

# MONA OFFSHORE WIND PROJECT

HRA Screening Report, Screening Matrices and Integrity Matrices



April 2023  
FINAL

Image of an offshore wind farm

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**Prepared by:**

**RPS**

**Prepared for:**

**Mona Offshore Wind Ltd.**

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## Glossary

Term	Meaning
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Mona Scoping Report	The Mona Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and Natural Resource Wales (NRW) for the Mona Offshore Wind Project.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process for the Mona Offshore Wind Project.
Mona Offshore Wind Project	The Mona Offshore Wind Project is comprised of both the generation assets and offshore and onshore transmission assets and associated activities
Mona Offshore Wind Project Boundary	The area containing all aspects of the Mona Offshore Wind Project, both offshore and onshore
Mona Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, offshore export cables and offshore substation platforms (OSPs) forming part of the Mona Offshore Wind Project will be located.
Mona Offshore Cable Corridor	The corridor located between the Mona Array Area and the landfall up to Mean High Water Springs (MHWS), in which the offshore export cables and the offshore booster substation will be located.
Mona Onshore Cable Corridor	The corridor located between Mean High Water Springs (MHWS) at the landfall and the Mona onshore substation, in which the onshore cable route will be located.
Mona 400kV Grid Connection Cable Corridor	The corridor from the Mona onshore substation to the National Grid substation.
Offshore Substation Platform (OSP)	The offshore substation platforms located within the Morgan Array Area will transform the electricity generated by the wind turbines to a higher voltage allowing the power to be efficiently transmitted to shore. 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.
Applicant	Mona Offshore Wind Limited.
Wind turbines	The wind turbine generators, including the tower, nacelle and rotor.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation platforms. Inter-array cables will carry the electrical current produced by the wind turbines to the offshore substation platforms.
Interconnector cables	Cables that may be required to interconnect the Offshore Substation Platforms in order to provide redundancy in the case of cable failure elsewhere.
Intertidal area	The area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS).
Landfall	The area in which the offshore export cables make contact with land and the transitional area where the offshore cabling connects to the onshore cabling.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.

Term	Meaning
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980.
Non-statutory consultee	Organisations that an applicant may choose to consult in relation to a project who are not designated in law but are likely to have an interest in the project.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Relevant Local Planning Authority	The Relevant Local Planning Authority is the Local Authority in respect of an area within which a project is situated, as set out in Section 173 of the Planning Act 2008. Relevant Local Planning Authorities may have responsibility for discharging requirements and some functions pursuant to the Development Consent Order, once made.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).
The Secretary of State for Business, Energy and Industrial Strategy	The decision maker with regards to the application for development consent for the Mona Offshore Wind Project.
Evidence Plan	The Evidence Plan is a mechanism to agree upfront what information the Applicant needs to supply to the Planning Inspectorate as part of the Development Consent Order (DCO) applications for the Mona Offshore Wind Project.
Evidence Plan Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process.
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 NRW. A separate marine licence is required for the offshore export cables and related works located within and between the Mona Array Area and the landfall at MHWS.
NPS	The current national policy statements published by the Department of Energy and Climate Change in 2011.
Offshore Wind Leasing Round 4	The Crown Estate auction process which allocated developers preferred bidder status on areas of the seabed within Welsh and English waters.

## Acronyms

Term	Meaning
AfL	Agreement for Lease
AIS	Air Insulated Switch gear
BDMPs	Biologically Defined Minimum Population Scales
CJEU	The Court of Justice of the European Union
cSAC	Candidate Special Area of Conservation

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Term	Meaning
DCO	Development Consent Order
EMF	Electromagnetic Field
EnBW	Energie Baden - Württemberg
FCS	Favourable Conservation Status
GIS	Gas Insulated Switch gear
HAT	Highest Astronomical Tide
HDD	Horizontal Directional Drilling
HLV	Heavy Lift Vessels
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
IAQM	Institute of Air Quality Management
IMO	International Maritime Organisation
IMWWG	The Inter-agency Marine Mammal Working Group
IROPI	Imperative Reasons of Overriding Public Interest
ISAA	Information to Support an Appropriate Assessment
LAT	Lowest Astronomical Tide
LSE	Likely Significant Effect
MARPOL	International convention for the prevention for the pollution from ships
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MOD	Military Of Defence
MSL	Mean Sea Level
MU	Management Unit
NRW	National Resources Wales
NSIP	Nationally Significant Infrastructure Project
OSP	Offshore Substation Platform
OSPAR	Oslo-Paris
PDE	Project Design Envelope
PEMP	Preliminary Environmental Management Plan
pSAC	Possible Special Area of Conservation
pSPA	Possible Special Protection Area
SAC	Special Area of Conservation
SD	Standard Deviation

Term	Meaning
SOSS	Strategic Ornithological Support Services
SSC	Suspended Sediment Concentration
TCE	The Crown Estate
TJB	Transition joint bays
UXO	Unexploded Ordnance
ZOI	Zone Of Influence

**Units**

Unit	Description
GW	Gigawatt
MW	Megawatt
nm	Nautical mile
km	Kilometre
km <sup>2</sup>	Square kilometre
m	Metre

<b>1</b>	<b>MONA HABITATS REGULATIONS ASSESSMENT STAGE 1 SCREENING</b>	<b>1.1.2</b>	<b>Habitats Regulations Assessment</b>
<b>1.1</b>	<b>Introduction</b>	1.1.2.1	This document has been produced to inform the HRA process for the Mona Offshore Wind Project. It provides information to enable the screening of the Mona Offshore Wind Project with respect to its potential to have a LSE on designated nature conservation sites (hereafter 'European sites'). The scope of this document covers all relevant European sites and relevant qualifying interest features. European sites are proposed to be "screened out" where no LSE from the Mona Offshore Wind Project is predicted. Where LSE cannot be ruled out at this stage the European sites will be "screened in" and assessed further.
<b>1.1.1</b>	<b>Overview</b>	1.1.2.2	The requirement and process for the consideration of potential impacts of plans and projects on European sites have followed the European Union's (EU) Habitats Directive (Directive 92/43/EEC). In terrestrial areas of the UK and territorial waters out to 12nm, the land and marine aspects of Habitats Directive and certain elements of the Wild Birds Directive (Directive 2009/147/EC) are transposed into UK law through The Conservation of Habitats and Species Regulations 2017. In waters beyond 12nm, The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations) apply, which transpose the Habitats and Birds Directives into national law. These regulations are together referred to as the Habitats Regulations.
1.1.1.1	Mona Offshore Wind Limited (the Applicant), a joint venture of bp Alternative Energy investments (hereafter referred to as bp) and Energie Baden-Württemberg AG (hereafter referred to as EnBW) is developing the Mona Offshore Wind Project. The Mona Offshore Wind Project is a proposed offshore wind farm located in the east Irish Sea.	1.1.2.3	The Habitats Regulations require that an HRA must be carried out on all plans and projects that are likely to have significant effects on European sites, which include Special Areas of Conservation (SACs), candidate SACs (cSACs), Sites of Community Importance (SCI), Special Protection Areas (SPAs) and as a matter of policy, possible SACs (pSACs), potential SPAs (pSPAs) and Ramsar Sites (listed under the Ramsar Convention on Wetlands of International Importance – where also designated as a European site).
1.1.1.2	In February 2021, EnBW and bp were selected by The Crown Estate (TCE) as Preferred Bidder for two 60-year leases in Offshore Wind Leasing Round 4. The projects to be developed, located in the east Irish Sea, have been named as the Morgan Offshore Wind Project and the Mona Offshore Wind Project. The Applicant entered into Agreement for Lease (AfL) for each of the Projects in early 2023. Separate consent applications will be submitted by Morgan Offshore Wind Limited and Mona Offshore Wind Limited (the 'Applicants') for each project, each accompanied by a separate Environmental Statement. The Mona Offshore Wind Project include both the offshore and onshore infrastructure required to generate and transmit electricity from the offshore wind turbines to an onshore National Grid substation at Bodelwyddan.	1.1.2.4	In this report, and in accordance with guidance issued by the UK Government on the changes made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, the term "European site" has been retained to refer to the above sites protected in European Member States, England and Wales (Defra, 2021). However, where these sites are located in the UK, they no longer form part of the EU's Natura 2000 ecological network and now form part of the National Site Network. European sites are defined in full in section 1.2.1.
1.1.1.3	This Habitats Regulations Assessment (HRA) Stage 1 Screening for Likely Significant Effects (LSE) has been prepared for the Mona Offshore Wind Project only; a separate HRA Screening Report will be prepared to support the Morgan Offshore Wind Project.	1.1.2.5	The Defra (2021) guidance identifies that the HRA process can have up to three stages as outlined below: <ol style="list-style-type: none"> <li>1. Screening - to determine if the proposal is likely to have a significant effect on the site's conservation objectives</li> <li>2. Appropriate Assessment - to assess the likely significant effects of the proposal on the integrity of the site and its conservation objectives and to consider ways to avoid or minimise any effects</li> <li>3. Derogation - to consider if proposals that would have an adverse effect on the integrity of a European site qualify for an exemption, subject to three legal tests being satisfied (i.e. alternative solutions, imperative reasons of overriding public interest and compensatory measures).</li> </ol>
1.1.1.4	As the Mona Offshore Wind Project is an offshore generating station with a capacity of greater than 350MW located in both Welsh and English waters, it is a Nationally Significant Infrastructure Project (NSIP) requiring a Development Consent Order (DCO) under the Planning Act 2008. The application for development consent for the Mona Offshore Wind Project will cover all offshore aspects of the project located within Welsh offshore waters and English offshore waters as well as all onshore aspects of the Mona Offshore Wind Project.		
1.1.1.5	The consents, licences and permissions that will be sought by the Applicant for the Mona Offshore Wind Project include: <ul style="list-style-type: none"> <li>• A marine licence under the Marine and Coastal Access Act 2009, deemed under the DCO, for licensable activities in English waters and Welsh offshore waters (i.e. all licensable activities related to the offshore wind farm infrastructure located within the Mona Array Area)</li> <li>• A marine licence under the Marine and Coastal Access Act 2009, from Natural Resources Wales (NRW), for licensable activities within 12 nautical miles (nm) of the Welsh coast (i.e. for the offshore export cables and related works located within and between the Mona Array Area and the landfall at mean high water springs (MHWS)).</li> </ul>		
1.1.1.6	This HRA Stage 1 Screening for LSE has been prepared in support of both the DCO and marine licence applications.		

**1.1.3 Purpose of the report**

- 1.1.3.1 This document represents the Applicant’s HRA Stage 1 Screening under the Habitats Regulations for the Mona Offshore Wind Project (as described in section 1.1.5). It comprises the screening stage and therefore provides information to enable the screening of the Mona Offshore Wind Project with respect to its potential to have an LSE on European sites.
- 1.1.3.2 The screening exercise presented in this report is based on the current understanding of the baseline environment and proposed activities associated with the Mona Offshore Wind Project and is based on the project and site-specific information currently available. Any changes which may arise as a result of further environmental surveys, assessment work, consultee responses, Evidence Plan process for the Mona Offshore Wind Project, and/or refinements to the design of the Mona Offshore Wind Project will be reflected in the Information to Support Appropriate Assessment (ISAA), and/or subsequent HRA reporting.
- 1.1.3.3 In summary, the purpose of this report is:
  - To identify the relevant European sites which may include features (Annex I habitats, Annex I birds and Annex II species) which may be sensitive or vulnerable to potential impacts arising from the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project
  - To consider the features of the relevant European sites and to identify those which are not considered likely to be at risk of significant effects arising from the Mona Offshore Wind Project, either alone or in combination with other plans or projects, so that they can be eliminated from further consideration within the process
  - To consider the features of the relevant European sites and to identify those which are considered likely to be at risk of significant effects arising from the Mona Offshore Wind Project, either alone or in combination with other plans or projects, so that they can be taken forward for appropriate assessment
  - To consider which of the potential impacts arising from the Mona Offshore Wind Project are considered likely to result in LSEs to features of European sites and which impacts can be eliminated from consideration in further stages of the HRA.

**1.1.4 Structure of the report**

- 1.1.4.1 This structure of this HRA Screening Report is as follows:
  - Section 1.2—a brief summary of the HRA process and legislative framework including implications of the UK’s departure from the EU
  - Section 1.3 – the initial identification of European sites and features which have the potential to be affected by the Mona Offshore Wind Project
  - Section 1.4 – HRA Screening tables and the determination of the potential for LSEs to arise with regard to the designated features of the European sites under consideration
  - Section 1.5 – a summary of the approach to the in-combination assessment

- Section 1.6– a summary of the European sites and features for which the screening process has identified potential for LSEs.

**1.1.5 Project overview**

- 1.1.5.1 An overview of the Mona Offshore Wind Project is outlined in the paragraphs below, the full project description is provided in volume 1, chapter 3: Project description of the PEIR.
- 1.1.5.2 The Mona Offshore Wind Project will be located in the east Irish Sea, with a landfall on the North Wales coastline and a connection to the existing Bodelwyddan National Grid substation.
- 1.1.5.3 The Mona Offshore Wind Project will consist of up to 107 wind turbines. The Round 4 bid was awarded on the basis that the capacity of the Mona Offshore Wind Project would not exceed 1.5GW. The final capacity of the Mona Offshore Wind Project will be determined based on available technology and constrained by the design envelope presented in this chapter. The offshore infrastructure will also include up to 360km of offshore export cables, 50km of interconnector cable and 500km of inter-array cable.
- 1.1.5.4 The onshore infrastructure will consist of up to 12 onshore export cables buried in up to four trenches and an onshore High Voltage Alternating Current (HVAC) substation to allow the power to be transferred to the National Grid via the existing Bodelwyddan National Grid substation.
- 1.1.5.5 The key components of the Mona Offshore Wind Project are shown in Figure 1.1 and presented in Table 1.1.
- 1.1.5.6 The Applicant intends to commence construction of the Mona Offshore Wind Project in 2026 and for it to be fully operational by 2030 in order to help meet UK and Welsh Government renewable energy targets. The Mona Offshore Wind Project will have a lifetime of 35 years.

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

Parameter	Value
Mona Array Area (km <sup>2</sup> )	449.97
Average water depth (m LAT)	-39.23
Maximum number of wind turbines	107
Maximum blade tip height above LAT (m)	324
Maximum number of Offshore Substation Platforms (OSPs)	4
Maximum number of offshore export cables	4
Maximum number of onshore export cable	12
Maximum length of inter-array cables (km)	500
Maximum length of interconnector cables (km)	50
Maximum length of offshore export cables (km)	360
Maximum length of onshore export cables (km)	216



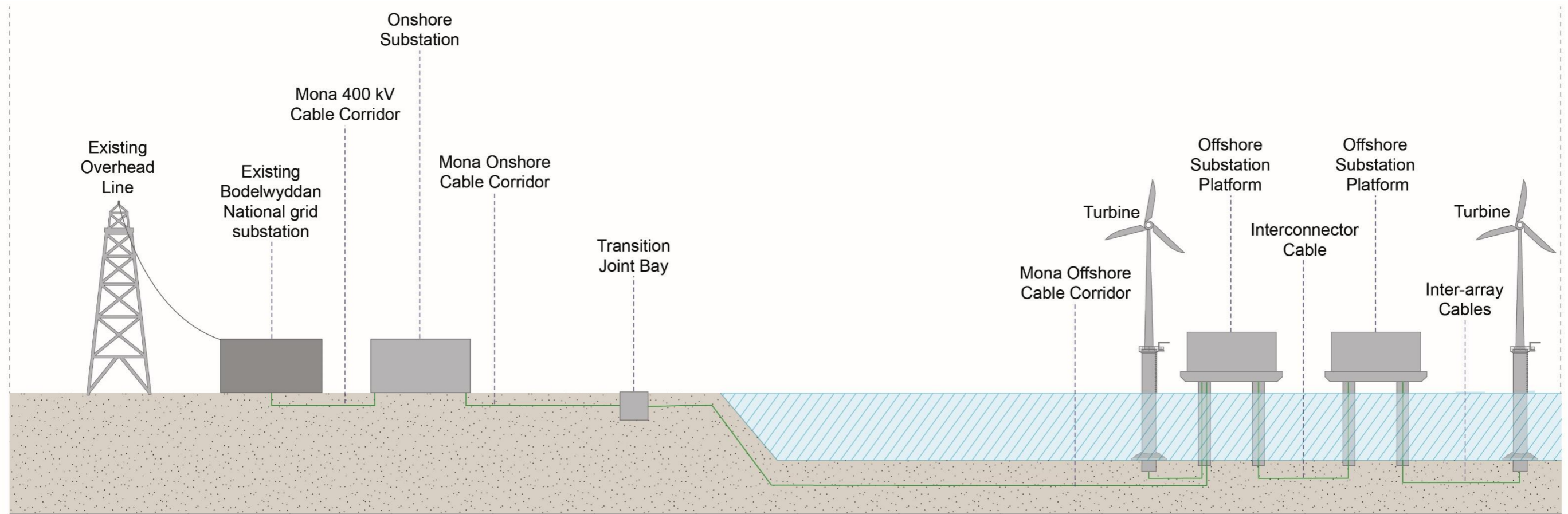


Figure 1.1: Overview of the Mona Offshore Wind Project infrastructure.

**1.1.6 Relevant consultations**

1.1.6.1 The Applicant is facilitating the Evidence Plan Process for the Mona Offshore Wind Project. Evidence plans are formal mechanisms to agree what information the Applicant needs to supply to the Planning Inspectorate as part of an application for development consent. This also helps to ensure compliance with the Habitats Regulations and helps ensure Applicants provide sufficient information as part of their DCO application.

1.1.6.2 An evidence plan steering group has been established for the Mona and Morgan Offshore Wind Projects. It was determined appropriate to have a joint evidence plan process across the Mona and Morgan Offshore Wind Projects to ensure common issues and cumulative/in-combination issues are appropriately addressed. The steering group is comprised of the Applicant, the Planning Inspectorate, NRW, Natural England, the Joint Nature Conservation Committee (JNCC) and the Marine Management Organisation (MMO) as the key regulatory bodies and Statutory Nature Conservation Bodies (SNCBs). The steering group has met and will continue to meet at key milestones throughout the EIA process.

1.1.6.3 In addition, Expert Working Groups (EWG) have been established to discuss topic specific issues with relevant stakeholders. EWG meetings have been held and will continue to be held at key stages in the EIA process or when new information becomes available for each topic, to provide the opportunity for stakeholders to provide feedback and advice at an early stage. EWGs have been established for the following topics:

- Physical processes, benthic ecology and fish and shellfish ecology
- Marine mammals
- Offshore ornithology
- Terrestrial ecology.

1.1.6.4 A summary of the details of the key consultation on HRA Screening undertaken to date is presented in Table 1.2.

**Table 1.2: Summary of key consultation on HRA Screening for the Mona Offshore Wind Project.**

Date	Consultee	Type of Consultation	Summary of Consultation	Where addressed
<b>Steering Group</b>				
November 2021	NRW, NE, MMO, JNCC and the Planning Inspectorate (PINS).	Steering Group meeting	• Meeting purpose was to set up and establish the Evidence Plan process and to gain feedback on the EWGs.	N/A
December 2021	NE, NRW, MMO, JNCC, PINS, Environment Agency	Steering Group meeting	• Meeting to introduce the cable route selection process.	N/A

Date	Consultee	Type of Consultation	Summary of Consultation	Where addressed
July 2022	NRW, NE, MMO, JNCC and PINS	Steering Group meeting	<ul style="list-style-type: none"> <li>• Meeting to provide an update on the cable route selection process.</li> <li>• LSE Methodology circulated to members of the Steering Group to gain feedback and agreement on the methodology to be used.</li> </ul>	Feedback will be incorporated into future iterations of the HRA Screening Report and the ISAA.

**Expert Working Groups**

Marine Mammals

December 2021	NRW, Natural England (NE), MMO, JNCC, Cefas and The Wildlife Trusts (TWT).	EWG meeting	<ul style="list-style-type: none"> <li>• Meeting to introduce the Mona Offshore Wind Project and to establish the EWG.</li> <li>• Overview of approach to baseline characterisation and study areas and ongoing surveys and preliminary findings.</li> <li>• Position on the use of Marine Mammal Management Units (MUs) for impact assessment or screening, and advice on applying these marine mammal MUs during Appropriate Assessment was provided in NRW's position statement.</li> </ul>	Feedback has been incorporated into the EIA.  Marine mammal MUs have been used when screening for LSE.
July 2022	NRW, NE, MMO, JNCC, Cefas and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>• Discussion of actions from first EWG meeting, scoping opinion discussion and underwater sound methodology.</li> <li>• LSE Methodology presented and discussed to the EWG for agreement on the methodology to be used.</li> </ul>	Feedback has been incorporated into the HRA Screening Report and the ISAA.
November 2022	NRW, Natural England, MMO, JNCC, Cefas and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>• Baseline characterisation</li> <li>• Baseline populations</li> <li>• Approach to HRA Screening</li> </ul>	Discussion on marine mammals. Due to the timing of the workshop ahead of publishing the PEIR, discussion outputs will be incorporated into the HRA provided with the Environmental Statement.

Date	Consultee	Type of Consultation	Summary of Consultation	Where addressed
<b>Ornithology</b>				
December 2021	NRW, NE, MMO, JNCC, TWT, Royal Society for the Protection of Birds (RSPB)	EWG meeting	<ul style="list-style-type: none"> <li>Meeting to introduce the Mona Offshore Wind Project and to establish the EWG.</li> <li>Discussion of ongoing surveys, preliminary findings and the approach to baseline characterisation.</li> </ul>	Feedback has been incorporated into the EIA.
July 2022	NE, NRW, MMO, JNCC, RSPB and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>Meeting to agree the approach to baseline characterisation, collision risk modelling and displacement.</li> <li>Opportunity for discussion of the Scoping Opinion.</li> <li>LSE Methodology presented and discussed to the EWG for agreement on the methodology to be used.</li> </ul>	Feedback has been incorporated into the HRA Screening Report and the ISAA.
November 2022	Natural England, NRW, MMO, JNCC and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>Baseline characterisation</li> <li>Baseline populations</li> <li>Approach to HRA Screening</li> </ul>	Discussion on offshore ornithology. Due to the timing of the workshop ahead of publishing the PEIR, discussion outputs will be incorporated into the HRA provided with the Environmental Statement.
<b>Benthic, Fish and Shellfish and Physical Processes</b>				
February 2022	NE, NRW, MMO, JNCC, Royal Society for the Protection of Birds (RSPB) and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>Meeting to discuss benthic survey feedback, preliminary results and desktop data sources.</li> <li>Physical Processes baseline characterisation: Site specific data and desktop data sources.</li> <li>Fish and Shellfish baseline characterisation: Site specific and desktop data sources.</li> </ul>	Feedback has been incorporated into the EIA.

Date	Consultee	Type of Consultation	Summary of Consultation	Where addressed
April 2022	NE, NRW and JNCC	Email	<ul style="list-style-type: none"> <li>Benthic subtidal and intertidal survey scope of work was consulted on to gain feedback on the methodology.</li> </ul>	Advice was incorporated into Benthic Ecology Survey Scope of Work
November 2022	Natural England, NRW, MMO, JNCC and TWT.	EWG meeting	<ul style="list-style-type: none"> <li>Baseline characterisation</li> <li>Baseline populations</li> <li>Approach to HRA Screening</li> </ul>	Discussion on benthic ecology, physical processes and fish and shellfish. Due to the timing of the workshop ahead of publishing the PEIR, discussion outputs will be incorporated into the HRA provided with the Environmental Statement.

## 1.2 The Habitats Regulations Assessment Process

### 1.2.1 Legislative context

1.2.1.1 The Habitats Directive, together with the Birds Directive provide the EU’s legal framework for the protection of wild fauna and flora and birds and establishes a network of internationally important sites, designated for their ecological status. This network of designated sites is comprised of the following:

- SACs which are designated under the Habitats Directive and promote the protection of flora, fauna and habitats
- SPAs which are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds.

1.2.1.2 In terrestrial areas of the UK and territorial waters out to 12nm, the land and marine aspects of the Habitats Directive and certain elements of the Birds Directive are transposed into UK law through The Conservation of Habitats and Species Regulations 2017. In waters beyond 12nm, The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations) apply, which transpose the Habitats and Birds Directives into national law.

1.2.1.3 The UK is no longer an EU Member State. Notwithstanding, the Habitats Directive as implemented by the Habitats Regulations continue to provide the legislative backdrop for HRA in the UK. The HRA process implemented under the Habitats Regulations continues to apply (subject to minor changes effected by the 2019 (EU Exit) Regulations) and the UK is bound by HRA judgments handed down by The Court of Justice of the European Union (CJEU) prior to 31 to December 2020<sup>1</sup>. The objective of the Habitats Regulations is to conserve, at a Favourable Conservation Status (FCS), those habitats and species listed in Annexes I and II of the Habitats Directive and Annex I of the Birds Directive. Post EU-Exit, the Habitats Regulations continue to refer to Annexes I and II of the Habitats Directive and Annex I of the Birds Directive

<sup>1</sup> The UK Supreme Court may depart from binding pre-EU Exit case law if they consider it 'right to do so' and the Inner House of the Court of Session may depart from such case law in certain circumstances

and as such, reference is made to the annexes of the Habitats and Birds Directives in this report.

## 1.2.2 European sites post EU exit

1.2.2.1 The Europe-wide network of nature conservation areas that are the subject of the HRA process was established under the Habitats Directive. The Habitats Directive establishes a network of internationally important sites, designated for their ecological status. European sites located within an EU Member State combine to create a Europe-wide network of designated sites known as the Natura 2000 network. In the UK, since exiting the EU, these are now referred to as European sites and together with other designated sites, these form part of the National Site Network.

## 1.2.3 The process

1.2.3.1 HRA is generally recognised as a progressive, staged process built around the wording of Article 6(3) of the Habitats Directive, with the outcome at each stage defining the requirement for and scope of the next. Compliance with the requirements of the Directive can be demonstrated if the stages are followed in the correct and particular sequence. These stages are summarised in Figure 1.2.

1.2.3.2 Article 6(3) of the Habitats Directive requires that:

*“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public”.*

1.2.3.3 As outlined in paragraph 1.2.3.1, HRA is a multi-stage process which identifies LSE, assesses any adverse effect on integrity of a European site, and considers the potential for derogation (as required). The Defra (2021) guidance describes that the process can have up to three stages as outlined below:

- Screening – the first stage involves a screening for LSE which is a simple assessment to check or screen if, in the absence of mitigation, a proposal:
  - is directly connected with or necessary for the conservation management of a European site
  - risks having a significant effect on a European site on its own or in combination with other proposals
- Appropriate assessment – the second stage is an appropriate assessment, which must be carried out if it is decided that there is a risk of a likely significant effect on a European site or if there is not enough evidence to rule out a risk. The appropriate assessment should assess the likely significant effects of a proposal on the integrity of the site and its conservation objectives and consider ways to avoid or reduce (mitigate) any potential for an ‘adverse effect on the integrity of the site’

- Derogations - the third stage is known as a derogation where, in certain circumstances, a proposal that has failed the integrity test may be allowed to go ahead. To decide if the proposal qualifies for a derogation, three legal tests must be applied. All three tests must be passed in sequence for a derogation to be granted:

- There are no feasible alternative solutions that would be less damaging or avoid damage to the site
- The proposal needs to be carried out for Imperative Reasons of Overriding Public Interest (IROPI)
- The necessary compensatory measures can be secured.

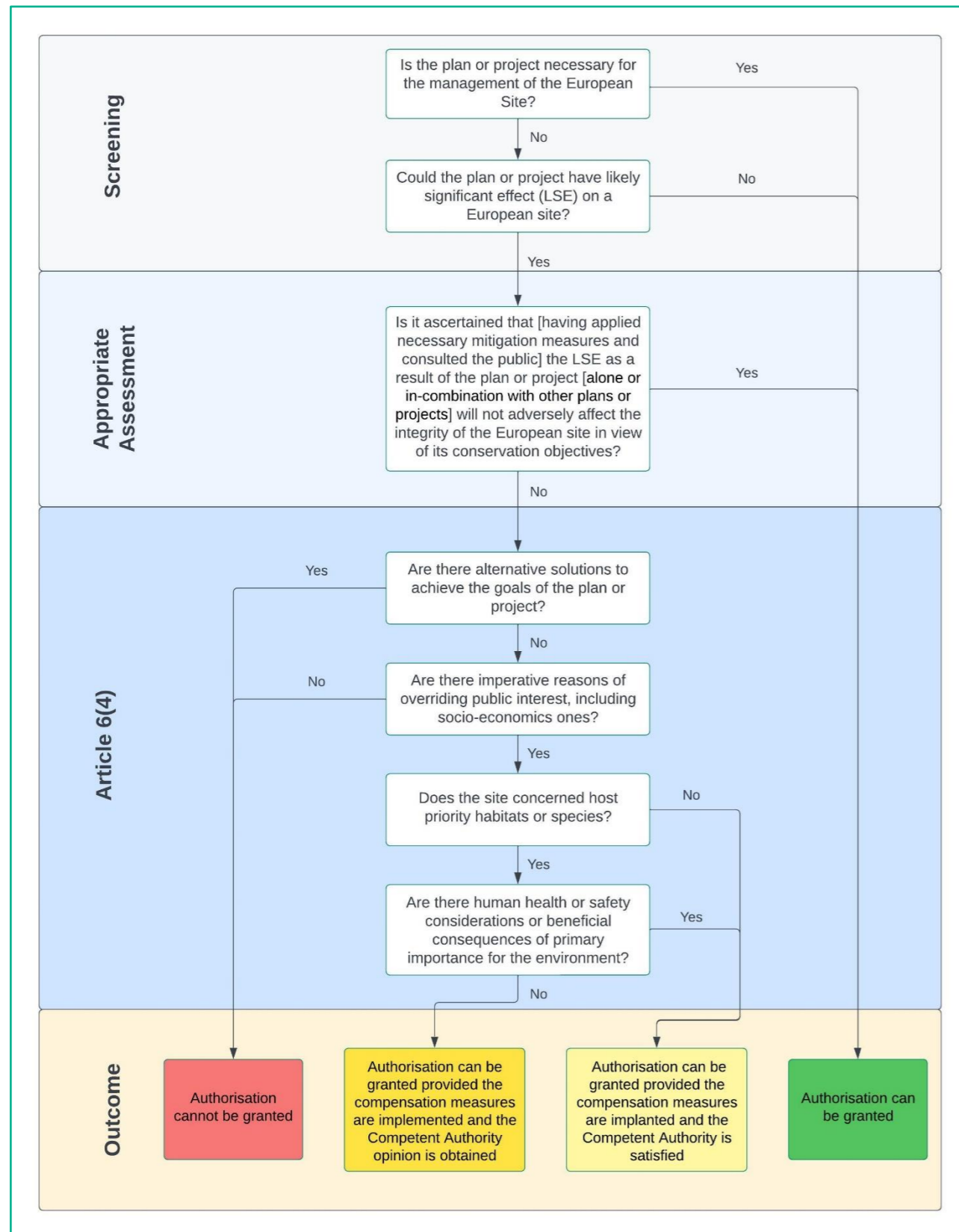
1.2.3.4 This report considers the first ‘screening for LSE’ step in the HRA process which encompasses the ‘screening’ stage shown in Figure 1.2.

1.2.3.5 The Habitats Regulations make it clear that the person applying for the consent of the plan or project must provide such information as the Competent Authority may reasonably require for the purposes of the assessment. It is intended that this report and the subsequent HRA reporting including the ISAA provides this information.

1.2.3.6 To determine whether an appropriate assessment is required it must first be ascertained whether or not the plan/project is directly connected with or necessary to the management of the European site. As this is not the case for the Mona Offshore Wind Project, it must therefore be determined whether the plan or project, either alone or in-combination with other plans and projects, is likely to have a significant effect on a European site(s). This constitutes the HRA Screening stage which removes from the assessment protected features of European sites which have no connectivity to the Mona Offshore Wind Project or those where the impacts are immaterial or inconsequential and the conservation objectives for the site’s qualifying interests would not be undermined (i.e. they are non-significant). All other European sites, including those where there is reasonable doubt as to the magnitude and nature of the relevant impact(s), are passed through to the next stage (appropriate assessment).

1.2.3.7 The Habitats Regulations establish management objectives for the national site network. These are called the network objectives. The objectives in relation to the National Site Network are to:

- Maintain or restore certain habitats and species listed in the Habitats Directive to FCS
- Contribute to ensuring the survival and reproduction of certain species of wild bird in their area of distribution and to maintaining their populations at levels which correspond to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements.



**Figure 1.2: Stages in the Habitats Regulations Appraisal Process (Taken from European Commission, 2021).**

**1.2.4 The Crown Estate Plan-Level HRA**

1.2.4.1 The Crown Estate (TCE), in its role as Competent Authority, conducted a Round 4 Plan-Level HRA. The Plan-Level HRA assessed the potential impacts of the six potential offshore wind projects identified through the Round 4 tender process (the “Round 4 plan”), including the Mona Offshore Wind Project, on the National Site Network.

1.2.4.2 The Plan-Level HRA process involved engagement and consultation with an EWG consisting of relevant UK statutory marine planning authorities, SNCBs and relevant non-governmental organisations.

