

# MONA OFFSHORE WIND PROJECT

## Offshore In-Principle Monitoring Plan

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Image of an offshore wind farm

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### Glossary

Term	Meaning
Applicant	Mona Offshore Wind Limited.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for a DCO to apply for 'deemed marine licences' as part of the DCO process. In addition, licensable activities within 12nm of the Welsh coast require a separate marine licence from Natural Resource Wales (NRW).
Mona Offshore Cable Corridor and Access Areas	The corridor located between the Mona Array Area and the landfall up to Mean High Water Springs (MHWS), in which the offshore export cables will be located and in which the intertidal access areas are located.
Offshore Substation Platform (OSP)	The offshore substation platforms located within the Mona Array Area will transform the electricity generated by the wind turbines to a higher voltage allowing the power to be efficiently transmitted to shore.

### Acronyms

Acronym	Description
AtoN	Aid to Navigation
DCO	Development Consent Order
DESNZ	Department for Energy Security & Net Zero
dML	Deemed Marine Licence
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
LAT	Lowest Astronomical Tide
MCA	Maritime and Coastguard Agency
MHWS	Mean High Water Springs
ML	Marine Licence
MMO	Marine Management Organisation
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NPS	National Policy Statement
OIPMP	Offshore In-Principle Monitoring Plan
OSP	Offshore Substation Platform
SNCB	Statutory Nature Conservation Body
UKHO	United Kingdom Hydrographic Office

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### Units

Unit	Description
km	Kilometre
km <sup>2</sup>	Square kilometre
kV	Kilovolts
m	Metre
nm	Nautical mile

# 1 Offshore In-Principle Monitoring Plan

## 1.1 Overview of the Offshore In-Principle Monitoring Plan

1.1.1.1 This Offshore In-Principle Monitoring Plan (OIPMP) has been produced to present and agree the objectives of any monitoring measures contained within the deemed marine licence (dML) in Schedule 14 of the draft Development Consent Order (DCO) (Document Reference C.1) and the standalone Natural Resources Wales (NRW) marine licence (ML). This document aims to:

- Compile relevant offshore monitoring as identified in the environmental impact assessment (EIA) process
- Compile relevant offshore monitoring that is proposed outside the EIA process
- Establish the objectives of this monitoring
- Present the guiding principles and framework through which monitoring activities associated with the construction and operation of the Mona Offshore Wind Project will be delivered.

1.1.1.2 This document provides assurance that necessary offshore monitoring associated with the Mona Offshore Wind Project will be formally controlled. It is intended that this document will provide the basis for further discussions with NRW and the relevant Statutory Nature Conservation Bodies (SNCBs) to agree the exact detail (e.g. timings, methodologies, etc.) of any offshore monitoring that is required by the conditions of the dML and standalone NRW ML. It should be noted that the final detailed plans for monitoring work will not be produced until closer to the time that the licensed activities will be undertaken (following final scheme design). These will be agreed with NRW (as required by the conditions of the dML and, if included, the standalone ML in consultation with their statutory advisors, where necessary).

## 1.2 Description of the Mona Offshore Wind Project

1.2.1.1 The Mona Offshore Wind Project is located in the east Irish Sea, consisting of both generation and transmission assets. The Mona Array Area (i.e. the area within which the offshore wind turbines (up to 96) will be located) is 300 square kilometres (km<sup>2</sup>) in area and is located 28.8 km (15.6 nautical miles (nm)) from the north coast of Wales, 46.9 km (25.3 nm) from the northwest coast of England and 46.6 km (25.2 nm) from the Isle of Man (when measured from Mean High Water Springs (MHWS)). The Mona Array Area is located in Welsh offshore waters (beyond 12 nm from the Welsh coast).

1.2.1.2 The offshore export cables and related works located within and between the Mona Array Area and the landfall will be routed through the Mona Offshore Cable Corridor and Access Areas, which overlaps with both Welsh offshore and Welsh inshore waters. Landfall will be made at Llanddulas, and the Mona Onshore Cable Corridor will head south, before turning east at Moelfre. The Onshore Substation will be sited to the south of the St Asaph Business Park in order to facilitate connection to the Bodelwyddan National Grid Substation via the Mona 400 Kilovolt (kV) Grid Connection Cable Corridor.

