHA) passes through the opened pipe clamp and reaches the seabed to start drilling operations. After drilling and performing the sampling and in-situ tests, the drill string, including the downhole tools, will be lifted and retrieved to the vessel, as will the seabed frame.

Approximately 140 borehole samples will be taken with an estimated volume of material to be removed of approximately 102.96 m³, as detailed in Table 3-1. Geotechnical samples via coring will be taken for laboratory analysis and testing.

Table 3-1: Borehole parameters and estimated sediment volumes

Section	No. of Samples	Diameter (mm)	Maximum Depth (m)	Estimated Volume Collected per Sample (m ³)	Estimated Volume Collected (m ³)
Mona Array Area	140 boreholes	230 (the diameter of the sample recovered will be up to 102 mm)	90	0.735	102.96

CPT

A CPT is undertaken using a cone penetrometer, a cone connected to a string of rods, pushed into the seabed at a controlled rate. As it penetrates, the variations in cone resistance, sleeve friction and pore pressure (or other parameters) are continuously recorded. Signals from the sensors pass through a control and data transmission module on the seabed frame are then transmitted, in digital form, to the surface via a combined power and signal umbilical line. In situ testing will also be undertaken with a CPT tool. A minimum of three types of cone will be mobilized of estimated cross-sectional areas of 5 cm², 10 cm², and 15 cm² respectively.

PPDT

In reference to the PPDT, the principle behind the method is to monitor the rate at which excess pore water pressure dissipates within the sediment following penetration of a piezocone or similar probe. After the probe is advanced to the target depth, penetration is paused, and sensors record changes in pore pressure over time as the sediment returns toward equilibrium. This process provides valuable information on soil permeability and consolidation characteristics. PPDT is a non-percussive technique that relies on static measurement rather than vibration or impact, minimizing disturbance to the surrounding sediments. Data collected during dissipation will be used to assess in-situ conditions and inform geotechnical interpretations.

HPD

In reference to the high-pressure dilatometer (HPD) testing, the principle behind the method is to measure the deformation response of in-situ sediments when subjected to controlled radial pressure. The HPD probe is inserted into a pre-drilled borehole and consists of an inflatable membrane that expands against the borehole walls under increasing pressure. This expansion allows measurement of soil stiffness, strength, and deformability characteristics at depth. The test is static and non-percussive, relying on gradual pressure increments rather than vibration or impact, which minimizes disturbance to surrounding sediments. Data recorded during the pressure cycles provides detailed insight into the sediment's stress-strain behaviour and consolidation properties.

BH Geophysical Logging

Borehole Geophysical Logging (BGL) may be undertaken following completion of drilling and withdrawal of the drilling string to provide continuous in situ measurements of the physical, chemical and structural properties of the subsurface strata intersected by the borehole. The survey will be performed by lowering a suite of geophysical logging probes into the open borehole using a calibrated winch system equipped with a depth counter and linked to a surface data acquisition unit. As the probes are raised and/or lowered through the borehole, continuous geophysical measurements will be recorded against depth to generate a series of borehole logs that can be used to characterise geological or geotechnical properties.

The BGL survey is a non-intrusive investigation technique that does not involve further penetration or disturbance of the formation beyond the previously drilled borehole. Logging will be conducted within an uncased (open) borehole and no downhole equipment remains in contact with the formation other than the logging probes suspended on the wireline. As the method relies upon access through an open borehole, there is a residual risk of borehole instability or collapse during operations. In the event that borehole conditions deteriorate and the logging tools become irretrievably trapped, the wireline may require severing to allow safe recovery of the survey equipment at surface, resulting in the loss of the downhole probes within the borehole.

Shallow sampling

Shallow sampling shall be performed by vibrocore, borehole drilling (as described earlier within the section) or by equivalent alternative shallow sampling methodology. The choice of sampling method would not affect the shallow sample parameters and estimated sediment volumes as per Table 3-2. In reference to the vibrocore sampling, the principal behind the method is the use of low-level vibration that is transferred from the vibrocorer head down through the attached barrel or core tube. This vibrational energy liquefies sediments, enabling the core barrel attached to the vibrocore unit to penetrate the liquefied sediments. Sampling using vibrocores will not require percussive methods. A core catcher is attached to the end of the barrel which holds the contents inside when withdrawn from the sediment.

Up to 500 shallow samples will be taken with an estimated volume of up to 32.7m³, as detailed in Table 3-2. Geotechnical samples via coring will be taken for laboratory analysis and testing.

Table 3-2: Shallow sample parameters and estimated sediment volumes

Section	No. of Samples	Diameter (mm)	Maximum Depth (m)	Estimated Volume Collected per Sample (m ³)	Estimated Volume Collected (m ³)
Mona Array Area	500	230 (the diameter of the sample recovered will be up to 102 mm)	8	0.0654	32.68

TRT

A thermal resistivity test is carried out using a thermal probe, which is inserted into the seabed and contains heating elements and temperature sensors that apply a controlled heat load to the surrounding sediment. As heat is introduced, the change in temperature over time is continuously recorded, allowing calculation of the sediment's thermal resistivity and conductivity. These measurements are logged and analysed to assess heat dissipation characteristics for subsea cables.

3.3 Location

The survey will be undertaken within the Mona Array Area, as illustrated in Figure 3-1. The exact locations of the works are not yet determined. The determination of the locations will be based on the results of geophysical survey data.

3.4 Vessels and Access

All works will be boat-based and undertaken offshore, with survey vessels likely to be transiting from Barrow, Holyhead or Liverpool (vessels may transit from other ports if necessary). It is anticipated that a maximum of up to four vessels associated with the survey will be required.

3.5 Programme

The geotechnical surveys are planned to commence from 01 December 2026. A licence is requested from 01 December 2026 extending until 31 October 2028 to allow contingency in the programme should the survey be delayed.

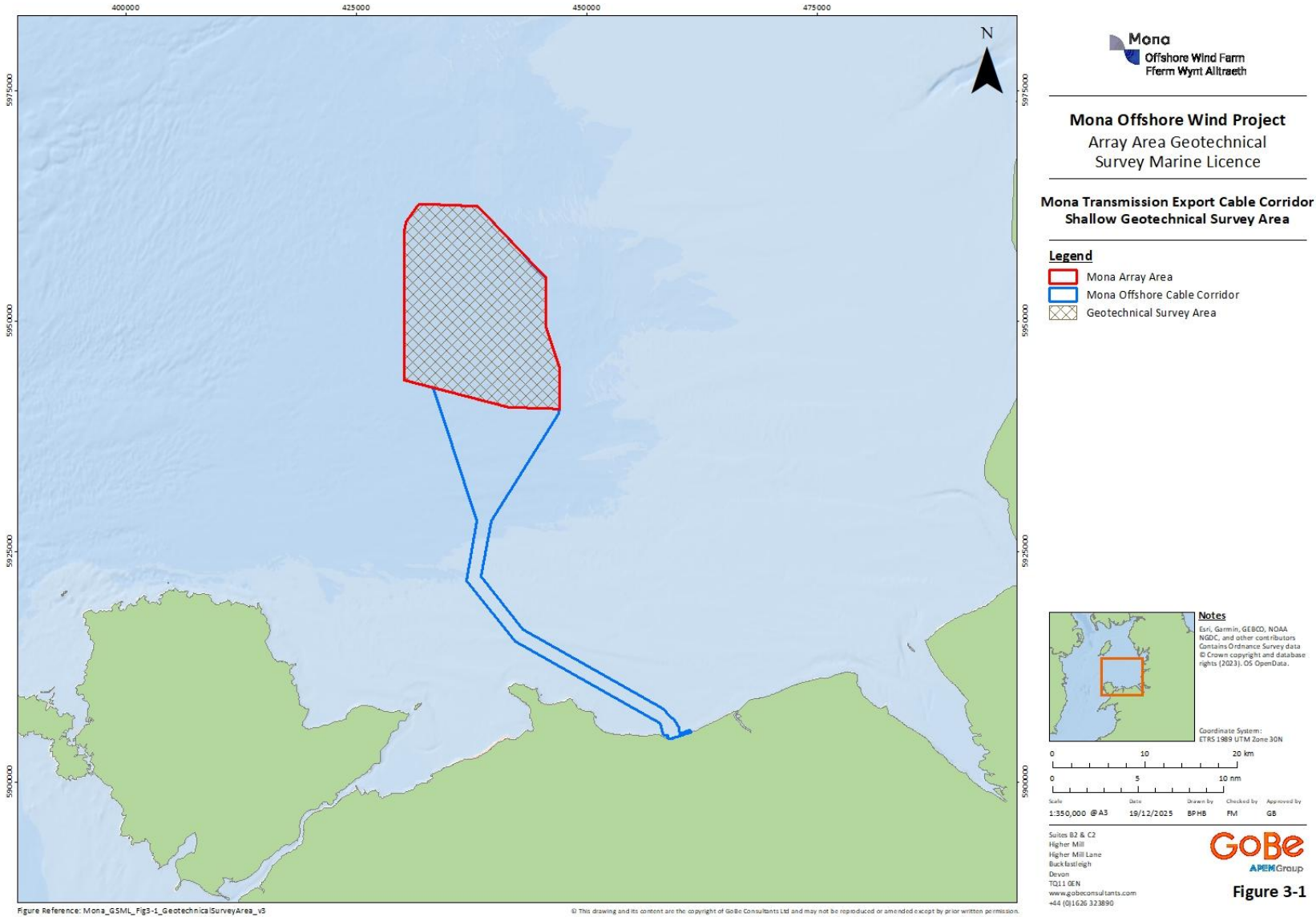


Figure 3-1: Mona Offshore Wind Project Geotechnical Survey Area

4 Supporting Environmental Appraisal

4.1 Identification of Potential Effects

Table 4-1 below provides an overview of the identified receptors using the 'Source-Pathway-Receptor' model, alongside the potential impacts and environmental appraisal. The potential impact pathways identified are primarily derived from the Mona ES and associated DCO application documents, although it is noted that the range and scale of activities and impacts within the ES far exceed those associated with the proposed works. Where relevant, the conclusions of the ES assessments on geotechnical surveys are presented in the assessment below.