1.2.4.3 TCE’s Plan-Level HRA concluded that the possibility of an Adverse Effect on Site Integrity as a result of the Round 4 Plan cannot be ruled out for two protected sites forming part of the National Site Network. The two protected sites, and relevant features, are: 1) sandbank features of the Dogger Bank SAC alone and in-combination; and 2) kittiwake feature of the Flamborough and Filey Coast SPA in-combination only. It should be noted, however, that the Mona Offshore Wind Project was not identified as a preferred project required to be considered in the appropriate assessment for either of these sites. Therefore, no Adverse Effect on Site Integrity was identified for the Mona Offshore Wind Project in the Plan-Level HRA.

1.2.4.4 On the basis of these conclusions, TCE considered derogation and concluded that: a) there are no alternative solutions to deliver the Round 4 objectives; b) there are clear imperative reasons of overriding public interest to proceed under the government’s targets for offshore wind and net zero; and c) the Round 4 plan provides a robust framework for the delivery of compensatory measures. TCE therefore considered that the three derogation tests have been met and the Secretary of State has since agreed that TCE can proceed with the plan, and Welsh Ministers have not raised any objection to the notice.

1.2.4.5 The Plan-Level HRA notes that TCE expects developers to undertake project-specific environmental assessments, including a detailed project-level HRA, as part of their application for development consent. This document comprises Stage 1 of the HRA, which carries out the screening of the Mona Offshore Wind Project with respect to its potential to have an LSE on European sites. This HRA Screening document has taken into account the information and approach taken by the Plan Level HRA as set out below.

1.2.4.6 TCE also established a Steering Group including government and SNCBs to oversee the development and delivery of strategic environmental compensation plans for each of the two affected sites. As projects progress before and during the planning process, developers will be required to work with the Steering Group – which will consult with the Round 4 HRA Expert Working Group - to develop detailed individual site compensation plans.

**1.2.5 Process for identifying sites and features**

1.2.5.1 To facilitate the identification of the European sites and features to be considered in the HRA Screening for the Mona Offshore Wind Project, a pre-screening of sites has been undertaken. This is considered to be appropriate due to the large spatial scale of the Mona Offshore Wind Project, the wide-ranging nature of many of the features

of European sites which may be affected (i.e. birds and marine mammals) and therefore the number of European sites which could potentially be affected.

- 1.2.5.2 The criteria adopted for the initial identification of European sites are outlined in Table 1.3. This approach takes account of the location of the European sites (including Ramsar sites) in relation to the Mona Offshore Wind Project, the anticipated Zone Of Influence (ZOI) of potential impacts associated with the Mona Offshore Wind Project, and the ecology and distribution of qualifying interest features.
- 1.2.5.3 Table 1.3 outlines the order of consideration given to the criteria used for the identification of the list of sites to be taken forward for determination of LSE. Initial consideration is given to whether there is a physical overlap between the Mona Offshore Wind Project and any European sites; all sites with an overlapping boundary are screened in to be taken forward for determination of LSE.
- 1.2.5.4 Pre-screening criterion 2 next identifies any European sites, not already screened in using criterion 1, where there is an overlap between the Mona Offshore Wind Project and the range of any qualifying mobile species of the site. All sites where the Mona Offshore Wind Project Boundary overlaps with the range of one (or more) of its features, are taken forward for determination of LSE.
- 1.2.5.5 Criterion 3 identifies any European sites, not already screened in by criterion 1 or 2, where the potential ZOI of the Mona Offshore Wind Project overlaps with a European site and/or qualifying interests of the site (as per section 1.3). For ornithology receptors, consideration is also given to a range of factors that inform the likely extent to which the different qualifying features will occur at the Mona Offshore Wind Project.

**Table 1.3: Criteria for initial identification of relevant European sites.**

Order of consideration	Criteria used for initial Identification of relevant European sites
1	The Mona Offshore Wind Project Boundary overlaps with one or more European or Ramsar sites.
2	European or Ramsar site with qualifying mobile features/species (e.g. Annex I birds, Annex II marine mammals, migratory fish, otter) whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary.
3	European or Ramsar sites and/or qualifying interest features located within the potential ZOI of impacts associated with the Mona Offshore Wind Project (e.g. habitat loss/disturbance, sound and risk of collision).

- 1.2.5.6 The outcome of this initial screening will be that sites where there is no potential for LSEs due to lack of potential overlap of receptor-impact pathway to occur are excluded from further consideration in this report. Sites not excluded on the basis of any of the criteria outlined in Table 1.3 (i.e. where there is a potential for a receptor-impact pathway to occur) will be taken forward for determination of LSE in section 1.4.
- 1.2.5.7 It should be noted that the HRA Screening may be updated, as appropriate, during the pre-application phase of the Project to account for site specific survey data, detailed assessments and stakeholder feedback which may result in some features or sites being excluded from consideration in the Appropriate Assessment, due to a lack of LSE. Any such updates would be discussed and agreed with the Evidence Plan Steering Group and Expert Working Groups (EWGs) as appropriate.

## 1.2.6 Legislation and Guidance

- 1.2.6.1 The HRA Screening Report has drawn upon a number of information sources, HRA principles, regulations and guidance documents, including:
  - The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations)
  - EC (2006) Nature and Biodiversity Cases Ruling of the European Court of Justice
  - EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EE. Clarification on the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission
  - EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC'
  - EC (2020) Guidance document on wind energy developments and EU nature legislation. European Commission Notice Brussels (2020) 7730 final
  - EC (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission Notice Brussels C(2021) 6913 final
  - Joint Defra, Welsh Government, Natural England and Natural Resources Wales guidance (2021) 'Habitats regulations assessments: protecting a European site'
  - The Planning Inspectorate Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects (The Planning Inspectorate, 2022)
  - The Planning Inspectorate Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (The Planning Inspectorate, 2019)
  - The Habitats Regulations Assessment Handbook (DTA Publications Limited, 2016)
  - The Crown Estate Plan Level HRA (The Crown Estate, 2021)
  - Feedback received from the Mona and Morgan Evidence Plan Process to date.

### 1.3 Identification of European sites and features

1.3.1.1 This section provides a list of European sites (including Ramsar sites), and their features, for which there is the potential for connectivity with the Mona Offshore Wind Project, using the criteria outlined in Table 1.3, and therefore those which should be taken forward for consideration of LSE in section 1.4.

1.3.1.2 Each of the following receptor groups are considered in turn:

- Annex I habitats (offshore and coastal) (see section 1.3.2)
- Annex II diadromous fish species (see section 1.3.3)
- Annex II marine mammals (see section 1.3.4)
- Annex I habitats (onshore) (see section 1.3.5)
- Annex II species (onshore) (see section 1.3.6)
- Marine ornithological features (see section 1.3.7)
- Onshore ornithological features (see section 1.3.8)

#### 1.3.2 Sites designated for Annex I habitats (offshore and coastal)

1.3.2.1 The following section details the results of the stepwise process to identify the European sites with relevant Annex I habitats (offshore and coastal) to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.2.2 The approach adopted will focus on the Annex I benthic habitat qualifying interest features for which there is considered to be a potential for impact as a result of the Mona Offshore Wind Project. Whilst only these qualifying interest features will be screened in for further consideration, it is acknowledged that the Competent Authority must undertake the HRA Screening, and any subsequent appropriate assessment, at the site level and not for individual qualifying interest features.

#### Initial identification for Annex I habitats (offshore and coastal)

##### Criterion 1

1.3.2.3 Criterion 1 for the identification of European or Ramsar sites to be taken forward for consideration of LSE considers those sites which overlap with the offshore and coastal boundaries of the Mona Offshore Wind Project. There are no European sites with relevant qualifying Annex I habitats, up to MHWS, which overlap with the Mona Array Area, however one site, the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, overlaps with the Mona Offshore Cable Corridor (Figure 1.3).

##### Criterion 2

1.3.2.4 Criterion 2 considers European or Ramsar sites with qualifying mobile features/species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary. There are no European sites which meet this criterion for Annex I (offshore and coastal) benthic habitats and so no sites are screened in for further consideration on this basis.

##### Criterion 3

1.3.2.5 Criterion 3 considers European or Ramsar sites and/or qualifying interest features which are located within the potential ZOI of impacts associated with the Mona Offshore Wind Project. There is the potential for indirect effects to sites designated for Annex I habitats as a result of impacts associated with increased suspended sediment concentration (SSC) arising from construction activities or from changes to the hydrodynamic regime as a result of the presence of offshore infrastructure associated with the Mona Offshore Wind Project.

1.3.2.6 The extent of these impacts is considered likely to extend beyond the Mona Offshore Wind Project Boundary.

1.3.2.7 The ZOI for such indirect effects associated with the offshore elements of the Mona Offshore Wind Project is typically defined from the outputs of physical processes modelling to determine, for example, the fate of sediments resuspended during the construction process. Physical processes modelling will be undertaken for the Mona Offshore Wind Project to inform the EIA and ISAA; however this has not been carried out at HRA Screening stage. Therefore, a buffer of one mean spring tidal excursion has been used to inform this area, which applies a reasonable and suitable level of precaution.

1.3.2.8 One mean tidal excursion in the vicinity of the Mona Offshore Wind Project equates to approximately 9km in the northeast and southwest direction and 3km in the northwest/southeast direction from the Mona Array Area and 7km in a northeast/southwest direction and 2km in a northwest/southeast direction in relation to the Mona Offshore Cable Corridor. For the purposes of HRA Screening, a precautionary approach has been adopted and this buffer has been increased to 15km. This buffer is considered to be sufficiently precautionary to capture all sites likely to be in the ZOI from indirect effects associated with construction activities. On the basis of this criterion, two additional sites, the Dee Estuary/Aber Dyfrdwy SAC and the Dee Estuary Ramsar are identified (Figure 1.3) and screened in for consideration of LSE in section 1.4.

#### Summary of initial screening of sites for Annex I habitats (offshore and coastal)

1.3.2.9 The initial screening process has identified the following European sites, /Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC; Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar (see Table 1.4 and Figure 1.3), to be taken forward for determination of LSE in section 1.4.3 of this report. The relevant Annex I habitat features identified in the initial screening are also outlined in Table 1.4 together with clarification on associated interest features where a designated site has more than one feature listed, but not all were highlighted by the site selection criteria.

1.3.2.10 Effects on benthic habitats from activities within the Mona Array Area across all phases are screened out on the basis of the distance of the Mona Array Area from the site (25.6km). Effects are only likely to arise from works along the Mona Offshore Cable Corridor.

**Table 1.4: European and Ramsar sites designated for Annex I habitats (subtidal and coastal) taken forward for determination of LSE.**

<sup>1</sup> All other terrestrial habitats (i.e. above MHWS) and species have been screened out of further assessment on the basis of no receptor-impact pathway.

<sup>2</sup> The fish species which are also qualifying features of this site are considered in Table 1.5.

<sup>3</sup> The bird species which are also qualifying species of this site are considered in Table 1.8.

European site	Relevant Annex I habitat features identified through initial screening of sites	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km)	Additional designated features
Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC	Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Reefs Large shallow inlets and bays Submerged or partially submerged sea caves	25.6	0.0	n/a
Dee Estuary/Aber Dyfrdwy SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide <i>Salicornia</i> and other annuals colonising mud and sand Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> )	34.5	13.1	Annual vegetation of drift lines <sup>1</sup> Vegetated sea cliffs of the Atlantic and Baltic Coasts <sup>1</sup> Embryonic shifting dunes <sup>1</sup> Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") <sup>1</sup> Fixed coastal dunes with herbaceous vegetation ("grey dunes") <sup>1</sup> Humid dune slacks <sup>1</sup> Sea lamprey <i>Petromyzon marinus</i> <sup>2</sup> River lamprey <i>Lampetra fluviatilis</i> <sup>2</sup> Petalwort <i>Petalophyllum ralfsii</i> <sup>1</sup>
Dee Estuary Ramsar	Estuaries Mudflats and sandflats not covered by seawater at low tide <i>Salicornia</i> and other annuals colonising mud and sand Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> )	35.2	13.51	Annual vegetation of drift lines <sup>1</sup> Vegetated sea cliffs of the Atlantic and Baltic coasts <sup>1</sup> Embryonic shifting dunes <sup>1</sup> Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") <sup>1</sup> Fixed dunes with herbaceous vegetation ("grey dunes") <sup>1</sup> Humid dune slack <sup>1</sup>

European site	Relevant Annex I habitat features identified through initial screening of sites	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km)	Additional designated features
	<i>Puccinellietalia maritimae</i> )			Natterjack Toad <i>Epidalea calamita</i> <sup>1</sup> Redshank <i>Tringa totanus</i> <sup>3</sup> Teal <i>Anas crecca</i> <sup>3</sup> Shelduck <i>Tadorna tadorna</i> <sup>3</sup> Oystercatcher <i>Haematopus ostralegus</i> <sup>3</sup> Curlew <i>Numenius arquata</i> <sup>3</sup> Pintail <i>Anas acuta</i> <sup>3</sup> Grey plover <i>Pluvialis squatarola</i> <sup>3</sup> Knot <i>Calidris Canutus islandica</i> <sup>3</sup> Dunlin <i>Calidris alpina alpina</i> <sup>3</sup> Black-tailed godwit <i>Limosa limosa islandica</i> <sup>3</sup> Bar-tailed godwit <i>Limosa lapponica</i> <sup>3</sup> Redshank <i>Tringa totanus</i> <sup>3</sup>



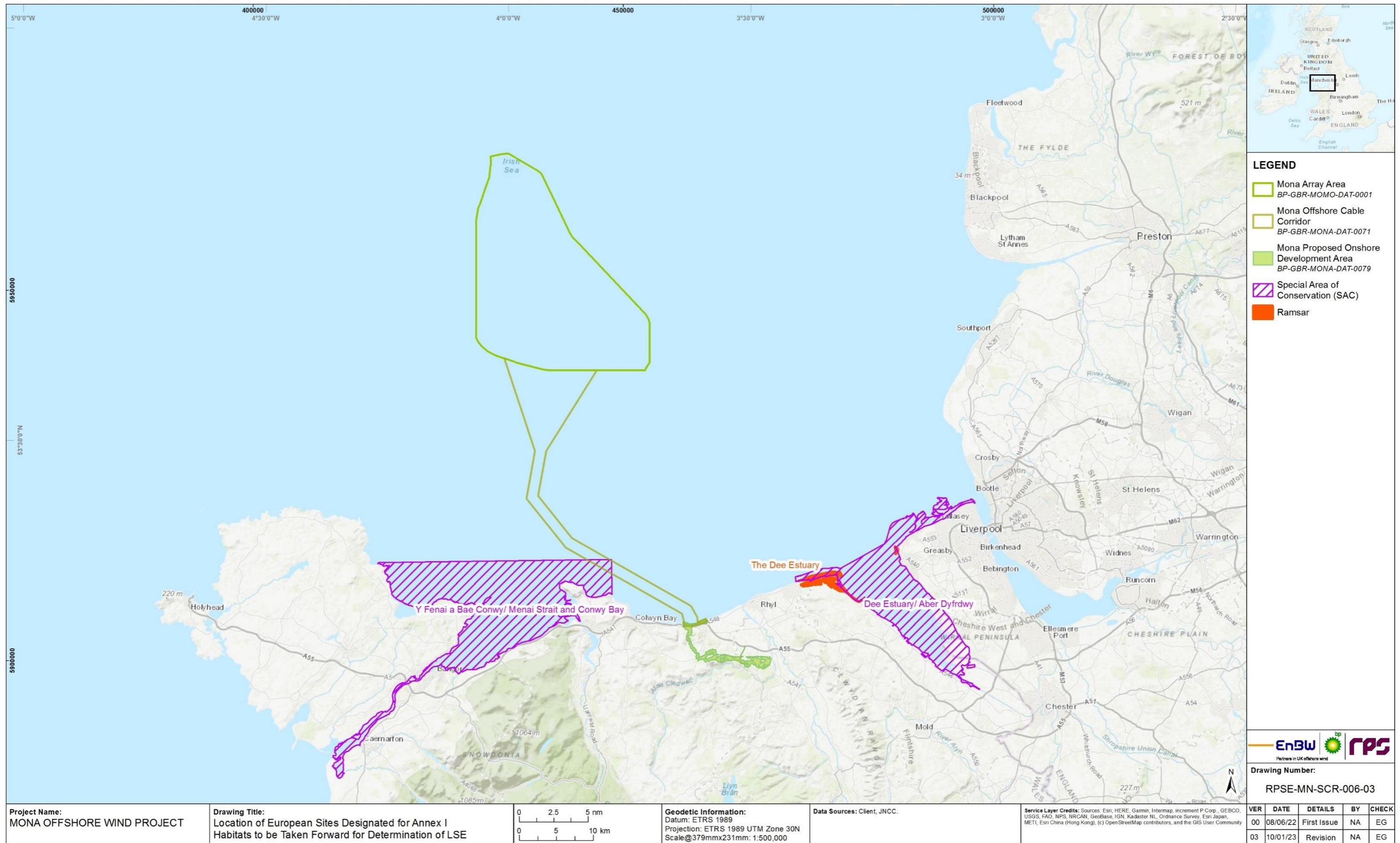


Figure 1.3: Location of European Sites designated for Annex I Habitats taken forward for determination of LSE.

### 1.3.3 Sites designated for Annex II diadromous fish

1.3.3.1 The following sections detail the results of the stepwise process to identify the European sites with relevant Annex II diadromous fish species to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.3.2 The approach adopted for this HRA Screening report focusses on the Annex II diadromous fish qualifying interest features for which there is considered to be a potential for impact as a result of the Mona Offshore Wind Project. Whilst only these qualifying interest features will be screened in for further consideration, it is acknowledged that the Competent Authority must undertake the HRA Screening, and any subsequent appropriate assessment, at the site level and not for individual qualifying interest features.

#### Initial identification for Annex II fish

##### Criterion 1

1.3.3.3 Criterion 1 considers European or Ramsar sites which overlap with the Mona Offshore Wind Project Boundary. As there are no European sites with Annex II diadromous fish species as qualifying features which overlap with the Mona Offshore Wind Project Boundary, no sites are screened in for further consideration for diadromous fish on the basis of this criterion.

##### Criterion 2

1.3.3.4 Criterion 2 considers European or Ramsar sites with qualifying mobile features/species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary.

1.3.3.5 There is the potential for activities associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project to result in impacts on Annex II diadromous fish species at a distance from the European sites for which they are qualifying interest features on the basis that these species are mobile and utilise both freshwater and marine environments throughout their life cycles.

1.3.3.6 A precautionary approach to the identification of relevant sites has been adopted in order to capture all sites with the potential for connectivity with the Mona Offshore Wind Project, and in particular to consider the potential for disruption to migration (i.e. barriers to migration) of diadromous fish (including but not limited to Atlantic salmon) to/from natal rivers (river of origin). For the purposes of HRA Screening, a precautionary approach has been adopted using a preliminary buffer of 100km from the Mona Offshore Wind Project Boundary for all Annex II diadromous fish species except Atlantic salmon and freshwater pearl mussel where the regional area has been considered (see Figure 1.4). These screening buffers take into account the likely migratory routes and distances for diadromous fish as outlined in ABPmer (2014) (see Figure 1.4), and follow the methodology outlined in the Plan Level HRA (The Crown Estate, 2021) and following feedback from stakeholders.

1.3.3.7 Given the location of the project within the eastern Irish Sea it is unlikely that any SACs located along the west Irish Sea coast (or further north or south) would be affected by

any of the predicted impacts. For example, SACs located on the east coast of Ireland (e.g. River Slaney SAC and River Boyne and River Blackwater SAC), will be unaffected by the Mona Offshore Wind Project due to its location within the eastern Irish Sea not presenting a barrier to migration, as shown in Figure 1.4. Similarly, only SACs located along the eastern Irish Sea coast have been included where the Mona Offshore Wind Project has the potential to create a barrier to migration for designated Annex II fish features (Figure 1.5).

1.3.3.8 On this basis, a total of eight European sites have been screened in using this criterion and must, therefore, be taken forward for determination of LSE in section 1.4.4. These are:

- Dee Estuary/Aber Dyfrdwy SAC
- River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC
- River Ehen SAC
- River Derwent and Bassenthwaite Lake SAC
- Solway Firth SAC
- River Kent SAC
- River Bladnoch SAC
- Afon Gwyrfaï a Llyn Cwellyn SAC.

##### Criterion 3

1.3.3.9 Criterion 3 considers European or Ramsar sites and/or qualifying interest features which are located within the potential ZOI of impacts associated with the Mona Offshore Wind Project (e.g. habitat loss/disturbance, sound and risk of collision). Given the large buffer proposed for criterion 2 above (100km), the ZOI for key impacts to migratory fish species (i.e. underwater sound, habitat loss and increased SSC) are anticipated to be well within this range. No additional European sites with Annex II diadromous fish as qualifying features, beyond those already identified for criterion 2, are therefore screened in for further consideration on the basis of criterion 3.

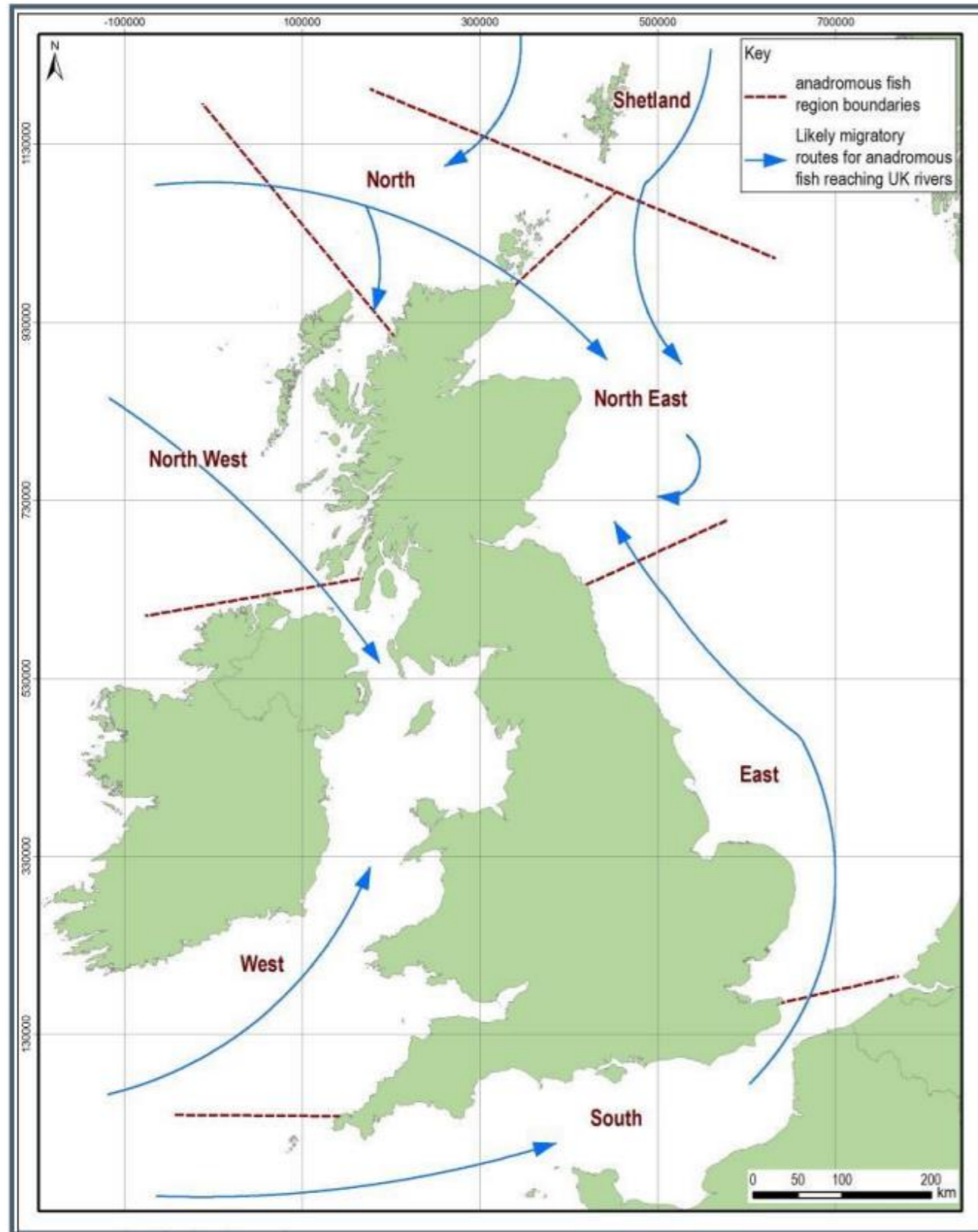


Figure 1.4: Likely migration routes for anadromous fish reaching UK rivers (ABPmer, 2014).

Summary of initial screening of sites for Annex II diadromous fish

1.3.3.10 The initial screening process has identified nine European sites with Annex II diadromous fish species as qualifying features to be taken forward for detailed determination of LSE in section 1.4.4 of this report. The sites are listed in Table 1.5 and illustrated in Figure 1.5.

Table 1.5: European and Ramsar sites designated for Annex II diadromous fish species taken forward for determination of LSE.

Note: All distances are measured as the marine route to the site (i.e. not the distance as the crow flies).

<sup>1</sup> The Annex I offshore and coastal Annex I habitats which are also qualifying features of this site are considered in Table 1.4 and section 1.3.2.

<sup>2</sup> All other terrestrial habitats (i.e. above MHWs) and species have been screened out of further assessment on the basis of no receptor-impact pathway.

<sup>3</sup> All other Annex I habitats have been screened out of further assessment on the basis that they are outside the ZOI for benthic receptors as determined in criterion 3 of section 1.3.2 and so there will be no receptor-impact pathway.

<sup>4</sup> Site is also designated for brook lamprey *Lampetra planeri* and bullhead *Cottus gobio*, but as these are not diadromous fish species (i.e. confined to the freshwater section of the river and do not migrate to the marine environment) there is no potential for connectivity with the Mona Offshore Wind Project and the features are screened out.

<sup>5</sup> Otter *Lutra lutra* is also a feature of this site but has been screened out of assessment based on distance (see section 1.3.6).

<sup>6</sup> Although the freshwater pearl mussel is not a diadromous fish, Atlantic salmon are host species during a critical parasitic phase of the mussel's lifecycle. There could therefore be an indirect impact upon the freshwater pearl mussel feature of the site if the salmon population is adversely affected.

<sup>7</sup> This site is only designated for freshwater pearl mussel Brown trout *Salmo trutta* is thought to be the host species within the River Kent SAC, however Atlantic salmon are also present within the river (Natural England, 2019c), and the site is therefore screened in.

European site	Relevant Annex II features identified through initial screening of sites	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km)	Additional designated features
Dee Estuary/Aber Dyfrdwy SAC	Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i>	34.51	13.1	Estuaries <sup>1</sup> Mudflats and sandflats not covered by seawater at low tide <sup>1</sup> <i>Salicornia</i> and other annuals colonising mud and sand <sup>1</sup> Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) <sup>1</sup> Annual vegetation of drift lines <sup>2</sup> Vegetated sea cliffs of the Atlantic and Baltic Coasts <sup>2</sup> Embryonic shifting dunes <sup>2</sup> Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") <sup>2</sup> Fixed coastal dunes with herbaceous vegetation ("grey dunes") <sup>2</sup> Humid dune slacks <sup>2</sup> Petalwort <i>Petalophyllum ralfsi</i> <sup>2</sup>
River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC	Sea lamprey <i>Petromyzon marinus</i> Atlantic salmon <i>Salmo salar</i> River lamprey <i>Lampetra fluviatilis</i>	59.13	40.58	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation <sup>2</sup> Floating water-plantain <i>Luronium natans</i> <sup>2</sup> Brook lamprey <i>Lampetra planeri</i> <sup>4</sup>

European site	Relevant Annex II features identified through initial screening of sites	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km)	Additional designated features
				Bullhead <i>Cottus gobio</i> <sup>4</sup> Otter <i>Lutra lutra</i> <sup>5</sup>
River Ehen SAC	Atlantic salmon <i>Salmo salar</i> Freshwater pearl mussel <i>Margaritifera margaritifera</i> <sup>6</sup>	83.01	106.4	n/a
River Eden SAC	Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i> Atlantic salmon <i>Salmo salar</i>	83.34	106.73	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the Isoëto-Nanojuncetea <sup>2</sup> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation <sup>2</sup> Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )* Priority feature <sup>2</sup> White-clawed (or Atlantic stream) crayfish <i>Austropotamobius pallipes</i> <sup>4</sup> Brook lamprey <i>Lampetra planeri</i> <sup>4</sup> Bullhead <i>Cottus gobio</i> <sup>4</sup> Otter <i>Lutra lutra</i> <sup>5</sup>
Afon Gwyrfaï a Llyn Cwellyn SAC	Atlantic salmon <i>Salmo salar</i>	92.18	91.2	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the Isoëto-Nanojuncetea <sup>2</sup> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation <sup>2</sup> Floating water-plantain <i>Luronium natans</i> <sup>2</sup> Otter <i>Lutra lutra</i> <sup>5</sup>
River Derwent and Bassenthwaite Lake SAC	Sea lamprey <i>Petromyzon marinus</i> Atlantic salmon <i>Salmo salar</i> River lamprey <i>Lampetra fluviatilis</i>	95.06	121.1	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the Isoëto-Nanojuncetea <sup>2</sup> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation <sup>2</sup> Marsh fritillary butterfly <i>Euphydryas</i> ( <i>Eurodryas</i> , <i>Hypodryas</i> ) <i>aurinia</i> <sup>2</sup> Brook lamprey <i>Lampetra planeri</i> <sup>4</sup> Otter <i>Lutra lutra</i> <sup>7</sup> Floating water-plantain <i>Luronium natans</i> <sup>2</sup>
River Kent SAC	Freshwater pearl mussel <i>Margaritifera margaritifera</i> <sup>7</sup>	96.27	106.3	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation <sup>2</sup>

European site	Relevant Annex II features identified through initial screening of sites	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km)	Additional designated features
				White-clawed (or Atlantic stream) crayfish <i>Austropotamobius pallipes</i> <sup>2</sup> Bullhead <i>Cottus gobio</i> <sup>2</sup>
Solway Firth SAC	Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i>	109.46	136.1	Sandbanks which are slightly covered by sea water all the time <sup>3</sup> Estuaries <sup>3</sup> Mudflats and sandflats not covered by seawater at low tide <sup>3</sup> <i>Salicornia</i> and other annuals colonizing mud and sand <sup>3</sup> Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) <sup>3</sup> Reefs <sup>3</sup> Perennial vegetation of stony banks <sup>2</sup> "Fixed coastal dunes with herbaceous vegetation ("grey dunes") <sup>2</sup>
River Bladnoch SAC	Atlantic salmon <i>Salmo salar</i>	114.88	142.9	n/a

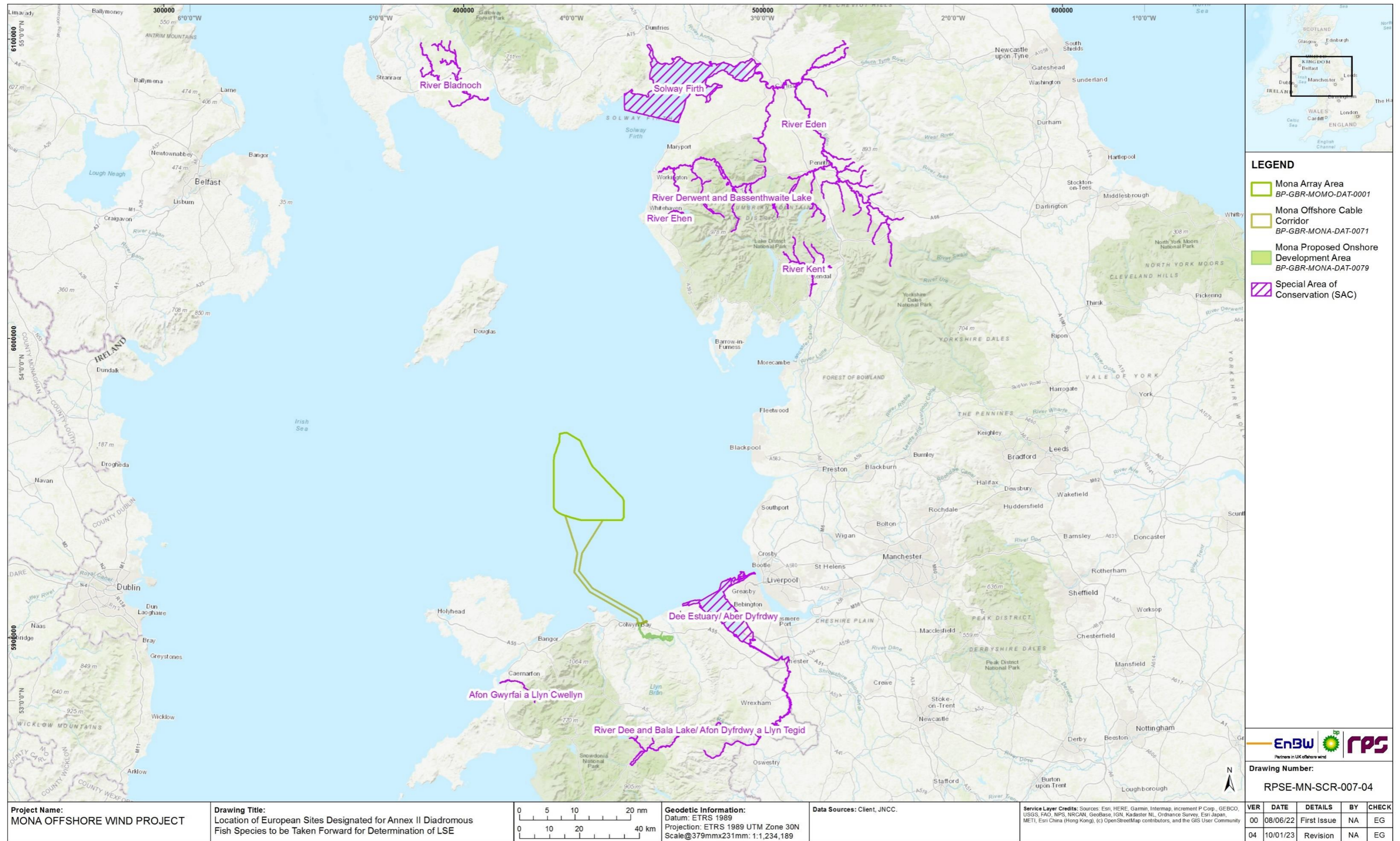


Figure 1.5: Location of European sites for Annex II diadromous fish species to be taken forward for determination of LSE.