1.2.1.3 A ML is required before carrying out any licensable marine activities under the Marine and Coastal Access Act 2009. The ML for activities located in Welsh offshore waters will be deemed under the Development Consent Order (DCO). The dML will cover works related to the offshore wind farm generation infrastructure (wind turbines,

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Offshore Substation Platforms (OSPs), inter-array cables and interconnector cables). A separate, standalone ML will be required for activities within 12 nautical miles (nm) of the Welsh coast. The standalone NRW ML will cover transmission works associated with the offshore export cables, interconnector cables, OSPs, Mona Offshore Cable Corridor and Access Areas. The OSPs are included in both MLs as it has not yet been determined whether they would be generation or transmission infrastructure. This OIPMP is applicable to both the generation and transmission infrastructure. Therefore, it is secured under Schedule 14 Part 2 of the DCO and is expected to also be secured within the ML, as presented in the Marine licence principles document (Document Reference J9) submitted with the application for consent.

- 1.2.1.4 A detailed description of the Mona Offshore Wind Project is presented in Volume 1, Chapter 3: Project description of the Environmental Statement (Document Reference F1.3). Key parameters of the Mona Offshore Wind Project are outlined in Table 1.1, which will be licensed under the dML and standalone ML.

**Table 1.1: Key parameters for the Mona Offshore Wind Project.**

Parameter	Value
Mona Array Area (km <sup>2</sup> )	300
Average water depth (m Lowest Astronomical Tide (LAT))	-39.39
Maximum number of wind turbines	96
Maximum blade tip height above LAT (m)	364
Maximum number of Offshore Substation Platforms (OSPs)	4
Maximum number of offshore export cables	4
Maximum length of inter-array cables (km)	325
Maximum length of interconnector cables (km)	50
Maximum length of offshore export cables (km)	360

## 1.3 General principles and guidance

### 1.3.1 Guidance

- 1.3.1.1 There are a number of guidance documents and reviews to draw on when considering the overarching principles in marine environmental monitoring. Of particular relevance to offshore wind farms is the independent review of post-consent environmental monitoring data undertaken by Fugro EMU Ltd on behalf of the Marine Management Organisation (MMO) (MMO, 2014a) and the MMO's subsequent recommendations (MMO, 2014b). Also of relevance is the best practice guidance for baseline survey and monitoring requirements for EIAs of major development projects, produced by ABPmer on behalf of NRW (Brooks *et al.*, 2018).

### 1.3.2 Principles

- The Planning Policy Wales (Llywodraeth Cymru, 2021) requires that renewable energy development proposals take into account the impact on the relevant human, natural and built receptors throughout construction, operation and decommissioning.



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- Paragraphs 3.8.9.7 and 3.8.9.8 of the National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) (Department for Energy Security & Net Zero (DESNZ), 2023) states that:  
*“Monitoring must measure and document the effects of the development and the efficacy of any associated mitigation or compensation. This will enable an assessment of the accuracy of the original predictions and improve the evidence base for future mitigation and compensation measures enabling better decision-making in future EIAs and Habitats Regulations Assessments (HRAs).”*
- Monitoring should have a clear purpose and be designed to provide answers to specific questions where significant environmental impacts have been identified (Cefas, 2012; Glasson et al., 2011; OSPAR, 2008). As such (and in- line with the MMO’s recommendations for targeted monitoring (MMO, 2014b)), monitoring proposals should have an identified frequency (and/or duration) and confirmed outputs, which provide statistically robust datasets designed to address the hypothesis being tested
- The presence of a significant impact identified in the EIA (whilst necessitating mitigation) should not, in itself, necessarily lead to a requirement for monitoring. Monitoring should address significant evidence gaps or uncertainty relevant to the Mona Offshore Wind Project, where it is realistic for those gaps to be filled or uncertainty reduced significantly. Monitoring should also be targeted at those features considered to be particularly sensitive to the impacts of the development, especially where these features are of economic or environmental importance. MMO (2014b) advise that the greatest focus should be placed on impacts of concern for which the highest uncertainty remains. Such targeted monitoring is more likely to answer key uncertainties than broad scale/generic monitoring approaches
- Proposals for monitoring should be based, where relevant, on the best practice and outcomes of the latest review of environmental data (i.e. best available evidence) associated with post-consent monitoring of licence conditions of offshore wind farms (MMO, 2014b)
- An iterative approach should be taken whereby the scope and design of any new monitoring work should be based on a review of the findings of any preceding phases of monitoring or relevant survey work, including surveys carried out in support of the EIA for the Mona Offshore Wind Project. It is acknowledged that NRW may require amendments to individual monitoring programmes if the evidence indicates the existing monitoring programme is not fit for purpose and/or impacts are not as predicted
- Where site specific monitoring is undertaken pre- and post-construction it may be relevant to consider undertaking monitoring over non-consecutive years
- Under certain circumstances for addressing specific uncertainties it may be more appropriate to adopt a strategic approach to the monitoring. Strategic work (potentially outwith the boundaries of the Mona Offshore Wind Project) may be considered where contributing to the answering of a broader question (that is still linked to the relevant receptors) is likely to offer greater ability to address key questions than any site-specific monitoring may achieve. Such strategic work may need to be de-coupled from any specific phase of the Mona Offshore Wind Project.