When considering effects that may result from the proposed works, there are a number of important points (drawn largely from the information presented in Section 3 of this report) to consider which have a material bearing on both the magnitude of effect and sensitivity of receptor. These include:

- The works are small scale, short term and temporary;
- The proposed works will be undertaken in a suitable window, and are expected to be undertaken between 01 December 2026 and 31 October 2028. Therefore, the following assessment considers the worst-case scenario in the context of seasonal sensitivities; and
- Individual tasks and sampling at each location will be brief, lasting a short period of time per site, subject to weather conditions.

This section is intended to provide NRW with the necessary information to determine the ML application and has been presented in a manner proportionate to the scale and nature of the proposed works.

Table 4-1: Consideration of environmental receptors and potential impacts

Receptor	Potential impacts	Supporting information
Physical processes	Direct effects from physical seabed disturbance	The removal of sediment and use of the sampling frame will provide localised disturbance to the seabed with increased Suspended Sediment (SSC). However, given the small scale and short term, temporary nature of these works, disturbance on the seabed around the geotechnical frame or as a result of the sampling will be limited, with no notable alteration to the physical environment or seabed expected. Any small scour pits or holes left during sample removal would be rapidly infilled via natural sedimentary processes. Therefore, any effects on physical processes are not anticipated to be significant in Environmental Impact Assessment (EIA) terms with no specific mitigation required.
Benthic subtidal and Intertidal ecology	Direct effects from physical seabed disturbance	The Survey Area is made up of broadscale habitats typified primarily by sandy sediments. These habitats are characterised by a number of biotopes none of which are considered sensitive to disturbance from the types of activities proposed. Additionally, the Mona array area contains seapens and burrowing megafauna communities, brittlestar beds, and communities of bivalves and polychaetes. It is considered that while some communities are considered to have a high sensitivity to disturbance, the limited spatial and temporal scales of the proposed works means that any seabed disturbance would be temporary and recoverable in the short term. It is therefore considered that any effects on the seabed habitats as a result of seabed disturbance from the proposed will not be significant in EIA terms.
Fish and shellfish ecology	Direct effects from physical seabed disturbance	With respect to the potential for direct effects from physical seabed disturbance, due consideration is given to less mobile receptors (such as shellfish) and receptors that exhibit demersal and substrate dependant spawning behaviours, such as Atlantic herring (<i>Clupea harengus</i>) and sandeel (<i>Ammodytidae</i> spp.). The proposed survey area overlaps with a high intensity spawning ground for sandeel, a demersal species, which exhibits substrate dependency for spawning behaviours, and therefore may be impacted by seabed disturbance from survey activities. However, given the limited spatial and temporal scale of the proposed works, particularly in relation to the broadscale nature of the spawning ground (which spans across the majority of the East Irish Sea, Figure 3.3 within ES Volume 2, Chapter 3: Fish and Shellfish Ecology, document reference F2.3), and wider distribution of suitable substrates for sandeel across the region, it is considered that there is no potential for population level effects on sandeel as a result of seabed disturbance from the proposed works, and therefore there is no significant effect in EIA terms. The proposed survey area overlaps with substrates characterised as potential spawning habitats for herring, however these substrates do not lie within an area recognised as a spawning ground for herring, with the closest spawning ground to the proposed survey area located north and northwest of Mona, outside any range of impact from seabed disturbance (Figure 3.2 within ES Volume 2, Chapter 3: Fish and Shellfish Ecology, document reference F2.3). There is also no evidence of spawning activity within the proposed survey area (as indicated by herring larval densities used as a proxy (NINEL 2012-2021, as illustrated within Figure 3.7 within ES Volume 2, Chapter 3: Fish and Shellfish Ecology, document reference F2.3)). Therefore, given the absence of interaction with the herring population as a result of seabed disturbance from the proposed works, there is no significant effect in EIA terms.

Receptor	Potential impacts	Supporting information
		The proposed survey area also overlaps with a high intensity spawning ground for Atlantic cod (<i>Gadus morhua</i>). Whilst cod exhibit site fidelity and males display lekking behaviour during the spawning season (defending small, temporary territories linked to suitable substrates), this occurs at a broad spatial scale, with individuals returning to extensive spawning areas rather than specific fixed locations. Although lekking behaviour may be associated with suitable seabed features, the territories established are small, temporary and flexible, and do not constrain movement within the wider spawning ground. Cod are pelagic broadcast spawners, releasing eggs into the water column, and reproduction is therefore not dependent on specific substrate conditions (unlike herring). Consequently, there is no direct dependency between cod spawning success and the discrete areas of seabed that may be affected by the proposed survey activities. Any localised disturbance would be temporary and of a scale that would allow spawning individuals to utilise alternative areas within the broader spawning ground without affecting reproductive success. Therefore, given the nature of cod spawning behaviour and the limited spatial and temporal scale of the proposed works relative to the extent of the high intensity spawning ground, there is no potential for population-level effects on cod as a result of physical seabed disturbance, and therefore no significant effect in EIA terms. The proposed survey area is also important for King scallop (<i>Pecten maximus</i>) and Queen scallop (<i>Aequipecten opercularis</i>). However, given the limited spatial and temporal scale of the proposed works, particularly in relation to the broadscale population distribution of these receptors across the Irish Sea, it is considered that there is no potential for population level effects as a result of seabed disturbance from the proposed works, and therefore no significant effects in EIA terms.
	Underwater sound	When considering the potential for disturbance from underwater sound, due consideration is given to receptors that exhibit demersal spawning behaviours (and are therefore considered unlikely to flee from the onset of sound, increasing their exposure to underwater sound from the geotechnical surveys), receptors of high sensitivity to noise, and migratory receptors of conservation importance that may transit the area during migration). Importantly, no percussive drilling is expected as part of the survey works and there is unlikely to be a significant increase in underwater noise above vessel disturbance, due consideration is provided here of the appropriate receptors for completeness. Within the vicinity of the survey area, herring are considered the most sensitive receptor to disturbance from underwater sound, as they possess a swim bladder that is involved in hearing and exhibit demersal spawning behaviours. However, given the continuous (non-impulsive) nature of the sound profile from the cone penetration testing, and the distance of the herring spawning ground from the survey area (located north and northwest of Mona (Figure 3.2 within ES Volume 2, Chapter 3: Fish and Shellfish Ecology, document reference F2.3) it is not considered that herring will experience any population level effects from the proposed surveys. Furthermore, it is considered that any impacts from underwater sound will be spatially and temporally limited, particularly in relation to the broadscale nature of the spawning and nursery grounds of fish and shellfish receptors in the surrounding environment. The proposed survey area also overlaps with a high intensity spawning ground for Atlantic cod. Like herring, cod are classified as Group 3 receptors (fish with a swim bladder involved in hearing) and are therefore considered

Receptor	Potential impacts	Supporting information
		sensitive to underwater sound (Popper <i>et al.</i>, 2014). Unlike herring, cod are not demersal substrate-dependent spawners and are expected to respond behaviourally to elevated sound levels by moving away from the source where necessary. Evidence from offshore construction activities indicates that cod actively avoid areas of elevated underwater sound at close range (van der Knaap <i>et al.</i>, 2022). Furthermore, the sound generated by the proposed geotechnical surveys is continuous (non-impulsive) in nature and of limited spatial and temporal extent. Given the mobility of cod, the broad spatial extent of the surrounding spawning ground relative to the survey area, and the ability of individuals to temporarily relocate within the wider spawning area, significant disruption to spawning activity is not anticipated. Therefore, there is no potential for population-level effects on cod as a result of underwater sound from the proposed surveys, and consequently no significant effect in EIA terms. The migratory species Atlantic Salmon (<i>Salmo salar</i>) is a qualifying feature of the nearby River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC (located 64.31 km away from the proposed survey area at its closest point). As part of their migration to and from the River Dee, Atlantic Salmon will migrate out of the Dee Estuary (approximately 39.19 km from the proposed survey area at its closest point), potentially transiting the proposed survey area to reach their oceanic feeding grounds in the north-east Atlantic. Atlantic Salmon possess a swim bladder, but it is not involved in hearing, and are therefore considered sensitive to particle motion, primarily sensing underwater sound through movement of the water particles. As a result, salmon show sensitivity to only a narrow band of frequencies. Further to this, during migration salmon may be transiting the site, reducing their overall exposure to noise. Considering the limited spatial (given the continuous nature of underwater noise from geotechnical surveys) and temporal scales of the proposed surveys, and the mobile nature of salmon, any potential effects on salmon as a result of the surveys are not anticipated to be significant in EIA terms. River lamprey (<i>Lampetra fluviatilis</i>) and sea lamprey (<i>Petromyzon marinus</i>) are both qualifying features of both the Dee Estuary SAC and the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC (located 39.19 km and 64.31 km away from the proposed survey area at their closest points, respectively). As part of their migration, river lamprey and sea lamprey have the potential to transit the proposed survey areas. In accordance with the sensitivity criteria as defined by Popper <i>et al.</i>, (2014), both river lamprey and sea lamprey are both Group 1 species (fish without a swim bladder or gas chamber and therefore are only sensitive to particle motion and a very narrow band of frequencies) and are therefore only sensitive to particle motion and a very narrow band of frequencies of underwater sound (Popper <i>et al.</i>, 2014; ES Volume 2, Chapter 3: Fish and Shellfish Ecology, document reference F2.3). Furthermore, given their migratory nature, they are considered transient across the proposed area of works (and therefore able to migrate away from any sound sources). Given their lack of sensitivity to underwater sound, the limited spatial extent of the works (on account of the continuous (non-impulsive) nature of the sound profile from geotechnical surveys) and intermittent nature of the works, and the transient nature of the species, any potential effects on sea and river lamprey as a result of the surveys are not anticipated to be significant in EIA terms.
Marine mammals	Vessel disturbance and collision risk	The survey has potential for minor disturbance and collision risk to marine mammals due to vessel presence. It is anticipated that a maximum of four vessels will be used for the survey at any one time, which due to the high vessel density in region represents minor uplift in the number of vessels expected to be in the area (averaging 34.3 unique vessels per day across the Mona Array Area, ES Volume 2, Chapter 7: Shipping and Navigation,