### 1.3.4 Sites designated for Annex II marine mammals

1.3.4.1 Based on data collected to date during aerial surveys and information on marine mammal species in the Irish Sea from desk based studies for the Mona Offshore Wind Project, the Annex II marine mammal species likely to occur in the vicinity of the Mona Offshore Wind Project and therefore considered in the HRA Screening are:

- Harbour porpoise *Phocoena phocoena*
- Bottlenose dolphin *Tursiops truncatus*
- Grey seal *Halichoerus grypus*
- Harbour seal *Phoca vitulina*.

1.3.4.2 The following species were included in the Mona Offshore Wind Project Scoping Report and are considered to have the potential to occur within the Mona Offshore Wind Project Boundary, however these species are listed under Annex IV rather than Annex II of the Habitats Directive and therefore do not have SACs designated for them and will be assessed within the marine mammal PEIR chapter and are not considered further within this document:

- Minke whale *Balaenoptera acutorostrata*
- White beaked dolphin *Lagenorhynchus albirostris* (note that these have also been scoped out of the EIA as agreed in the marine mammal EWG)
- Short beaked common dolphin *Delphinus delphis*
- Risso's dolphin *Grampus griseus*.

#### Initial identification for Annex II marine mammals

1.3.4.3 The following sections detail the results of the stepwise process to identify the European sites with relevant Annex II marine mammals as qualifying features to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.4.4 The approach adopted for this HRA Screening report focusses on the Annex II marine mammal qualifying interest features for which there is considered to be a potential for impact as a result of the Mona Offshore Wind Project. Whilst only these qualifying interest features have been screened in for further consideration in section 1.4, it is acknowledged that the Competent Authority must undertake the HRA Screening, and any subsequent appropriate assessment, at the site level and not for individual qualifying interest features.

#### Criterion 1

1.3.4.5 Criterion 1 considers European or Ramsar sites which overlap with the Mona Offshore Wind Project Boundary. There are no sites with Annex II marine mammal species as qualifying features which overlap with the Mona Offshore Wind Project Boundary, therefore no sites are screened in for further consideration for marine mammals on the basis of this criterion.

#### Criterion 2

1.3.4.6 Criterion 2 considers European or Ramsar sites with qualifying mobile species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary. There is the potential for activities associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project to result in impacts on Annex II marine mammal species at distance from the sites for which they are qualifying interest features on the basis that these are highly mobile species which potentially forage over wide areas. The relevant ranges for the different marine mammal receptors are discussed in the following paragraphs.

#### Harbour porpoise

1.3.4.7 A precautionary approach to the identification of relevant sites for harbour porpoise has been adopted in order to capture all sites with the potential for connectivity with the Mona Offshore Wind Project based on criterion 2. On this basis, it has been considered that sites with harbour porpoise as qualifying interest features which are located within the same Management Unit (MU) defined by IMWWG (2015) as the Mona Offshore Wind Project will be screened for LSE. For harbour porpoise all sites within the Celtic and Irish Seas MU will be considered. Therefore, a total of 24 European sites for harbour porpoise have been identified for consideration at HRA Screening (see Table 1.6 and Figure 1.6).

#### Bottlenose dolphin

1.3.4.8 A precautionary approach to the identification of relevant sites for bottlenose dolphin has been adopted in order to capture all sites with the potential for connectivity with the Mona Offshore Wind Project based on criterion 2. On this basis, it has been considered that sites with bottlenose dolphin as qualifying interest features which are located within the same MU defined by IMWWG (2015) as the Mona Offshore Wind Project will be screened for LSE. For bottlenose dolphin therefore all sites within the Irish Sea MU will be considered. Therefore, a total of two European sites for bottlenose dolphin have been identified for consideration at HRA Screening (see Table 1.6).

#### Grey seal

1.3.4.9 All SACs designated for grey seal located within the same Seal MUs (SCOS, 2020) as the Mona Offshore Wind Project (i.e. the Wales MU, North West England MU, SW Scotland and Northern Ireland MU) will be screened for LSE. A preliminary screening range of 100km has also been adopted to identify sites with grey seal as a qualifying feature for inclusion in the assessment of LSE, which is based on the latest advice regarding the typical foraging range of this species from haul out sites (SCOS, 2018). However, more recent sources on seal foraging ranges presented in Carter *et al.*, 2022 and telemetry data presented in appendix 2 of volume 2, chapter 9.1: Marine mammals technical report of the PEIR, (Wright and Sinclair, 2022) have also been considered to identify potential connectivity between the project boundary and SACs beyond the 100km buffer used. Based on the information set out in Carter *et al.*, 2022 and telemetry data presented in appendix 2 of volume 2, chapter 9.1: Marine mammals technical report of the PEIR, (Wright and Sinclair, 2022), telemetry data indicates some potential connectivity (i.e. individual grey seal movements between these SACs and the vicinity of the project boundary) with the Isles of Scilly Complex SAC, Lundy SAC, The Maidens SAC and Saltee Islands SAC. No additional sites were

identified based on these information sources. Therefore, a total of six European sites for grey seal have been identified for consideration at HRA Screening (see Table 1.6).

**Harbour seal**

1.3.4.10 All SACs designated for harbour seal located within the same Seal MUs (SCOS, 2020) as the Mona Offshore Wind Project (the Wales and North West England MU) will be considered by the screening. In addition, a screening range has been applied to identify sites for inclusion in the assessment of LSE for harbour seal which is based on the typical foraging range of this species. Harbour seal tend to make relatively short foraging trips from haul out sites and the latest Special Committee on Seal (SCOS) report (SCOS, 2020) states that harbour seal typically forage at distances of 40 to 50km from haul out sites. However, more recent sources on seal foraging ranges presented in Carter *et al.*, (2022) and telemetry data presented in appendix 2 of volume 2, chapter 9.1: Marine mammals technical report of the PEIR, (Wright and Sinclair, 2022) have also been considered. Based on these sources, there is considered to be potential connectivity with the Strangford Lough SAC and Murlough SAC.

1.3.4.11 The screening process for harbour seal includes any European site where the species is considered as a qualifying feature. Two European sites for harbour seal have been screened in using this criterion (see Table 1.6).

**Criterion 3**

1.3.4.12 Criterion 3 considers European sites and/or qualifying interest features which are located within the potential ZOI of impacts associated with the Mona Offshore Wind Project (e.g. habitat loss/disturbance, sound and risk of collision). Given the large buffers proposed above for both cetaceans and pinnipeds in criterion 2, the ZOI for key impacts to marine mammals (i.e. underwater sound and changes to prey species) are anticipated to be well within this area. No additional European sites have marine mammal species as qualifying features, beyond those already identified for criterion 2; therefore no additional sites have been screened in for further consideration on the basis of this criterion.

**Summary of initial screening of sites for Annex II marine mammals**

1.3.4.13 The initial screening process has identified 33 European sites with Annex II marine mammals as qualifying features to be taken forward for detailed determination of LSE in section 1.4 of this report. The sites are listed in Table 1.6 and shown in Figure 1.6.

**Table 1.6: European and Ramsar sites designated for Annex II marine mammal species taken forward for determination of LSE.**

Note: All distances are measured as the marine route to the site (i.e. not the distance as the crow flies).

<sup>1</sup> All additional designated features associated with each SAC have been screened out on the basis of distance from the Mona Offshore Wind Project and so there will be no receptor-impact pathway. Additional Annex II marine mammal features have been screened out on the basis that the SAC is not located within the relevant MU for that species and so there will be no receptor-impact pathway.

ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
<b>UK</b>					
1	North Anglesey Marine/Gogledd Môn Forol SAC	Harbour porpoise <i>Phocoena phocoena</i>	22.58	17.5	N/A
2	North Channel SAC	Harbour porpoise <i>Phocoena phocoena</i>	79.58	96.2	N/A
3	Pen Llŷn a'r Sarnau/Lleyr Peninsula and the Sarnau SAC	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i>	94.00	93.1	Sandbanks which are slightly covered by sea water all the time Estuaries Coastal lagoons Large shallow inlets and bays Reefs Mudflats and sandflats not covered by seawater at low tide Salicornia and other annuals colonizing mud and sand Atlantic salt meadows <i>Glauco-Puccinellietalia maritima</i> Submerged or partially submerged sea caves Otter <i>Lutra lutra</i>
4	West Wales Marine/Gorllewin Cymru Forol SAC	Harbour porpoise <i>Phocoena phocoena</i>	95.31	94.5	N/A
5	Strangford Lough SAC	Harbour seal <i>Phoca vitulina</i>	110.17	126.69	Mudflats and sandflats not covered by seawater at low tide Coastal lagoons* Priority feature Large shallow inlets and bays Reefs Annual vegetation of drift lines Perennial vegetation of stony banks <i>Salicornia</i> and other annuals colonizing mud and sand Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> )
6	Murlough SAC	Harbour seal <i>Phoca vitulina</i>	114.16	128.66	"Fixed coastal dunes with herbaceous vegetation ("grey dunes")" * Priority feature Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) * Priority feature Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) Embryonic shifting dunes "Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")" Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) Marsh fritillary butterfly <i>Euphydryas</i> ( <i>Eurodryas</i> , <i>Hypodryas</i> ) <i>aurinia</i>
7	Cardigan Bay/Bae Ceredigion SAC	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i>	163.29	162.4	Sandbanks which are slightly covered by sea water all the time Reefs Submerged or partially submerged sea caves



ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
					Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i>
8	The Maidens SAC	Grey seal <i>Halichoerus grypus</i>	164.77	181.42	Sandbanks which are slightly covered by sea water all the time Reefs
9	Pembrokeshire Marine/Sir Benfro Forol SAC	Grey seal <i>Halichoerus grypus</i>	211.72	210.9	Estuaries Large shallow inlets and bays Reefs Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Coastal lagoons * Priority feature Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) Submerged or partially submerged sea caves Shore dock <i>Rumex rupestris</i> Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i>
10	Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC	Harbour porpoise <i>Phocoena phocoena</i>	275.83	275.6	N/A
11	Lundy SAC	Grey seal <i>Halichoerus grypus</i>	309.43	308.41	Reefs Sandbanks which are slightly covered by sea water all the time Submerged or partially submerged sea caves
12	Isles of Scilly Complex SAC	Grey seal <i>Halichoerus grypus</i>	439.25	438.3	Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Reefs Shore dock <i>Rumex rupestris</i>
<b>Republic of Ireland</b>					
13	Rockabill to Dalkey Island SAC	Harbour porpoise <i>Phocoena phocoena</i>	126.8	129.9	Reefs
14	Saltee Islands SAC	Grey seal <i>Halichoerus grypus</i>	235.32	234.36	Mudflats and sandflats not covered by seawater at low tide Large shallow inlets and bays Reefs Vegetated sea cliffs of the Atlantic and Baltic coasts Submerged or partially submerged sea caves
15	Roaringwater Bay and Islands SAC	Harbour porpoise <i>Phocoena phocoena</i>	448.73	447.9	Grey seal <i>Halichoerus grypus</i> Large shallow inlets and bays Reefs Vegetated sea cliffs of the Atlantic and Baltic coasts European dry heaths Submerged or partially submerged sea caves

ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
					Otter <i>Lutra lutra</i>
16	Blasket Islands SAC	Harbour porpoise <i>Phocoena phocoena</i>	565.07	563.1	Grey seal <i>Halichoerus grypus</i>
<b>France</b>					
17	Mers Celtiques - Talus du golfe de Gascogne SCI	Harbour porpoise <i>Phocoena phocoena</i>	533.10	532.6	Bottlenose dolphin <i>Tursiops truncatus</i> Fen orchid <i>Liparis loeselii</i> Southern damselfly <i>Coenagrion mercurial</i> Jersey tiger <i>Euplagia quadripunctaria</i>
18	Abers - Côte des legends SCI	Harbour porpoise <i>Phocoena phocoena</i>	599.81	598.8	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i>
19	Ouessant-Molène SCI	Harbour porpoise <i>Phocoena phocoena</i>	601.21	600.1	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Otter <i>Lutra lutra</i> Killarney Fern <i>Trichomanes speciosum</i> Shore dock <i>Rumex rupestris</i>
20	Côte de Granit rose-Sept-Iles SCI	Harbour porpoise <i>Phocoena phocoena</i>	607.53	606.4	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa falax</i> Atlantic salmon <i>Salmo salar</i> Sea lamprey <i>Petromyzon marinus</i> Quimper snail <i>Elona quimperiana</i> European <i>Lucanus cervus</i> Killarney Fern <i>Trichomanes speciosum</i> Shore dock <i>Rumex rupestris</i>
21	Anse de Goulven, dunes de Keremma SCI	Harbour porpoise <i>Phocoena phocoena</i>	610.51	609.2	Grey seal <i>Halichoerus grypus</i> Fen orchid <i>Liparis loeselii</i> Southern <i>Coenagrion mercuriale</i> Jersey tiger <i>Euplagia quadripunctaria</i>
22	Tregor Goëlo SCI	Harbour porpoise <i>Phocoena phocoena</i>	630.48	629.3	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Geoffroy's bat <i>Myotis emarginatus</i> Bechstein's bat <i>Myotis bechsteinii</i>

ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
					Greater mouse-eared bat <i>Myotis myotis</i> Otter <i>Lutra lutra</i> Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra planeri</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i> Atlantic salmon <i>Salmo salar</i> Chabot bullhead <i>Cottus perifretum</i> Qumiper snail <i>Elona quimperiana</i> Southern damselfly <i>Coenagrion mercuriale</i> European stag beetle <i>Lucanus cervus</i> Killarney Fern <i>Trichomanes speciosum</i> Shore dock <i>Rumex rupestris</i>
23	Côtes de Crozon SCI	Harbour porpoise <i>Phocoena phocoena</i>	638.67	637.8	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Otter <i>Lutra lutra</i>
24	Chaussée de Sein SCI	Harbour porpoise <i>Phocoena phocoena</i>	649.92	648.8	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Qumiper snail <i>Elona quimperiana</i> Southern damselfly <i>Coenagrion mercurial</i> Marsh fritillary <i>Euphydryas aurinia</i> Killarney Fern <i>Trichomanes speciosum</i> Shore dock <i>Rumex rupestris</i>
25	Cap Sizun SCI	Harbour porpoise <i>Phocoena phocoena</i>	658.75	657.6	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Qumiper snail <i>Elona quimperiana</i> Southern damselfly <i>Coenagrion mercurial</i> Marsh fritillary <i>Euphydryas aurinia</i> Killarney fern <i>Trichomanes speciosum</i> Shore dock <i>Rumex rupestris</i>
26	Récifs du talus du golfe de Gascogne SCI	Harbour porpoise <i>Phocoena phocoena</i>	687.00	686.0	Bottlenose dolphin <i>Tursiops truncatus</i>
27	Anse de Vauville SCI	Harbour porpoise <i>Phocoena phocoena</i>	696.94	695.8	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i>

ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
28	Cap d'Erquy-Cap Fréhel SCI	Harbour porpoise <i>Phocoena phocoena</i>	698.37	697.2	Bottlenose dolphin <i>Tursiops truncatus</i> Harbour seal <i>Halichoerus grypus</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Geoffroy's bat <i>Myotis emarginatus</i> Bechstein's bat <i>Myotis bechsteinii</i> Greater mouse-eared bat <i>Myotis myotis</i> Northern crested newt <i>Triturus cristatus</i> European stag beetle <i>Lucanus cervus</i> Shore dock <i>Rumex rupestris</i>
29	Baie de Saint-Brieuc – Est SCI	Harbour porpoise <i>Phocoena phocoena</i>	699.30	697.9	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Bechstein's bat <i>Myotis bechsteinii</i> Otter <i>Lutra lutra</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i> Shore dock <i>Rumex rupestris</i> Moss grass <i>Coleanthus subtilis</i>
30	Banc et récifs de Surtainville SCI	Harbour porpoise <i>Phocoena phocoena</i>	701.09	6700	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i>
31	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SCI	Harbour porpoise <i>Phocoena phocoena</i>	727.22	723.4	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Geoffroy's bat <i>Myotis emarginatus</i> Bechstein's bat <i>Myotis bechsteinii</i> Greater mouse-eared bat <i>Myotis myotis</i> Otter <i>Lutra lutra</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i> European stag beetle <i>Lucanus cervus</i> Shore dock <i>Rumex rupestris</i>

ID	European site	Relevant Annex II features	Distance to Mona Array Area (km)	Distance to Mona Cable Corridor (km)	Additional designated features <sup>1</sup>
32	Estuaire de la Rance SCI	Harbour porpoise <i>Phocoena phocoena</i>	738.65	738.9	Harbour seal <i>Phoca vitulina</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Western barbastelle <i>Barbastella barbastellus</i> Common bent-winged bat <i>Miniopterus schreibersii</i> Geoffroy's bat <i>Myotis emarginatus</i> Bechstein's bat <i>Myotis bechsteinii</i> Greater mouse-eared bat <i>Myotis myotis</i> Otter <i>Lutra lutra</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i> European stag beetle <i>Lucanus cervus</i>
33	Baie du Mont Saint-Michel SCI	Harbour porpoise <i>Phocoena phocoena</i>	747.81	742.4	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Western barbastelle <i>Barbastella barbastellus</i> Geoffroy's bat <i>Myotis emarginatus</i> Bechstein's bat <i>Myotis bechsteinii</i> Greater mouse-eared bat <i>Myotis myotis</i> Otter <i>Lutra lutra</i> Northern crested newt <i>Triturus cristatus</i> Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra planeri</i> Brook lamprey <i>Lampetra fluviatilis</i> Allis shad <i>Alosa alosa</i> Twaite shad <i>Alosa fallax</i> Atlantic salmon <i>Salmo salar</i> European bullhead <i>Cottus gobio</i>

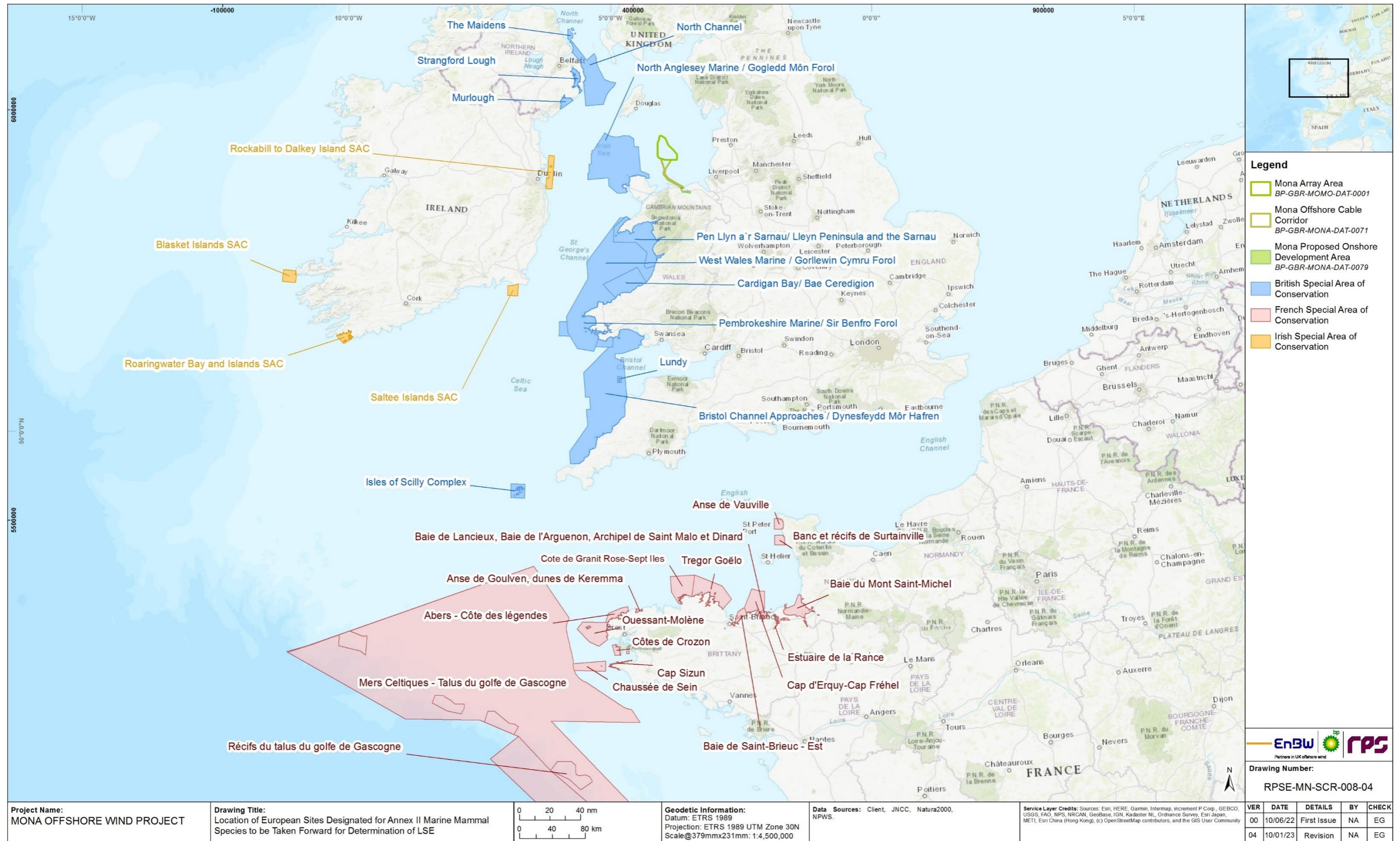


Figure 1.6: Location of European Sites designated for Annex II marine mammal species to be taken forward for the determination of LSE.

### 1.3.5 Sites designated for Annex I habitats (onshore)

1.3.5.1 The following section details the results of the stepwise process to identify the European sites with relevant onshore Annex I habitats, above MHWS, to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.5.2 The approach adopted for this HRA Screening report focusses on the Annex I habitat qualifying interest features for which there is considered to be a potential for impact as a result of the Mona Offshore Wind Project. Whilst pathways to individual features are identified, the consideration for the HRA is acknowledged to be for the integrity of the European site as a whole.

#### Initial identification for Annex I habitats (onshore)

##### Criterion 1

1.3.5.3 Criterion 1 for the identification of European or Ramsar sites to be taken forward for consideration of LSE considers those sites which overlap with the Mona Offshore Wind Project Boundary. There are no European sites with relevant onshore qualifying Annex I habitats which overlap with the Mona Offshore Wind Project Boundary.

##### Criterion 2

1.3.5.4 Criterion 2 considers European or Ramsar sites with qualifying mobile features/species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary. There are no European sites which meet this criterion for Annex I habitats (onshore) and so no sites are screened in for further consideration on this basis.

##### Criterion 3

1.3.5.5 Criterion 3 considers European or Ramsar sites and/or qualifying interest features which are located within the potential ZOI of impacts associated with the Mona Offshore Wind Project. There is the potential for indirect effects to sites designated for onshore Annex I habitats as a result of airborne pollutants associated with construction or decommissioning activities.

1.3.5.6 The ZOI for such indirect effects associated with the Onshore Cable Corridor Search Area of the Mona Offshore Wind Project is defined as 350m. According to guidance from the Institute of Air Quality Management (IAQM) (IAQM, 2020), an assessment of air pollutant impacts is required where there are sensitive receptors within 350m of the Mona Offshore Wind Project Boundary. The guidance also states an assessment for ecological receptors should consider an impact zone of up to 50m from the site boundary. The Highways Agency (2007) refers to a 200m impact zone for ecological receptors in internationally (and nationally) designated sites. Therefore, a precautionary approach of 350m has been adopted, which is considered large enough to encompass all direct and indirect impacts associated with the Mona Offshore Wind Project.

1.3.5.7 The closest SAC to the Mona Offshore Wind Project with relevant onshore Annex I habitats is the Coedwigoedd Dyffryn Elwy/Elwy Valley Woods SAC, which is 930m

from the site. Therefore, on the basis of this criterion, no sites are identified and screened in for consideration of LSE in section 1.4.

#### Summary of initial screening of sites for Annex I habitats (onshore)

1.3.5.8 The initial screening process has identified no European sites to be taken forward for determination of LSE in section 1.4 of this report.

### 1.3.6 Sites designated for Annex II species (onshore)

1.3.6.1 The following section details the results of the stepwise process to identify the European sites with Annex II species (onshore) as a feature, to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.6.2 With regard to Annex II terrestrial species, only SACs for otter are located within species-relevant ZOI, and therefore only otter will be considered further. For bats, a ZOI of 10km is considered appropriate, based on a 5-10km typical home range (between summer and winter roosts) (Collins *et al.*, 2016 cited: Bat Conservation Trust/BMT Cordah Ltd, 2005). The closest SAC for lesser horseshoe bats is located approximately 20km away and therefore outside of the ZOI. For great-crested newt *Triturus cristatus* 2km is considered an appropriate buffer due to most great-crested newt activity being recorded within 250m of a breeding pond, and dispersal distances being up to around 1.3km (e.g. English Nature, 2001), the closest SAC located is approximately 23km from Mona Offshore Wind Project Boundary. As such, only otter are considered further.

1.3.6.3 The approach adopted for this HRA Screening report focusses on the Annex II otter qualifying interest features for which there is considered to be a potential for impact as a result of the Mona Offshore Wind Project. Whilst only these qualifying interest features will be screened in for further consideration, it is acknowledged that the Competent Authority must undertake the HRA Screening, and any subsequent appropriate assessment, at the site level and not for individual qualifying interest features.

#### Initial identification for Annex II otter

##### Criterion 1

1.3.6.4 Criterion 1 considers European or Ramsar sites which overlap with the Mona Offshore Wind Project Boundary. As there are no European sites with Annex II otter as qualifying features which overlap with the Mona Offshore Wind Project Boundary, no sites are screened in for further consideration for otter on the basis of this criterion.

##### Criterion 2

1.3.6.5 Criterion 2 considers European or Ramsar sites with qualifying mobile features/species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the Mona Offshore Wind Project Boundary.

1.3.6.6 Otters can have relatively large home ranges and can travel considerable distances in one night, particularly during dispersal (e.g. more than 20km, Harris *et al.*, 1995, cited in Chanin 2003; or an estimated average home range of 27km, Harris *et al.*,

1995, cited in Chanin 2003). However, territories and distances travelled can vary considerable depending on the resources available.

- 1.3.6.7 Sites within a 27km buffer will therefore be considered further. There are no European sites with Annex II otter as qualifying features located within 27km of the Mona Offshore Wind Project and therefore no sites are screened in for further consideration on the basis of criterion 2.

**Criterion 3**

- 1.3.6.8 Criterion 3 considers European or Ramsar sites and/or qualifying interest features which are located within the potential ZOI of impacts associated with the Mona Offshore Wind Project (e.g. habitat loss/disturbance). Given the large buffer associated with criterion 2 above, the ZOI for key impacts to otter are anticipated to be well within this range. No European sites with Annex II otter as qualifying features, are therefore screened in for further consideration on the basis of criterion 3.

**Summary of initial screening of sites for Annex II otter**

- 1.3.6.9 The initial screening process has identified no European sites to be taken forward for determination of LSE in section 1.4 of this report.



### 1.3.7 Sites designated for marine ornithological features

#### Initial identification for marine ornithological features

##### Defining the qualifying features and sites: broad-scale considerations

1.3.7.1 Birds present in offshore waters and potentially affected by the construction, operation and decommissioning of the Mona Offshore Wind Project will be predominantly seabirds (defined for this report as auks, gulls, terns, gannets, skuas, shearwaters, petrels, cormorants and divers) and seaducks. These species have the potential to be present in the vicinity of the Mona Offshore Wind Project during the breeding and non-breeding seasons (including the spring and autumn passage periods). Other bird species that may be affected by the Mona Offshore Wind Project include those which may fly through the area of the Mona Offshore Wind Project during their spring and/or autumn migration (or passage) periods (e.g. waterbirds), and any other species which may use the intertidal habitats or the inshore or offshore waters which are potentially affected by the Mona Offshore Wind Project.

1.3.7.2 Based on the above, it is considered that (in relation to marine ornithology) the SPAs (and Ramsar sites) which have the potential to be affected by the Mona Offshore Wind Project are those which:

- Overlap with the location of the Mona Offshore Wind Project Boundary, or with the area in which potential effects from the Mona Offshore Wind Project could extend (e.g. displacement effects extending beyond the boundary of the Mona array area)
- Include seabird qualifying features that use the waters in and around the Mona Offshore Wind Project Boundary (e.g. for foraging)
- Include qualifying features which may fly through the area of the Mona Offshore Wind Project Boundary during migration.

1.3.7.3 The SPAs (and Ramsar sites) which meet these different criteria are outlined below under the categories of:

- Marine SPAs
- Breeding seabird colony SPAs (and Ramsar sites)
- SPAs (and Ramsar sites) with migratory waterbird qualifying features (subsequently termed migratory waterbird SPAs for convenience, with waterbirds defined for this report as waders, ducks, geese, swans, grebes, divers, gulls, terns and cormorants)
- Other SPAs (and Ramsar sites) which are located within the ZOI of the Mona Offshore Wind Project.

##### Species considered for LSE

1.3.7.4 Detailed Collision Risk Modelling (CRM) was undertaken for the Mona Offshore Wind Project (volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR) which included consideration of 24 months of site specific survey data and modelling inputs and parameterisation which were discussed and agreed with the Offshore Ornithology EWG (see section 1.1.6). The report considered

the most abundant seabird species recorded during the digital aerial surveys carried out between March 2020 and February 2022. All other species were excluded from further consideration in the CRM (and therefore this HRA Screening) on the basis of their limited vulnerability to collision and their low abundances recorded across the Mona Offshore Wind Project Boundary. The following species were considered in detail in the CRM and were therefore included in HRA Screening.

- Kittiwake
- Lesser black-backed gull
- Herring gull
- Great black-backed gull
- Common guillemot
- Razorbill
- Gannet
- Fulmar
- Manx shearwater.

1.3.7.5 Displacement assessments were also conducted for the Mona Offshore Wind Farm Project (volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR) which included consideration of 24 months of site specific survey data and modelling inputs and parameterisation which were discussed and agreed with the Offshore Ornithology EWG (see section 1.1.6). The species outlined below included those species which were the most abundant within the Mona Offshore Ornithology Array Area study area and therefore for which there were sufficient sightings to produce robust model and design-based estimates. All other species were present at abundances which were too low to undertake such modelling and assessment. The following also include those additional species which were taken forward for assessment following advice from SNCB's and the Offshore Ornithology EWG:

- Common guillemot
- Razorbill
- Atlantic puffin
- Kittiwake
- Northern gannet
- Manx shearwater.

1.3.7.6 The predicted mortalities from displacement of seabirds from the Mona Array Area plus 2km buffer are presented in the (volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Given the sensitivity of Atlantic puffin to displacement and uncertainty around the susceptibility of Manx shearwater to disturbance, displacement impacts of both species were quantified for the population derived within the Mona Array Area plus 2km buffer (based on 24 months of digital aerial surveys). The annual predicted number of Manx shearwater and Atlantic puffin subject to mortality due to displacement during the construction, operations and maintenance and decommissioning phases was predicted to be very small, even in the most highly conservative assessment scenarios, and thus the resulting increase

in the mortality relative to the baseline mortality rate was negligible. As the effect of the Mona Offshore Wind Project alone or in-combination would be negligible, both species were excluded from further consideration in this HRA Screening.

1.3.7.7 Furthermore, the impact of collision was assessed for Manx shearwater and northern fulmar in the offshore ornithology non-migratory seabird collision risk assessment (volume, annex 10.3: offshore ornithology non-migratory seabird collision risk assessment of the PEIR). As a result of the very small number of predicted collisions (even using the most conservative assumptions), the corresponding increase in annual baseline mortality was found to be negligible. As such, northern fulmar, alongside Manx shearwater, were excluded from this HRA Screening with regards to collision risk.

**Changes in prey availability**

1.3.7.8 In addition to the species taken forward on the basis of collision risk and disturbance and displacement, Manx shearwater from SPAs located in the east Irish Sea have also been taken forward for changes in prey availability only. These species have been included in the initial list of species on a precautionary basis, as based on the SPAs proximity to the Mona Offshore Wind Project, there is potential for underwater sound impacts to affect prey availability.