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### 1.4 Consultation

1.4.1.1 To presents key issues raised during consultation activities undertaken for the Mona Offshore Wind Project relevant to monitoring.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in the application
01 June 2023	NRW	Each chapter of the PEIR has identified mitigation and monitoring that the applicant considered necessary for the project. NRW Marine Licensing Team would advise that a document is presented that compiles all the mitigation and monitoring proposed within the Environmental Statement, and identifies where it is proposed these mitigation and monitoring actions are secured, identifying the relevant condition(s) of all the deemed MLs where relevant. This document should also identify which monitoring and mitigation the applicant considers will be relevant to the separate non-deemed ML.	Mitigation and monitoring proposed for the Mona Offshore Wind Project is presented in this document and in the Mitigation and monitoring schedule (Document Reference J10).
01 June 2023	Isle of Man Government	Will monitoring of fishing patterns during and post-construction be undertaken to confirm these conclusions? This may be important to the Isle of Man, particularly if displaced vessels also hold Manx licences.	No monitoring of fishing patterns post-construction is proposed. However, the Applicant has made a commitment to Annual review for the first five years of the operations and maintenance phase of VMS and landings data to contribute to the evidence base for fishing activity in and around offshore wind farms. This commitment is secured within the Outline fisheries liaison and co-existence plan (Document Reference J13).

### 1.5 In-principle proposals for monitoring

#### 1.5.1 Approach

1.5.1.1 This document outlines the rationale behind the proposed monitoring, with a view to reducing uncertainty when drafting the final plans post grant of a DCO. Following an iterative approach, it should be recognised that increased knowledge and understanding based on survey outcomes may influence the design of subsequent monitoring work. The focus, requirements and methodologies for future monitoring for the Mona Offshore Wind Project may therefore differ from the outline approach presented in this document. Any such future modifications to monitoring approaches will be the subject of ongoing consultation between the Applicant, NRW and its statutory advisers. Listed monitoring has been presented under topics of relevance, the monitoring may not have been directly identified for the topic through the EIA but is relevant for these receptors.

1.5.1.2 The relevant topics that will be discussed in this document are as follows:

- Physical processes
- Benthic subtidal and intertidal ecology

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- Commercial fisheries
- Shipping and navigation
- Marine archaeology

1.5.1.3 For each topic, a table is presented which details the:

- Potential effects and receptor(s) for which monitoring is relevant
- Monitoring objectives
- The approach to monitoring
- Residual effect
- Links to other monitoring
- Method of securing monitoring
- Rationale.

1.5.1.4 For each topic, the tables are divided into sections for pre-construction monitoring, construction monitoring, and post-construction monitoring. At this stage, no monitoring approaches are outlined for the decommissioning phase.

### **1.5.2 Engineering and design-related studies**

1.5.2.1 Studies will be undertaken for engineering purposes in addition to the environmental monitoring required under conditions of the dMLs within the DCO. Some of these studies will overlap with the conditioned monitoring and wherever possible the Applicant will endeavour to combine surveys for monitoring purposes with those already being carried out for engineering purposes. These are:

- Geophysical
- Geotechnical
- Unexploded Ordnance survey
- Remotely Operated Vehicle (ROV) survey
- Cable burial survey.

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### 1.6 Physical processes

#### 1.6.1 Conclusions of the Environmental Statement

1.6.1.1 The potential impacts of the Mona Offshore Wind Project on physical processes receptors have been assessed within Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1). All impacts were assessed as being of **minor adverse** or lower significance following the application of appropriate measures adopted as part of the Mona Offshore Wind Project. The commitment to the monitoring of cables and their burial status has been included as this is considered industry best practice.