Receptor	Potential impacts	Supporting information
		document reference F2.7). There are low densities of sensitive species, such as harbour porpoise (<i>Phocoena phocoena</i>) and pinnipeds in the vicinity of the works, however as the works are small scale and temporary in nature, it is considered that vessel disturbance impacts on marine mammals as a result of the survey are not anticipated to be significant in EIA terms.
	Underwater sound	There are relatively low numbers of marine mammals anticipated to be in the vicinity of the survey. The species most sensitive to underwater sound effects is harbour porpoise, and the ES concluded that the density of harbour porpoise in the Mona Array Area is 0.2773 porpoises/km ² (ES Volume 2, Chapter 4: Marine Mammals, document reference F2.4). While the works are small in scale and temporary, with the undertaking of the works expected to cause limited increase in underwater sound, it can therefore be concluded that the sound impacts and associated effects from the sampling and testing would be negligible (Erbe and Mcpherson, 2017). Therefore, given then limited spatial and temporal scale of the proposed works, and low density of sensitive species in the area, any potential impacts from sound generated by the survey are not anticipated to be significant in EIA terms.
	Indirect impacts through effects on habitat and prey species.	As discussed above for benthic subtidal and intertidal ecology, and fish and shellfish ecology, due to the limited spatial and temporal extent of the surveys, it is considered unlikely that the works will significantly impact the habitat or prey availability for marine mammal features. Therefore, any potential indirect impacts through effects on habitat and prey are not anticipated to be significant in EIA terms.
Offshore ornithology	Vessel disturbance	The survey has the potential to temporarily impact seabirds via disturbance or displacement. This could result in the temporary loss of habitat use, reducing the available area for feeding, loafing and moulting. There will be a maximum of four vessels on site at any one time. It is assumed that any potential impacts would be short term, temporary and reversible in nature. There is the potential for vessels to pass through the Liverpool Bay SPA when transiting to the proposed works in the Mona Array Area. The Liverpool Bay SPA is located 15.89 km from the proposed works, and is designated for red-throated diver (<i>Gavia stellata</i>), common scoter (<i>Melanitta nigra</i>), and little gull (<i>Hydrocoloeus minutus</i>) in the non-breeding season, common tern (<i>Sterna hirundo</i>) and little tern (<i>Sterna albifrons</i>) in the breeding season, and an internationally important waterbird assemblage. It is noted that red-throated diver and common scoter have high vulnerability to vessel disturbance (Furness <i>et al.</i>, 2013; Fleissbach <i>et al.</i>, 2019), however, vessel best practice will be followed (see Section 8). Potential impacts to species designated at this SPA are discussed in further detail in Section 5. Given the small scale and short-term, temporary nature of these works, with birds expected to return to the area once these activities have ceased, any effects on ornithology as a result of the survey are not anticipated to be significant in EIA terms.
	Indirect impacts through effects on habitat and prey species.	As discussed above for benthic subtidal and intertidal ecology, and fish and shellfish ecology, due to the limited spatial and temporal extent of the surveys, it is considered unlikely that the works will significantly impact the habitat or prey availability for ornithological features. Therefore, any potential indirect impacts through effects on habitat and prey are not anticipated to be significant in EIA terms.

Receptor	Potential impacts	Supporting information
Commercial fisheries	Indirect effects on fish and shellfish and/or shipping and navigation	Any potential effects to commercial fisheries would be indirect as a result of impacts to their stock and/or direct as a result of disruption to commercial fishing activities due to the presence of survey vessels. Given the small scale and short term, temporary nature of these works, no significant effects to fish and shellfish populations are anticipated as a result of the survey. Best practice measures will be in place, such as coordination with the Fisheries Liaison Officer (FLO). As such, effects on commercial fisheries as a result of the survey are not anticipated to be significant in EIA terms.
	Vessel presence	The survey will require a maximum of four vessels at any one time, representing a minimal increase in vessel traffic. Given the small scale and short term, temporary nature of these works, no significant effects to commercial fisheries activities due to vessel presence are anticipated as a result of the survey. In addition, best practice measures will be in place, such as coordination with the Fisheries Liaison Officer (FLO). As such, effects on commercial fisheries as a result of the survey are not anticipated to be significant in EIA terms.
Shipping and navigation	Vessel presence	The survey will require a maximum of four vessels at any one time, representing a minimal increase in vessel traffic. In addition, the works are temporary and localised in nature. Additionally, the ES (ES Volume 2, Chapter 7: Shipping and Navigation, document reference F2.7) assessed the potential impact of vessel presence from the construction of Mona OWF with up to 86 construction vessels on site at any one time, concluding a minor adverse effect which is not significant effect in EIA terms. Therefore, any effects to shipping and navigation for the proposed works are not anticipated to be significant in EIA terms.
Marine archaeology	Direct effects from physical seabed disturbance	Geotechnical works have the potential to directly affect archaeological material by disturbing the seabed. However, the survey is limited in scope and spatial extent and will adhere to existing archaeological exclusion zones (AEZs, as outlined in the Mona Written Scheme of Investigation (WSI), Outline Offshore Written Scheme of Investigation and Protocol for Archaeological Discoveries, document reference J18), and any additional AEZs identified as part of pre-construction surveys. In addition, an archaeological method statement has been developed, detailing how site investigations may contribute towards our understanding of the archaeological environment. The method statement was submitted to the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) and NRW with the original marine licence application, and was accepted as part of that licence. The archaeological method statement has been updated in line with this variation and has been re-submitted to the RCAHMW and NRW as part of this ML variation. A Mona Protocol for Archaeological Discoveries (PAD) has been developed (Outline Offshore Written Scheme of Investigation and Protocol for Archaeological Discoveries, document reference J18) and will be implemented if required. As such, any effects on archaeology and cultural heritage are not anticipated to be significant in EIA terms.
Other sea users	Direct effects from physical seabed disturbance	The survey will maintain a buffer around existing infrastructure, such as pipelines or cables. Consequently, no effects on infrastructure and other users are predicted as a result of the survey.

4.2 Characterisation of Cumulative Effects

Following consideration in the above sections of this SID, effects on identified receptors from the proposed surveys will not be significant in EIA terms for Mona alone. However, it is also necessary to consider whether the proposed surveys could result in significant adverse effects when assessed cumulatively with other plans, projects and activities.

The proposed surveys are discrete in nature, with any potential impacts not extending past the boundary of the Survey Area (noting potential vessel transit through the Liverpool Bay SPA, see Section 5 for further information). Thus, the Survey Area itself was used as a screening buffer to conduct a review of the NRW public register. No other plans or projects that have the potential to impact upon the same receptors were identified. It is important to note based on the temporary nature of the surveys, the Mona OWF was not considered cumulatively.

The only potential cumulative effects to consider, are those from the proposed surveys for the Mona ECC and intertidal areas as per the separate marine licences being submitted. A similar scope is expected for the Mona ECC and intertidal surveys, with a number of samples and geotechnical testing equipment to be used. It is acknowledged that there may be some overlap between the works, however given the small scale and localised potential impact of geotechnical works under the three licences, it is unlikely to result in greater impacts than what is detailed in Section 4.1 and therefore no significant cumulative impacts have been identified.

5 Habitats Regulations Assessment (HRA)

5.1 The HRA Process

The HRA process can be broken down into several sequential stages, with each stage determining the requirement for the next. An initial 'Screening' stage (Stage 1) determines the potential for LSE. Key to the process are the terms 'likely' and 'significant', which means there is potential for an effect to occur, but for it to not be considered significant (i.e. a pathway for effect does not necessarily result in a conclusion of LSE). It is possible that no LSE is determined alone but potential for LSE remains in-combination. If, on the best available information, potential for a LSE to a European site(s) cannot be discounted, then an AA of the effect-pathway(s) to the site is required at HRA Stage 2, where the implications for European site integrity are considered. The HRA process is of relevance to SACs, SPAs, and Ramsar sites.

5.2 Identification of European Sites

Previous sections have concluded that there will be no significant effects on identified receptors in EIA terms, and that any potential impacts are localised to the immediate vicinity of the proposed works due to the small scale and temporary nature of the proposed works. This section considers potential LSE on European sites and their features in the context of the Habitats Regulations both alone and in-combination with other plans and projects.

Due to the nature/scale of the works and the conclusions drawn from Section 4, it is considered that there is no pathway of effect for the majority of European sites beyond the immediate vicinity of the proposed works. Therefore, only European sites that have a direct physical overlap with the proposed works have been considered further in this section. Following review of all designated sites there are no overlapping European sites with the Mona Array Area. Despite not having overlap with the site, it is considered that there is a potential interaction with the Liverpool Bay/Bae Lerpŵl SPA as transiting vessels may go through the site (Figure 5-1). Therefore, the Liverpool Bay/Bae Lerpŵl SPA is the only site that has been considered below.