1.3.7.9 On this basis the following species are considered for potential LSE in relation to the Mona Offshore Wind Project:

- Kittiwake
- Lesser black-backed gull
- Herring gull
- Great black-backed gull
- Common guillemot
- Razorbill
- Gannet
- Manx shearwater (considered for changes in prey availability only).

**Marine SPAs**

1.3.7.10 There are no marine SPAs within 10km of the Mona Array Area boundary (a deliberate development exclusion zone decision was made by the Applicant to maintain a minimum 10km buffer from the Liverpool Bay/Bae Lerpwl SPA), however the Liverpool Bay/Bae Lerpwl SPA is located 10km away, with the Mona Offshore Cable Corridor running through the SPA. Consequently, all qualifying features of this SPA (as detailed in Table 1.8, subject to the various exclusions outlined in the text below) are considered for determination of LSE in section 1.4.6. The Irish Sea Front SPA and the Skomer and Skokholm and the Seas off Pembrokeshire SPA are also located within the initial area of search and are therefore also considered for LSE in section 1.4.6.

1.3.7.11 No other marine SPAs occur within sufficient proximity of the Mona Offshore Wind Project for connectivity to be likely.

**Breeding seabird colony SPAs**

1.3.7.12 Seabird species may have large foraging ranges during the breeding season (Table 1.7, Woodward *et al.*, 2019). Therefore, the Mona Offshore Wind Project could potentially have an effect on the seabird qualifying features outlined above from a large number of SPA breeding colonies. The area within which the Mona Offshore Wind Project is located may be used by these qualifying features when foraging or when commuting between the colony and foraging areas. Furthermore, seabird qualifying features from SPA breeding colonies may use, or fly through, the area occupied by the Mona Offshore Wind Project during the non-breeding and migratory seasons, when these populations are widely distributed and not constrained by the need to return to the colony. More details are provided in the section below covering non-breeding season and migration periods.

1.3.7.13 To determine the breeding seabird colony SPAs which may have connectivity with the Mona Offshore Wind Project, those SPAs located in UK Western Waters, the Channel and Ireland were considered (Table 1.8). A number of SPAs located on the west coast of Ireland have breeding features within foraging range (e.g. fulmar, Manx shearwater, Leach’s petrel, northern gannet). However, these have been screened out as although the Mona Offshore Wind Project is within the foraging range of several species (as mentioned above), birds from the west coast colonies are highly unlikely to make frequent movements into the Irish Sea and interact with the Mona Offshore Wind Project and therefore there is no potential for significant effects to occur to these species from these SPAs.

**Table 1.7: Mean maximum foraging ranges of breeding seabirds (from Woodward *et al.*, 2019).**

\*No SD available for mean maximum value.

\*\*Mean value without SD – no mean maximum value available.

\*\*\*Mean value with SD – no mean maximum value available.

\*\*\*\*Excluding data from Fair Isle where foraging range may have been unusually high as a result of reduced prey availability during the study year.

Species	Mean maximum foraging range (km) ± 1 SD	Maximum foraging range (km)
Black-legged kittiwake <i>Rissa tridactyla</i>	156.1 ± 144.5	770
Common guillemot <i>Uria aalge</i>	73.2 ± 80.5	338 (135)****
Great black-backed gull <i>Larus marinus</i>	73.0*	73
Herring gull <i>Larus argentatus</i>	58.8 ± 26.8	92
Lesser black-backed gull <i>Larus fuscus</i>	127.0 ± 109	533
Northern gannet <i>Morus bassanus</i>	315.2 ± 194.2	709
Razorbill <i>Alca torda</i>	88.7 ± 75.9	313 (191)****

**Connectivity in the breeding season**

- 1.3.7.14 The initial stage in establishing potential connectivity during the breeding season involved determining whether either the Mona Array Area or Mona Offshore Cable Corridor are within (i) the mean maximum foraging range plus 1 SD of each qualifying feature from each of the SPAs (ii) the maximum foraging range of each qualifying feature from each of the SPAs (Table 1.7, Woodward *et al.*, 2019).
- 1.3.7.15 Given the above, it is considered that 53 marine SPAs or breeding seabird colony SPAs identified in Table 1.8 have potential connectivity with the Mona Offshore Wind Project during the breeding season.

**Table 1.8: European Sites designated for marine ornithological features with potential connectivity to the Mona Offshore Wind Project during the breeding season.**

Notes:

1 Measured as the closest, straight line, distance from the SPA (irrespective of the presence of land masses).

2 Relevant qualifying features are seabird species only, and non-seabird qualifying features of these SPAs (e.g. chough, corncrake etc.) are not listed.

3 Relevant to qualifying features of breeding seabird colony SPAs only (and not applicable (N/A) to the qualifying features of other SPAs). Breeding seabird foraging ranges are from Woodward et al., (2019). Where a qualifying feature is within foraging range of the array area but not the Mona Offshore Cable Corridor this is indicated by Y/N (with N/Y indicating the opposite situation).

4 For a small number of species no estimate of the mean maximum foraging range is available, with the mean or maximum foraging range being used instead (see Table 1.7 and Woodward et al., 2019 for details).

5 Only species which are to be taken forward for consideration of LSE are listed here, as outlined in section 1.3.7

ID	European Site	Site Code	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km) <sup>1</sup>	Relevant Qualifying Features <sup>2,5</sup>	Breeding colony sites	
						Within mean maximum foraging range +1SD <sup>3,4</sup>	Within max max foraging range <sup>3,4</sup>
<b>Marine SPAs</b>							
1	Liverpool Bay/Bae Lerpwl SPA	UK9020294	10.0	0.0	Red-throated diver <i>Gavia stellata</i> Little gull <i>Hydrocoloeus minutus</i> Common scoter <i>Melanitta nigra</i> Little tern <i>Sternula albifrons</i> Common tern <i>Sterna hirundo</i> Waterbird assemblage	N/A	N/A
2	Irish Seafront SPA	UK9020328	57.2	61.4	Manx shearwater <i>Puffinus puffinus</i> <sup>2</sup>	N/A	N/A
3	Skomer, Skokholm and the Seas off Pembrokeshire SPA	UK9014051	220.6	201.1	Lesser black-backed gull <i>Larus fuscus</i>	Y	Y
					Seabird assemblage (breeding) including the components:		
					Razorbill <i>Alca torda</i>	N	Y
					Guillemot <i>Uria aalge</i>	Y	Y
	Kittiwake <i>Rissa tridactyla</i>	Y	Y				
	Lesser black-backed gull <i>Larus fuscus</i>	Y	Y				
<b>Breeding seabird colonies</b>							
4	Ribble and Alt Estuaries SPA	UK9005103	37.2	38.91	Lesser black-backed gull <i>Larus fuscus</i>	Y	Y
						Y	Y
5	Morecambe Bay and Duddon Estuary SPA	UK9020326	47.0	58.7	Lesser black-backed gull <i>Larus fuscus</i>	Y	Y
					Herring gull <i>Larus argentatus</i>	Y	Y
6	Lambay Island SPA	004069	128.9	132.5	Lesser black-backed gull <i>Larus fuscus</i>	Y	Y
					Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Guillemot <i>Uria aalge</i>	Y	Y
					Razorbill <i>Alca torda</i>	Y	Y

<sup>2</sup> Irish Sea Front SPA designated for Manx shearwater which are likely to use the area as a foraging location during the breeding season, considered for impacts from potential changes in prey availability.

ID	European Site	Site Code	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km) <sup>1</sup>	Relevant Qualifying Features <sup>2,5</sup>	Breeding colony sites	
						Within mean maximum foraging range +1SD <sup>3,4</sup>	Within max max foraging range <sup>3,4</sup>
7	Howth Head Coast SPA	004113	134.4	137.7	Kittiwake <i>Rissa tridactyla</i>	Y	Y
8	Ireland's Eye SPA	004117	134.7	138.0	Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Guillemot <i>Uria aalge</i>	Y	Y
					Razorbill <i>Alca torda</i>	Y	Y
9	Wicklow Head SPA	004127	148.8	146.2	Kittiwake <i>Rissa tridactyla</i>	Y	Y
10	Ailsa Craig SPA	UK9003091	166.9	193.0	Gannet <i>Morus bassanus</i>	Y	Y
					Guillemot <i>Uria aalge</i>	N	N
					Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Lesser black-backed gull <i>Larus fuscus</i>	Y	Y
					Seabird assemblage including the components:		
					– Guillemot <i>Uria aalge</i>	N	N
– Gannet <i>Morus bassanus</i>	Y	Y					
– Lesser black-backed gull <i>Larus fuscus</i>	Y	Y					
– Herring gull <i>Larus argentatus</i>	N	N					
– Kittiwake <i>Rissa tridactyla</i>	Y	Y					
11	Rathlin Island SPA	UK0030055	207.7	230.3	Guillemot <i>Uria aalge</i>	N	N
					Razorbill <i>Alca torda</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Lesser black-backed gull <i>Larus fuscus</i> assemblage	Y	Y
					Herring gull <i>Larus argentatus</i> assemblage	N	N
12	Grassholm SPA	UK9014041	229.4	211.4	Gannet <i>Morus bassanus</i>	Y	Y
13	Saltee Islands SPA	004002	236.8	228.2	Gannet <i>Morus bassanus</i>	Y	Y
					Lesser black-backed gull <i>Larus fuscus</i>	N/Y	Y
					Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Guillemot <i>Uria aalge</i>	N	N
					Razorbill <i>Alca torda</i>	N	N

ID	European Site	Site Code	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km) <sup>1</sup>	Relevant Qualifying Features <sup>2,5</sup>	Breeding colony sites	
						Within mean maximum foraging range +1SD <sup>3,4</sup>	Within max max foraging range <sup>3,4</sup>
14	North Colonsay and Western Cliffs SPA	UK9003171	281.7	307.0	Kittiwake <i>Rissa tridactyla</i>	Y	Y
					Guillemot <i>Uria aalge</i>	N	N
15	Helvick Head to Ballyquin SPA	004192	292.4	286.6	Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	Y	Y
16	Rum SPA	UK9001341	365.5	391.8	Kittiwake <i>Rissa tridactyla</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
17	Old Head of Kinsale SPA	004021	377.7	371.9	Kittiwake <i>Rissa tridactyla</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
18	Canna and Sanday SPA	UK9001431	384.5	410.7	Herring gull <i>Larus argentatus</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
19	Isles of Scilly SPA/Ramsar	UK9020288	433.3	411.1	Great-black backed gull <i>Larus marinus</i>	N	N
					Lesser black-backed gull <i>Larus fuscus</i>	N	Y
20	Shiant Isles SPA	UK9001041	467.5	494.3	Guillemot <i>Uria aalge</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Razorbill <i>Alca torda</i>	N	N
21	Handa SPA	UK9001241	505.1	532.5	Guillemot <i>Uria aalge</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Razorbill <i>Alca torda</i>	N	N
22	St Kilda SPA	UK9001031	514.2	538.92	Gannet <i>Morus bassanus</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Razorbill <i>Alca torda</i>	N	N
23	Cape Wrath SPA	UK9001231	527.1	554.6	Kittiwake <i>Rissa tridactyla</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
					Razorbill <i>Alca torda</i>	N	N

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ID	European Site	Site Code	Distance to Mona Array Area (km)	Distance to Mona Offshore Cable Corridor (km) <sup>1</sup>	Relevant Qualifying Features <sup>2,5</sup>	Breeding colony sites	
						Within mean maximum foraging range +1SD <sup>3,4</sup>	Within max max foraging range <sup>3,4</sup>
24	Flannan Isles SPA	UK9001021	535.5	561.6	Guillemot <i>Uria aalge</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Razorbill <i>Alca torda</i>	N	N
25	Sule Skerry and Sule Stack SPA	UK9002181	573.3	600.9	Gannet <i>Morus bassanus</i>	N	Y
					Guillemot <i>Uria aalge</i>	N	N
26	North Rona and Sula Sgeir SPA	UK9001011	592.7	620.0	Gannet <i>Morus bassanus</i>	N	Y
					Great black-backed gull <i>Larus marinus</i>	N	N
					Guillemot <i>Uria aalge</i>	N	N
					Kittiwake <i>Rissa tridactyla</i>	N	Y
					Razorbill <i>Alca torda</i>	N	N

### Seabird connectivity in the non-breeding season and migration periods

- 1.3.7.16 As well as true pelagic seabirds (e.g. gannet, fulmar and auk), other species that spend part of their annual life cycle at sea (e.g. diver, gull and sea duck species) may be present in the vicinity of the Mona Offshore Wind Project during the non-breeding season and migration periods.
- 1.3.7.17 Seabird species that are breeding interest features at SPA sites further north or west of the Mona Offshore Wind Project may pass through the area or reside in the area in winter. The identification of migrating corridors and wintering areas for seabirds can be drawn from the Migration Atlas (Wernham *et al.*, 2002) and the Eurasian African Migration Atlas (Franks *et al.*, 2022). Furthermore, the SOSS-05 report for The Crown Estate (Wright *et al.*, 2012) details bird migration routes for key migratory birds in relation to offshore wind developments (Round 3, Round 1 and 2 and Scottish Territorial Waters developments). Furness (2015) presents the total number of birds present in all UK territorial waters during the defined season (e.g. migration periods and winter) for each spatially distinct Biologically Defined Minimum Population Scales (BDMPS) (e.g. UK Western Waters).
- 1.3.7.18 However, most seabirds (i.e. northern fulmar, Manx shearwater, petrels and auks) are dispersive in their migration rather than following migratory corridors, and the above guidance is therefore limited. With the advance of modern telemetry, there is a better understanding of seabird migration routes and the use of wintering areas, although it is difficult to generalise movements and usage given the relatively low sample size of tracked birds.
- 1.3.7.19 Nevertheless, there is potential for breeding interest features at SPA colonies along the Irish Sea or from further north (i.e. west and north coast of Scotland) to travel through and winter in the vicinity of the Mona Offshore Wind Project.
- 1.3.7.20 The Offshore Ornithology Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) sets out the approach and assessment conclusions to apportioning the impacts from collision and displacement on the relevant seabird species to individual colonies, including SPAs during the breeding season (discussed further in section 1.4.6) and during the non-breeding season. For all species considered within the Apportioning Assessment, mortalities due to collision and/or displacement (for kittiwake and gannet the combined impacts of these were considered) were low, with the increase in baseline mortality being <1% for all SPA populations. Due to the very low percentage of seabird mortalities estimated during the non-breeding season and in line with the TCE (2021) Plan Level HRA, effects during the non-breeding season are not considered further in this HRA Screening.

### Migratory waterbird SPAs (and Ramsar Sites)

- 1.3.7.21 The British Isles are located along the East Atlantic Flyway - a migration route that connects bird species' breeding sites to wintering sites (Boere *et al.*, 2006). Therefore, the British Isles are of key importance for many over-wintering and migrating birds that move through the area in large numbers during the spring and autumn passage periods. Whilst some bird species will follow the coastline during their migration journey, other groups of species (e.g. waders) will undertake long journeys across open seas, often flying at high altitudes depending on the weather conditions. Wildfowl species are known to follow a coastal route during their migration (when in sight of the

land). However, many wildfowl species do undertake open-sea movements to reach their wintering or moulting grounds (e.g. Shelduck (*Tadorna tadorna*) (Green *et al.*, 2019)).

- 1.3.7.22 Waterbirds (e.g. wildfowl and waders) may therefore pass through the Mona Array Area periodically in spring and autumn. Many of these migrants will originate from the Arctic and sub-Arctic regions (e.g., Iceland and Scandinavia) and winter at SPA sites in the UK. Although migration occurs over a broad front and often at high altitude at sea, there is a potential for migratory waterbirds to cross the Mona Array Area twice per year. The connectivity is more likely to occur with SPA sites nearest to the Mona Array Area, as it is assumed that migration routes will be broader and more dispersed with increased distance to/from the wintering sites.
- 1.3.7.23 The migratory non-seabird collision risk modelling technical report (volume 6, annex 10.4: offshore ornithology migratory non-seabird collision risk modelling of the PEIR) provides numbers of predicted collisions of migratory non-seabird species (excluding 'true seabirds', gull, cormorant and diver species) based on the species/populations identified to be at risk of crossing the Mona Offshore Wind Project.
- 1.3.7.24 Migratory birds CRM showed that migratory birds would not be significantly impacted. At avoidance rates of 98%, the numbers of birds predicted to be affected were <1 individual for most species, the species for which the numbers affected are estimated to be >1 are European golden plover, northern lapwing, dunlin (sub-species *schinzii* and *arctica*), common snipe, Eurasian curlew and common redshank. The largest number of individuals predicted to be impacted are up to 9 common snipe. When considering the baseline populations of waders and waterbirds associated with SPAs in the region and the number of SPAs from which these birds could have originated, these estimates would not lead to a likely significant effect on any SPA populations and therefore migratory waterbirds are not considered further for potential LSE.

### Other SPAs (and Ramsar sites) within the ZOI

- 1.3.7.25 The potential ZOI of impacts associated with the Mona Offshore Wind Project (e.g. habitat loss/disturbance, sound and risk of collision) is considered to be limited to the area within 2km of the Mona Array Area and Mona Offshore Cable Corridor for most bird species, which is the area over which displacement effects are potentially considered to occur. This may extend to considerably greater distances for some species, notably red-throated diver which shows particular sensitivity to various sources of anthropogenic disturbance (e.g. Mendel *et al.*, 2019, Dorsch *et al.*, 2020).
- 1.3.7.26 Other than the Liverpool Bay/Bae Lerpwl SPA (considered above under marine SPAs), no SPAs or Ramsar sites occur within 2km of the Mona Offshore Wind Project.

### Summary of Initial Screening of Sites for Marine Ornithological Features

- 1.3.7.27 As detailed above, the initial screening process identified European sites with seabirds or migratory waterbirds as qualifying features to be taken forward for detailed determination of LSE. These sites are identified, together with their distance to the Mona Offshore Wind Project and the qualifying features of relevance in Table 1.8 and Table 1.9, the locations of these sites are shown in Figure 1.7.



**1.3.8 Sites designated for onshore ornithological features**

1.3.8.1 The following section details the results of the stepwise process to identify the European sites with onshore ornithological features, to be taken forward for detailed determination of LSE based on the methodology and criteria outlined in section 1.2.4 and Table 1.3.

1.3.8.2 The approach adopted for this HRA Screening report focusses on the ornithology qualifying interest features for which there is considered to be a potential for impact as a result of the onshore and intertidal activities associated with the Mona Offshore Wind Project. Whilst pathways to individual features are identified, the consideration for the HRA is acknowledged to be for the integrity of the European site as a whole.

**Initial Identification for onshore ornithological features**

**SPAs designated for wintering and passage waterbirds**

1.3.8.3 From the low water to the high-water mark, the Mona Proposed Onshore Development Area passes through intertidal habitats. Above the high-water mark, agricultural habitats (arable fields and pasture with hedgerows) dominate the Mona Proposed Onshore Development Area to the substation.

1.3.8.4 Although the intertidal habitats and coastal habitats of the Mona Proposed Onshore Development Area do not overlap with SPAs designated for wintering or passage waterbirds, there is potential for waders and wildfowl from adjacent SPAs to use the intertidal habitats during the passage and wintering periods. Waders are known to be faithful to feeding and roosting sites in winter (Van de kam, 2004). There is however some variability between species (e.g. roosting sites, Rehfish *et al.*, 2003) and some inter-individual variability (e.g. territorial versus non-territorial birds). As competition increases and resources are being depleted on the intertidal habitats, waterbirds might need to forage outside their preferred areas to maintain their daily energy requirement. As a result, there is potential for less favoured areas (e.g. outside the SPAs) to be used by birds in winter.

1.3.8.5 As birds move through the SPA sites during the passage period, they can also stop and feed in a range of locations outside the SPAs. Coastal pastures and wet marshes outside the boundary of the SPAs can also be used by waterbirds as an alternative or complementary foraging areas. Pink-footed geese in particular can travel long distances from their roosting sites (>50km) to feed in agricultural habitats.

1.3.8.6 SPAs (and Ramsar sites) with onshore waterbird qualifying features have been identified using expert knowledge and evidence from the literature on migratory routes and foraging range of waterbirds. This has been based on judgement of the sites location and surrounding SPAs designated for wintering waterbirds. A precautionary approach has been adopted with sites within 50km of the cable landfall being considered as a starting point.

1.3.8.7 On this basis, the following SPAs in the vicinity of the Mona Offshore Wind Project are considered for determination of LSE (see Table 1.9):

- Dee Estuary SPA
- Ribble Alt Estuaries SPA
- Mersey Narrows and North Wirral Foreshore SPA

- Morecambe Bay and Duddon Estuary SPA
- Traeth Lafan/Lavan Sands, Conway Bay SPA.

**Table 1.9: European Sites designated for passage and wintering waterbird features with potential connectivity to the Mona Offshore Wind Project.**

ID	European Site	Site Code	Distance to Mona Array Area	Distance to Mona Proposed Onshore Development Area (km)	Relevant Qualifying Features
1	Dee Estuary SPA	UK0030131	34.5	10.53	Pintail <i>Anas acuta</i> Teal <i>Anas crecca</i> Dunlin <i>Calidris alpina alpina</i> Knot <i>Calidris canutus</i> Oystercatcher <i>Haematopus ostralegus</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Curlew <i>Numenius arquata</i> Grey plover <i>Pluvialis squatarola</i> Shelduck <i>Tadorna tadorna</i> Redshank <i>Tringa totanus</i>
2	Ribble Alt Estuaries SPA	UK9005103	37.2	36.22	Pintail <i>Anas acuta</i> Teal <i>Anas crecca</i> Wigeon <i>Anas penelope</i> Greylag goose <i>Anser brachyrhynchus</i> Sanderling <i>Calidris alba</i> Dunlin <i>Calidris alpina alpina</i> Knot <i>Calidris canutus</i> Ringed plover <i>Charadrius hiaticula</i> Bewick's swan <i>Cygnus columbianus bewickii</i> Oystercatcher <i>Haematopus ostralegus</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Curlew <i>Numenius arquata</i> Whimbrel <i>Numenius Phaeopus</i> Ruff <i>Philomachus pugnax</i>

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ID	European Site	Site Code	Distance to Mona Array Area	Distance to Mona Proposed Onshore Development Area (km)	Relevant Qualifying Features
					Golden plover <i>Pluvialis apricaria</i>
					Grey plover <i>Pluvialis squatarola</i>
					Shelduck <i>Tadorna tadorna</i>
					Redshank <i>Tringa totanus</i>
					Lapwing <i>Vanellus vanellus</i>
3	Mersey Narrows and North Wirral Foreshore SPA	UK9020287	39.3	21.79	Sanderling <i>Calidris alba</i>
					Dunlin <i>Calidris alpina alpina</i>
					Knot <i>Calidris canutus islandica</i>
					Oystercatcher <i>Haematopus ostralegus</i>
					Bar-tailed godwit <i>Limosa lapponica</i>
					Grey plover <i>Pluvialis squatarola</i>
					Redshank <i>Tringa totanus</i>
4	Morecambe Bay and Duddon Estuary SPA	UK9020326	47.0	74.42	Pintail <i>Anas acuta</i>
					Pink-footed goose <i>Anser brachyrhynchus</i>
					Turnstone <i>Arenaria interpres</i>
					Sanderling <i>Calidris alba</i>
					Dunlin <i>Calidris alpina alpina</i>
					Knot <i>Calidris canutus</i>
					Ringed plover <i>Charadrius hiaticula</i>
					Mute swan <i>Cygnus cygnus</i>
					Little egret <i>Egretta garzetta</i>
					Oystercatcher <i>Haematopus ostralegus</i>
					Bar-tailed godwit <i>Limosa lapponica</i>
					Black-tailed Godwit <i>Limosa limosa islandica</i>
					Curlew <i>Numenius arquata</i>
					Ruff <i>Philomachus pugnax</i>
					Golden plover <i>Pluvialis apricaria</i>
					Grey plover <i>Pluvialis squatarola</i>
					Shelduck <i>Tadorna tadorna</i>
					Redshank <i>Tringa totanus</i>

ID	European Site	Site Code	Distance to Mona Array Area	Distance to Mona Proposed Onshore Development Area (km)	Relevant Qualifying Features
5	Traeth Lafan/ Lavan Sands, Conway Bay SPA	UK9013031	36.6	22.66	Oystercatcher <i>Haematopus ostralegus</i>
					Curlew <i>Numenius arquata</i>
					Redshank <i>Tringa totanus</i>

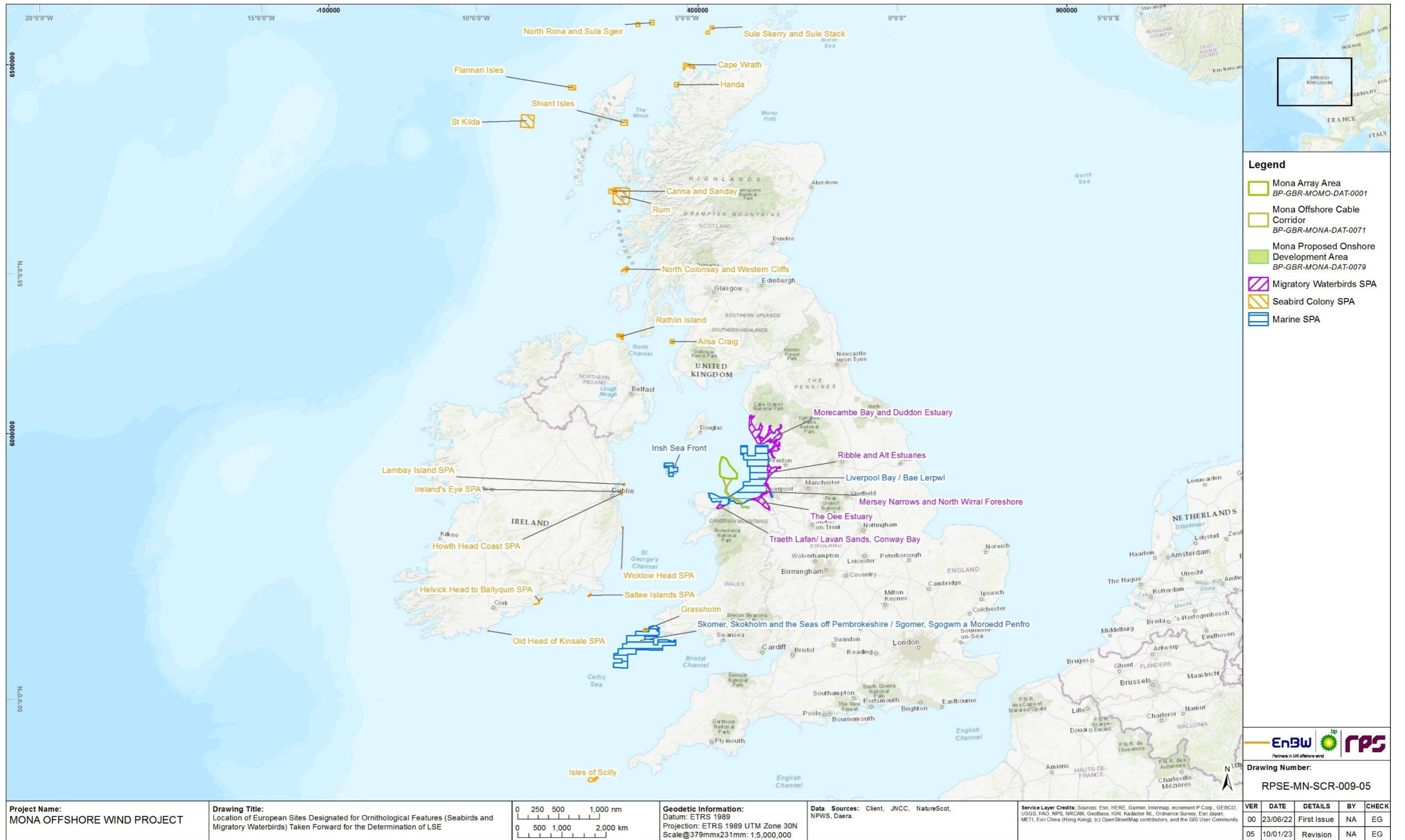


Figure 1.7: Location of European Sites designated for ornithological features to be taken forward for the determination of LSE.

## 1.4 Determination of likely significant effect

1.4.1.1 The initial screening process documented in section 1.3, generated a list of designated sites and qualifying interest features (Table 1.4 to Table 1.9) for further determination of LSE as a result of the Mona Offshore Wind Project. This section of the HRA Screening process therefore documents the determination of LSE for those European sites which have been identified for further consideration through section 1.4.

### 1.4.2 Methodology

1.4.2.1 The assessment of LSE in the following sections is presented as a series of matrices setting out whether no LSE can be concluded for the relevant features of the European sites identified in section 1.3. The matrix approach used is considered to be a pragmatic approach and useful in defining the extent of impacts from the Mona Offshore Wind Project on identified designated sites' qualifying interest features, in relation to the sites' conservation objectives. It also provides a clear audit trail for agreement with the statutory consultees on the scope of the HRA and the features and impacts to be taken forward into the appropriate assessment for each site.

1.4.2.2 The following matrix key is applicable to the matrices presented in the subsequent sections:

- ✓ - Potential for a LSE/ LSE cannot be excluded
- ✗ – No potential for an LSE
- C = Construction
- O&M = Operations and maintenance
- D = Decommissioning.

1.4.2.3 With respect to the consideration of mitigation at the HRA Screening stage, in April 2018, the European Court of Justice issued a judgement in the People Over Wind and Sweetman case (Case C323/17) clarifying the stage in a HRA process when mitigation measures can be taken into account when assessing impacts on a European site. The ruling stated that “...in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.”

### 1.4.3 Assessment of LSE for Annex I habitats (offshore and coastal)

1.4.3.1 Three European sites, the Dee Estuary/Aber Dyfrdwy SAC, the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, and the Dee Estuary Ramsar were identified in the initial screening process (section 1.3) to be taken forward for the determination of LSE for Annex I habitats.

## Site overviews

### Dee Estuary/Aber Dyfrdwy SAC

1.4.3.2 The Dee Estuary is one of the largest estuaries in the UK, with an intertidal area primarily comprising of extensive mudflat and sandflat areas and some salt marsh habitat. The estuary is hyper-tidal giving rise to a mean tidal range of 7.7m. The intertidal mud flats of the sheltered inner estuary in particular support populations of marine worms, molluscs and other invertebrates, which often occur at high densities and with high biomass and saltmarshes also provide roosting and foraging sites for waders and wildfowl species at high and low tide, respectively. The subtidal area of the SAC provides important breeding and nursery areas for coastal fish species, the Dee is also used as a migratory passage for species such as migratory fish species including river lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, Atlantic salmon *Salmo salmar*, sea trout *S. trutta*, twaite shad *Alosa fallax*, smelt *Osmerus eperlanus*, and European eels *Anguilla anguillato* and from their spawning and nursery grounds in the River Dee upstream of the estuary or open sea.

1.4.3.3 The qualifying interest features of this site are detailed in Table 1.4.

### Dee Estuary Ramsar

1.4.3.4 The Dee Estuary is one of the largest estuaries in the UK, with an intertidal area primarily comprising of extensive mudflat and sandflat areas and some salt marsh habitat. The estuary supports internationally important numbers of waterfowl and waders. On the upper shore salt marsh transitions into brackish freshwater swamp vegetation. Coastal fields provide important foraging habitat for wintering waders and freshwater lagoons and reedbeds support the largest common tern *Sterna hirundo* breeding colony in Wales.

1.4.3.5 The qualifying interest features of this site are detailed in Table 1.4.

### Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC

1.4.3.6 The Menai Strait and Conwy Bay SAC is located in northwest Wales. The physical and environmental conditions including characteristics such as sediment type, aspect, water clarity and exposure to tidal currents vary extensively throughout the site and give rise to a diverse range of habitats and associated marine species and communities. The varying physical geography of areas such as the narrows of the Menai Strait to the more open waters of Conwy Bay and the moderately wave-exposed Great and Little Ormes results in the establishment of contrasting and in many cases rare marine communities.

1.4.3.7 The qualifying interest features of this site are detailed in Table 1.4.

### Pathways for LSE: potential impacts on Annex I habitats

1.4.3.8 There is considerable knowledge from previous offshore wind farm projects on the potential effects that the construction, operations and maintenance and decommissioning of an offshore wind farm may have on benthic receptors. In addition the 'Advice on Operations' documents for the relevant SACs have also been consulted (which details the type of impacts that Annex I features are sensitive to) a list of impacts that may result from the Mona Offshore Wind Project, and that need to

be taken into account when determining the potential for LSE for the identified SACs, has been considered and is summarised in Table 1.10. For consistency with the EIA, the terminology adopted for describing the potential impacts identified in Table 1.10 for Annex I habitats (coastal and subtidal) is the same as that used in the EIA Offshore Scoping Report for the Mona Offshore Wind Project (bpEnBW, 2022). This, however, differs to the terminology used in the advice on operations package for the site and so for clarity the equivalent terms, as used in the Natural England Advice Package for the Dee Estuary/Aber Dyfrdwy SAC (NRW, 2010) are also given in Table 1.10.