#### 1.6.2 In-principle monitoring

1.6.2.1 Table 1.2 provides information on the monitoring commitments for physical processes.

**Table 1.2: In-principle monitoring proposed for physical processes.**

Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
<b>Post-construction</b>						
Impacts to sediment transport and sediment transport pathways due to presence of infrastructure and associated potential impacts to physical features and bathymetry	Sediment transport and sediment transport pathways	To monitor the effect of sediment transport and sediment transport pathways on cable burial.	Monitoring of the cables and their burial status.	Benthic subtidal and intertidal ecology (Table 1.3), shipping and navigation (Table 1.5), marine archaeology (Table 1.6).	Secured through relevant conditions as part of the DCO and expected to be secured through the standalone NRW marine licence.	To understand whether sediment movement in the Mona Array Area and Mona Offshore Cable Corridor has affected cable burial.

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### 1.7 Benthic subtidal and intertidal ecology

#### 1.7.1 Conclusions of the Environmental Statement

1.7.1.1 The potential impacts of the Mona Offshore Wind Project on benthic subtidal and intertidal ecology receptors have been assessed within Volume 2, Chapter 2: Benthic subtidal and intertidal ecology of the Environmental Statement (Document Reference F2.2). All impacts were assessed as being of **minor adverse** or lower significance following the application of appropriate measures adopted as part of the Mona Offshore Wind Project. The commitment to the monitoring of cables and their burial status has been included as this is considered industry best practice.

#### 1.7.2 In-principle monitoring

1.7.2.1 Table 1.3 provides information on the monitoring commitments for benthic subtidal and intertidal ecology.

**Table 1.3: In-principle monitoring proposed for benthic subtidal and intertidal ecology.**

Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
<b>Post-construction</b>						
Changes to physical processes	Benthic ecology	To monitor the effect of physical processes on cable burial.	Monitoring of the cables and their burial status.	Physical processes (Table 1.2), shipping and navigation (Table 1.5), marine archaeology (Table 1.6).	Secured through relevant conditions as part of the DCO and expected to be secured through the standalone NRW marine licence.	To understand whether sediment movement in the Mona Array Area and Mona Offshore Cable Corridor has affected cable burial.

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### 1.8 Commercial fisheries

#### 1.8.1 Conclusions of the Environmental Statement

1.8.1.1 The potential impacts of the Mona Offshore Wind Project on commercial fisheries receptors have been assessed within Volume 2, Chapter 6: Commercial fisheries of the Environmental Statement (Document Reference F2.6). All impacts were assessed as being of **minor adverse** or lower significance following the application of appropriate measures adopted as part of the Mona Offshore Wind Project. The commitment to the monitoring of cable routes and their burial status has been included as this is considered industry best practice.

#### 1.8.2 In-principle monitoring

1.8.2.1 Table 1.4 provides information on the monitoring commitments for commercial fisheries.

**Table 1.4: In-principle monitoring proposed for commercial fisheries.**

Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
<b>Post-Construction</b>						
Loss or damage to fishing gear due to snagging	Fishing vessels	To identify and reduce snagging risk.	Preparation of an Offshore Construction Method Statement post-consent with details of cable monitoring to reduce snagging risk.	Shipping and navigation (Table 1.5), Benthic subtidal and intertidal ecology (Table 1.3)	Secured through a condition in the ML.	To understand whether cables associated with the Mona Offshore Wind Project have, or have the potential to have snagged fishing gear.

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### 1.9 Shipping and navigation

#### 1.9.1 Conclusions of the Environmental Statement

1.9.1.1 The potential impacts of the Mona Offshore Wind Project on shipping and navigation receptors have been assessed within Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement (Document Reference F2.7). All impacts were assessed as being of minor adverse or lower significance following the application of appropriate measures adopted as part of the Mona Offshore Wind Project, other than:

- Impacts to adverse weather routeing, assessed as **moderate adverse** for all phases (construction, operations and maintenance, and decommissioning)
- Impacts to commercial operators including strategic routes and lifeline ferries, which when assessed cumulatively with other existing and planned projects, plans and activities considered within the CEA, assessed as **moderate adverse** for all phases.

#### 1.9.2 In-principle monitoring

1.9.2.1 Table 1.5 provides information on the monitoring commitments for shipping and navigation.

**Table 1.5: In-principle monitoring proposed for shipping and navigation.**

Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
<b>Pre-construction</b>						
Impact on under keel clearance	Marine traffic	To assess the level of under keel clearance within the Mona Array Area and Mona Offshore Cable Corridor and Access Areas.	Bathymetric survey to IHO Order 1a standard that meets the requirements of MGN654, with data to be provided to the Maritime and Coastguard Agency (MCA) and the United Kingdom Hydrographic Office (UKHO).	Physical processes (Table 1.2), benthic subtidal and intertidal ecology (Table 1.3), marine archaeology (Table 1.6).	Secured through relevant conditions as part of the ML(s).	To assess the impact of the Mona Offshore Wind Project on under keel clearance.