Table 5-1: Liverpool Bay/Bae Lerpŵl SPA Site Description

Relevant Qualifying features	Closes distance between the site and the proposed works	Description of the site	Conservation Objectives of the site
Red-throated diver (<i>Gavia stellata</i>), common scoter (<i>Melanitta nigra</i>), and little gull (<i>Hydrocoloeus minutus</i>) in the non-breeding season, common tern (<i>Sterna hirundo</i>) and little tern (<i>Sterna albifrons</i>) in the breeding season, and an internationally important waterbird assemblage.	15.89	The Liverpool Bay / Bae Lerpŵl SPA comprises a mosaic of shallow coastal and offshore marine habitats across English, Welsh, and UK offshore waters.	Red-throated diver • Maintain the size of the non-breeding population at a level which is at or above 1,800 individuals (mean peak, 2015, 2018, 2019 and 2020). • Restore the distribution of the feature; preventing further deterioration, and where possible, reduce any existing anthropogenic influences impacting feature distribution. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the distribution, abundance and availability of key food and prey items (e.g. fish) to maintain the population. • Restore the extent, distribution and availability of suitable habitat which supports the feature; preventing further deterioration, and where possible, reduce any existing anthropogenic influences impacting the extent and quality (including water quality). Common scoter • Maintain the size of the non-breeding population at a level which is at or above 141,801 individuals (mean peak, 2015, 2018, 2019 and 2020). • Maintain the distribution of the feature; the extent should not be reduced by anthropogenic factors. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the distribution, abundance and availability of key food and prey items (e.g. molluscs and bivalves) to maintain the population. • Maintain the extent, distribution and availability of suitable habitat which supports the feature; the quality and extent should not deteriorate by anthropogenic factors (including water quality).

Relevant Qualifying features	Closets distance between the site and the proposed works	Description of the site	Conservation Objectives of the site
			Little gull • Maintain the size of the non-breeding population at a level which is at or above 319 individuals (mean peak, 2004/5 – 2010/11). • Maintain the distribution of the feature; the extent should not be reduced by anthropogenic factors. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the distribution, abundance and availability of key food and prey items (e.g. fish) to maintain the population. • Maintain safe passage of birds moving between roosting and feeding areas. • Maintain the extent, distribution and availability of suitable habitat which supports the feature; the quality and extent should not deteriorate by anthropogenic factors (including water quality). Common tern • Maintain the size of the non-breeding population at a level which is at or above 380 pairs (2011 - 2015). • Maintain the distribution of the feature; the extent should not be reduced by anthropogenic factors. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the distribution, abundance and availability of key food and prey items (e.g. fish) to maintain the population. • Maintain safe passage of birds moving between roosting and feeding areas. • Maintain the extent, distribution and availability of suitable habitat which supports the feature; the quality and extent should not deteriorate by anthropogenic factors (including water quality). Little tern

Relevant Qualifying features	Closes distance between the site and the proposed works	Description of the site	Conservation Objectives of the site
			• Maintain the size of the non-breeding population at a level which is at or above 69 pairs (1995-1999). • Maintain the distribution of the feature; the extent should not be reduced by anthropogenic factors. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the distribution, abundance and availability of key food and prey items (e.g. fish) to maintain the population. • Maintain safe passage of birds moving between roosting and feeding areas. • Maintain the extent, distribution and availability of suitable habitat which supports the feature; the quality and extent should not deteriorate by anthropogenic factors (including water quality). Waterbird assemblage • Maintain the size of the non-breeding population of component species at a level which is at or above 157,952 individuals (mean peak 2015, 2018, 2019 & 2020). • Maintain the species diversity of the bird assemblage which should include common scoter, red-throated diver, little gull, red-breasted merganser and great cormorant. • Maintain the distribution of the feature; the extent should not be reduced by anthropogenic factors. • Minimise the frequency, duration and/or intensity of disturbance affecting the feature so that the population, its distribution within the site, or its use of the habitat is not significantly affected. • Maintain the extent, distribution and availability of suitable habitat which supports the feature; the quality and extent should not deteriorate by anthropogenic factors (including water quality).

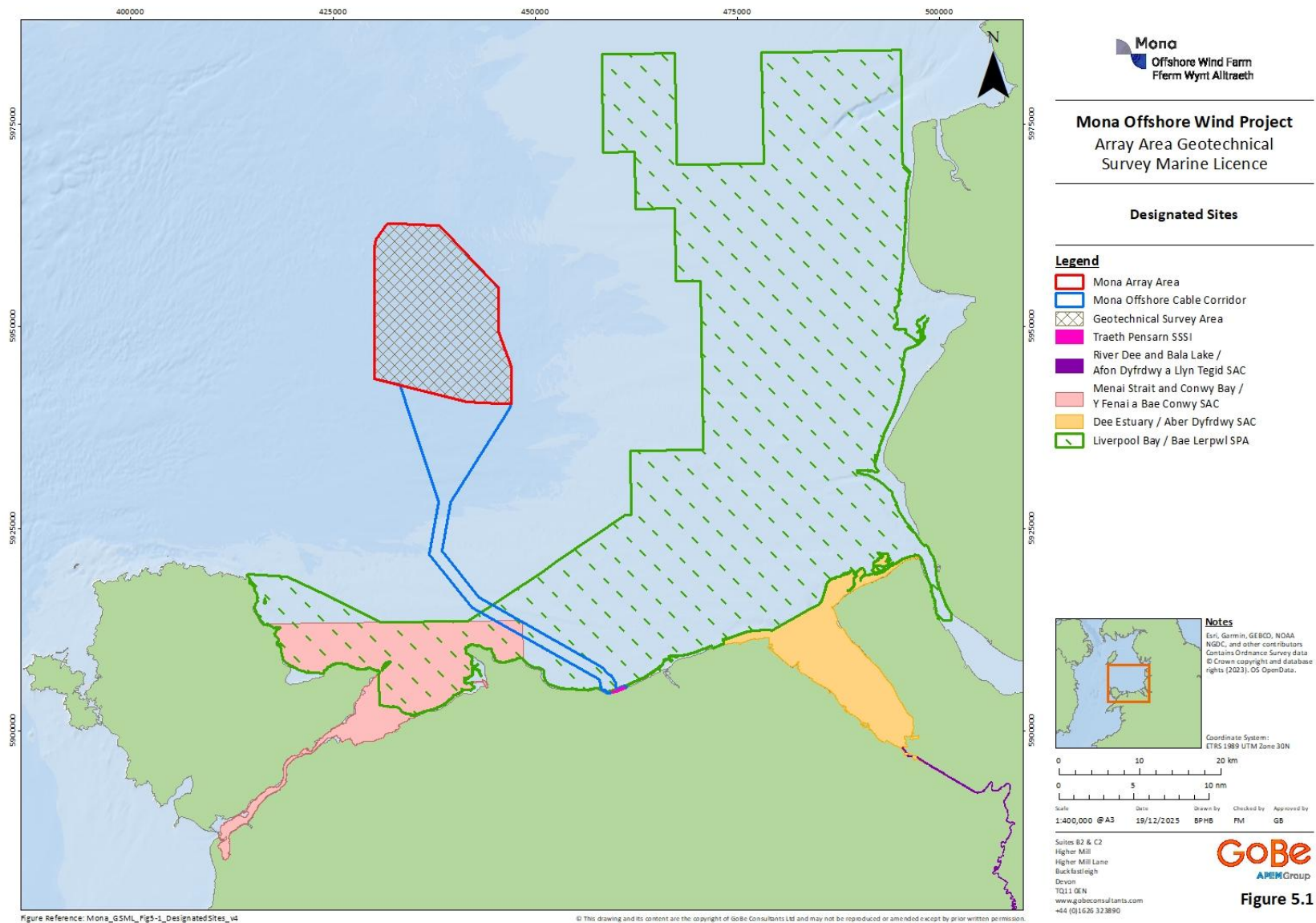


Figure 5-1: Designated sites in relation to the proposed works

5.3 Identification of Potential Effects

This section identifies the potential effects using the 'Source-Pathway-Receptor' model. The potential impact pathways identified are primarily derived from the Mona application documents, although it is noted that the impacts within the scope of the proposed survey will be smaller than those considered in the HRA undertaken for the main project. This section is intended to provide NRW with the necessary information to determine the Marine Licence application and has been presented to be proportionate to the scale and type of proposed works. The only potential effect identified is Disturbance from Transiting Vessels.

5.4 Stage 1: Likely Significant Effects Test

5.4.1 LSE Test for the proposed survey alone

To determine the potential for LSE from the proposed survey alone, the potential impacts need to be identified and compared to the species and habitats for which the sites were designated, in light of the available Conservation Objectives. As the features of the designated sites are birds, potential impacts are limited to vessel disturbance. It is noted that there will not be significant indirect effects on ornithological prey species, as concluded in Section 4. This is presented below within Table 5-2.

Table 5-2: Summary of the consideration of the potential for LSE from the proposed works alone

Designated Site	Closest distance between the site and the proposed works (km)	Potential for LSE alone			
		Receptor(s)	Potential effect	Screened in?	Justification
Liverpool Bay/Bae Lerpwl SPA; and	15.89	Red-throated diver (<i>Gavia stellata</i>); and common scoter (<i>Melanitta nigra</i>) Little gull (<i>Hydrocoloeus minutus</i>); Common tern (<i>Sterna hirundo</i>); Little tern (<i>Sterna albifrons</i>); and Waterbird assemblage.	Vessel disturbance	No	The survey area is 15.89 km from the Liverpool Bay SPA, therefore there is no overlap for the potential impacts from the proposed surveys and associated disturbance buffers (2 km). However, vessels may transit through the SPA. While there is a potential for transiting vessels to travel through the Liverpool Bay SPA, the number of vessels is limited (a maximum of four at any one time) and no sampling will be undertaken within the SPA boundary. Therefore any transiting vessels will be a short term and temporary presence within the SPA. Moreover, the vessels will follow best-practice (outlined in Section 8). Therefore any potential impact is expected to be minimal, temporary, and spatially limited. It is therefore considered that the potential for effect is considered to be negligible, and there is no potential for LSE.

5.4.2 LSE Test for the proposed survey In-Combination

The assessment for LSE alone concluded no LSE for the Liverpool Bay/Bae Lerpŵl SPA for the consideration of the proposed works alone given the negligible potential impact. Therefore, it is considered that there is also no potential for LSE at the site in-combination with any plans or projects.