**Table 1.10: Potential impacts identified for Annex I habitats (offshore and coastal) and equivalent terms from the Advice on Operations document for the Dee Estuary/Aber Dyfrdwy SAC.**

Impact description in HRA and EIA	Equivalent pressure defined for site (Natural Resources Wales, 2010)
Temporary Habitat Loss/Disturbance	Physical loss Physical loss by removal Physical damage Physical damage by abrasion Physical damage by selective extraction
Increases in SSC and Sediment Deposition	Physical loss by smothering Physical damage by siltation
Disturbance/remobilisation of sediment-bound contaminants	Toxic contamination Toxic contamination by synthetic toxic compounds Toxic contamination by non-synthetic toxic compounds Toxic contamination by radioactive compounds Non-toxic contamination Non-toxic contamination by changes in inorganic nutrient loading Non-toxic contamination by changes in organic nutrient loading
Accidental Pollution	Toxic contamination Toxic contamination by synthetic toxic compounds Toxic contamination by non-synthetic toxic compounds Toxic contamination by radioactive compounds Non-toxic contamination Non-toxic contamination by changes in inorganic nutrient loading Non-toxic contamination by changes in organic nutrient loading
Long-term Subtidal habitat Loss	Physical loss Physical loss by removal Physical damage Physical damage by selective extraction
Changes in Physical Processes	Non-toxic contamination by changes in the thermal regime Non-toxic contamination by changes in turbidity Non-toxic contamination by changes in salinity
Colonisation of Hard Structures	N/A

Impact description in HRA and EIA	Equivalent pressure defined for site (Natural Resources Wales, 2010)
Electro-Magnetic Field (EMF) from Subsea Cabling	N/A
Removal of Hard Structures	N/A

**Construction phase**

**Temporary habitat loss/disturbance**

1.4.3.9 There is potential for temporary, direct habitat loss and disturbance as a result of site preparation activities in advance of installation activities, cable installation activities (including Unexploded Ordnance (UXO) detonation, pre-cabling seabed clearance and anchor placements), and placement of spud-can legs from jack-up operations. This impact will be spatially restricted to within the Mona Offshore Wind Project Boundary, there is no potential for spatial overlap with the Mona Array Area and any Annex I habitat features of the sites. Therefore, there is no potential for LSE on Annex I habitats of the Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar or the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of temporary habitat loss/disturbance associated with the Mona Array Area activities.

1.4.3.10 There is considered to be LSE on Annex I habitats of the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of temporary habitat loss/disturbance associated with the activities along the Mona Offshore Cable Corridor due to spatial overlap with the SAC (see Table 1.4). Of the Annex I habitat features of the Menai Strait and Conwy Bay /Y Fenai a Bae Conwy SAC, potential for LSE is only identified for reef and sandbanks which are slightly covered by seawater all the time features of the SAC. There is no potential for LSE on the Annex I habitat features: mudflats and submerged or partially submerged sea caves and large shallow inlets and bays as these features are coastal and will not overlap with the Mona Offshore Wind Project Boundary. Site-specific baseline data will also be collected to support the ISAA and EIA and to determine the potential for screened in Annex I habitats to occur within the Mona Offshore Cable Corridor.

**Increases in SSC and sediment deposition**

1.4.3.11 Sediment disturbance arising from construction activities (e.g. foundation and cable installation – including drilling and any deposits arising) UXO detonation and seabed preparation) may result in indirect impacts on benthic communities as a result of temporary increases in SSC and associated sediment deposition (i.e. smothering effects). The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). Therefore, for the purposes of this HRA Screening, there is considered to be potential for LSE on reef and sandbanks which are slightly covered by seawater all the time Annex I habitat features only which are within the ZOI from increased SSC (defined as 15km; see section 1.3.2).

1.4.3.12 On this basis, effects associated with the array are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/Aber Dyfrdwy SAC/Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy

	SAC, respectively (see Table 1.4) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC and is located 13.1km from the Dee Estuary/ Aber Dyfrdwy SAC /Ramsar or (see Table 1.4) and therefore within the ZOI.		
	<b>Disturbance/remobilisation of sediment-bound contaminants</b>		
1.4.3.13	Seabed disturbance associated with construction (e.g. foundation and cable installation) could lead to the remobilisation of sediment-bound contaminants that may result in harmful and adverse effects on benthic communities. There is comprehensive desktop information available to characterise the Irish Sea region (e.g. sediment chemistry data for Rhiannon Offshore Wind Farm), however there is no data available for the Mona Array Area and Mona Offshore Cable Corridor.	1.4.3.17	<b>Operations and maintenance phase</b> <b>Long-term subtidal habitat loss</b> There is the potential for long-term habitat loss to occur directly under all foundation structures and associated scour protection, and under any cable protection required along the inter-array, inter-connector and Mona Offshore Cable Corridor for the duration of the operations and maintenance phase. This impact will be spatially restricted to within the footprint of the Mona Offshore Wind Project Boundary. On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary /Aber Dyfrdwy SAC, Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC respectively (see Table 1.4) and therefore there is no pathway for an impact to occur.
1.4.3.14	On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC and is located 13.1km from the Dee Estuary/Aber Dyfrdwy SAC/Ramsar or (see Table 1.4) and therefore within the ZOI.	1.4.3.18	There is considered to be potential for LSE on Annex I habitats of the Menai Strait and Conwy Bay SAC as a result of long term subtidal habitat loss associated with the Mona Offshore Cable Corridor only as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC. There is no potential for LSE on the Annex I habitat features: mudflats, submerged or partially submerged sea caves or large shallow inlets and bays of the SAC as these features are coastal and will not overlap with the Mona Offshore Wind Project Boundary. Site-specific baseline data will also be collected to support the ISAA and EIA and to determine the potential for screened-in Annex I habitats to occur within the Mona Offshore Cable Corridor. The Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar are located 13.1km from the Mona Offshore Cable Corridor and so there is no potential for LSE on any Annex I habitats of the site as a result of long term habitat loss.
	<b>Accidental pollution</b>		
1.4.3.15	There is a risk of pollution being accidentally released during the construction phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind developments). On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4) and therefore outside the ZOI. As noted above, any indirect effects on Annex I habitat qualifying interests from accidental release of pollutants would be unlikely and should they occur, these would be unlikely to lead to a significant effect on the conservation objectives of the site. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC.	1.4.3.19	The MDS for the decommissioning phase assumes that all cable protection will remain <i>in situ</i> . Therefore, there is considered to be the potential for LSE on Annex I habitats of the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of long-term subtidal habitat loss/alteration that will persist post-decommissioning.
			<b>Temporary habitat disturbance</b>
1.4.3.16	In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an Outline Environmental Management Plan (EMP) including a Marine Pollution Contingency Plan (MPCP)) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR (Oslo-Paris), IMO (International Maritime Organization) and MARPOL (International Convention for the Prevention of Pollution from Ships) guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.	1.4.3.20	Temporary habitat disturbance may occur during the operations and maintenance phase as a result of maintenance operations (e.g. cable repair/reburial, use of jack-up vessels to facilitate wind turbine component repairs etc.). This impact will be spatially restricted to within the footprint of the Mona Offshore Wind Project and, therefore, there is no potential for spatial overlap between activities occurring within the Mona Array Area and any Annex I habitat features of the Dee Estuary/ Aber Dyfrdwy SAC /Ramsar or the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC.
		1.4.3.21	There is considered to be potential for LSE on Annex I habitats of the Menai Strait and Conwy Bay /Y Fenai a Bae Conwy SAC as a result of temporary habitat disturbance associated with the Mona Offshore Cable Corridor only as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC. There is no potential for LSE on the Annex I habitat features: mudflats, submerged or partially submerged sea caves or large shallow inlets and bays of the SAC as these features are coastal and will not overlap with the Mona Offshore Wind Project Boundary. Site-specific baseline data will also be collected to support the ISAA and EIA and to determine the potential for screened in Annex I habitats to occur within the Mona Offshore Cable Corridor. The Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar are located 13.1km from

- the Mona Offshore Cable Corridor and so there is no potential for LSE on any Annex I habitats of the site as a result of temporary habitat loss/disturbance.
- Increases in SSC and sediment deposition**
- 1.4.3.22 Temporary increases in SSC and associated sediment deposition may arise during maintenance activities (e.g. cable reburial or replacement works) and may affect benthic communities. The magnitude of this impact will be substantially less than that during construction as no seabed preparation will be required. The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC and is located 13.1km from the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar.
- Disturbance/remobilisation of sediment-bound contaminants**
- 1.4.3.23 Seabed disturbance associated with maintenance activities (e.g. cable reburial or replacement works) could lead to the remobilisation of sediment-bound contaminants that may result in harmful and adverse effects on benthic communities. Due to the highly localised nature of maintenance activities associated with the operations and maintenance phase there is considered to be no potential for LSE on Annex I habitats of the Dee Estuary/Aber Dyfrdwy SAC, Dee Estuary Ramsar or the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of disturbance/remobilisation of sediment-bound contaminants.
- Changes in physical processes**
- 1.4.3.24 The presence of foundation structures, associated scour protection and cable protection may introduce localised changes to the tidal flow and wave climate, resulting in potential changes to the sediment transport pathways and associated effects on benthic ecology. The extent of the impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC and is located 13.1km from the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar.
- Colonisation of hard structures**
- 1.4.3.25 Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) in the offshore environment are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and changes in community composition. These structures may also facilitate the spread of marine Invasive Non-Native Species (INNS).
- 1.4.3.26 The environmental risk associated with invasive species is considered to be relative to the capacity for a new species to enter a new environment and spread. The greatest risk exists where new opportunities are provided for novel invasive species. Although there would be new infrastructure as a result of the Mona Offshore Wind Project, there is not considered to be a new route to impact due to the presence of other local offshore wind farms and major shipping lanes within the Irish Sea. It is considered that the addition of hard substratum in the Mona Array Area and Mona Offshore Cable Corridor and infrastructure associated with the Mona Offshore Wind Project would not create any new connectivity routes or "stepping-stones" that were previously absent. As there is already a potential for marine INNS to occur due to the presence of other local offshore wind farms and major shipping lanes within the Irish Sea, it is considered that there is no additional risk posed by the Mona Offshore Wind Project.
- 1.4.3.27 Further, there is also no physical overlap between the Mona Array Area and the European sites, there is only spatial overlap between the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC and the Mona Offshore Cable Corridor associated with the Mona Offshore Wind Project. As such, there is considered to be no potential for LSE on any Annex I habitat features of the Dee Estuary/Aber Dyfrdwy SAC, Dee Estuary Ramsar or the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC from colonisation of hard structures.
- EMF from subsea cabling**
- 1.4.3.28 Electromagnetic fields (EMF) generated through the subsea electrical cabling may affect benthic subtidal and intertidal ecology by inhibiting/interfering with behaviours of the relevant benthic receptors. Research has demonstrated that even when buried, emission of EMF can impact the behaviour of invertebrates (Hutchison *et al.*, 2020). Any impacts associated with EMF will, however, be spatially restricted to within the footprint of the Mona Offshore Wind Project Boundary. On this basis, effects associated with the Mona Array Area are screened out as there is no spatial overlap between the Mona Array Area and any European site (i.e. the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC/Aber Dyfrdwy SAC, Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4).
- 1.4.3.29 There is considered to be potential for LSE on Annex I habitats of the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of EMF from subsea cabling associated with the Mona Offshore Cable Corridor only as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC. The Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar are located 13.1km from the Mona Offshore Cable Corridor and so there is no potential for LSE on any Annex I habitats of the site as a result of EMF from subsea cabling.
- Heat from subsea cabling**
- 1.4.3.30 The presence and operation of inter-array, interconnector and export cables within the Mona Array Area and Mona Offshore Cable Corridor may lead to localised heating of seabed affecting benthic subtidal and intertidal receptors. It is concluded that there is no potential for LSE on Annex I habitat features associated with the Dee Estuary SAC and Ramsar due to distance from the Mona Offshore Cable Corridor (>14km) and Mona Array Area (>30km). The Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC overlaps with the Mona Offshore Cable Corridor, however the Annex I habitats of the SAC which are likely to be impacted by the presence of cables (i.e. Annex I sandbanks and reefs) are considered to have low sensitivity to temperature increase

and the spatial extent of any increase in seabed sediment temperature would be highly limited in extent. Therefore, no potential LSE is concluded for all SACs as a result of heat from subsea cabling.

#### Accidental pollution

- 1.4.3.31 There is a risk of pollution being accidentally released during the operations and maintenance phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery.
- 1.4.3.32 Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind developments). On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located 34.5km and 25.5km from the boundary of the Dee Estuary/ Aber Dyfrdwy SAC and Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC, respectively (see Table 1.4) and therefore outside the ZOI. As noted above, any indirect effects on Annex I habitat qualifying interests from accidental release of pollutants would be unlikely and should they occur, these would be unlikely to lead to a significant effect on conservation objectives of the site. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC.
- 1.4.3.33 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MCMP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

#### Decommissioning phase

- 1.4.3.34 The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. The only additional impact, unique to the decommissioning phase, is the removal of hard substrates which is considered below.

#### Removal of hard structures

- 1.4.3.35 The removal of foundations during decommissioning has the potential to lead to loss of species/habitats colonising these structures. Such effects will be highly localised and small scale and limited to where there is physical overlap between the Mona Offshore Wind Project Boundary and a site.
- 1.4.3.36 The Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar are located 13.1km from the Mona Offshore Cable Corridor and so there is no potential for LSE on any Annex I habitats of the site as a result of removal of hard structures. The Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC overlaps with the Mona Offshore Cable Corridor. The MDS for the decommissioning phase assumes that all cable protection will remain *in situ*, and so no hard structures would be removed from the SAC during decommissioning. It is therefore concluded that there is no potential for LSE on any

Annex I habitat features of the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC as a result of the removal of hard structures.

#### Determination of LSE for Annex I Habitats

- 1.4.3.37 Table 1.11 presents the results of the LSE determination assessment as a result of the Mona Offshore Wind Project on relevant qualifying interest features of the Dee Estuary/Aber Dyfrdwy SAC, Dee Estuary Ramsar and the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC in the absence of mitigation measures. The footnotes to these tables provide a brief assessment to support the screening in or out of each of these likely significant effects on the identified SACs features.

#### LSE in combination

- 1.4.3.38 The LSE test requires consideration of the Mona Offshore Wind Project alone and in-combination with other plans and projects. Therefore, it is not necessary at the LSE stage to consider sites/features for which an LSE 'alone' has already been identified, as in-combination effects will be considered at the Appropriate Assessment. The focus at this stage should be to identify sites/features for which no LSE alone was concluded, but there is potential for a LSE in-combination with other plans and projects (e.g. where contributions are made by a number of external projects as well as the Mona Offshore Wind Project).
- 1.4.3.39 Given the highly precautionary method for site selection applied during this Screening assessment, it is considered that the consolidation of information regarding external plans and projects would not likely result in additional LSEs being identified for the Screening assessment.
- 1.4.3.40 For Annex I habitats, the potential for LSE alone is identified for all sites within the widest ranging effect, therefore effects in-combination will be considered at Appropriate Assessment. For effects discounted for LSE alone, there is either no pathway to effect, or the Mona Offshore Wind Project would result in only negligible or inconsequential effects that would not contribute (even collectively) in a material way to in-combination effects and therefore, no additional in-combination issues are identified.



**Table 1.11: LSE Matrix for Annex I Habitats of the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC.**

Qualifying features	Temporary habitat loss/disturbance			Increases in SSC and sediment deposition			Release of sediment bound contaminants			Long-term subtidal habitat loss			Colonisation of hard structures			Changes in physical processes			EMF			Heat from subsea cabling			Removal of hard structures			Accidental pollution			In-combination effects			
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	
Mudflats and sandflats not covered by seawater at low tide	*a	*a	*a	*b	*b	*b	*c	*c	*c		*d	*d		*e			*f			*g			*h					*i	*j	*j	*j	*k	*k	*k
Reefs	✓a	✓a	✓a	✓b	✓b	✓b	✓c	*c	✓c		✓d	✓d		*e			✓f			✓g			*h					*i	✓j	✓j	✓j	✓k	✓k	✓k
Sandbanks which are slightly covered by seawater all the time	✓a	✓a	✓a	✓b	✓b	✓b	✓c	*c	✓c		✓d	✓d		*e			✓f			✓g			*h					*i	✓j	✓j	✓j	✓k	✓k	✓k
Large shallow inlets and bays	*a	*a	*a	*b	*b	*b	*c	*c	*c		*d	*d		*e			*f			*g			*h					*i	*j	*j	*j	*k	*k	*k
Submerged or partially submerged sea caves	*a	*a	*a	*b	*b	*b	*c	*c	*c		*d	*d		*e			*f			*g			*h					*i	*j	*j	*j	*k	*k	*k

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** – The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and there will be no direct physical overlap between the Mona Array Area and the site, however there is potential overlap between the Mona Offshore Cable Corridor and the SAC. It is concluded, on the basis of NRW’s mapped distribution of designated features within the SAC (NRW, 2016), that there is a potential for LSE on the Annex I reef and Annex I sandbanks which are slightly covered by seawater all the time features of the site across all phases of the Mona Offshore Wind Project from temporary habitat loss/disturbance associated with the Mona Offshore Cable Corridor works only. There is no potential for LSE on the other Annex I habitat features of the SAC (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) as these features are coastal and on the basis of NRW’s mapped distribution of designated features within the SAC (NRW, 2016), the Mona Offshore Cable Corridor does not spatially overlap with these protected features. Site-specific baseline data was collected in the Mona Offshore Cable Corridor in summer 2022 and will be used to validate the features taken forward for assessment in the final ISAA.
- b. **Increases in SSC and sediment deposition** - The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). Effects on benthic habitats from activities within the Mona Array Area across all phases are screened out on the basis of the distance of the Mona Array Area from the site (25.6km). Effects are only likely to arise from works along the Mona Offshore Cable Corridor and, on the basis of NRW’s mapped distribution of designated features within the SAC (NRW, 2016), it is considered that there is potential for LSE on the Annex I reef and Annex I sandbanks which are slightly covered by seawater all the time features of the SAC during the construction, operation and maintenance and decommissioning of the Mona Offshore Cable Corridor only. There is no potential for

- LSE on the other Annex I habitat features of the SAC (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) as these features are coastal and, on the basis of NRW's mapped distribution of designated features within the SAC (NRW, 2016), will not overlap with the Mona Offshore Wind Project ZOI. Site-specific baseline data was collected in the Mona Offshore Cable Corridor in summer 2022 and will be used to validate the features taken forward for assessment in the final ISAA.
- c. **Release of sediment bound contaminants** – In the absence of site-specific sediment contaminant data for the Mona Offshore Cable Corridor, and due to the spatial overlap between the SAC and the Mona Offshore Cable Corridor, risks to benthic receptors from the release of sediment bound contaminants cannot be ruled out for the construction and decommissioning phases for the Annex I reefs and Annex I sandbanks which are slightly covered by seawater all the time features. There is no potential for LSE on the other Annex I habitat features of the SAC (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) as these features are coastal and, on the basis of NRW's mapped distribution of designated features within the SAC (NRW, 2016), will not overlap with the Mona Offshore Wind Project ZOI. Due to the highly localised nature of maintenance activities associated with the operations phase there is considered to be no potential for LSE on any Annex I habitats of the SAC during the operations and maintenance phase.
  - d. **Long-term subtidal habitat loss** - The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary. There will be no direct physical overlap between the Mona Array Area and the SAC, however there is potential overlap between the Mona Offshore Cable Corridor and the Annex I habitat features of the SAC. It is concluded that there is a potential for LSE on the Annex I reefs and Annex I sandbanks which are slightly covered by seawater all the time features of the SAC during the operations and maintenance phase of the Mona Offshore Wind Project as a result of long-term habitat loss associated with the Mona Offshore Cable Corridor only. The MDS for decommissioning assumes that cable protection and scour protection will be left *in situ* post- decommissioning, therefore the potential for LSE from permanent subtidal habitat loss/alteration cannot be discounted during the decommissioning phase. There is considered to be no potential for LSE on the other Annex I habitat features (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) of the SAC as, on the basis of NRW's mapped distribution of designated features within the SAC (NRW, 2016), these features are coastal and will not overlap with the Mona Offshore Wind Project Boundary. Site-specific baseline data was collected in the Mona Offshore Cable Corridor in summer 2022 and will be used to validate the features taken forward for assessment in the final ISAA.
  - e. **Colonisation of hard structures** - Although there would be new infrastructure as a result of the Mona Offshore Wind Project, there is not considered to be a new route to impact, due to the presence of other local offshore wind farms and major shipping lanes within the Irish Sea region. As the movement of commercial vessels is common throughout the region and hard substrates are already prevalent throughout the region, the Mona Offshore Wind Project would not create any new 'connectivity routes' or "stepping-stones" that were previously absent. Given these factors and that there is very limited physical overlap between the Mona Offshore Cable Corridor and the site, it can therefore be concluded that there is no potential for LSE on any Annex I habitat features of the site as a result of the colonisation of hard substrates.
  - f. **Changes in physical processes** - Effects associated with the Mona Array Area are screened in as the SAC is located within the ZOI of 15km. There is considered to be potential for LSE on the Annex I reef and Annex I sandbanks which are slightly covered by seawater all the time features of the site during the operations and maintenance phase associated with the Mona Offshore Cable Corridor only. There is no potential for LSE on the other Annex I habitat features (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) of the SAC as these features are coastal and, on the basis of NRW's mapped distribution of designated features within the SAC (NRW, 2016), will not overlap with the Mona Offshore Wind Project ZOI. Site-specific baseline data was collected in the Mona Offshore Cable Corridor in summer 2022 and will be used to validate the features taken forward for assessment in the final ISAA.
  - g. **EMF**- There will be limited spatial overlap between the cabling associated with the Mona Offshore Wind Project and the Annex I habitat features of the SAC. It can, therefore, be concluded that there is a potential for LSE on the Annex I reef and Annex I sandbanks which are slightly covered by seawater all the time features of the site from EMF effects during the operations and maintenance phase associated with the Mona Offshore Cable Corridor only. There is no potential for LSE on the other Annex I habitat features (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) of the SAC as these features are coastal and, on the basis of NRW's mapped distribution of designated features within the SAC (NRW, 2016), will not overlap with the Mona Offshore Wind Project ZOI. Site-specific baseline data was collected in the Mona Offshore Cable Corridor in summer 2022 and will be used to validate the features taken forward for assessment in the final ISAA.
  - h. **Heat from subsea cabling** – The presence and operation of inter-array, interconnector and export cables within the Mona Array Area and Mona Offshore Cable Corridor may lead to localised heating of seabed affecting benthic subtidal and intertidal receptors. The Menai Strait Conwy Bay/Y Fenai a Bae Conwy SAC overlaps with the Mona Offshore Cable Corridor, however the Annex I habitats of the SAC which are likely to be impacted by the presence of cables (i.e. Annex I sandbanks and reefs) are considered to have low sensitivity to temperature increase and the spatial extent of any increase in seabed sediment temperature would be highly limited in extent. Therefore, no potential LSE is concluded for all Annex I habitat features of the Menai Strait Conwy Bay/Y Fenai a Bae Conwy SAC as a result of heat from subsea cabling.
  - i. **Removal of hard structures** – The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary but there will be no direct physical overlap between the Mona Array Area and the site. The MDS for decommissioning assumes that all cable and scour protection will remain *in situ* and so no hard structures would be removed from the SAC during decommissioning. It can therefore be concluded that there is no potential for LSE on any Annex I habitat features of the site as a result of the removal of hard structures during the decommissioning phase.
  - j. **Accidental Pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor as this overlaps the Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC. The Mona Array Area is located 25.6km from the SAC and is therefore not considered further. There is a potential for LSE on the Annex I reef and Annex I sandbanks which are slightly

covered by seawater all the time features of the site. There is no potential for LSE on the other Annex I habitat features (mudflats, large shallow inlets and bays and submerged or partially submerged sea caves) of the SAC as these features are coastal and, due to the distance, will not overlap with the Mona Offshore Wind Project ZOI.

- k. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex I habitat features of the SAC as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination. For effects discounted for LSE alone, there is either no pathway to effect, or the Mona Offshore Wind Project would result in only negligible or inconsequential effects that would not contribute (even collectively) a materially to in-combination effects and therefore, no additional in-combination issues are identified.

**Table 1.12: LSE Matrix for Annex I Habitats of the Dee Estuary/Aber Dyfrdwy SAC and Ramsar.**

Qualifying features	Temporary habitat loss/disturbance			Increases in SSC and sediment deposition			Release of sediment bound contaminants			Long-term subtidal habitat loss			Colonisation of hard structures			Changes in physical processes			EMF			Heat from subsea cabling			Removal of hard structures			Accidental pollution			In-combination effects			
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	
Estuaries	*a	*a	*a	✓b	✓b	✓b	✓c	*c	✓c		*d	*d		*e			✓f			*g			*h					*i	*j	*j	*j	✓k	✓k	✓k
Mudflats and sandflats not covered by seawater at low tide	*a	*a	*a	✓b	✓b	✓b	✓c	*c	✓c		*d	*d		*e			✓f			*g			*h					*i	*j	*j	*j	✓k	✓k	✓k
<i>Salicornia</i> and other annuals colonising mud and sand	*a	*a	*a	*b	*b	*b	*c	*c	*c		*d	*d		*e			*f			*g			*h					*i	*j	*j	*j	*k	*k	*k
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> )	*a	*a	*a	*b	*b	*b	*c	*c	*c		*d	*d		*e			*f			*g			*h					*i	*j	*j	*j	*k	*k	*k

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** – there will be no direct physical overlap between any of the activities associated with the Mona Offshore Wind Project and the Annex I habitat features of the SAC. It can, therefore, be concluded that there is no potential for LSE on any Annex I habitat features of the site across all phases of the Mona Offshore Wind Project from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - the extent of this impact will be spatially restricted to within the boundaries of the Mona Offshore Wind Project and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). Effects on benthic habitats from activities within the Mona Array Area across all phases are screened out on the basis of the distance of the Mona Array Area from the site (34.5km). Effects are only likely to arise from works along the Mona Offshore Cable Corridor and it is considered that there is potential for LSE on the Annex I estuaries and Annex I mudflats and sandflats not covered by seawater at low tide features of the site during Mona Offshore Cable Corridor works only. Due to distance between the other Annex I (and Ramsar) habitat features and the Mona Offshore Cable Corridor and the fact that sensitivity to increased SSC and sediment deposition is considered low for *Salicornia* and other annuals colonising mud and sand and Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) there is considered to be no potential for LSE on these Annex I habitat features resulting from increased SSC and sediment deposition during all phases.
- c. **Release of sediment bound contaminants** – In the absence of site-specific sediment contaminant data for the Mona Offshore Cable Corridor, risks to benthic receptors from the release of sediment bound contaminants cannot be ruled out for the construction and decommissioning phase with respect to the Mona Offshore Cable Corridor for the following features: estuaries and mudflats and sandflats not covered by seawater at low tide. Effects on all Annex I habitats and Ramsar features from activities within the Mona Array Area across all phases are screened out on the basis of the distance of the Mona Array Area from the site (34.5km). Due to the coastal nature of the other features of the sites and the distance between the Mona Offshore Cable Corridor and the *Salicornia* and other annuals colonising mud and Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) features there is considered to be no potential for LSE resulting from the release of sediment bound contaminants. There is considered to be no potential for LSE on any Annex I habitats of the Dee Estuary/Aber Dyfrdwy SAC and Ramsar from the release of sediment-bound contaminants during the operations and maintenance phase due to the highly localised nature of maintenance activities.

- d. **Long-term subtidal habitat loss** - there will be no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the Annex I habitat or Ramsar features of the SAC. It can therefore be concluded that there is no potential for LSE on any Annex I habitat features of the site from long-term habitat loss during the operations and maintenance and decommissioning phase.
- e. **Colonisation of hard structures** - Although there would be new infrastructure as a result of the Mona Offshore Wind Project, there is not considered to be a new route to impact, due to the presence of other local offshore wind farms and major shipping lanes within the Irish Sea region. As the movement of commercial vessels is common throughout the region and hard substrates are already prevalent throughout the region, the Mona Offshore Wind Project would not create any new 'connectivity routes' or "stepping-stones" that were previously absent. Given these factors and that there is no physical overlap between the Mona Offshore Wind Project Boundary and the site, it can therefore be concluded that there is no potential for LSE on any Annex I habitat features of the site as a result of the colonisation of hard substrates.
- f. **Changes in physical processes** - Effects associated with the Mona Array Area are screened out as the SAC is located outside the ZOI of 15km. There is considered to be potential for LSE on the Annex I estuaries and Annex I mudflats and sandflats not covered by seawater at low tide features of the site during the operations and maintenance phase from the Mona Offshore Cable Corridor only. Due to the coastal nature of the other features of the sites, the distance between the Mona Offshore Cable Corridor and the *Salicornia* and other annuals colonising mud and Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) features, and the fact that they are considered to have low sensitivity to this impact (Tyler-Walters, 2001; Tyler-Walters, 2004), there is considered to be no potential for LSE resulting from changes in physical processes.
- g. **EMF**- There will be no direct physical overlap between the cabling associated with the Mona Offshore Wind Project and the Annex I habitat features of the SAC. It can, therefore, be concluded that there is no potential for LSE on any Annex I habitat or Ramsar features of the site from EMF effects during the operations and maintenance phase.
- h. **Heat from subsea cabling** – The presence and operation of inter-array, interconnector and export cables within the Mona Array Area and Mona Offshore Cable Corridor may lead to localised heating of seabed affecting benthic subtidal and intertidal receptors. It is concluded that there is no potential for LSE on Annex I habitat features associated with the Dee Estuary SAC and Ramsar due to distance from the Mona Offshore Cable Corridor (>14km) and Mona Array Area (>30km). In addition, the spatial extent of any increase in seabed sediment temperature would be highly limited in extent. Therefore, no potential LSE is concluded for all Annex I habitat features of the Dee Estuary/Aber Dyfrdwy SAC and Ramsar.
- i. **Removal of hard structures** – There is no physical overlap between the Mona Offshore Wind Project Boundary and the site. It can, therefore, be concluded that there is no potential for LSE on any Annex I habitat or Ramsar features of the site from the removal of hard substrate during the decommissioning phase.
- j. **Accidental Pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the distance to the SAC (13.1km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex I habitat qualifying interest features of the Dee Estuary/Aber Dyfrdwy SAC and Ramsar as a result of accidental pollution.
- k. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex I habitat features of the SAC as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination. For effects discounted for LSE alone, there is either no pathway to effect, or the Mona Offshore Wind Project would result in only negligible or inconsequential effects that would not contribute (even collectively) a materially to in-combination effects and therefore, no additional in-combination issues are identified.

## 1.4.4 Assessment of LSE for Annex II diadromous fish

1.4.4.1 A total of nine European sites were identified in the initial screening process (section 1.3.3) to be taken forward for determination of LSE for Annex II diadromous fish species. These sites are:

- Dee Estuary/Aber Dyfrdwy SAC
- River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC
- River Ehen SAC
- River Eden SAC
- Derwent and Bassenthwaite Lake SAC
- Solway Firth SAC
- River Kent SAC
- River Bladnoch SAC
- Afon Gwyrfaï a Llyn Cwellyn SAC.

### Site overviews

1.4.4.2 The following sections provide a brief overview of each of the sites brought forward for consideration of LSE and a summary of their designated features.

#### Dee Estuary/Aber Dyfrdwy SAC

1.4.4.3 The overview relating to Annex I features of this SAC is detailed in section 1.3.3. The subtidal area of the SAC provides important breeding and nursery areas for coastal fish species, the Dee is also used as a migratory passage for species such as migratory fish species including river lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, Atlantic salmon *Salmo salmar*, sea trout *S. trutta*, twaite shad *Alosa fallax*, smelt *Osmerus eperlanus*, and eels *Anguilla anguilla* to and from their spawning and nursery grounds in the River Dee upstream of the estuary or open sea.

#### River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC

1.4.4.4 The SAC extends from Llyn Tegid encompassing the Bala lake and its banks and outfalls into the River Dee. The site extends downstream to where it joins the Dee Estuary SSSI. Several Dee tributaries are also included within the site, specifically the Ceiriog, Meloch, Tryweryn, and Mynach. The River Dee is designated for Atlantic salmon *Salmo salar*, with the Mynach, Meloch and Ceiriog tributaries being the most prevalent salmon spawning tributaries in the Dee catchment. Other diadromous fish species present as qualifying features of the site are river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*. The Dee also supports populations of bullhead *Cottus gobio*, brook lamprey *Lampetra planeri* and otter *Lutra lutra*.

#### River Ehen SAC

1.4.4.5 The River Ehen forms the outfall from Ennerdale Water and flows some 20km to Sellafield where it meets the Irish Sea. The SAC is located between Ennerdale Water

and the convergence with the River Keekle. This part of the river supports outstanding populations of the freshwater pearl mussel *Margaritifera margaritifera* for which the SAC is designated, likely resulting from high amount of tree shade along the banks, which is thought to be of importance for mussel habitat. The SAC is also designated for Atlantic salmon which plays an important role in the lifecycle of the freshwater pearl mussel.