### Construction



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Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
All impacts on vessel routeing and safety	Marine traffic	To assess the extent to which the impacts predicted in the Navigational Risk Assessment (NRA) are accurate.	Monitoring of marine traffic with a report submitted annually to the NRW, MCA and Trinity House.	N/A	Secured through relevant conditions as part of the ML(s).	To ensure adopted risk controls are fit for purpose.
Impact on snagging risk to vessel anchor and fishing gear	Marine traffic	To identify and reduce snagging risk.	Monitoring of the cables and their burial status.	Commercial fisheries (Table 1.4), Benthic subtidal and intertidal ecology (Table 1.3)	Secured through relevant conditions as part of the ML(s).	To understand whether cables associated with the Mona Offshore Wind Project have, or have the potential to have snagged fishing gear.
Impact on under keel clearance	Marine traffic	To assess the level of under keel clearance within the Mona Array Area and Mona Offshore Cable Corridor and Access Areas.	Bathymetric survey to IHO Order 1a standard that meets the requirements of MGN654, with data to be provided to the MCA and UKHO.	Physical processes (Table 1.2), benthic subtidal and intertidal ecology (Table 1.3), marine archaeology (Table 1.6).	Secured through relevant conditions as part of the ML(s).	To assess the impact of the Mona Offshore Wind Project on under keel clearance.
<b>Post-construction</b>						
Impact on allision (contact) risk to vessels	Marine traffic	To ensure constant functionality of Aids to Navigation (AtoNs) throughout the lifetime of the Mona Offshore Wind Project.	AtoN monitoring. Trinity House to be informed of any defects.	N/A	Secured through relevant conditions as part of the ML(s).	To minimise the likelihood of allision.
All impacts on vessel routeing and safety	Marine traffic	To assess the extent to which the impacts predicted in the NRA are accurate.	Monitoring of marine traffic with a report submitted annually to the NRW, MCA and Trinity House	N/A	Secured through relevant conditions as part of the ML(s).	To ensure adopted risk controls are fit for purpose.

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Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
Impact on snagging risk to vessel anchor and fishing gear	Marine traffic	To identify and reduce snagging risk.	Monitoring of the cables and their burial status.	Commercial fisheries (Table 1.4), Benthic subtidal and intertidal ecology (Table 1.3)	Secured through relevant conditions as part of the ML(s).	To understand whether cables associated with the Mona Offshore Wind Project have, or have the potential to have snagged fishing gear.
Impact on under keel clearance	Marine traffic	To assess the level of under keel clearance within the Mona Array Area and Mona Offshore Cable Corridor and Access Areas.	Bathymetric survey to IHO Order 1a standard that meets the requirements of MGN654, with data to be provided to the MCA and UKHO.	N/A	Secured through relevant conditions as part of the ML(s).	To assess the impact of the Mona Offshore Wind Project on under keel clearance.

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### 1.10 Marine archaeology

#### 1.10.1 Conclusions of the Environmental Statement

1.10.1.1 The potential impacts of the Mona Offshore Wind Project on marine archaeology receptors have been assessed within Volume 2, Chapter 9: Marine archaeology of the Environmental Statement (Document Reference F2.9). All impacts were assessed as being of minor adverse or lower significance following the application of appropriate measures adopted as part of the Mona Offshore Wind Project. The commitment to the monitoring of cables and their burial status has been included as this is considered industry best practice.

#### 1.10.2 In-principle monitoring

1.10.2.1 Table 1.6 provides information on the monitoring commitments for marine archaeology.

**Table 1.6: In-principle monitoring proposed for marine archaeology.**

Potential effect	Receptor	Monitoring objectives	Monitoring approach	Links to other monitoring	Method of securing monitoring	Rationale
<b>Pre-construction</b>						
Changes to physical processes	Marine archaeology	To monitor any changes in physical processes around marine archaeology receptors.	Bathymetric survey to IHO Order 1a standard that meets the requirements of MGN654, with data to be provided to the MCA and UKHO.	Physical processes (Table 1.2), benthic subtidal and intertidal ecology (Table 1.3), shipping and navigation (Table 1.5).	Secured through relevant conditions as part of the DCO and expected to be secured through the standalone NRW marine licence.	To understand any changes in physical processes around the Mona Offshore Wind Project.

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