5.4.3 Conclusions of Stage 1

As the Stage 1 assessment concluded no LSE on any site or feature either alone or in-combination, it is considered that there is no requirement to undertake the Stage 2 assessment for the proposed works. It can be concluded that there will be no Adverse Effect on Site Integrity (AEol) on any designated site or feature from the proposed works.

6 Water Framework Directive Assessment

Given the proposed survey will take place greater than 12 nautical miles from the shore, the Water Framework Directive (WFD) is not considered applicable and, therefore, the MLA is not required to assess the potential implications to WFD objectives.

7 Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan

The Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan has been undertaken within Appendix B and attached to the Marine Licence Application as per NRW Guidance. It should be noted that the specific vessel contractor is not known at the time this application is submitted, however all relevant information will be circulated to all relevant parties prior to the commencement of surveys.

Additionally, standard best practice measures to reduce the risk of introducing INNS will be implemented, including:

- All equipment, materials, machinery and Personal Protective Equipment (PPE) used as part of the licensed activities will be cleaned immediately prior to arrival at and subsequent departure from the licensed area;
- Large vessels will be stored in water except for defouling and dry-docking;
- Vessels will not be slow moving between sites;
- Maintenance records of Impressed Current Anti-Fouling Anodes and Biofouling Records will be inspected;
- Vessel equipped with Ballast Water Treatment System (BWTS) will be installed according to classification regulation. BWTS designed to meet IMO guidelines for approval of ballast water management system and Det Norske Veritas (DNV) standards; and
- It is anticipated that the seabed frame will be covered by Cathodic Protection Anodes.

8 Best Practice and Proposed Mitigation Measures

The following mitigation measures and environmental best practice will be adhered to throughout the survey work to minimise risk to the marine environment:

- Best practice vessel management measures to minimise disturbance to ornithology will be adhered to (these measures are further described in the DCO Application for the Mona Offshore Wind Project, 2024: Measures to minimise disturbance to marine mammals and rafting birds from transiting vessels. Deadline 5. [J17 F03]), including:
- Adhering to the Wildlife Safe (WiSe) Scheme;
 - Use of regular vessel transit routes which follow, where possible, established shipping routes to minimise disturbance to ornithology;
 - Where it is necessary for vessels to go outside of established navigational routes during transit to/from port and working areas, routes will be pre-selected to avoid locations where birds are known to aggregate and visible aggregations of rafting birds (inside or outside of the Liverpool Bay/Bae Lerpwl SPA) will be actively avoided within the limitations of vessel safety and manoeuvrability.
- The locations of the boreholes will be informed by geophysical data and environmental benthic data collected during the previous survey campaigns, and will also be screened by geophysical survey techniques prior to execution of geotechnical activities. Therefore, geotechnical locations will be sited to avoid potential archaeological features and other potential hazards such as UXOs.
- A project-specific CFLO will develop and issue Notice to Mariners (NtM) and kingfisher notifications will be provided; the vessel will display the appropriate navigational signals at all times.
- All equipment associated with the works will be removed on completion of the works.
- Bunding, storage facilities and spill kits will be employed to contain and prevent the release of fuel, oils and chemicals associated with the equipment into the marine environment.
- Coatings and treatments will be suitable for use in the marine environment and are used in accordance with best environmental practice.
- 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. See Appendix B for more details.
- An archaeological method statement was submitted to and approved by the RCAHMW and NRW for the original ML (RML2602). The archaeological method statement has been updated in line with this variation and has been re-submitted alongside this SID in order to seek agreement with the RCAHMW and NRW prior to the commencement of surveys.
- Best practice measures to reduce the risk of introducing INNS will be implemented, including:
 - All equipment, materials, machinery and PPE used as part of the licensed activities will be cleaned immediately prior to arrival at and subsequent departure from the licensed area.
- Large vessels will be stored in water except for defouling and dry-docking.
 - Maintenance records of Impressed Current Anti-Fouling Anodes and Biofouling Records inspected.
 - Vessel equipped with BWTS installed according to classification regulation. BWTS designed to meet IMO guidelines for approval of ballast water management system and DNV standards.
 - It is anticipated that the seabed frame will be covered by Cathodic Protection Anodes.

9 Conclusion

This SID supports the Marine Licence application for geotechnical survey works scheduled to take place between 01 December 2026 to 31 October 2028. The purpose of this SID is to provide NRW and their statutory advisers (where relevant) with the necessary information to inform the Marine Licensing process for the proposed works.

Environmental receptors that may potentially be affected by the proposed works have been identified and assessed. No significant effects are predicted to occur, given the limited scale and short duration of the survey and the implementation of appropriate mitigation measures. Similarly, there is considered to be no potential for significant cumulative effects from the proposed works.

Any European sites that have the potential to be affected by the proposed works have been identified and assessed for the potential for LSE. No significant impacts will result from the geotechnical surveys on any designated site from the proposed works alone or in-combination.

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Appendix A National Marine Plan Policy Assessment

WNMP Policy No.	WNMP Policy		Does the project have the potential to impact the Policy?	How Does the Proposed Project Comply with the Policy?
GEN_01	Planning policy	There is a presumption in favour of the sustainable development of the plan area in order to contribute to Wales’ well-being goals.	Yes	The proposed works are being undertaken as part of the wider Mona offshore wind development, and have been designed to support evidence-based decisions for the construction of the OWF. This aligns with the Welsh well-being goals through promoting a resilient, low carbon economy, whilst undertaking responsible planning.
GEN_02	Planning policy	Relevant public authorities should take a proportionate, risk-based approach to application of relevant marine planning policies in decision making.	n/a	n/a
ECON_01	Sustainable economic growth	Proposals for economically sustainable activities are encouraged, particularly where they contribute to: • the sustainable management of natural resources thereby supporting ecosystem resilience; • a more resilient economy; • employment opportunities particularly for coastal communities; • protecting and creating employment at all skill levels; • maintaining communities with a high-density of Welsh speakers; and/or • tackling poverty by supporting deprived coastal communities.	Yes	The proposed works provide essential data that underpins the design and delivery of the wider Mona offshore wind development, which represents an economically sustainable activity along the Welsh coast, and aims to create and promote the development of numerous skilled jobs.
ECON_02	Coexistence	Proposals should demonstrate how they have considered opportunities for coexistence with other compatible sectors in order to optimise the value and use of the marine area and marine natural resources.	Yes	The Supporting Information Document considers opportunities for coexistence with other marine sectors, including fisheries, shipping, and recreational users. The proposed survey will use vessel routes that minimise interference with navigation. Additionally information relevant to the surveys will be shared as appropriate through the appropriate channels, for example Notices to Mariners will be issued for all relevant survey works. These measures ensure that the survey optimises the use of marine space and resources while avoiding significant impacts on other users.
SOC_01	Access to the marine environment	Proposals that maintain or enhance access to the marine environment are encouraged.	No	The proposed works do not provide an opportunity to incorporate features that enhance biodiversity and geological interests, however it also does not hinder access to the marine environment. It should be noted that the proposed works will contribute data to allow a wider understanding of geographical interests in the area e.g. seabed morphology.
SOC_02	Well-being of coastal communities	Proposals that contribute to the well-being of coastal communities are encouraged.	Yes	The proposed works have the potential to interact with this policy as they involve marine activities near coastal communities. While the proposed works do not deliver specific well-being benefits, they have been designed to avoid adverse effects on access to the coast or community well-being. Therefore, the proposed works are considered neutral in relation to this policy.
SOC_03	Marine pollution incidents	Proposals should demonstrate how they minimise their risk of causing or contributing to marine pollution incidents.	Yes	The proposed works have the potential to cause marine pollution through the use of fuels, oils, and coatings. To minimise this risk, best practice measures detailed in the Supporting Information Document will be implemented. These include bunded storage, spill kits, and appropriate containment for chemicals. All coatings and treatments will be suitable for marine use and applied in accordance with environmental best practice. Equipment and materials will be cleaned before arrival and removal to prevent introduction of non-native species. These measures demonstrate compliance with the policy requirement to minimise pollution risk.
SOC_04	Welsh language and culture	Proposals that contribute to the promotion and facilitation of the use of the Welsh language and culture are encouraged.	No	The proposed works do not relate to the promotion or facilitation of Welsh language or culture and therefore have no interaction with this policy. The proposed works will not adversely affect Welsh language or cultural interests.
SOC_05	Historic assets	Proposals should demonstrate how potential impacts on historic assets and their settings have been taken into consideration and should, in order of preference: a) avoid adverse impacts on historic assets and their settings; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance historic assets are encouraged.	No	Given the scale of the proposed works, the impacts are considered to be limited and no impacts on the historic environment (heritage assets) are expected from the proposed works. Consideration to marine archaeological impacts has been described within the Supporting Information Document.
SOC_06	Designated landscapes	Proposals should demonstrate how potential impacts on the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated have been taken into consideration and should, in order of preference: a) avoid adverse impacts on designated landscapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance designated landscapes are encouraged.	No	Given the limited scale of the proposed works (a maximum of four vessels at any one time across a large area), they will have no significant impact on the landscape or any designated National Parks or Areas of Outstanding Natural Beauty.
SOC_07	Seascapes	Proposals should demonstrate how potential impacts on seascapes have been taken into consideration and should, in order of preference: a) avoid adverse impacts on seascapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance seascapes are encouraged.	No	Given the limited scale of the proposed works (a maximum of four vessels at any one time across a large area), they will have no significant impact on the seascape.
SOC_08	Resilience to coastal change and flooding	Proposals should demonstrate how they are resilient to coastal change and flooding over their lifetime.	No	The proposed works are temporary and located offshore, with no permanent infrastructure or long-term presence. As such, resilience to coastal change and flooding over a lifetime is not applicable, and the proposed works do not interact with this policy.
SOC_09	Effects on coastal change and flooding	Proposals should demonstrate how they: avoid significant adverse impacts upon coastal processes; and minimise the risk of coastal change and flooding; Proposals that align with the relevant Shoreline Management Plan(s) and its policies are encouraged.	No	The proposed works are temporary and located offshore, with no interaction with coastal processes, coastal change, or flooding risk. The proposed works do not involve any permanent infrastructure and therefore do not require alignment with Shoreline Management Plans. As such, the proposed works do not interact with this policy.
SOC_10	Minimising climate change	Proposals should demonstrate how they, in order of preference: a) avoid the emission of greenhouse gases; and/or b) minimise them where they cannot be avoided; and/or c) mitigate them where they cannot be minimised. Where significant emission of greenhouse gases cannot be avoided, minimised or mitigated, proposals for regulated activities must present a clear and convincing case for proceeding.	Yes	The proposed works involve vessel operations, which will result in minor greenhouse gas emissions. These emissions cannot be fully avoided but will be minimised through efficient vessel routing, use of modern engines, and adherence to best practice for fuel efficiency. The proposed works are temporary and emissions are considered negligible in the context of the wider offshore wind development, which will deliver significant long-term reductions in greenhouse gas emissions. These measures demonstrate compliance with the policy requirement to minimise emissions where they cannot be avoided.
SOC_11	Resilience to climate change	Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaptation measures, taking into account Climate Change Risk Assessments for Wales. Proposals that contribute to climate change adaptation and/or mitigation are encouraged.	Yes	The proposed works are temporary and offshore, so adaptation measures for climate change impacts are not applicable. However, the survey provide essential data to inform the design and delivery of the Mona offshore wind development, which will deliver significant long-term benefits for climate change mitigation by supporting renewable energy generation and reducing greenhouse gas emissions. This demonstrates alignment with the policy objective to contribute to climate change mitigation.
ENV_01	Resilient marine ecosystems	Proposals should demonstrate how potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.	Yes	A comprehensive assessment of potential impacts on marine ecosystems has been undertaken and is detailed in the Supporting Information Document. The proposed works are temporary and small scale, and have been designed to avoid significant adverse impacts on marine ecosystems. Where minor risks exist, best practice measures will be implemented to minimise them. Overall, the assessment concludes that there will be no significant effects, either alone or cumulatively. These measures demonstrate compliance with the policy requirement to avoid and minimise impacts on marine ecosystems.
ENV_02	Marine Protected Areas	Proposals should demonstrate how they: avoid adverse impacts on individual Marine Protected Areas (MPAs) and the coherence of the network as a whole; have regard to the measures to manage MPAs; and avoid adverse impacts on designated sites that are not part of the MPA network.	No	A comprehensive assessment of the Marine Protected Areas within and in the vicinity of the proposed works has been in the Supporting Information Document. Overall, it has been concluded that there will be no adverse effect on integrity on any designated site from the proposed works, either alone or in-combination.
ENV_03	Invasive non-native species	Proposals should demonstrate how they avoid or minimise the risk of introducing and spreading invasive non-native species. Where appropriate, proposals should include biosecurity measures to reduce the risk of introducing and spreading of invasive non-native species.	Yes	Best practice measures to reduce the risk of introducing INNS will be implemented, including: - All equipment, materials, machinery and PPE used as part of the licensed activities will be cleaned immediately prior to arrival at and subsequent departure from the licensed area. - Large vessels will be stored in water except for defouling and dry-docking. Vessels will not be slow moving between sites. - Maintenance records of Impressed Current Anti-Fouling Anodes and Biofouling Records inspected. - Vessel equipped with BWTS installed according to classification regulation. BWTS designed to meet IMO guidelines for approval of ballast water management system and DNV standards - It is anticipated that the seabed frame will be covered by Cathodic Protection Anodes