#### River Eden SAC

1.4.4.6 Designated fish species of the River Eden includes Atlantic salmon *Salmo salar*, bullhead *Cottus gobio*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis* and brook lamprey *Lampetra planeri*. The Eden maintains a large population of salmon owing to the extensive suitable habitat available including areas of gravel and finer silt owing to the highly erodible nature of the rock within the river, which provide conditions for spawning and nursery areas. The river Eden also supports brook and river lampreys and a large population of sea lamprey in the middle to lower regions of the river. The extensive areas of gravel and generally good quality water provides habitat for bullhead *Cottus gobio* and the tributaries, specifically those flowing over limestone, also hold high numbers of bullhead.

#### River Derwent and Bassenthwaite Lake SAC

1.4.4.7 The SAC consists of the River Derwent, a large oligotrophic river system with high water quality and a natural channel. The Derwent flows through two lakes Derwentwater and Bassenthwaite, with presence of aquatic flora is typical of oligotrophic/mesotrophic lake. Designated fish species present within the SAC include salmon *Salmo salar*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis* and brook lamprey *Lampetra planeri*. The site encompasses various important salmon spawning areas as well as extensive sea and river lamprey nursery grounds.

#### Solway Firth SAC

1.4.4.8 The Solway is a large, complex estuary with moderately strong tidal streams and wave action. The sediment habitats present throughout the estuary consist mainly of dynamic sandflats and subtidal reefs. There are unusually large areas of upper marsh which is predominantly characterised by saltmarsh rush *Juncus gerardii* community with smaller areas of the saltmarsh-grass/fescue *Puccinellia/Festuca* communities. The sublittoral sediment communities are typically sparse in the inner estuary, due to high levels of sediment mobility coupled with low and variable salinity whilst intertidal sediments are characterised by flats of fine sands, rather than muds. The estuary also provides a migratory passage for sea lamprey *Petromyzon marinus* and river lamprey *Lampetra fluviatilis* to and from their spawning and nursery grounds.

#### River Kent SAC

1.4.4.9 The River Kent's main tributaries have their catchments in the south eastern Lake District fells which provide natural mineral enrichment in the form the calcium necessary for growth. Due to high water quality, heavy rainfall on the catchment fells and a short distance from the headwaters to the mouth of the river, a high degree of flushing occurs throughout the river which maintains the river bed free of silt and algal

growth. This provides suitable habitat for populations of bullhead *Cottus gobio*. This headwater also provides the moderate, fast flow regime, cool temperatures and suitable areas of stable river channel, also provide sufficient habitat for freshwater pearl mussels *Margaritifera margaritifera* found primarily in one of the upper tributaries.

#### River Bladnoch SAC

- 1.4.4.10 The River Bladnoch flows from Mayberry Loch in South Ayrshire for seven miles to Wigtown Bay. The River Bladnoch is designated for Atlantic salmon and the site supports a high-quality salmon population and a spring run of salmon. The river's ecological and water quality characteristics are influenced by a moderate-sized catchment with diverse upland and lowland areas.

#### Afon Gwyrfai a Llyn Cwellyn SAC

- 1.4.4.11 This SAC encompasses the Afon Gwyrfai and Llyn Cwellyn. The Gwyrfai flows out of Llyn y Gader near Rhyd Ddu and passes through Llyn Cwellyn before reaching the sea at Caernarfon Bay. The lake Llyn Cwellyn is a deep oligotrophic lake, recognised for its conservation importance. The Gwyrfai river system is recognised for outstanding ecological and water quality and is designated for an extensive salmon population, one of the best supporting rivers in the United Kingdom.

#### Pathways for LSE: Potential Impacts on Annex II Fish

- 1.4.4.12 A list of potential impacts and effects on diadromous fish that may result from the Mona Offshore Wind Project has been provided below. These are the impacts which must be taken into account when determining the potential for LSE on the designated sites and qualifying fish features identified in section 1.3.3. The list of potential impacts has been compiled using the experience and knowledge gained from previous offshore wind farm projects and Natural England's 'Advice on Operations' (NRW (2010), Countryside Council For Wales (2008a), Countryside Council For Wales (2008b), Natural England (2019a), Natural England (2019b), Natural England (2019c), NatureScot (2022a) and NatureScot (2022b) for individual features of sites. Consideration of the potential impacts identified for Annex II diadromous fish species is presented in the following sections to inform the determination of LSE below.

#### Construction phase

##### Temporary habitat loss/disturbance

- 1.4.4.13 There is potential for temporary, direct habitat loss and disturbance as a result of seabed preparation activities in advance of foundation installation, cable installation activities (including pre-cabling seabed clearance and anchor placements), and placement of spud-can legs during jack-up operations during the construction phase of the Mona Offshore Wind Project. This impact will be spatially restricted to within the footprint of the Mona Offshore Wind Project Boundary. No European sites with Annex II diadromous fish species physically overlap with the Mona Offshore Wind Project Boundary (see Figure 1.5) and so there is no potential for direct impacts to supporting habitats for Annex II diadromous fish species within any site. There is the potential for migratory fish to be present in the waters in and around the Mona Offshore Wind Project Boundary, and to be affected by temporary habitat loss/disturbance (e.g.

effects on feeding grounds). Similar habitats are however widespread within the wider Irish Sea region and it is considered that there would be no barrier effects to migratory fish reaching the designated sites as a result of this impact. Furthermore, any impacts to supporting habitats such as foraging grounds outside the designated sites would be temporary and would not be expected to result in any long-term effects on the availability of food in the area. On this basis there is considered to be no potential for LSE on any Annex II fish species of any of the European sites screened in as a result of temporary habitat loss/disturbance. This impact is screened out for all sites.

##### Increases in SSC and sediment deposition

- 1.4.4.14 Sediment disturbance arising from construction activities (e.g. foundation and cable installation, and seabed preparation works) may result in temporary, indirect impacts on diadromous fish as a result of temporary increases in SSC. The extent of this impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area. This distance will be refined through physical processes modelling to be undertaken for the EIA but for the purposes of this HRA Screening is defined as a precautionary distance of 15km from the Mona Offshore Wind Project Boundary (see section 1.3.2).

- 1.4.4.15 On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located over 15km from all sites (see Table 1.5) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor for the Dee Estuary/Aber Dyfrdwy SAC as this site is located 13.1km from the Mona Offshore Cable Corridor (see Table 1.4) and therefore within the ZOI.

##### Underwater sound

- 1.4.4.16 There is potential for mortality, injury and/or disturbance to migratory fish as a result of construction activities including pile-driving to install foundations and clearance of UXOs, as well as construction/installation vessel sound. The greatest potential for sound to be generated will occur within the Mona Array Area as a result of piling activities and UXO clearance. It is acknowledged that there will be stages when fish do not move much at all, for example salmon are likely to aggregate in the open sea near river mouths, prior to the upriver migration (e.g., Matz, 2014). The nearest European site to the Mona Array Area with Annex II diadromous fish qualifying interest features is the Dee Estuary/Aber Dyfrdwy SAC which is located 34.5km from the Mona Array Area (see Figure 1.5), but there is potential for migratory species to be present within, or transiting through, the Mona Array Area and potential area of impact. The zone of impact will be determined for the EIA through sound modelling and therefore, at this stage of the development process, the potential for LSE on any Annex II features of European sites as a result of underwater sound arising from construction activities cannot be excluded. Underwater sound is therefore screened in for further consideration for diadromous fish for all sites.

##### Disturbance/remobilisation of sediment-bound contaminants

- 1.4.4.17 Seabed disturbance associated with construction (e.g. foundation and cable installation) could lead to the remobilisation of sediment-bound contaminants that may result in harmful and adverse effects on fish and shellfish communities. There is comprehensive desktop information available to characterise the Irish Sea region (e.g. sediment chemistry data for Rhiannon Offshore Wind Farm), although there is no data available specifically for the Mona Offshore Wind Project.

1.4.4.18 On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located over 15km from all sites (see Table 1.5) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor for the Dee Estuary/Aber Dyfrdwy SAC as this site is located 13.1km from the Mona Offshore Cable Corridor (see Table 1.4) and therefore within the ZOI.

#### Accidental pollution

1.4.4.19 There is a risk of pollution being accidentally released during the construction phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind developments). Furthermore, considering the large distances to the SACs identified, (the nearest site being the SAC Dee Estuary/Aber Dyfrdwy SAC which is located 35km from the Mona Array Area) any effects should they occur, will not directly affect the SACs. As noted above, any indirect effects on Annex II diadromous fish qualifying interests from accidental release of pollutants would be unlikely and should they occur these would be unlikely to lead to a significant effect on conservation objectives of the site (e.g. disruption to/from migration to SACs). On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of accidental pollution and so this impact is screened out from further consideration.

1.4.4.20 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

#### Operations and maintenance phase

##### Temporary habitat disturbance

1.4.4.21 Temporary habitat disturbance may occur during the operations and maintenance phase of the Mona Offshore Wind Project as a result of maintenance operations (e.g. cable repair/reburial, use of jack-up vessels to facilitate wind turbine component repairs etc.). This impact will be spatially restricted to within the footprint of the Mona Offshore Wind Project and there is no physical overlap with the Mona Offshore Wind Project Boundary and any European sites and so there is no potential for direct impacts to supporting habitats for Annex II diadromous fish species within any site. There is the potential for migratory fish to be present in the waters in and around the Mona Offshore Wind Project Boundary, and to be affected by temporary habitat loss/disturbance (e.g. effects on feeding grounds). Similar habitats are however widespread within this part of the Irish Sea and it is considered that there would be no barrier effects to migratory fish reaching the designated sites as a result of this impact. Furthermore, any impacts to supporting habitats such as foraging grounds outside the designated sites would be temporary and would not be expected to result in any long-

term effects on the availability of food in the area. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of temporary habitat loss/disturbance and so this impact is screened out from further consideration.

#### Increases in SSC and sediment deposition

1.4.4.22 Temporary increases in SSC and associated sediment deposition may arise during maintenance activities (e.g. cable reburial or replacement works). The magnitude of this impact will be substantially less than that during construction as no seabed preparation will be required for these activities. The extent of the impact will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). This distance will be refined through physical processes modelling to be undertaken for the EIA but for the purposes of this HRA Screening is defined as a precautionary distance of 15km from the Mona Offshore Wind Project Boundary (see section 1.3.2).

1.4.4.23 On this basis, effects associated with the Mona Array Area are screened out as the Mona Array Area is located over 15km from all sites (see Table 1.5) and therefore outside the ZOI. There is only considered to be LSE from the activities along the Mona Offshore Cable Corridor for the Dee Estuary/Aber Dyfrdwy SAC as this site is located 13.1km from the Mona Offshore Cable Corridor (see Table 1.5) and is therefore within the ZOI.

#### Underwater sound

1.4.4.24 During the operations and maintenance phase there is the potential for sound generated by the operational wind turbines, and from vessels undertaking operations and maintenance activities to result in disturbance to migratory fish as they pass through the Mona Offshore Wind Project. The operational sound from wind turbines is however of a very low frequency and low sound pressure level (Andersson *et al.*, 2011). Studies have found that sound levels are only high enough to have the potential to cause a behavioural reaction within metres from a wind turbine (Sigray and Andersson 2011; Andersson *et al.*, 2011) and therefore such levels are not considered likely to result in significant effects on diadromous fish species. Similarly, underwater sound generated from operations and maintenance vessels is likely to be at a low level and effects would only occur if fish remain within the immediate vicinity of the vessel (i.e. within metres) for a number of hours which is unlikely given the likely movements that the majority of vessels (e.g. crew transfer vessels etc.) will be making within the Mona Offshore Wind Project. It is therefore considered that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of underwater sound during the operations and maintenance phase and this impact is screened out of further consideration for all sites.

#### Long-term habitat loss

1.4.4.25 There is the potential for long-term habitat loss to occur directly under all foundation structures and associated scour protection, and under any cable protection required along the inter-array and offshore Mona Offshore Cable Corridor for the duration of the operations and maintenance phase. This impact will be spatially restricted to within the footprint of the Mona Offshore Wind Project Boundary and there is no physical overlap between the Mona Offshore Wind Project Boundary and any European sites



- (see Figure 1.5). As such, there is no potential for direct impacts to supporting habitats for Annex II diadromous fish species within any site.
- 1.4.4.26 There is the potential for migratory fish to be present in the waters in and around the Mona Offshore Wind Project Boundary, and to be affected by long-term habitat loss (e.g. loss of feeding grounds). Similar habitats are however widespread within this region of the Irish Sea and the areas of seabed impacted by long-term loss will be discreet and small in the content of the habitats present in the wider area. Furthermore, it is considered that there would be no barrier effects to migratory fish reaching the designated sites as a result of this impact. Any impacts to supporting habitats such as foraging grounds outside the designated sites would be localised and would not be expected to result in any long-term effects on the availability of food in the area. On this basis, there is no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of long-term habitat loss, and this impact is screened out from further consideration.
- Electromagnetic Fields (EMF)**
- 1.4.4.27 The presence of subsea electrical cabling has the potential to emit a localised EMF which may interfere with the navigation of migratory fish, particularly in shallow nearshore waters (Gill and Bartlett, 2010). At this stage, the potential for LSE on Annex II features of European sites as a result of EMF from subsea cabling cannot be excluded.
- Colonisation of hard structures**
- 1.4.4.28 Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) in the offshore environment are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. These structures may also facilitate the spread of INNS. Further, the introduction of hard substrate into the marine environment could increase the time fish spend in the vicinity of the structures (known as the fish aggregation (or reef) effect). It is anticipated that the risk of bio-invasion and the spread of marine INNS is low (as set out in the discussion of the risk to Annex I habitats) and that colonisation of hard substrates will lead to limited effects on fish and shellfish populations. Further, effects on migratory fish are expected to be highly limited, given offshore areas coinciding with the Mona Offshore Wind Project are unlikely to be particularly important for diadromous fish species. On this basis, there is no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of colonisation of hard substrates, and this impact is screened out from further consideration.
- Disturbance/remobilisation of sediment-bound contaminants**
- 1.4.4.29 Seabed disturbance associated with maintenance activities (e.g. cable reburial or replacement works) could lead to the remobilisation of sediment-bound contaminants that may result in harmful and adverse effects on benthic communities. Due to the highly localised nature of maintenance activities associated with the operations phase there is considered to be no potential for LSE on Annex II diadromous fish features of any of the SACs identified and this impact is screened out.
- Accidental pollution**
- 1.4.4.30 There is a risk of pollution being accidentally released during the operations and maintenance phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind). Furthermore, considering the large distances to the SACs identified, (the nearest site being the Dee Estuary/Aber Dyfrdwy SAC which is located 35km from the Mona Array Area) any effects should they occur, will not directly affect the SACs. As noted above, any indirect effects on Annex II diadromous fish qualifying interests from accidental release of pollutants would be unlikely and should they occur these would be unlikely to lead to a significant effect on conservation objectives of the site (e.g. disruption to/from migration to SACs). On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of European sites as a result of accidental pollution and so this impact is screened out from further consideration.
- 1.4.4.31 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.
- Decommissioning phase**
- 1.4.4.32 The potential for impacts during the decommissioning phase are considered to be similar and potentially less than those outlined above in the construction phase and have not been reiterated.
- Determination of LSE for Annex II Fish**
- 1.4.4.33 Table 1.13 to Table 1.21 present the results of the LSE determination assessment as a result of the Mona Offshore Wind Project on relevant qualifying interest features of the Dee Estuary/Aber Dyfrdwy SAC, River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC, River Ehen SAC, River Eden, River Derwent and Bassenthwaite SAC, Solway Firth SAC, River Kent SAC, River Bladnoch SAC and the Afon Gwyrfa a Llyn Cwellyn SAC, respectively. These assessments are made in the absence of mitigation measures. The footnotes to the following tables provide a brief assessment to support the screening in or out of each of the likely significant effects on the identified SAC features.
- LSE In-combination**
- 1.4.4.34 The LSE test requires consideration of the Mona Offshore Wind Project alone and/ or in-combination with other plans and projects. Therefore, it is not necessary at the LSE stage to consider sites/features for which an LSE 'alone' has already been identified, as in-combination effects will be considered at the Appropriate Assessment. The focus at this stage should be to identify sites/features for which no LSE alone was concluded, but there is potential for a LSE in-combination with other plans and projects (e.g. due to wide foraging ranges resulting in a species interacting with a large number of projects).

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- 1.4.4.35 Given the highly precautionary method for site selection applied during this Screening assessment, it is considered that the consolidation of information regarding external plans and projects would not likely result in additional European sites or new effect pathways being identified for the Screening assessment.
- 1.4.4.36 For diadromous fish species, the potential for LSE alone is identified for all sites with the potential to be affected, therefore effects in-combination will be considered at Appropriate Assessment.

**Table 1.13: LSE matrix for Annex II diadromous fish species of the Dee Estuary/Aber Dyfrdwy SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment-bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Sea lamprey <i>Petromyzon marinus</i>	*a	*a	*a	✓b	✓b	✓b	✓c	*c	✓c		*d			*e			✓f		✓g	*g	*g	*h	*h	*h	✓i	✓i	✓i
River lamprey <i>Lampetra fluviatilis</i>	*a	*a	*a	✓b	✓b	✓b	✓c	*c	✓c		*d			*e			✓f		✓g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area due to the distance between the Mona Array Area and this site (34.5km) and the highly mobile nature of migratory fish, however as the Mona Offshore Cable Corridor is located within the precautionary 15km ZOI and in the absence of physical processes modelling it is concluded that there is a potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** – The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area. The impact is screened out for the Mona Array Area due to the distance between the Mona Array Area and this site (34.5km) and the highly mobile nature of migratory fish, however as the Mona Offshore Cable Corridor is located within the precautionary 15km ZOI and in the absence of site-specific data for the Mona Offshore Cable Corridor it is concluded that there is a potential for LSE on any Annex II diadromous fish qualifying interest features of the site during the construction phase. Impacts during the operations phase are screened out due to the very low magnitude of effects associated with the disturbance/remobilisation of sediment bound contaminants during this phase.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be

implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (35km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.14: LSE matrix for Annex II diadromous fish species of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D				C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
Sea lamprey <i>Petromyzon marinus</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
River lamprey <i>Lampetra fluviatilis</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the and Mona Offshore Cable Corridor due to the site being located beyond the precautionary 15km ZOI and it is concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the and Mona Offshore Cable Corridor due to the site being located beyond the precautionary 15km ZOI and it is concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that

the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (59km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.15: LSE matrix for Annex II diadromous fish species of the River Ehen SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
Freshwater pearl mussel <i>Margaritifera margaritifera</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project Boundary and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish and freshwater pearl mussel qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (83km) and Mona Offshore Cable Corridor (106.4km) based on distance from River Ehen SAC and the highly mobile nature of migratory fish. It is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish and freshwater pearl mussel qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish and freshwater pearl mussel qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (83km) and Mona Offshore Cable Corridor (106.4km) based on distance from River Ehen SAC and the highly mobile nature of migratory fish. It is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (83km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.



**Table 1.16: LSE matrix for Annex II diadromous fish species of the River Eden SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
Sea lamprey <i>Petromyzon marinus</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
River lamprey <i>Lampetra fluviatilis</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the and Mona Offshore Cable Corridor due to the site being located beyond the precautionary 15km ZOI and it is concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the and Mona Offshore Cable Corridor due to the site being located beyond the precautionary 15km ZOI and it is concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that

the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (83km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.17: LSE matrix for Annex II fish species of the Afon Gwyrfai a Llyn Cwellyn SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (92km) and Mona Offshore Cable Corridor (91.2km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (92km) and Mona Offshore Cable Corridor (91.2km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (92km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.18: LSE matrix for Annex II diadromous fish species of the River Derwent and Bassenthwaite SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
Sea lamprey <i>Petromyzon marinus</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
River lamprey <i>Lampetra fluviatilis</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (95km) and Mona Offshore Cable Corridor (121.1km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (95km) and Mona Offshore Cable Corridor (121.1km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that

the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (95km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.19: LSE Matrix for Annex II diadromous fish species of the River Kent SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Freshwater pearl mussel <i>Margaritifera margaritifera</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

**Note:** This site is only designated for freshwater pearl mussel and no diadromous fish species, however brown trout *Salmo trutta* is thought to be the host species within the River Kent SAC and Atlantic salmon are also present within the river (Natural England, 2019). There therefore may be an indirect effect to freshwater pearl mussel through effects on host species.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (96.3km) and Mona Offshore Cable Corridor (106.4km) based on distance from SAC and the highly mobile nature of migratory fish which are host species for the freshwater pearl mussel, it is therefore concluded that there is no potential for LSE on any Annex II qualifying interest features of the site.
- c. **Underwater sound** - There is potential for host species of the freshwater pearl mussel (brown trout and Atlantic salmon) to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex features of the site indirectly through potential impacts to host species during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for impact on the host species of the freshwater pearl mussel and therefore no LSE on the freshwater pearl mussel qualifying feature of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish host species of the freshwater pearl mussel. It is considered that there is potential for LSE on the Annex II qualifying interest feature of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (96.3km) and Mona Offshore Cable Corridor (106.4km) based on distance from SAC and the highly mobile nature of migratory fish which are host species for the freshwater pearl mussel, it is therefore concluded that there is no potential for LSE on any Annex II qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (96km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.



**Table 1.20: LSE matrix for Annex II diadromous fish species of the Solway Firth SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Sea lamprey <i>Petromyzon marinus</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i
River lamprey <i>Lampetra fluviatilis</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (110km) and Mona Offshore Cable Corridor (136.1km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (110km) and Mona Offshore Cable Corridor (136.1km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (109km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.21: LSE matrix for Annex II diadromous fish species of the River Bladnoch SAC.**

European Qualifying Features	Temporary Habitat Loss/Disturbance			Increases in SSC and Sediment Deposition			Underwater sound			Long-term subtidal Habitat Loss			Colonisation of Hard Structures			EMF			Disturbance/remobilisation of sediment bound contaminants			Accidental Pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Atlantic salmon <i>Salmo salar</i>	*a	*a	*a	*b	*b	*b	✓c	*c	✓c		*d			*e			✓f		*g	*g	*g	*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance** - There is no potential for any direct physical overlap between the activities associated with all phases of the Mona Offshore Wind Project and the boundary of the European site. It can, therefore, be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from temporary habitat loss/disturbance.
- b. **Increases in SSC and sediment deposition** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (114km) and Mona Offshore Cable Corridor (142.9km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- c. **Underwater sound** - There is potential for migratory species to be present within or transiting through the Mona Array Area and potential area of impact (injury and behavioural) from underwater sound during construction and decommissioning. There is therefore considered to be the potential for LSE on Annex II diadromous fish features of the site during the construction and decommissioning phases. Noise levels will be substantially lower during the operations and maintenance phase and, as such, it is concluded that there is no potential for LSE on Annex II diadromous fish qualifying interest features of the site during the operations and maintenance phase.
- d. **Long-term habitat loss** - There is no direct physical overlap between the footprint of the Mona Offshore Wind Project Boundary and the SAC. It can therefore be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from long-term habitat loss.
- e. **Colonisation of hard structures** - Artificial structures placed on the seabed (i.e. foundations and scour/cable protection) are expected to be colonised by a range of marine organisms leading to localised increases in biodiversity and potential changes in prey-predator interactions. However, effects on fish populations during the operations and maintenance phase are expected to be limited and therefore it can be concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site from the colonisation of hard structures during the operations and maintenance phase.
- f. **EMF** - EMF emitted from subsea electrical cabling has the potential to interfere with the navigation of migratory fish. It is considered that there is potential for LSE on the Annex II diadromous fish qualifying interest features of the site from EMF during the operations and maintenance phase.
- g. **Disturbance/remobilisation of sediment bound contaminants** - The extent of this impact, across all phases of the Mona Offshore Wind Project, will be spatially restricted to within the Mona Offshore Wind Project Boundary and the surrounding area (which will be refined through physical processes modelling to be undertaken for the EIA). The impact is screened out for the Mona Array Area (114km) and Mona Offshore Cable Corridor (142.9km) based on distance from SAC and the highly mobile nature of migratory fish, it is therefore concluded that there is no potential for LSE on any Annex II diadromous fish qualifying interest features of the site.
- h. **Accidental pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (115km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II diadromous fish qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II diadromous fish qualifying interest features of the site as a result of in-combination effects across all phases. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

### 1.4.5 Assessment of LSE for Annex II marine mammals

1.4.5.1 A total of 33 European sites were identified in the initial screening process (section 1.3.4 to be taken forward for determination of LSE for Annex II marine mammals. These sites are listed below, broken down by country:

- Twelve sites in the United Kingdom:
  - North Anglesey Marine/Gogledd Môn Forol SAC
  - North Channel SAC
  - Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC
  - West Wales Marine/Gorllewin Cymru Forol SAC
  - Cardigan Bay/Bae Ceredigion SAC
  - Pembrokeshire Marine/Sir Benfro Forol SAC
  - Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC
  - Isles of Scilly Complex SAC
  - Lundy SAC
  - The Maidens SAC
  - Strangford Lough
  - Murlough SAC
- Four sites in Ireland:
  - Rockabill to Dalkey Island SAC
  - Roaringwater Bay and Islands SAC
  - Blasket Islands SAC
  - Saltee Islands SAC
- 17 sites in France: (see Table 1.6).

#### Site overviews

1.4.5.2 As outlined in section 1.3.4, a total of 33 European sites were identified in the initial screening process to be taken forward for determination of LSE. These sites and the associated qualifying features are set out in Table 1.22 below.

**Table 1.22: The SACs and Ramsar sites taken forward for determination of LSE, with details of associated marine mammal qualifying features.**

ID	European Site	Relevant Annex II Features
<b>UK</b>		
1	North Anglesey Marine/Gogledd Môn Forol SAC	Harbour porpoise <i>Phocoena phocoena</i>
2	North Channel SAC	Harbour porpoise <i>Phocoena phocoena</i>
3	Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC	Bottlenose dolphin <i>Tursiops truncatus</i> Grey seal <i>Halichoerus grypus</i>

ID	European Site	Relevant Annex II Features
4	West Wales Marine/Gorllewin Cymru Forol SAC	Harbour porpoise <i>Phocoena phocoena</i>
5	Strangford Lough SAC	Harbour seal <i>Phoca vitulina</i>
6	Murlough SAC	Harbour seal <i>Phoca vitulina</i>
7	Cardigan Bay/Bae Ceredigion SAC	Bottlenose dolphin <i>Tursiops truncatus</i>
8	The Maidens SAC	Grey seal <i>Halichoerus grypus</i>
9	Pembrokeshire Marine/Sir Benfro Forol SAC	Grey seal <i>Halichoerus grypus</i>
10	Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC	Harbour porpoise <i>Phocoena phocoena</i>
11	Lundy SAC	Grey seal <i>Halichoerus grypus</i>
12	Isles of Scilly Complex SAC	Grey seal <i>Halichoerus grypus</i>
<b>Republic of Ireland</b>		
13	Rockabill to Dalkey Island SAC	Harbour porpoise <i>Phocoena phocoena</i>
14	Roaringwater Bay and Islands SAC	Harbour porpoise <i>Phocoena phocoena</i>
15	Blasket Islands SAC	Harbour porpoise <i>Phocoena phocoena</i>
16	Saltee Islands SAC	Grey seal <i>Halichoerus grypus</i>
<b>France</b>		
17	Mers Celtiques - Talus du golfe de Gascogne SCI	Harbour porpoise <i>Phocoena phocoena</i>
18	Abers - Côte des légendes SCI	Harbour porpoise <i>Phocoena phocoena</i>
19	Ouessant-Molène SCI	Harbour porpoise <i>Phocoena phocoena</i>
20	Côte de Granit rose-Sept-Iles SCI	Harbour porpoise <i>Phocoena phocoena</i>
21	Anse de Goulven, dunes de Keremma SCI	Harbour porpoise <i>Phocoena phocoena</i>
22	Tregor Goëlo SCI	Harbour porpoise <i>Phocoena phocoena</i>
23	Côtes de Crozon SCI	Harbour porpoise <i>Phocoena phocoena</i>
24	Chaussée de Sein SCI	Harbour porpoise <i>Phocoena phocoena</i>
25	Cap Sizun SCI	Harbour porpoise <i>Phocoena phocoena</i>
26	Récifs du talus du golfe de Gascogne SCI	Harbour porpoise <i>Phocoena phocoena</i>
27	Anse de Vauville SCI	Harbour porpoise <i>Phocoena phocoena</i>
28	Cap d'Erquy-Cap Fréhel SCI	Harbour porpoise <i>Phocoena phocoena</i>
29	Baie de Saint-Brieuc - Est SCI	Harbour porpoise <i>Phocoena phocoena</i>
30	Banc et récifs de Surtainville SCI	Harbour porpoise <i>Phocoena phocoena</i>
31	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SCI	Harbour porpoise <i>Phocoena phocoena</i>
32	Estuaire de la Rance SCI	Harbour porpoise <i>Phocoena phocoena</i>

ID	European Site	Relevant Annex II Features
33	Baie du Mont Saint Michel SCI	Harbour porpoise <i>Phocoena phocoena</i>

**Pathways for LSE: potential impacts on Annex II marine mammals**

1.4.5.3 A list of potential impacts and effects on marine mammals that may result from the Mona Offshore Wind Project has been provided below. These are the impacts which must be taken into account when determining the potential for LSE on the designated sites and marine mammal qualifying interest features identified. The list of potential impacts on marine mammals has been compiled using the experience and knowledge gained from previous offshore wind farm projects and the Natural England and Natural Resources Wales ‘Advice on Operations’ (JNCC, 2019; JNCC and DAERA, 2019; Natural Resources Wales, 2018) for individual features of sites. Consideration of the potential impacts identified for Annex II marine mammals is presented in the following sections to inform the determination of LSE below.

**Construction phase**

**Injury and disturbance from underwater sound generated from piling.**

1.4.5.4 Impact piling during construction may result in hearing damage/auditory injury or behavioural disturbance/displacement (including barrier effects) of marine mammals. Based on feedback from the marine mammal EWG, a precautionary approach has been adopted to the determination of LSE at this stage which assumes that there is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. On this basis, it is concluded that LSE from underwater sound resulting from piling activities on marine mammals cannot be excluded at this stage. This impact is therefore screened in for further consideration in the ISAA for Annex II marine mammal features of sites within the relevant MUs outlined in section 1.3.4. The ISAA will include consideration of site-specific underwater sound modelling and assessments and the distribution and abundances of the relevant Annex II marine mammal features outlined above.

**Injury and disturbance from underwater sound generation from unexploded ordnance (UXO) detonation.**

1.4.5.5 There may be a requirement for the clearance of UXOs from the Mona Offshore Wind Project. The detonation of small charges as part of this process has the potential to result in hearing damage/auditory injury or behavioural disturbance/displacement (including barrier effects) of marine mammals. Based on feedback from the marine mammal EWG, a precautionary approach has been adopted to the determination of LSE at this stage which assumes that there is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. On this basis, it is concluded that LSE from underwater sound resulting from UXO detonation on marine mammals cannot be excluded at this stage. This impact is therefore screened in for further consideration in the ISAA for Annex II marine mammal features of sites within the relevant MUs outlined in section 1.3.4. The ISAA will include consideration of site-specific underwater sound modelling and assessments and the distribution and abundances of the relevant Annex II marine mammal features outlined above.

**Underwater sound from pre-construction site surveys**

1.4.5.6 The impact of pre-construction related activities, and in particular geophysical surveys, may result in behavioural disturbance/displacement of marine mammals. Based on feedback from the marine mammal EWG, a precautionary approach has been adopted to the determination of LSE at this stage which assumes that there is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. On this basis it is concluded that LSE from underwater sound resulting from pre-construction site surveys on marine mammals cannot be excluded at this stage. This impact is therefore screened in for further consideration in the ISAA for Annex II marine mammal features of sites within the relevant MUs outlined in section 1.3.4. The ISAA will include consideration of site-specific underwater sound assessments and the distribution and abundances of the relevant Annex II marine mammal features outlined above.

**Underwater sound from vessels and other (non-piling) sound producing activities**

1.4.5.7 Disturbance of marine mammals may also arise during the construction phase from vessel use and other construction related activities (e.g. dredging, trenching, rock placement). The extent of this potential disturbance will be spatially restricted to within the Mona Offshore Wind Project Boundary and along vessel routes to ports used in support of the Mona Offshore Wind Project during the construction phase. Beyond this, the movements of vessels using already established vessel routes will be dispersed and will become part of the background vessel traffic. There is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. On this basis it is concluded that LSE from underwater sound resulting from vessels and other sound sources on marine mammals cannot be excluded at this stage. This impact is therefore screened in for further consideration in the ISAA for Annex II marine mammal features of sites within the relevant MUs outlined in section 1.3.4.

**Vessel collision risk**

1.4.5.8 An increase in vessel activity, compared to baseline levels, during the construction phase, may result in increased vessel collisions with marine mammals. The extent of this potential disturbance will be spatially restricted to within the Mona Offshore Wind Project Boundary and along routes to local ports. Beyond this, the movements of vessels using already established vessel routes will be dispersed and will become part of the background vessel traffic.

1.4.5.9 As there is only a small increase in vessels against a baseline of high shipping activity, the likelihood of collisions occurring between vessels and marine mammals is considered to be low, with marine mammals likely to maintain their distance. There is therefore considered to be little potential for the increased vessel activity during construction to result in a significant effect to Annex II marine mammal features in terms of collision risk with vessels. As such, no LSEs are anticipated to occur to Annex II marine mammal features of any European site and the impact of vessel collision risk is therefore screened out of further consideration for all sites.

**Changes in prey availability**

1.4.5.10 There is the potential for changes in marine mammal prey (e.g. fish species) abundance and distribution to arise as a result of construction activities which physically disturb the seabed, result in increased SSC or which generate underwater sound. Potential impacts to prey species may result in changes in the ability/success

of marine mammals to forage in the area of the Mona Offshore Wind Project Boundary. The risk of effects on prey species is expected to be greatest during the construction phase (e.g. due to seabed disturbance and/or underwater sound during construction) with effects during operations and maintenance expected to be much reduced.

- 1.4.5.11 There is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. Any potential temporary changes to the fish community in the vicinity of the Mona Array Area as a result of construction impacts such as underwater sound, are unlikely to result in significant effects to Annex II marine mammal features given that the majority of impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. As such, no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of the majority of European sites with the exception of the North Anglesey Marine/Gogledd Môn Forol SAC which has been screened in on a precautionary basis, due to its proximity to the Mona Offshore Wind Project Boundary.

#### Increased SSC and associated sediment deposition

- 1.4.5.12 Disturbance to water quality as a result of construction activities (e.g. foundation and cable installation, and site preparation activities) can have both direct and indirect impacts on marine mammals. Indirect impacts would include effects on prey species (this impact is screened in under “changes in prey availability” above). Direct impacts include the impairment of visibility and therefore foraging ability which might be expected to reduce foraging success. Marine mammals are well known to forage in tidal areas where water conditions are turbid and visibility conditions poor. For example, harbour porpoise and harbour seal in the UK have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008; Marubini *et al.*, 2009; Hastie *et al.*, 2016); therefore, low light levels, turbid waters and suspended sediments are unlikely to negatively impact marine mammal foraging success. When the visual sensory systems of marine mammals are compromised, they are able to sense the environment in other ways, for example, seals can detect water movements and hydrodynamic trails with their mystacial vibrissae; while odontocetes primarily use echolocation to navigate and find food in darkness.

- 1.4.5.13 Whilst elevated levels of SSC arising during construction of the Mona Offshore Wind Project may temporarily decrease light availability in the water column and produce turbid conditions, the maximum impact range is expected to be localised with sediments rapidly dissipating over one tidal excursion. In addition, there is a large natural variability in the SSC within the Irish Sea, so marine mammals present here will be tolerant of any small scale increases, such as those associated with the construction activities.

- 1.4.5.14 As such, no LSEs are anticipated to occur to Annex II marine mammal features of any European site and the impact of increased SSC and sediment deposition is therefore screened out of further consideration for all sites.

#### Accidental pollution

- 1.4.5.15 There is a risk of pollution being accidentally released during the operations and maintenance phase of the Mona Offshore Wind Project from sources including

vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind developments). Furthermore, considering the large distances to the SACs identified, (the nearest site being the North Anglesey Marine/Gogledd Môn Forol SAC which is located 23km from the Mona Array Area) any effects should they occur, will not directly affect the SACs. As noted above, any indirect effects on Annex II marine mammal qualifying interests from accidental release of pollutants would be unlikely and should they occur, these would be unlikely to lead to a significant effect on conservation objectives of the site. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of European sites as a result of accidental pollution and so this impact is screened out from further consideration.

- 1.4.5.16 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

#### Operations and maintenance phase

##### Underwater sound from vessels and other vessel activities

- 1.4.5.17 Disturbance of marine mammals may arise during the operations and maintenance phase from increased vessel traffic and vessel-based activities associated with operations and maintenance activities (e.g. cable reburial). As during the construction phase, the extent of this potential disturbance will be spatially restricted to within the Mona Offshore Wind Project Boundary and along routes to local ports. Beyond this, the movements of vessels using already established vessel routes will be dispersed and will become part of the background vessel traffic. However, at this stage, project-specific underwater sound modelling has not yet been completed and therefore cannot yet be used to inform the assessment of LSE. A precautionary approach has, therefore, been adopted to the determination of LSE at this stage which assumes that there is the potential for connectivity with Annex II marine mammal features of all sites located within the relevant MU for each species. On this basis it is concluded that LSE from underwater sound resulting from vessels and other vessel activities on marine mammals cannot be excluded at this stage. This impact is therefore screened in for further consideration in the ISAA for Annex II marine mammal features of sites within the relevant MUs outlined in section 1.3.4.

##### Vessel collision risk

- 1.4.5.18 An increase in vessel activity associated with operations and maintenance activities may result in increased collisions with marine mammals. The extent of this potential disturbance will however be spatially restricted to within the Mona Offshore Wind Project Boundary and along routes to local ports. Beyond this, the movements of vessels using already established vessel routes will be dispersed and will become part of the background vessel traffic. As such, no LSEs are anticipated to occur to Annex

II marine mammal features of any European site and the impact of vessel collision risk is therefore screened out of further consideration for all sites.

#### Changes in prey availability

- 1.4.5.19 There is the potential for changes in marine mammal prey abundance and distribution to arise as a result of operations and maintenance activities and as a result of the presence of offshore structures. The potential for any adverse effects on prey are, however, significantly reduced compared to the construction phase as underwater sound will be substantially lower (i.e. no piling will be required). As such, no LSEs are anticipated to occur to Annex II marine mammal features of any European site and the impact of changes in prey availability is therefore screened out of further consideration for all sites within the relevant MUs outlined in section 1.3.4.

#### Operational sound

- 1.4.5.20 The Marine Management Organisation (MMO, 2014) review of post-consent monitoring at offshore wind farms found that available data on the operational wind turbine sound, from the UK and abroad, in general showed that sound levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine sound on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbines. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms.

- 1.4.5.21 At the Horns Rev and Nysted offshore wind farms in Denmark, long term monitoring showed that both harbour porpoise and harbour seal were sighted regularly within the operational offshore wind farms, and within two years of operation, the populations had returned to levels that were comparable with the wider area (Diederichs *et al.*, 2008). Similarly, a monitoring programme at the Egmond aan Zee offshore wind farm in the Netherlands reported that significantly more porpoise activity was recorded within the offshore wind farm compared to the reference area during the operational phase (Scheidat *et al.*, 2011). Other studies at Dutch and Danish offshore wind farms (Lindeboom *et al.*, 2011) also suggest that harbour porpoise may be attracted to increased foraging opportunities within operating offshore wind farms. In addition, recent tagging work by Russell *et al.* (2014) found that some tagged harbour and grey seal demonstrated grid like movement patterns as these animals moved between individual wind turbines, strongly suggestive of these structures being used for foraging.

- 1.4.5.22 Other reviews have also concluded that operational wind farm sound will have negligible effects (Madsen *et al.*, 2006; Teilmann *et al.*, 2006a; Teilmann *et al.*, 2006b; CEFAS, 2010; Brasseur *et al.*, 2012). As such, no LSEs are anticipated to occur to any marine mammal qualifying feature of any European site and the impact of operational sound will be screened out of further consideration.

#### EMF

- 1.4.5.23 Based on the data available to date, there is no evidence of EMF related to marine renewable devices having any impact (either positive or negative) on marine mammals (Copping, 2018). There is no evidence that seals can detect or respond to EMF, however, some species of cetaceans may be able to detect variations in magnetic fields (Normandeau *et al.*, 2011). To date, the only marine mammal known to show any response to EMF is the Guiana dolphin (*Sotalia guianensis*) which has been shown to possess an electroreceptive system, which uses the vibrissal crypts

on their rostrum to detect electrical stimuli similar to those generated by small to medium sized fish (Czech-Damal *et al.*, 2013). However, this has not been shown in any other species of marine mammal and this species does not occur within the Mona marine mammal study area for the generation assets. As such, no LSEs are anticipated to occur to any marine mammal qualifying feature of any European site and the impact of EMF will be screened out of further consideration.

#### Accidental pollution

- 1.4.5.24 There is a risk of pollution being accidentally released during the operations and maintenance phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery.

- 1.4.5.25 Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind developments). Furthermore, considering the large distances to the SACs identified, (the nearest site being the North Anglesey Marine/Gogledd Môn Forol SAC which is located 23km from the Mona Array Area) any effects should they occur, will not directly affect the SACs. As noted above, any indirect effects on Annex II marine mammal qualifying interests from accidental release of pollutants would be unlikely and should they occur these would be unlikely to lead to a significant effect on conservation objectives of the site. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of European sites as a result of accidental pollution and so this impact is screened out from further consideration.

- 1.4.5.26 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

#### Decommissioning phase

- 1.4.5.27 The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined above in the construction phase.

#### Determination of LSE for Annex II marine mammals

- 1.4.5.28 Table 1.23 to Table 1.39 present the results of the LSE determination assessment as a result of the Mona Offshore Wind Project on relevant qualifying interest features of the European sites identified for marine mammals. Separate HRA Screening tables are presented for each of the UK sites and Republic of Ireland sites and a single table (Table 1.39) has been produced to cover the 17 French sites screened into the LSE assessment for harbour porpoise. This is because the justifications for the screening decisions were the same for all French sites on the basis of the distance of these sites from the Mona Offshore Wind Project.



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1.4.5.29 These assessments have been made in the absence of mitigation measures. The footnotes to these tables provide a brief assessment to support the screening in or out of each of these likely significant effects on the identified SAC features.

### **LSE in combination**

1.4.5.30 The LSE test requires consideration of the Mona Offshore Wind Project alone and/or in-combination with other plans and projects. Therefore, it is not necessary at the LSE stage to consider sites/features for which an LSE 'alone' has already been identified, as in-combination effects will be considered at the Appropriate Assessment. The focus at this stage should be to identify sites/features for which no LSE alone was concluded, but for which there is potential for a LSE in-combination to occur in combination with other plans or projects (e.g. due to wide foraging ranges resulting in a species interacting with a large number of projects).

1.4.5.31 Given the highly precautionary method for site selection applied during this Screening assessment, it is considered that the consolidation of information regarding external plans and projects would not likely result in additional LSEs being identified for the Screening assessment. For marine mammals, the potential for LSE alone is identified for all sites within the respective species MU, therefore effects in-combination will be considered at Appropriate Assessment.

**Table 1.23: LSE matrix for North Anglesey Marine/Gogledd Môn Forol SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	✓d	*d	*d	*e		*e				*g			*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels and the advice on operations for this SAC (JNCC and NRW and DAERA, 2019a) does not currently identify the pressure of death/injury by collision as a ‘high’ or significant risk. The likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. The majority of impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. However, LSE associated with changes to prey species have been screened in for this SAC on a precautionary basis due to its proximity to the Mona Offshore Wind Project Boundary. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phases compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be

implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (22km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to the Annex II harbour porpoise feature of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.24: LSE matrix for the North Channel SAC.

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels and the advice on operations for this SAC (JNCC and DAERA, 2019b) does not currently identify the pressure of death/injury by collision as a 'high' or significant risk. The likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** –the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. ~80km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be

implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (79km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.25: LSE matrix for Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects					
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Bottlenose dolphin <i>Tursiops truncatus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d				*e						*g			*h	*h	*h	✓i	✓i	✓i
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d				*e						*g			*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for bottlenose dolphin and grey seal features of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** - – there is the potential for bottlenose dolphin and grey seal features of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other non-vessel activities. It is therefore concluded that there is potential for LSE from vessel sound and other vessel related activities.
- c. **Vessel collision risk** - the uplift in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels and the likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** - the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. ~95km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE to the bottlenose dolphin and grey seal features from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – bottlenose dolphin and grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of this species. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to bottlenose dolphin will be small. Given the low abundance of bottlenose dolphin within the Mona Array Area, there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence to indicate that bottlenose dolphin or grey seal respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. a EMP including a MPCP) which will be

implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (94km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** – activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II bottlenose dolphin and grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.26: LSE matrix for the West Wales Marine/Gorllewin Cymru Forol SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e				*g			*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels. The likelihood of collisions occurring between vessels and marine mammals is considered to be low and the advice on operations for this SAC (NRW and JNCC, 2019) does not currently identify the pressure of death/injury by collision as a 'high' or significant risk. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. ~95km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. a EMP including a MPCP) which will be



implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (95km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise feature of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.27: LSE matrix for Strangford Lough SAC

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour seal <i>Phoca vitulina</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the harbour seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to harbour seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >100km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- Changes in water clarity** – harbour seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour seal will be small. Several published studies indicate that harbour seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. a EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (110km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.28: LSE matrix for Murlough SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour seal <i>Phoca vitulina</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the harbour seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to harbour seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >100km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- Changes in water clarity** – harbour seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour seal will be small. Several published studies indicate that harbour seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (114km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.29: LSE matrix Cardigan Bay/Bae Ceredigion SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Bottlenose dolphin <i>Tursiops truncatus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the bottlenose dolphin and grey seal features of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** - there is considered to be the potential for bottlenose dolphin and grey seal features from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** - the uplift in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels and the likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** - the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >100km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – bottlenose dolphin and grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of this species. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to bottlenose dolphin and grey seal will be small. Given the distance of the SAC from the Mona Array Area, there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence to indicate that bottlenose dolphin or grey seal respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.

- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (163km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.
- i. **In-combination effects** – activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II bottlenose dolphin and grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.30: LSE matrix for The Maidens SAC.

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g			*h	*h	*h	✓i	✓i	✓i	

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the grey seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for grey seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to grey seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >100km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of grey seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to grey seal will be small. Several published studies indicate that grey seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.



Furthermore, considering the large distance to the SAC (164km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.31: LSE matrix for Pembrokeshire Marine/Sir Benfro Forol SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the grey seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- Underwater sound from vessels and other vessel activities** – there is considered to be the potential for grey seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to grey seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >200km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- Changes in water clarity** – grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of grey seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to grey seal will be small. Several published studies indicate that grey seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (211km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.32: LSE matrix for the Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels. The likelihood of collisions occurring between vessels and marine mammals is considered to be low and the advice on operations for this SAC (Natural England, JNCC and NRW, 2019) does not currently identify the pressure of death/injury by collision as a ‘high’ or significant risk. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >200km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be

implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (275km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.33: LSE matrix for Lundy SAC.

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g			*h	*h	*h	✓i	✓i	✓i	

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the grey seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for grey seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to grey seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >400km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of grey seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to grey seal will be small. Several published studies indicate that grey seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (309km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.34: LSE matrix for Isles of Scilly Complex SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects					
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i			

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the grey seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for grey seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to grey seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- j. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >400km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- d. **Changes in water clarity** – grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of grey seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- e. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to grey seal will be small. Several published studies indicate that grey seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- f. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- g. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.



Furthermore, considering the large distance to the SAC (439km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- h. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.35: LSE matrix for Rockabill to Dalkey Island SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels. The likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >100km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (126km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.36: LSE matrix for Saltee Islands SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects				
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M
Grey seal <i>Halichoerus grypus</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d		*e			*f			*g		*h	*h	*h	✓i	✓i	✓i		

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – there is the potential for the grey seal feature of this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with piling, UXO clearance activities and pre-construction site surveys (e.g. geophysical surveys). There is therefore considered to be potential for LSE from underwater sound during the construction phase.
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for grey seal from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic associated with the construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project is likely to be low compared to background levels and likelihood of the impact occurring is considered to be low and there is therefore considered to be little potential for the increased vessel activity across all phases to result in a significant impact to grey seal in terms of collision risk with vessels. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >200km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – grey seal frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of grey seal. Given the distance of the SAC from the Mona Offshore Wind Project Boundary it is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to grey seal will be small. Several published studies indicate that grey seal are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that seals can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SAC (235km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II grey seal features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.37: LSE matrix for the Roaringwater Bay and Islands SAC.**

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		*f			*g		*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Underwater sound from piling, UXO clearance and pre-construction site surveys** – given the significant distance of the SAC to the Mona Offshore Wind Project Boundary (448km from the Mona array area), the Mona Offshore Wind Project Boundary is unlikely to constitute important foraging grounds for individuals from these sites and underwater sound during construction is unlikely to result in significant effects (disturbance or injury) on the harbour porpoise features of these sites. However, due to the sites being located within the Celtic and Irish seas MU for harbour porpoise there is the potential connectivity for harbour porpoise features from these sites and the Mona Offshore Wind Project Boundary. In the absence of project specific underwater sound modelling, a precautionary approach has been adopted at this stage and it is therefore concluded that there is potential for LSE on the Annex II harbour porpoise feature of the site during the construction phase from piling, UXO clearance activities or pre-construction site surveys (e.g. geophysical surveys).
- Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels. The likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >400km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.

- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (449km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.
- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.38: LSE matrix Basket Islands SAC.

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Harbour porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		*f			*g		*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** – given the significant distance of the SAC to the Mona Offshore Wind Project Boundary (565km from the Mona array area), the Mona Offshore Wind Project Boundary is unlikely to constitute important foraging grounds for individuals from this site and underwater sound during construction is unlikely to result in significant effects (disturbance or injury) on the harbour porpoise features of this site. However, due to the site being located within the Celtic and Irish seas MU for harbour porpoise there is the potential connectivity for harbour porpoise features from this site and the Mona Offshore Wind Project Boundary. In the absence of project specific underwater sound modelling, a precautionary approach has been adopted at this stage and it is therefore concluded that there is potential for LSE on the Annex II harbour porpoise feature of the site during the construction phase from piling, UXO clearance activities or pre-construction site surveys (e.g. geophysical surveys).
- b. **Underwater sound from vessels and other vessel activities** – there is considered to be the potential for harbour porpoise from this site to be present (i.e. transiting or foraging) within the Mona Offshore Wind Project Boundary and zone of potential impact (injury and behavioural) from underwater sound associated with vessels and other vessel activities. There is therefore considered to be potential for LSE from vessel sound across all phases of the Mona Offshore Wind Project.
- c. **Vessel collision risk** – the increase in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels. The likelihood of collisions occurring between vessels and marine mammals is considered to be low. It is therefore concluded that there is no potential for LSE from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >500km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – harbour porpoise frequently occur in turbid environments and are adapted to navigating and locating prey in such conditions through echolocation. Increases in SSC during construction and decommissioning will be localised, short-term and intermittent and unlikely to result in significant effects to the foraging ability of harbour porpoise. It is considered that there is no potential for LSE from changes in water clarity.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Several published studies indicate that harbour porpoise are not likely to be displaced from the operational wind farm and so there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.
- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence that harbour porpoise can detect or respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be



implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (565km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of the site as a result of accidental pollution.

- i. **In-combination effects** - activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in LSE to Annex II harbour porpoise features of the SAC as a result of in-combination effects across all phases of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

Table 1.39: LSE matrix for the 17 French sites.

European Site Qualifying Features	Underwater sound from Piling			Underwater sound from Clearance of UXO			Underwater sound from Pre-construction site surveys			Underwater sound from Vessels and other Vessel Activities			Vessel Collision Risk			Changes in Prey Availability			Changes in Water Clarity			Operational Sound			EMF			Accidental Pollution			In-combination Effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Harbour Porpoise <i>Phocoena phocoena</i>	✓a			✓a			✓a			✓b	✓b	✓b	*c	*c	*c	*d	*d	*d	*e		*e		xf			*g		*h	*h	*h	✓i	✓i	✓i

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

SACs within French waters have been assessed together, as all SACs are designated for harbour porpoise and impacts are expected to be similar across all 17 sites.

- a. **Underwater sound from piling, UXO clearance and pre-construction site surveys** - given the significant distance of the nearest French site to the Mona Offshore Wind Project Boundary (closest site is located 519km from the Mona array area), the Mona Offshore Wind Project Boundary is unlikely to constitute important foraging grounds for individuals from these sites and underwater sound during construction is unlikely to result in significant effects (disturbance or injury) on the harbour porpoise features of these sites. However, due to the sites being located within the Celtic and Irish seas MU for harbour porpoise there is the potential connectivity for harbour porpoise features from these sites and the Mona Offshore Wind Project. In the absence of project specific underwater sound modelling, a precautionary approach has been adopted at this stage and it is therefore concluded that there is potential for LSE on the Annex II harbour porpoise feature of any French site during the construction phase from piling, UXO clearance activities or pre-construction site surveys (e.g. geophysical surveys).
- b. **Underwater sound from vessels and other vessel activities** - given the large distances of all the French sites from the Mona Offshore Wind Project Boundary (closest site is located 519km from the Mona array area), it is considered that vessel traffic will not result in a significant disturbance to Annex II harbour porpoise feature of any French site. However, due to the sites being located within the Celtic and Irish seas MU for harbour porpoise there is the potential connectivity for harbour porpoise features from these sites and the Mona Offshore Wind Project. It is therefore concluded that there is potential for LSE on the Annex II harbour porpoise feature of all French sites during all phases from underwater sound associated with vessels and vessel activities.
- c. **Vessel collision risk** - the uplift in vessel traffic across all phases of the Mona Offshore Wind Project is considered to be low compared to current background levels and the likelihood of collisions occurring between vessels and marine mammals is considered to be low. Furthermore, the minimum distance between the Mona Offshore Wind Project Boundary and the nearest French site is 519km. There is therefore considered to be little potential for increased vessel activity to result in a significant effect in terms of collision risk and so it is concluded that there is no potential for LSE to the harbour porpoise feature of all French sites from vessel collision risk across all phases of the Mona Offshore Wind Project.
- d. **Changes in prey availability** – the majority of effects on fish populations across all phases of the Mona Offshore Wind Project are likely to be temporary, short-term and reversible. Any impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the foraging opportunities within the extensive ranges for marine mammal species and the highly mobile nature of these species. Due to the distance between this SAC and the Mona Offshore Wind Project Boundary (i.e. >500km) no LSEs are anticipated to occur as a result of changes in prey availability to Annex II marine mammal features of this SAC during the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is also concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- e. **Changes in water clarity** – given the large distance between the Mona Offshore Wind Project Boundary and the French sites for harbour porpoise (closest site is 519km from the Mona Array Area) and the fact that increases in SSC will be localised, short-term and intermittent, they are considered unlikely to result in significant effects to the foraging ability of harbour porpoise. There is no potential for LSE from changes in water clarity for any French site.
- f. **Operational sound** – sound levels from operational wind turbines are predicted to be low and the spatial extent of any potential behavioural impact to harbour porpoise will be small. Given the large distance between the Mona Offshore Wind Project Boundary and the French sites for harbour porpoise (closest site is 519km from the Mona Array Area) and that several published

studies indicate that harbour porpoise are not likely to be displaced from the operations wind farm, there is considered to be no potential for LSE as a result of wind turbine sound during the operations and maintenance phase.

- g. **EMF** – there is no evidence of EMF related to marine renewable devices having any impact (either beneficial or adverse) on marine mammals and there is no evidence to indicate that harbour porpoise respond to EMF. It is concluded that there is no potential for LSE from EMF during the operations and maintenance phase.
- h. **Accidental pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SAC (closest site (Mers Celtiques - Talus du golfe de Gascogne SCI) is located 533km from the Mona Array Area)) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on any Annex II marine mammal qualifying interest features of European sites as a result of accidental pollution.
- i. **In-combination effects** – over the distances considered, all relevant effect-pathways are considered extremely weak, such that only a negligible (if even detectable) influence would be apparent. However, due to the sites being located within the Celtic and Irish seas MU for harbour porpoise there is the potential connectivity for harbour porpoise features from these sites and the Mona Offshore Wind Project. Therefore, in-combination effects associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project cannot be ruled out.

## 1.4.6 Assessment of LSE for marine ornithological features

### Site overview

1.4.6.1 As outlined in section 1.3.7, European sites were identified in the initial screening process to be taken forward for determination of LSE. These sites and the associated qualifying features are set out in Table 1.40 below.

**Table 1.40: The SPAs and Ramsar sites taken forward for determination of LSE, with details of the associated qualifying features.**

European Site	Relevant qualifying features
Liverpool Bay/Bae Lerpwl SPA	Red-throated diver <i>Gavia stellata</i> Little gull <i>Hydrocoloeus minutus</i> Common scoter <i>Melanitta nigra</i> Little tern <i>Sternula albifrons</i> Common tern <i>Sterna hirundo</i> Waterbird assemblage
Irish Seafront SPA	Manx shearwater <i>Puffinus puffinus</i>
Skomer, Skokholm and the Seas off Pembrokeshire SPA	Lesser black-backed gull <i>Larus fuscus</i> Seabird assemblage (breeding) including the components: <ul style="list-style-type: none"> <li>Razorbill <i>Alca torda</i></li> <li>Guillemot <i>Uria aalge</i></li> <li>Kittiwake <i>Rissa tridactyla</i></li> <li>Lesser black-backed gull <i>Larus fuscus</i>.</li> </ul>
Ribble Alt Estuaries SPA	Lesser black-backed gull <i>Larus fuscus</i>
Morecambe Bay and Duddon Estuary SPA	Lesser black-backed gull <i>Larus fuscus</i> Herring gull <i>Larus argentatus</i>
Lambay Island SPA	Lesser black-backed gull <i>Larus fuscus</i> Herring gull <i>Larus argentatus</i> Kittiwake <i>Rissa tridactyla</i> Guillemot <i>Uria aalge</i> Razorbill <i>Alca torda</i>
Howth Head Coast SPA	Kittiwake <i>Rissa tridactyla</i>
Ireland's Eye SPA	Kittiwake <i>Rissa tridactyla</i> Guillemot <i>Uria aalge</i> Razorbill <i>Alca torda</i>
Wicklow Head SPA	Kittiwake <i>Rissa tridactyla</i>
Ailsa Craig SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa tridactyla</i> Lesser black-backed gull <i>Larus fuscus</i>

European Site	Relevant qualifying features
	Seabird assemblage including the components: <ul style="list-style-type: none"> <li>Guillemot <i>Uria aalge</i></li> <li>Gannet <i>Morus bassanus</i></li> <li>Lesser black-backed gull <i>Larus fuscus</i></li> <li>Herring gull <i>Larus argentatus</i></li> <li>Kittiwake <i>Rissa tridactyla</i></li> </ul>
Rathlin Island SPA	Kittiwake <i>Rissa tridactyla</i> Lesser black-backed gull <i>Larus fuscus</i> assemblage
Grassholm SPA	Gannet <i>Morus bassanus</i>
Saltee Islands SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa tridactyla</i>
North Colonsay and Western Cliffs SPA	Kittiwake <i>Rissa tridactyla</i>
Helvick Head to Ballyquin SPA	Kittiwake <i>Rissa tridactyla</i>
Rum SPA	Kittiwake <i>Rissa tridactyla</i>
Old Head of Kinsale SPA	Kittiwake <i>Rissa tridactyla</i>
Canna and Sanday SPA	Kittiwake <i>Rissa tridactyla</i>
Isles of Scilly SPA/Ramsar	Lesser black-backed gull <i>Larus fuscus</i>
Shiant Isles SPA	Kittiwake <i>Rissa tridactyla</i>
St Kilda SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa tridactyla</i>
Handa SPA	Kittiwake <i>Rissa tridactyla</i>
Cape Wrath SPA	Kittiwake <i>Rissa tridactyla</i>
Flannan Isles SPA	Kittiwake <i>Rissa tridactyla</i>
Sule Skerry and Sule Stack SPA	Gannet <i>Morus bassanus</i>
North Rona and Sula Sgeir SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa tridactyla</i>

### Pathways for LSE: potential impacts on marine ornithological features

1.4.6.2 A range of potential impacts on the marine ornithological features have been identified which may occur during the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project. These are the impacts which are taken into account when determining the potential for LSE on the designated sites and seabirds (i.e. during the breeding season; see section 1.3.7). The list of potential impacts on seabirds has been compiled using the experience and

- knowledge gained from previous offshore wind farm projects, as well as published literature. At this stage in the Mona Offshore Wind Project Programme, full analysis of baseline survey information for the Mona Offshore Wind Project has been completed, and collision risk modelling, displacement assessments and apportioning assessments have been undertaken and used to inform screening for LSE (as discussed in section 1.3.7).
- 1.4.6.3 Consideration of the potential impacts identified for the marine ornithological features is presented in the following sections to inform the determination of LSE.
- Construction phase**
- Temporary habitat loss/disturbance and increased SSC**
- 1.4.6.4 Direct habitat loss arising from the presence of infrastructure may occur during the construction phase of the Mona Offshore Wind Project. This is a temporary (and relatively short-term) effect in relation to the construction period and is unlikely to be significant for marine ornithological features using the Mona Array Area due to the lack of overlap between the Mona Array Area and any SPAs. However, there is potential for effects to occur in relation to the Mona Offshore Cable Corridor which passes through the Liverpool Bay/Bae Lerpwl SPA. Indirect loss of habitats used by marine ornithological features is assessed as displacement. Therefore, it is considered that there is potential for LSE in relation to the qualifying features of the Liverpool Bay/Bae Lerpwl SPA only.
- Disturbance and displacement from airborne sound and presence of vessels and infrastructure**
- 1.4.6.5 Airborne sound, the presence of vessels and construction works may disturb seabirds from offshore foraging or non-foraging areas (e.g. rafting, moulting) in the short-term, causing changes in behaviour or displacement from the affected areas. Temporary disturbance/displacement may lead to a reduction in foraging opportunities or increased energy expenditure, resulting in decreased survival rates or productivity in the population. This would only be likely to apply to seabirds which use the area of the marine environment in which construction activities will occur. Although migratory waterbird species would not be significantly affected when passing through (or over) the Mona Offshore Wind Project Boundary site on migration (as they are not expected to forage or rest in the marine environment around the Mona Offshore Wind Project Boundary), the offshore Mona Offshore Cable Corridor passes through the Liverpool Bay/Bae Lerpwl SPA so that there is the potential for LSE during the construction phase in relation to this site.
- 1.4.6.6 Given the above, it is considered that there is the potential for LSE to result from this effect pathway in relation to SPA populations of non-breeding red-throated diver, little gull, common scoter and the waterbird assemblage, as well as breeding little tern and common tern for the Liverpool Bay/Bae Lerpwl SPA.
- 1.4.6.7 The effect of disturbance and displacement as a result of the Mona Array Area (during all phases) has been assessed in volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR (see section 1.3.7). The results of this assessment have been considered in the context of SPA populations within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) which is summarised for each SPA feature in the HRA Screening tables below (see Table 1.66 to Table 1.41). The overall conclusion was that disturbance and displacement from the Mona Offshore Wind Project will not lead to LSE on any of the features of the SPAs considered in this screening.
- Changes in prey availability**
- 1.4.6.8 There is the potential for changes in bird prey (e.g. fish species) abundance and distribution to arise as a result of construction activities which physically disturb the seabed, result in increased SSC or which generate underwater sound. Reduction or disruption to prey availability to seabirds may cause displacement from foraging grounds in the area or reduced energy intake, affecting survival rates or productivity in the population in the short-term. The risk of effects on prey species is expected to be greatest during the construction phase (e.g. due to seabed disturbance and/or underwater sound during construction) with effects during the operations and maintenance phase expected to be much reduced.
- 1.4.6.9 As outlined in section 1.3.7 above, there is the potential for connectivity with SPA populations considered in this HRA Screening. Any potential temporary changes to the fish community in the vicinity of the Mona Array Area as a result of construction impacts, such as underwater sound, are unlikely to result in significant effects to SPA populations of bird species given that the majority of impacts on prey species will be spatially limited to the Mona Offshore Wind Project Boundary (for habitat disturbance) and surrounding area (e.g. behavioural effects from underwater sound), particularly in the context of the extensive foraging ranges for bird species and the highly mobile nature of these species. As such, no LSEs are anticipated to occur as a result of changes in prey availability to bird populations for the majority of the SPA sites considered. The only exceptions are the Liverpool Bay/Bae Lerpwl SPA (which overlaps the offshore Mona Offshore Cable Corridor), the Irish Sea Front SPA, the Ribble and Alt Estuaries SPA and the Morecambe Bay and Duddon Estuary SPA which are screened in on a precautionary basis, due to their proximities (i.e. within ~60km) to the Mona Offshore Wind Project Boundary.
- Accidental pollution**
- 1.4.6.10 There is a risk of pollution being accidentally released during the construction phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery of the PEIR. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind). Furthermore, considering the large distances to the SPAs identified, (with the exception of Liverpool Bay/Bae Lerpwl SPA the nearest site being the Ribble Alt Estuaries SPA, which is located 37km from the Mona Array Area) any effects should they occur, will not directly affect the SPAs. As noted above, any indirect effects on Annex I marine ornithological qualifying interests from accidental release of pollutants would be unlikely and should they occur, these would be unlikely to lead to a significant effect on the conservation objectives of the site. The exception is for the Liverpool Bay/Bae Lerpwl SPA for which there is potential LSE for the Mona Cable Corridor only, due to spatial overlap between the Mona Cable Corridor and the SPA. On this basis, there is considered to be no potential for LSE on any Annex I marine ornithological qualifying interests features of European sites as a result of accidental pollution for all sites except the Liverpool Bay/Bae Lerpwl SPA.
- 1.4.6.11 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans

(e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

### Operations and maintenance phase

#### Temporary habitat loss/disturbance and increased SSC

1.4.6.12 Direct temporary habitat disturbance may occur during the operations and maintenance phase of the Mona Offshore Wind Project. Given the large foraging ranges used by seabirds and the extent of marine habitats available for other functions (e.g. resting, moulting), direct habitat loss due to the Mona Offshore Wind Project is unlikely to have effects on SPA breeding seabird populations. Similarly, no effects are predicted on migratory waterbird populations as a result of birds passing through (or over) the Mona Offshore Wind Project site on migration. However, the Mona Offshore Cable Corridor passes through the Liverpool Bay/Bae Lerpwl SPA, so that there is the potential for LSE in relation to the qualifying features of this site (as is the case for the construction period).