ENV_04	Marine litter	Proposals should demonstrate how they: avoid the deliberate introduction of litter into the marine plan area; and minimise the risk of accidental release of litter .	No	All equipment associated with the proposed works will be removed on completion of the proposed works, therefore minimising the release of litter into the marine environment. In the unlikely event that an object cannot be retrieved, appropriate reporting and mitigation measures will be implemented.
WNMP Policy No.	WNMP Policy		Does the project have the potential to impact the Policy?	How Does the Proposed Project Comply with the Policy?
ENV_05	Underwater noise	Proposals should demonstrate that they have considered man-made noise impacts on the marine environment and, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	No	The geotechnical survey may result in low frequency sound at a level within the typical sound levels produced by general shipping. Further assessment of potential impacts from noise are discussed within Section 4 of the Supporting Information Document.
ENV_06	Air and water quality	Proposals should demonstrate that they have considered their potential air and water quality impacts and should, in order of preference: a) avoid adverse impacts; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	No	The Supporting Information Document contains a Water Framework Directive compliance assessment which considers the potential impacts to water quality impacts and concludes that there are no significant impacts. The nature and scale of the proposed works are not considered to present a potential impact to air quality.
ENV_07	Fish species and habitats	Proposals potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: a) avoid adverse impacts on those areas; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised; If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	No	A comprehensive assessment of potential impacts on fish and shellfish from the proposed works has been in the Supporting Information Document. Overall, it has been concluded that there will be no significant effects from the proposed works, either alone or cumulatively.
GOV_01	Cumulative effects	Proposals should demonstrate that they have assessed potential cumulative effects and should, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse effects cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to positive cumulative effects are encouraged.	No	The Supporting Information Document includes consideration of cumulative impacts. All potential effects are short-term and temporary, and will not result in any significant effects. Therefore, there is no potential for site investigation surveys to contribute to wider effects cumulatively with other plans, projects and activities. See the Section 4 of the Supporting Information Document for further information.
GOV_02	Cross-border and plan compatibility	Relevant public authorities, in making their decisions, should have regard to: any applicable policy in a relevant marine plan; any applicable policy in relevant terrestrial development plans or related documents; the Natural Resources Policy; any relevant local well-being plan(s) (including the local well-being assessment); and evidence in any relevant Area Statement(s) produced by Natural Resources Wales (NRW).	n/a	This policy applies to public authorities when making decisions and is not directly applicable to the applicant. However, the Supporting Information Document includes details of relevant marine and terrestrial policies, as well as considerations outlined in this appendix, to assist decision-makers in meeting their obligations.
SCI_01	Using sound science responsibly	Relevant public authorities should make decisions using sound evidence and a risk-based, proportionate approach. Where appropriate they should apply the precautionary principle and consider opportunities to apply adaptive management.	n/a	This policy applies to public authorities when making decisions and is not directly applicable to the Applicant. The Supporting Information Document provides sound evidence and risk-based considerations to assist decision-makers in applying this policy.
AGG_01a	Aggregates (supporting)	Proposals for new aggregate extraction will be supported, within any tonnage limits, where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for new aggregate extraction, which is not relevant to the proposed works. The proposed works do not overlap with aggregate extraction areas, and there are no exploration options, production licences, or application areas in the vicinity. Therefore, the proposed works do not interact with this policy.
AGG_01b	Aggregates (supporting)	Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities: for the sustainable use of wider marine aggregate natural resources; to define and, once in place, further develop and refine Strategic Resource Areas for aggregates in order to support the sustainable development of the aggregate sector through marine planning.	No	This policy applies to public authorities and the aggregate sector and is not directly relevant to the proposed works. The proposed works do not overlap with aggregate extraction areas, and there are no exploration options, production licences, or application areas in the vicinity. Therefore, the proposed works do not interact with this policy.
AQU_01a	Aquaculture (supporting)	Proposals for new aquaculture developments will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for new aquaculture development, which is not relevant to the proposed works. The proposed works do not overlap with aquaculture development areas, and there are no aquaculture activities in the vicinity. Therefore, the proposed works do not interact with this policy.
AQU_01b	Aquaculture (supporting)	Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of aquaculture resources including the identification of: natural resources that provide aquaculture potential opportunities to define and, once in place, further develop and refine Strategic Resource Areas for aquaculture in order to support the sustainable development of the aquaculture sector through marine planning.	No	This policy applies to public authorities and the aquaculture sector and is not directly relevant to the proposed works. The proposed works do not overlap with aquaculture development areas, and there are no aquaculture activities in the vicinity. Therefore, the proposed works do not interact with this policy.
D&D_01	Dredging and disposal (supporting)	Proposals that maintain navigable channels and long term access to open at-sea disposal sites for appropriate material will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals that maintain navigable channels or access to at-sea disposal sites, which is not relevant to the proposed works. The proposed works do not involve dredging or disposal activities and will not affect navigable channels or disposal site access. Therefore, the proposed works do not interact with this policy.
ELC_01a	Low carbon energy (supporting) wind	Proposals for offshore wind energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for wind >350MW will be considered by UK Government in accordance with relevant national policy. In determining an NSIP for a wind proposal, the decision maker will have regard to this plan. Any determination in relation to energy developments of any scale will be taken in accordance with this plan alongside any other relevant considerations.	Yes	The proposed geotechnical survey directly supports the development of the Mona Offshore Wind Farm, which will contribute up to 1500 MW of renewable energy to Wales. By providing essential data for design, the proposed works help to ensure that the Mona Offshore Wind Farm is located and developed sustainably, avoiding environmental sensitivities where possible. This demonstrates alignment with the policy objective to support offshore wind energy generation and sustainable marine development.
ELC_01b	Low carbon energy (supporting) wind	In order to understand future opportunities for offshore wind development, including floating technologies, this plan supports strategic planning for the sector. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wind energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for offshore wind energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	No	The geotechnical survey will inform the development of the Mona Offshore Wind Farm, which will contribute up to 1500 MW of renewable energy to Wales. Conducting comprehensive offshore surveys and using the data to inform the design of the Mona Offshore Wind Farm can help ensure sustainable marine development, getting the right project in the right location and avoiding environmental and other sensitivities where possible.
ELC_02a	Low carbon energy (supporting) wave	Proposals for wave energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for wave energy generation, which is not relevant to the proposed works. The works do not involve wave energy technology and will not affect any wave energy development areas. Therefore, the proposed works do not interact with this policy.

ELC_02b	Low carbon energy (supporting) wave	In order to understand future opportunities for wave energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wave energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for wave energy resource safeguarding; in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	No	This policy applies to public authorities and the wave energy sector and is not directly relevant to the proposed works. The works do not involve wave energy technology and will not affect any wave energy development areas or contribute evidence for wave energy planning. Therefore, the proposed works do not interact with this policy.
ELC_03a	Low carbon energy (supporting) tidal stream	Proposals for tidal stream energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for tidal stream energy generation, which is not relevant to the proposed works. The proposed works do not involve tidal stream technology and will not affect any tidal energy development areas. Therefore, the proposed works do not interact with this policy.
WNMP Policy No.	WNMP Policy		Does the project have the potential to impact the Policy?	How Does the Proposed Project Comply with the Policy?
ELC_03b	Low carbon energy (supporting) tidal stream	In order to understand future opportunities for tidal stream energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of tidal stream energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal stream energy resource safeguarding; in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	No	This policy applies to proposals for tidal stream energy generation, which is not relevant to the proposed works. The proposed works do not involve tidal stream technology and will not affect any tidal energy development areas. Therefore, the proposed works do not interact with this policy.
ELC_04	Low carbon energy (supporting) tidal range	In order to understand future opportunities for tidal range development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to: • collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; • support understanding of the optimal siting of tidal lagoon developments across Wales as part of a wider, UK perspective; and • identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	No	This policy applies to proposals for tidal range development, which is not relevant to the proposed works. The proposed works do not involve tidal range technology and will not affect any tidal lagoon developments. Therefore, the proposed works do not interact with this policy.
O&G_01a	Oil and gas (supporting)	Proposals that maximise the economic recovery of oil and gas sustainably will be supported where they comply with the objectives of this plan, and fully meet the environmental safeguards contained within the statutory processes of awarding production licences and subsequent activity-specific approvals. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for oil and gas recovery, which is not relevant to the proposed works. The proposed works do not involve oil and gas activities and will not affect any oil and gas development areas. Therefore, the proposed works do not interact with this policy.
O&G_01b	Oil and gas (supporting)	Welsh Government policy is to avoid the continued extraction of fossil fuels in intertidal areas and estuaries and coastal inlet waters that fall within the Welsh onshore licence area. Applications for new petroleum licenses in these areas should not be supported, unless required for mine safety or scientific purposes. Proposals for the development and extraction of oil and gas in these areas with land based elements must provide robust and credible evidence to demonstrate how they conform to the Planning Policy Wales Energy Hierarchy for Planning, including how they make a necessary contribution towards decarbonising the energy system.	No	This policy applies to proposals for fossil fuel extraction in intertidal areas, estuaries, and coastal inlet waters, which is not relevant to the proposed works. The proposed works do not involve petroleum licensing or oil and gas development and will not affect any fossil fuel extraction activities. Therefore, the proposed works do not interact with this policy.
O&G_02	Oil and gas (supporting)	Proposals that support the long-term development of carbon capture and storage technology will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals that support the development of carbon capture and storage technology, which is not relevant to the proposed works. The proposed works do not involve CCS activities and will not affect any CCS development areas. Therefore, the proposed works do not interact with this policy.
FIS_01a	Fisheries (supporting)	Proposals that support and enhance sustainable fishing activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for sustainable fishing activities, which is not relevant to the proposed works. The proposed works do not involve fisheries development and will not affect fishing activities. Therefore, the proposed works do not interact with this policy.
FIS_01b	Fisheries (supporting)	Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to develop a strategic evidence base to improve understanding of opportunities for the sustainable development of fisheries in order to support the sustainable development of the fisheries sector through marine planning.	No	This policy applies to public authorities and the fisheries sector and is not directly relevant to the proposed works. The proposed works do not involve fisheries activities or contribute evidence for fisheries planning. Therefore, the proposed works do not interact with this policy.
P&S_01a	Ports and shipping (supporting)	Proposals for ports, harbours and shipping activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for port, harbour, or shipping development, which is not relevant to the proposed works. The proposed works do not involve such activities and will not affect port or shipping operations. Therefore, the proposed works do not interact with this policy.
P&S_01b	Ports and shipping (supporting)	Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to support the sustainable development of the ports and shipping sector through marine planning.	No	This policy applies to public authorities and the ports/shipping sector and is not directly relevant to the proposed works. The proposed works do not involve port or shipping development and will not contribute evidence for planning. Therefore, the proposed works do not interact with this policy.
P&S_02	Ports and shipping (supporting)	Proposals that provide for the maintenance, repair, development and diversification of port and harbour facilities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for port and harbour facilities, which is not relevant to the proposed works. The proposed works do not involve such activities and will not affect port or harbour infrastructure. Therefore, the proposed works do not interact with this policy.
CAB_01	Subsea cabling (supporting)	Proposals that facilitate the growth of digital communications networks and/or the optimal distribution of electricity will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for digital communications or electricity distribution, which is not relevant to the proposed works. The proposed works do not involve these activities and will not affect related infrastructure. Therefore, the proposed works do not interact with this policy.
T&R_01a	Tourism and recreation (supporting)	Proposals that demonstrate a positive contribution to tourism and recreation opportunities and policy objectives (for the sector) around the Welsh coast will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	No	This policy applies to proposals for tourism and recreation, which is not relevant to the proposed works. The proposed works do not involve tourism or recreation activities and will not affect such opportunities. Therefore, the proposed works do not interact with this policy.

T&R_01b	Tourism and recreation (supporting)	Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for sustainable tourism and recreation around the Welsh coast, including: a) developing a strategic evidence base to improve understanding of current and potential tourism and recreation activities, including eco-tourism and other low impact activities; and b) opportunities to define areas of future opportunity for tourism and recreation; in order to support the sustainable development of the tourism and recreation sector through marine planning.	No	This policy applies to public authorities and the tourism/recreation sector and is not directly relevant to the proposed works. The proposed works do not involve tourism or recreation activities and will not contribute evidence for planning. Therefore, the proposed works do not interact with this policy.
SAF_01	Safeguarding existing activity	a: Proposals likely to have significant adverse impacts upon an established activity covered by a formal application or authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for the proposal to progress under exceptional circumstances. b: Proposals likely to have significant adverse impacts upon an established activity not subject to a formal authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Under SAF 01 a and b, compatibility should be demonstrated through, in order of preference: a. Avoiding significant adverse impacts on those activities, and/or b. Minimising significant adverse impacts where these cannot be avoided; and/or c. Mitigating significant adverse impacts where they cannot be minimised.	No	The Supporting Information Document confirms that the proposed works will not result in significant adverse impacts on established activities, either alone or cumulatively. Therefore, the proposed works do not interact with this policy.

WNMP Policy No.	WNMP Policy		Does the project have the potential to impact the Policy?	How Does the Proposed Project Comply with the Policy?
SAF_02	Safeguarding strategic resources Strategic Resource Area for Tidal Stream Energy in force January 2025	Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Compatibility should be demonstrated through, in order of preference: a. Avoiding significant adverse impacts on this potential strategic resource use, and/or b. Minimising significant adverse impacts where these cannot be avoided; and/or c. Mitigating significant adverse impacts where they cannot be minimised.	No	The Supporting Information Document confirms that the proposed works will not result in significant adverse impacts on any sector or strategic resource use. Therefore, the proposed works do not interact with this policy.
DEF_01	Defence (safeguarding)	Proposals that: - potentially affect Ministry of Defence (MOD) Danger Areas, Exercise Areas or strategic defence interests; and/or - potentially interfere with communication, surveillance and navigation facilities necessary for defence and national security; should only be authorised with the agreement of MOD.	No	The proposed works do not affect any MOD Danger Areas, Exercise Areas, or strategic defence assets. Therefore, the proposed works do not interact with this policy.

Appendix B Marine Invasive Non-Native Species Biosecurity Risk Assessment and Management Plan

<i>Document version number: (to be completed by marine licensing team)</i>	
<i>Approval date: (to be completed by marine licensing team)</i>	

Marine Invasive Non-native Species Biosecurity Risk Assessment and Management Plan

A Marine Biosecurity Risk Assessment and Management Plan enables marine operators and contractors to understand and minimise the risk of introducing or spreading marine invasive non-native species (INNS). Management of marine INNS is extremely challenging once they are introduced to a new area. Effective biosecurity measures that minimise the risk of introduction or spread are therefore key to effective management.

Filling in this form:

To help you fill in this form, see accompanying document “Guidance for completing NRW’s Biosecurity Risk Assessment and Management Plan”. The accompanying document contains clarification of many key terms and also provides guidance on potential pathways of introduction for INNS (Table 1) and level of risk associated with each pathway (Table 2).

Structure of this form:

You will need to fill in Sections A and C. Fill in sections B1 to B5 when relevant to your activity. For further information on what is included in each section see the accompanying guidance document.

Section A: Activity overview

You should complete this section.

Section B: Risk Assessment

B.1 Assessing the pathway risks associated with vessels

If you are using a vessel (or vessels) as part of your licensed activity you should complete this section. Information on any equipment to be used which can be separated from the vessel should be provided in Section B.4.

B.2 Assessing the pathway risks associated with non-biological materials and water

If your activity involves the use or transfer of non-biological materials (e.g. water, sediment, construction material) you should complete this section.

B.3 Assessing the pathway risks associated with biological material

If your activity involves the use or transfer of biological material (including aquaculture) you should complete this section.

B.4 Assessing the pathway risks associated with equipment

If your activity involves use of equipment which can be separated from their vessel you should complete this section.

B.5 Assessing other pathway risks

This should be filled in if previous sections do not capture aspects of your activity.

Section C: Management Measures

You should complete this section.

Section D: Recommendations

You should consider this section.

Section A: Activity overview

Please fill out the activity details below:

Applicant name:	Mona Offshore Wind Limited
Short description of activity: <i>(please provide enough detail for NRW to understand the location and the different elements of the project. Links to other documents which describe the project can be provided)</i>	Geotechnical survey to establish the characteristics and properties of the different seabed substrates within the Mona Offshore Wind Farm Array Area to inform the design of the Mona Offshore Windfarm. Data will be acquired from up to four vessels to investigate the seabed conditions relevant to the design of the foundations of the wind turbine generators, substations, and cable routing and design. See the Supporting Information Document (MOCNS-J4022-APE-40002, Revision B02) for further information.
Estimated timings of proposed licensed activities:	The geotechnical surveys are planned to commence from 01 December 2026. A license is requested from 01 December 2026 extending until 31 October 2028 to allow contingency in the programme should the survey be delayed.

Section B: Risk Assessment

B.1 Assessing the pathway risks associated with vessels

B.1.1. Please list all ports within the UK or overseas that all vessel(s) to be used (both during construction and maintenance) have visited over the 12 months prior to this licensed activity, or since the last out of water period (whichever is most recent).

Please state **N/A** if vessels have not entered any port since the last out of water period.

If you do not yet have the information to complete this section, please state **Unknown**. NRW may ask for this section to be updated when these details are known. The risk should be set as High.

Vessel name	Port / location visited over last 12 months (listed chronologically with dates if known)	Which marine invasive non-native species known to be present at this port(s) / location(s)?	Has the vessel had antifouling? 12 months prior to activity for biocidal coatings, 24 months for biocide-free coatings
Unknown (TBC)	Unknown (TBC) As a worst-case scenario, it is assumed the vessel has visited a high number of ports over a wide geographic region. Potential high-risk ports include: • Rotterdam • Zeebrugge • Antwerp • Oostende • Hamburg • Liverpool • Southampton • Harwich • Holyhead	Unknown (TBC) As a worst-case scenario, it is assumed that there is the potential for vessels to have visited a port within the last 12 months with the following high-risk species present: • Compass sea squirt (<i>Asterocarpa humilis</i>) • American slipper limpet (<i>Crepidula fornicata</i>) • Carpet sea squirt (<i>Didemnum vexillum</i>) • Chinese mitten crab (<i>Eriocheir sinensis</i>) • Devil's tongue weed (<i>Grateloupia turuturu</i>) • Red ribbon bryozoan (<i>Watersipora subatra</i>)	Unknown (TBC) The Applicant commits to using vessels (up to four) with antifouling coating applied within the past 12 months, or be valid for the duration of vessel use.

Please indicate the INNS risk level and justification of the risk below, separately for each vessel based on the locations visited in last 12 months. This should take into account the probability of biofouling and vessel antifouling regime. **Note:** Examples of risk levels are given in Table 2 of the accompanying guidance document and there is further information about this section in the accompanying guidance document.

Vessel name / type	Risk Level (High, Medium, Low)	Justification of risk level
Unknown (TBC)	High	Risk is set as 'High' based on a worst-case scenario.

B.1.2 Please provide details of the vessels (identified in Table B.1.1), which have not had antifouling (within the 12 months prior to the licensed activity for biocidal coatings, or 24 months for biocide-free coatings) and if there is an alternative antifouling management regime.

If there are not additional measures or an alternative biofouling management regime, then please put **None**, and the risk level would not change.

Vessel	Alternative biofouling management regime (e.g. different timeframes for antifouling treatment, vessel storage on land etc.)	Risk Level (High, Medium, low)
N/A	The Applicant has committed to using vessels with antifouling coating applied within the past 12 months or be valid for the duration of vessel use.	Low

B.2 Assessing the pathway risks associated with non-biological materials and water

B.2.1: Please provide information about the source and receiving environments for non-biological materials and water transferred through the licensed activity from different pathways (for example hopper water, dredge material, construction material).

Pathway	Location (including Coordinates, WGS84)		Relevant Environmental Conditions for INNS species (e.g. salinity and depth differences between source and receiving environments)	List of INNS known to be present	Risk Level (High, Medium or Low)	Justification of risk level
Hull fouling	Source	Unknown (TBC)	Unknown (TBC)	Unknown (TBC). As a worst-case scenario, it is assumed that there is the potential for vessels to have visited a port within the last 12 months with, or the port of operations is known to have, high-risk species present.	High	The risk level is set as 'High' based on a worst-case scenario.
	Receiving	Survey Area (Refer to co-ordinate spreadsheets)				
Ballast water	Source	Unknown (TBC)				
	Receiving	Survey Area (Refer to co-ordinate spreadsheets)				

Pathway	Location (including Coordinates, WGS84)		Relevant Environmental Conditions for INNS species (e.g. salinity and depth differences between source and receiving environments)	List of INNS known to be present	Risk Level (High, Medium or Low)	Justification of risk level
Equipment	Source	Unknown (TBC)				
	Receiving	Survey Area (Refer to co-ordinate spreadsheets)				
Mooring (at intended port of operations)	Source	Unknown (TBC)				
	Receiving	Survey Area (Refer to co-ordinate spreadsheets)				

B.3 Assessing the pathway risks associated with biological material

B.3.1 Please provide information about the species that will be used or transferred through the licensed activity and the potential for INNS to be contained in the biological material.

N/A – No movement or introduction of biological material.

B.3.2: Please provide information about the source and receiving environments for biological material used or transferred through the licensed activity. Pathways include, for example, transfer of seeded ropes with seaweed or shellfish.

Pathway	Location (coordinates, WGS84) and / or name of culture facility		Relevant environmental conditions for INNS species (e.g. salinity and depth differences between source and receiving environments)	List of INNS known to be present in the location or culture facility	Risk Level (High, Medium or Low)	Justification of risk level
	Source					
	Receiving					
	Source					
	Receiving					

B.3.3. If a relevant pathway is identified in Table B.3.2, please outline any relevant biosecurity measures or protocols in place to prevent contamination of material by marine INNS, and introduction or spread of marine INNS.

N/A

B.3.4. Does the transfer have the relevant documentation from the Fish Health Inspectorate at CEFAS (Aquaculture Production Business Registration), or follow other relevant codes of conduct for prevention of the introduction or spread of marine INNS? Please place an X in the relevant box.

Yes	No	Don't know	Not relevant
			X

B.4 Assessing the pathway risks associated with immersible equipment

B.4.1. Please list the immersible equipment expected to be used in this licensed activity in the box below.

Seabed sampling/testing equipment (including but not limited to borehole drilling equipment, Vibrocore unit, Cone Penetration Testing (CPT) unit, Thermal Resistivity Testing (TRT) unit, and Borehole Geological Logging).

B.4.2. Will all the immersible equipment used in this licensed activity undergo washing, rinsing and / or drying as part of routine maintenance at the times described below? Please place an X in the relevant box.

	Yes	No
Immediately prior to departing the <u>port of origin</u> to undertake the licensed activity.	X	
Immediately prior to leaving the licensed activity area on completion of the licensed activity.	X	

B.4.3. Will all the immersible equipment used in this licensed activity undergo washing, rinsing and / or drying between different deployments within the activity area of this licensed activity (e.g. different specific locations of dredging or sampling covered under this marine licence)? Please place an X in the relevant box.

Yes	No (please provide reason)
	X Not feasible to wash between each and every location. However, this licence covers a limited area, and it is therefore not considered necessary to wash between sampling locations due to the extremely low biosecurity risk.

If you answer No to any of the questions in B.4.2 or B.4.3, then please complete B.4.4 below.

B.4.4. Please provide information on the previous location the equipment will have been used prior to the vessel being used for this licensed activity.

Equipment	Location (Coordinates, WGS84)	Risk Level (High, Medium or Low)	Justification of risk level
All	Unknown until vessel(s)/equipment are confirmed	Low	All equipment washed, rinsed and dried prior to deployment at this site. Seabed frame likely covered by Cathodic Protection Anodes.

B.5 Assessing other pathway risks

B.5.1 Please provide any other information on the licensed activity that may produce a risk of the introduction or spread of marine INNS that is not covered in the sections above.

Pathway	Risk Level (High, Medium or Low)	Justification of risk level
N/A	N/A	N/A

Section C: Management Measures

C.1 Management Measures

Enter the management measures for the pathways identified in the sections above.

All **high and medium risk** pathways identified in the previous risk assessment (sections B.1 to B.5) should have some degree of additional control or mitigation measures. Low risk pathways may also need additional control or mitigation measures. You may want to consider keeping a logbook to help demonstrate compliance if this is requested.

Pathway (identified in sections above)	Risk Level (High, Medium or Low)	Risk management measure/s	Risk level after management (High, Medium or Low)
Equipment	High	All equipment, materials and machinery used as part of the licensed activities will be cleaned prior to arrival at and subsequent departure from the licensed area. Logs of these activities will be maintained.	Low
Hull Fouling	High	Large vessel will be stored in water except for defouling and dry-docking. Vessel will not be slow moving between sites.	Low

Pathway (identified in sections above)	Risk Level (High, Medium or Low)	Risk management measure/s	Risk level after management (High, Medium or Low)
		Vessels will have an appropriate maintenance routine, including effective antifouling following the IMO biofouling guidelines. Maintenance records of Impressed Current Anti-Fouling Anodes and Biofouling Records inspected.	
Ballast Water	High	Vessel equipped with Ballast Water Treatment System (BWTS) installed according to classification regulation. BWTS designed to meet IMO guidelines for approval of ballast water management system and DNV standards	Low
Mooring	High	In reference to the port of operation, liaise with the Port Authority and NRW to avoid mooring in locations with recorded high-risk species.	Low

Section D. Recommendations

You may want to consider how compliance with the management measures will be recorded, for example in a log book or via photos.

We also recommend that;

- You identify an individual for monitoring and reporting on biosecurity management plan actions (a biosecurity manager)
- All staff involved in the licensed activity are made fully aware of the possibility that INNS may be encountered and understand what measures will be taken to ensure surveillance / monitoring of INNS during the activity
- All relevant staff are adequately trained in the identification and detection of INNS and to report any instances to the biosecurity manager