#### Disturbance and displacement from airborne sound and presence of vessels and infrastructure

1.4.6.13 The presence of operational wind turbines, as well as the associated maintenance activities, may disturb seabirds and displace them from preferred foraging areas over the long-term. This may lead to a reduction in foraging opportunities or increased competition and energy expenditure, resulting in decreased survival rates or productivity in the population. Such effects may be most likely in relation to seabirds using the marine habitats within the Mona Array Area, although species are known to vary in their sensitivity to displacement (e.g. large gull species show little evidence of displacement from offshore wind farms whereas gannet and red-throated diver show marked displacement; Dierschke *et al.*, 2018; Dorsch *et al.*, 2020). Additionally, the effects of such displacement are likely to be minimal for species such as gannet and fulmar (irrespective of their sensitivity to the effect), which have particularly large foraging ranges, because the resultant habitat loss will represent a small proportion of the available habitat that they use.

1.4.6.14 As noted above, the effect of disturbance and displacement as a result of the Mona Array Area (during all phases) has been assessed in volume 6, annex 10.2: Offshore ornithology displacement assessment of the PEIR (see section 1.3.7). The results of this assessment have been considered in the context of SPA populations within the offshore ornithology apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR which is summarised in the HRA Screening tables below (see Table 1.41 to Table 1.66). The overall conclusion was that disturbance and displacement from the Mona Offshore Wind Project alone will not lead to LSE on any of the features of the SPAs considered in this screening (see discussion of in-combination effects below).

1.4.6.15 During the operations and maintenance phase, the offshore Mona Offshore Cable Corridor is an immobile structure on the seabed with minimal maintenance activity involving vessel activity. As such, there is considered to be no potential for LSE due

to disturbance and displacement associated with the Offshore Cable Corridor during the operations and maintenance phase.

#### Collision risk

1.4.6.16 Collisions of seabirds with the rotating blades of the wind turbines may result in the death or injury of individuals. Such mortality may be additive, so could cause population declines or, in some situations, prevent population recovery. Therefore, seabird species which forage within, or commute through, the Mona Array Area may be vulnerable to such effects. For seabirds, collision risk may vary between species in relation to a range of factors associated with flight behaviour but with flight heights being of fundamental importance in predicting the vulnerability to this effect (Johnston *et al.*, 2014a,b). Thus, species which fly at low heights and below the rotor swept area (e.g. fulmar and auk species) are less vulnerable to this effect pathway, in contrast to other species which generally fly at greater heights and are at risk of collision for a proportion of their flight time (e.g. kittiwake, large gull species and gannet).

1.4.6.17 The effect of collisions has been modelled in volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR (see section 1.3.7). The results of this assessment have been considered in the context of SPA populations within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the Environmental Statement) and, where relevant to the species, in combination with displacement effects discussed above (i.e. for gannet and kittiwake). The findings of these assessments are summarised for each SPA feature in the HRA Screening tables below (see Table 1.41 to Table 1.66). The overall conclusion was that collision with turbines from the Mona Offshore Wind Project alone will not lead to LSE on any of the features of the SPAs considered in this screening (see discussion of in-combination effects below).

1.4.6.18 Results from collision risk and apportioning assessments for relevant qualifying features are outlined in the footnotes of the LSE matrices.

#### Barrier to Movement

1.4.6.19 Large scale offshore wind farms may act as barriers to seabird and/or migratory waterbird movements, causing individuals to fly around or over the wind turbine arrays. However, seabird species that commute frequently across the Mona Array Area (e.g. to access foraging areas) could incur greater energetic costs as a consequence of these effects, with the potential for this to result in decreased survival rates or productivity in the population. This is particularly relevant to seabirds during the breeding season, when they frequently commute between the colony and foraging areas (e.g. Searle *et al.*, 2018).

1.4.6.20 The likelihood of the Mona Array Area resulting in barrier effects for qualifying features of SPAs are low, particularly in the context of the large foraging ranges used by seabirds and the large distances from the Mona Array at which the SPAs are located. This impact is screened out for all sites.

#### Changes in prey availability

1.4.6.21 As discussed in paragraph 1.4.6.8 above, indirect impacts on seabirds may occur as a result of changes in prey distribution, availability or abundance in the marine environment. Reduction or disruption to prey availability to seabirds may cause displacement from the area or reduced energy intake, affecting survival rates or productivity in the population in the long term. However, impacts on fish populations

during the operations and maintenance phase and decommissioning phase are expected to be considerably lower than those for construction and as such, there is no potential for LSEs associated with changes to prey availability during the operations and maintenance or decommissioning phases.

#### Accidental pollution

1.4.6.22 There is a risk of pollution being accidentally released during the operations and maintenance phase of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. Pollution events are considered unlikely, and given the volumes associated with offshore wind farm development, should an event occur, effects will be temporary, reversible and limited in spatial extent (e.g. due to the expected low volumes of pollutants associated with offshore wind). Furthermore, considering the large distances to the SPAs identified, (with the exception of Liverpool Bay/Bae Lerpwl SPA, the nearest site being the Ribble Alt Estuaries SPA, which is located 37km from the Mona Array Area) any effects should they occur, will not directly affect the SPAs. As noted above, any indirect effects on Annex I marine ornithological qualifying interests from accidental release of pollutants would be unlikely and should they occur, these would be unlikely to lead to a significant effect on conservation objectives of the site. The exception is for the Liverpool Bay/Bae Lerpwl SPA for which there is potential LSE for the Mona Cable Corridor only, due to spatial overlap between the Mona Cable Corridor and the SPA. On this basis, there is considered to be no potential for LSE on any Annex I marine ornithological qualifying interests features of European sites as a result of accidental pollution for all sites except the Liverpool Bay/Bae Lerpwl SPA.

1.4.6.23 In addition, it is anticipated that the risk of such events occurring will be minimised and managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. These plans include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. It will also set out industry good practice and OSPAR, IMO and MARPOL guidelines for preventing pollution at sea. While these plans are not considered in the determination of no LSE, they will nevertheless further reduce the potential for LSE.

#### Decommissioning phase

1.4.6.24 The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined above for the construction phase. The impacts of direct habitat loss, collision and barriers to movement are not applicable to the decommissioning phase and will not be considered in the determination of LSE.

#### Determination of LSE for marine ornithological features

1.4.6.25 Table 1.41 to Table 1.66 present the results of the LSE determination assessment as a result of the Mona Offshore Wind Project on relevant qualifying interest features of the European sites identified for marine ornithological features. When determining LSE, a similar approach to that used by TCE Plan Level HRA for breeding birds in the non-breeding season has been adopted. Where the predicted effect is less than 0.5% of the baseline mortality of the reference population, then none of the component SPAs have been screened in, on the basis that the magnitude of the impact is too low

for there to be any risk of LSE either alone or in-combination (i.e. the effect will be *de minimis*) (TCE, 2021).

1.4.6.26 These assessments have been made in the absence of mitigation measures but based on the outputs of the site-specific modelling and assessments outlined above. The footnotes to these tables provide a brief explanation to support the screening in or out of each of these likely significant effects on the identified SPA features.

#### LSE in combination

1.4.6.27 The LSE test requires consideration of the Mona Offshore Wind Project alone and/or in-combination with other plans and projects. Therefore, it is not necessary at the LSE stage to consider sites/features for which an LSE 'alone' has already been identified, as in-combination effects will be considered at the Appropriate Assessment. The focus at this stage should be to identify sites/features for which no LSE alone was concluded, but for which there is potential for a LSE in-combination to occur when considering other plans or projects (e.g. due to wide foraging ranges resulting in a species interacting with a large number of projects).

1.4.6.28 The approach taken in TCE Plan Level HRA has been broadly followed in this HRA Screening, i.e. if the predicted magnitude is between 0.5% and 1% or >1% of the baseline mortality of the reference population for a qualifying feature, then further consideration will be given to the magnitude of the likely effect, including the contribution of impacts from other plans and projects, in-combination. If it cannot be concluded that the combined magnitude of the potential impact will not exceed 1% then each of the component SPAs will be screened into the assessment (with respect to the relevant feature and pressure considered) (TCE, 2021). Although these thresholds have been used as a guide for determining whether there is potential for LSE in-combination, each site and feature is considered individually based on the outputs of site-specific modelling and assessments set out above and screening conclusions based on these.

1.4.6.29 Given the highly precautionary method for site selection applied during this Screening assessment, it is considered that the consolidation of information regarding external plans and projects would not likely result in additional LSEs being identified for the Screening assessment.

**Table 1.41: LSE matrix for marine ornithological features of the Liverpool Bay/Bae Lerpwl SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning).

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Red-throated Diver <i>Gavia stellata</i> (non-breeding)	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g
Little gull <i>Hydrocoloeus minutus</i> (non-breeding)	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g
Common scoter <i>Melanitta gretta</i> (non-breeding)	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g
Waterbird assemblage	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g
Little tern <i>Sternula albifrons</i> (breeding)	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g
Common tern <i>Sterna hirundo</i> (breeding)	✓a	✓a	✓a	✓b	✓b	✓b		*c			*d		✓e	*e	*e	✓f	✓f	✓f	✓g	✓g	✓g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – temporary habitat loss/disturbance and increased SSC can be discounted for the Mona Array Area because of the distance to the Liverpool Bay/Bae Lerpwl SPA (10km). The Mona Offshore Cable Corridor however overlaps with the Liverpool Bay/Bae Lerpwl SPA and therefore the potential for LSE cannot be discounted for any qualifying features of the Liverpool Bay/Bae Lerpwl SPA in relation to temporary habitat loss/disturbance and increased SSC.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure** – disturbance and displacement from airborne sound and presence of vessels and infrastructure can be discounted for the Mona Array Area because of the distance to the Liverpool Bay/Bae Lerpwl SPA (10km). The Mona Offshore Cable Corridor however overlaps with the Liverpool Bay/Bae Lerpwl SPA and therefore the potential for LSE cannot be discounted for any qualifying features of the Liverpool Bay/Bae Lerpwl SPA in relation to disturbance and displacement effects.
- c. **Collision risk** – collision risk can be discounted for the Mona Array Area. None of the species listed as qualifying features of the SPA were present in digital aerial surveys in high enough numbers or were deemed vulnerable to collision risk effects and were therefore not assessed within the collision risk modelling for the Mona Offshore Wind Project (see section 1.3.7 and volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling). Therefore, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** –the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges of seabirds. In addition, the species listed as qualifying features of the SPA were excluded from collision risk modelling and displacement assessments based on either low numbers recorded within the Mona Array Area or that the species is not considered sensitive to these effects (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Effects relating to barrier to movement are considered to be of much lower magnitude compared with collision risk and displacement. Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for any qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. This SPA (which overlaps the offshore Mona Offshore Cable Corridor) has been screened in on a precautionary basis for the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.



- f. **Accidental pollution** – there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Accidental pollution effects can be discounted for the Mona Array Area due to the distance to the Liverpool Bay/Bae Lerpwl SPA (10km). The Mona Offshore Cable Corridor however overlaps with the Liverpool Bay/Bae Lerpwl SPA and therefore the potential for LSE cannot be discounted for any qualifying features of the Liverpool Bay/Bae Lerpwl SPA in relation to accidental pollution. On this basis, there is considered to be potential for LSE on qualifying interest features of the SPA as a result of accidental pollution for the Mona Cable Corridor only.
- g. **In-combination effects** – activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in an in-combination LSE to the marine ornithological features of the SPA as a result of temporary habitat loss/disturbance and increased SSCs, disturbance and displacement from airborne sound and presence of vessels and infrastructure and accidental pollution effects across all phases of the Mona Offshore Wind Project. There is also potential for an in-combination LSE to the marine ornithological features of the SPA as a result of changes in prey availability effects across the construction phase of the Mona Offshore Wind Project together with other projects. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.42: LSE matrix for the Irish Sea Front SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Manx shearwater <i>Puffinus puffinus</i>	*a	*a	*a	*b	*b	*b		*c			*d		✓e	*e	*e	*f	*f	*f	✓g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – Temporary habitat loss/disturbance and increased SSC due to the Mona Offshore Wind Project is unlikely to have effects on SPA seabird populations due to the large foraging ranges used by seabirds and the extent of marine habitats available for other functions (e.g. roosting). On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for the Manx shearwater qualifying feature of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – Manx shearwater was not considered in the Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) as the species is not considered sensitive to displacement impacts (volume 6, annex 10.3: Offshore ornithology non-migratory seabird collision risk assessment of the PEIR). On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement from presence of vessels and infrastructure for Manx shearwater qualifying features of this SPA.
- c. **Collision risk** – Collision risk assessments conducted for Manx shearwater showed that associated mortalities were estimated to be zero (volume 6, annex 10.3: Offshore ornithology non-migratory seabird collision risk assessment of the PEIR). On this basis, it is considered that there is no potential for LSE in relation to collision risk for Manx shearwater qualifying features of this SPA.
- d. **Barrier to movement** – Effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (57km from the Mona Array Area), and the low likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded very low numbers of Manx shearwater will be affected by these impacts, and effects relating to barriers to movement are considered to be of much lower magnitude compared with collision risk and displacement. Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the Manx shearwater qualifying features of this SPA.
- e. **Changes in prey availability** – As set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to birds populations for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. This SPA (which is located 57km from the Mona Array Area) has been screened in on a precautionary basis for the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - There is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (57km from the Mona Array Area) any effects should they occur, will not directly affect the SPA. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.
- g. **In-combination effects** – As outlined above, estimated collisions for Manx shearwater were estimated to be zero and this species was not considered in the Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR), impacts are considered too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in an in-combination LSE to the marine ornithological features of the SPA as a result of changes in

prey availability effects across the construction phase of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.43: LSE matrix for marine ornithological features of the Skomer, Skokholm and the Seas off Pembrokeshire SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Seabird assemblage	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✗ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – temporary habitat loss/disturbance and increased SSC due to the Mona Offshore Wind Project is unlikely to have effects on SPA seabird populations due to the large foraging ranges used by seabirds and the extent of marine habitats available for other functions (e.g. roosting). Densities of lesser black-backed gull recorded in the Mona Offshore Wind Project aerial surveys were also very low with a peak density of 0.04 birds/km<sup>2</sup> recorded in February. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for lesser black-backed gull qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – lesser black-backed gull are considered to be relatively insensitive to disturbance and displacement effects and were not considered in Displacement Assessments (volume 6, annex 10.2: offshore ornithology displacement assessment) for the Mona Offshore Wind Project, following guidance from SNCBs and the Offshore Ornithology Expert Working Group. The Skomer, Skokholm and the Seas off Pembrokeshire SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) for the species constituting the seabird assemblage (razorbill, guillemot, and kittiwake) due to the distance between the Mona Offshore Wind Project and this SPA (220km). However, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant SPA populations. On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement from airborne sound and presence of vessels and infrastructure for lesser black-backed gull and the seabird assemblage qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above for seabird assemblage qualifying feature. The Skomer, Skokholm and the Seas off Pembrokeshire SPA was not considered within the Apportioning Assessment for lesser black-backed gull (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (220km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Morecambe Bay SPA adult mortality numbers were 0 birds equating to a 0.008% increase in baseline mortality for lesser black-backed gull). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Skomer, Skokholm and the Seas off Pembrokeshire SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (220km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition, collision risk and displacement assessments have concluded very low numbers of lesser black backed gull will be affected by these impacts, effects relating to barrier to movement are considered to be of much lower magnitude compared with collision risk and displacement. Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for lesser black-backed gull qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to birds populations the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.

- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (220km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.
- g. **In-combination effects** – as noted above SPA mortality numbers for all qualifying features of this SPA are expected to be well below 0.5% of the baseline mortality for these populations and too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.44: LSE matrix for marine ornithological features of the Ribble Alt Estuaries SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b	*b		*c			*d		✓e	*e	*e	*f	*f	*f	✓g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – temporary habitat loss/disturbance and increased SSC due to the Mona Offshore Wind Project is unlikely to have effects on SPA seabird populations due to the large foraging ranges used by seabirds and the extent of marine habitats available for other functions (e.g. roosting). Densities of lesser black-backed gull recorded in the Mona Offshore Wind Project aerial surveys were also very low with a peak density of 0.04 birds/km<sup>2</sup> recorded in March. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for lesser black-backed gull qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – lesser black-backed gull are considered to be relatively insensitive to disturbance and displacement effects and were not considered in Displacement Assessments (volume 6, annex 10.2: offshore ornithology displacement assessment) for the Mona Offshore Wind Project, following guidance from SNCBs and the Offshore Ornithology Expert Working Group. On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement from airborne sound and presence of vessels and infrastructure for lesser black-backed gull qualifying features of this SPA.
- c. **Collision risk** – the Apportioning Assessment undertaken for the Mona Offshore Wind Project (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) estimated that the maximum mortality numbers associated with collisions for lesser black-backed gull was 0.1 adult birds per annum, equating to 0.014% increase in baseline mortality, which is well below the broad 1% or 0.5% thresholds and therefore inconsequential in the context of the natural variability in baseline mortalities associated with this SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the lesser black-backed gull qualifying feature of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (37km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded very low numbers of lesser black-backed gull will be affected by these impacts, effects relating to barrier to movement are considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for lesser black-backed gull features of this SPA.
- e. **Indirect impacts from underwater sound affecting prey species** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to birds populations the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. This SPA (which is located 37.km from the Mona Array Area) has been screened in on a precautionary basis for the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (37km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With <1 mortality apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in an in-combination LSE to the marine ornithological features of the SPA as a result of changes in prey availability effects across the construction phase of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.45: LSE matrix for marine ornithological features of the Morecambe Bay and Duddon Estuary SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Lesser black-backed gull <i>Larus fuscus</i> (Breeding)	*a	*a	*a	*b	*b	*b		*c			*d		✓e	*e	*e	*f	*f	*f	✓g	*g	*g
Herring gull <i>Larus argentatus</i> (Breeding)	*a	*a	*a	*b	*b	*b		*c			*d		✓e	*e	*e	*f	*f	*f	✓g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – temporary habitat loss/disturbance and increased SSC due to the Mona Offshore Wind Project is unlikely to have effects on SPA seabird populations due to the large foraging ranges used by seabirds and the extent of marine habitats available for other functions (e.g. roosting). Densities of lesser black-backed gull and herring gull recorded in the Mona Offshore Wind Project aerial surveys were also very low with a peak density of 0.04 birds/km<sup>2</sup> recorded in March for lesser black-backed gull. For herring gull peak densities of 0.03 birds/km<sup>2</sup> were recorded in January and February. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for lesser black-backed gull and herring gull qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – lesser black-backed gull and herring gull are considered to be relatively insensitive to disturbance and displacement effects and were not considered in Displacement Assessments for the Mona Offshore Wind Project, following guidance from SNCBs and the Offshore Ornithology Expert Working Group. On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement from airborne sound and presence of vessels and infrastructure for lesser black-backed gull and herring gull qualifying features of this SPA.
- c. **Collision risk** –the Apportioning Assessment undertaken for the Mona Offshore Wind Project (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) estimated that the maximum mortality numbers associated with collisions for lesser black-backed gull were 0 adult birds per annum, with a corresponding increase in annual baseline mortality of up to 0.008%. For herring gull the annual number of expected collisions was 0 adult birds, with a corresponding increase in annual baseline mortality of up to 0.011% which is well below the broad 1% or 0.5% thresholds and therefore inconsequential in the context of the natural variability in baseline mortalities associated with this SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for lesser black-backed gull and herring gull qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (47km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded very low numbers of lesser black backed gull and herring gull will be affected by these impacts, effects relating to barrier to movement are considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for lesser black-backed gull or herring gull features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. This SPA (which is located 47km from the Mona Array Area) has been screened in on a precautionary basis for the construction phase. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.



Furthermore, considering the large distance to the SPA (47km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With <1 mortality apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). Activities associated with planned projects or other activities in the vicinity of the Mona Offshore Wind Project have the potential to result in an in-combination LSE to the marine ornithological features of the SPA as a result of changes in prey availability effects across the construction phase of the Mona Offshore Wind Project. Where potential for LSE has been concluded alone, the potential for LSE has been concluded in-combination.

**Table 1.46: LSE matrix for marine ornithological features of the Lambay Island SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*c		*e	*e	*e	*f	*f	*f	*g	*g	*g
Guillemot <i>Uria aalge</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	✓g	✓g	✓g
Razorbill <i>Alca torda</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (129km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – lesser black-backed gull are considered to be relatively insensitive to disturbance and displacement effects and were not considered in Displacement Assessments for the Mona Offshore Wind Project, following guidance from SNCBs and the Offshore Ornithology Expert Working Group. For kittiwake the apportioned expected SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was a maximum of 1.3 adult birds per annum, equating to 0.138% increase in baseline mortality for kittiwake from this SPA. For guillemot, mortality numbers associated with displacement only were up to 43.3 birds equating to 0.883% increase in baseline mortality for this SPA. For razorbill mortality numbers for displacement only were up to 1.3 birds equating to 0.118% increase in baseline mortality for this SPA. All values are well below 1% of the baseline mortality for the SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement for all qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound, and presence of vessels and infrastructure above for kittiwake qualifying feature. The apportioning assessment undertaken for the Mona Offshore Wind Project (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) estimated that the maximum mortality numbers for lesser black-backed gull associated with collision risk only was estimated at 0 birds per annum equating to a 0.002% increase in baseline mortality, which is well below the broad 1% or 0.5% thresholds and therefore inconsequential in the context of the natural variability in baseline mortalities associated with this SPA. Guillemot and razorbill are not considered to be vulnerable to collision risk. On this basis, it is considered that there is no potential for LSE in relation to collision risk for all qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (129km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for all qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater

sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.

- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (129km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.
- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <1.5 birds apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). The only exception is for guillemot where the mortality rate was 43.3 adult birds and while this was below the 0.5% of the baseline mortality threshold, this species will be brought through to the appropriate assessment on a precautionary basis for in-combination effects from disturbance and displacement from airborne sound and presence of vessels and infrastructure.

**Table 1.47: LSE matrix for marine ornithological features of the Howth Head Coast SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✖ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (135km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– for kittiwake the apportioned expected SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was a maximum of 1.1 birds, equating to 0.127% increase in baseline mortality for kittiwake of this SPA. This is well below 0.5% of the baseline mortality for the SPA, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to collision risk for kittiwake qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound, and presence of vessels and infrastructure above for the kittiwake qualifying feature. On this basis, it is considered that there is no potential for LSE in relation to collision risk for kittiwake qualifying features of this SPA for the Mona Offshore Wind Project alone.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (135km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (135km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <2 bird apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.48: LSE matrix for marine ornithological features of the Ireland’s Eye SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Herring gull <i>Larus argentatus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Guillemot <i>Uria aalge</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	✓g	✓g	✓g
Razorbill <i>Alca torda</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (135km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– herring gull are considered to be relatively insensitive to disturbance and displacement effects and were not considered in Displacement Assessments for the Mona Offshore Wind Project, following guidance from SNCBs and the Offshore Ornithology Expert Working Group. Apportioned expected SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was a maximum of 0.6 birds, equating to 0.127% increase in baseline mortality for kittiwake from this SPA.. For guillemot mortality numbers associated with displacement only were a maximum of 3 birds equating to 0.825% increase in baseline mortality for this SPA. For razorbill mortality numbers for displacement only were a maximum of 0.3 birds equating to 0.11% increase in baseline mortality for this SPA. All values are well below 1% of the baseline mortality for this SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement for all qualifying features of this SPA for the Mona Offshore Wind Project.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound, and presence of vessels and infrastructure above for the kittiwake qualifying feature. For herring gull, those populations associated with this SPA were not considered within the Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (135km). However as outlined in previous tables, all SPAs for which collision risk impacts on herring gull were apportioned were very low and well below 0.1% increase in baseline mortality rate for the relevant reference populations guillemot and razorbill are not considered to be vulnerable to collision risk. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (135km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential

for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.

- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (135km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.
- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <1.5 bird apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). The only exception is for guillemot where the mortality rate was 3 birds and while this was below the 0.5% baseline mortality threshold, this species will be brought through to the appropriate assessment on a precautionary basis for in-combination effects from disturbance and displacement from airborne sound and presence of vessels and infrastructure.

**Table 1.49: LSE matrix for marine ornithological features of the Wicklow Head Coast SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (149km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure** - for kittiwake the apportioned expected SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was up to 0.2 birds, equating to 0.107% increase in baseline mortality. This value is well below 0.5% of the baseline mortality of the SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to collision risk for kittiwake qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound, and presence of vessels and infrastructure above for the kittiwake qualifying feature. On this basis, it is considered that there is no potential for LSE in relation to collision risk for kittiwake qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (149km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (149km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.



- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <1 bird apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.50: LSE matrix for marine ornithological features of the Ailsa Craig SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Gannet <i>Morus bassanus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	✓g	✓g	✓g
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (167km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– for gannet the apportioned expected SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project was a maximum of 7.5 birds, equating to 0.143% increase in baseline mortality for this SPA, for kittiwake the expected SPA mortality was 0.1 birds which equates to 0.075% increase in baseline mortality for this SPA. Lesser black-backed gull are not considered sensitive to disturbance displacement effects and were therefore not considered in the displacement assessment (volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). On this basis, it is considered that there is no potential for LSE in relation to disturbance and displacement for all qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound, and presence of vessels and infrastructure above for kittiwake and gannet qualifying features. For lesser black-backed gull the apportioned SPA mortality due to displacement effects only at Alisa Craig SPA was 0 birds, equating to 0.001% increase in baseline mortality for this SPA for lesser black-backed gull. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (167km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SPA (167km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <1 bird apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). The only exception is for gannet where the mortality rate was 7.5 birds and while this was below the 0.5% of baseline mortality threshold, this species will be brought through to the appropriate assessment on a precautionary basis for in-combination effects from collision risk and disturbance and displacement from airborne sound and presence of vessels and infrastructure.

**Table 1.51: LSE matrix for marine ornithological features of the Rathlin Island SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (208km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– for kittiwake the apportioned SPA mortality due to the combined effect of collision risk and displacement effects from the Mona Offshore Wind Project alone was a maximum of 1.8 birds which equates to 0.045% increase in baseline mortality for this SPA (volume 6, annex 10.5: Offshore ornithology apportioning assessment). This value is well below 0.5% of the baseline mortality rate for the relevant SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). Lesser black-backed gull are not considered sensitive to disturbance displacement effects and were not considered in the displacement assessment (volume 6, annex 10.2: Offshore ornithology displacement assessment). On this basis, it is considered that there is no potential for LSE in relation to disturbance displacement effects for qualifying features of this SPA.
- Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above for kittiwake qualifying feature. For lesser black-backed gull the apportioned SPA mortality due to displacement effects only was a maximum of 0 birds, equating to 0.001% increase in baseline mortality for the SPA population. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (208km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SPA (208km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of 2 birds apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.52: LSE matrix for marine ornithological features of the Grassholm SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D				C	O&M	D
Gannet <i>Morus bassanus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	✓g	✓g	✓g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (229km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– for gannet the apportioned SPA mortality due to the combined effect of collision risk and displacement effects from the Mona Offshore Wind Project alone was a maximum of 5.8 birds which equates to 0.1% increase in baseline mortality for gannet from this SPA (volume 6, annex 10.5: Offshore ornithology apportioning assessment). This represented well below 0.5% of the baseline mortality rate for the relevant SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (229km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the gannet qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (229km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the gannet qualifying feature of this SPA were well below 0.5% of the baseline mortality as outlined in section 1.4.6. However, due to the higher mortality rate of 5.8 birds associated with the combined effect of collision risk and displacement, this species will be brought through to the appropriate assessment on a precautionary basis for in-combination effects from collision risk and disturbance and displacement from airborne sound and presence of vessels and infrastructure.

**Table 1.53: LSE matrix for marine ornithological features of the Saltee Islands SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Gannet <i>Morus bassanus</i>	*a	*a	*a		*b			*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a		*b			*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a		*b			*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (237km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for all qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound and presence of vessels and infrastructure** – for gannet the apportioned SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was a maximum of 0.6 birds which equates to 0.081% increase in baseline mortality. For kittiwake the apportioned SPA mortality due to the combined effect of collision risk and displacement from the Mona Offshore Wind Project alone was a maximum of 0.1 birds which equates to 0.035% increase in baseline mortality for this SPA (volume 6, annex 10.5: offshore ornithology apportioning assessment). These values are well below 0.5% of the baseline mortality for the SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). Lesser black backed gull are not considered to be sensitive to disturbance and displacement effects. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. Saltee Islands SPA was not included in the Apportioning Assessment for lesser black-backed gull, however apportioned SPA mortality for Lambay Island which is located significantly closer to the Mona Array Area was 0 birds equating to 0.002% increase in baseline mortality for the SPA population, the magnitude of the impact is too low for there to be any risk of LSE (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA). On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (237km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction. operations and maintenance and decommissioning phases.



- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (237km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.
- g. **In-combination effects** – SPA mortality numbers for qualifying features of this SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6. With mortality rates of <1 bird apportioned to this SPA, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.54: LSE matrix for marine ornithological features of the North Colonsay and Western Cliffs SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (282km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the North Colonsay and Western Cliffs SPA was not considered within the Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (282km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant SPA populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 birds equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the North Colonsay and Western Cliffs SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying feature of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying feature of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (282km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (282km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – as noted above, SPA mortality numbers for all qualifying features of this SPA are expected to be well below 0.5% of the baseline mortality for these populations and too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.55: LSE matrix for marine ornithological features of the Helvick Head to Ballyquin SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a		*b			*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✖ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (292km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– Helvick Head to Ballyquin SPA was not considered within the Apportioning Assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (292km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant SPA populations (e.g. for Lambay Island SPA adult mortality numbers were estimated to be 1.3 birds equating to 0.138% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Helvick Head to Ballyquin SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (292km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (292km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying feature of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.56: LSE matrix for marine ornithological features of the Rum SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✖ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (366km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Rum SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (366km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Rum SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (366km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (366km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying feature of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.57: LSE matrix for marine ornithological features of the Old Head of Kinsale.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (377km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– Old Head of Kinsale SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (377km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant SPA populations (e.g. for Lambay Island SPA adult mortality numbers were estimated to be 1.3 birds equating to 0.138% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Old Head of Kinsale SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (377km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (377km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.



- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying feature of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.58: LSE matrix for marine ornithological features of the Canna and Sanday SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✖ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (385km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– Canna and Sanday SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (385km). However all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Canna and Sanday SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying feature of this SPA.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying feature of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (385km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: Offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (385km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on the kittiwake qualifying interest feature of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying feature of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.59: LSE matrix for marine ornithological features of the Isles of Scilly SPA/Ramsar.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a		✓b			✓c			✓d		e*	e*	e*	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (433km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for lesser black-backed gull qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure** – the Isles of Scilly SPA/Ramsar was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (433km). However, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Ribble Alt Estuaries adult mortality numbers were 0.1 equating to a 0.014% increase in baseline mortality for lesser black-backed gull). The SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Isles of Scilly SPA/Ramsar. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the lesser black-backed gull qualifying feature of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (433km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the lesser black-backed gull qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (433km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the lesser black-backed gull qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.60: LSE matrix for marine ornithological features of the Shiant Isles SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✖ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (468km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for the kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Shiant Isles SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (468km). However all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Shiant Isles SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying feature of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (468km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying feature of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (468km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.61: LSE matrix for marine ornithological features of the Handa SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (505km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for the kittiwake qualifying features of this SPA.
- a. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Flannan Isles SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (505km)., However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.0075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Flannan Isles SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA for the Mona Offshore Wind Project alone.
- b. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA.
- c. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (505km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying features of this SPA.
- d. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- e. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (505km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on the kittiwake qualifying interest features of the SPA as a result of accidental pollution.



- f. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.62: LSE matrix for marine ornithological features of the St Kilda SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Gannet <i>Morus bassanus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (514km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake and gannet recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup> in December and 0.06 birds/km<sup>2</sup> in September, respectively. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for kittiwake and gannet qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the St Kilda SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (514km). However as outlined in previous tables all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake and 7.5 equating to a 0.143% increase in baseline mortality for gannet). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the St Kilda SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (514km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling of the PEIR and volume 6, annex 10.2: offshore ornithology displacement assessment of the PEIR). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SPA (514km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for all qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.63: LSE matrix for marine ornithological features of the Cape Wrath SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (527km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for the kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Cape Wrath SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment of the PEIR) due to the distance between the Mona Offshore Wind Project and this SPA (527km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Cape Wrath SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (527km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (527km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on the kittiwake qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.64: LSE matrix for marine ornithological features of the Flannan Isles SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✗ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (535km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. Densities of kittiwake recorded in the Mona Offshore Wind Project aerial surveys were also low with a peak density of 0.99 birds/km<sup>2</sup>, recorded in December. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for the kittiwake qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Flannan Isles SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (535km). However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Flannan Isles SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the kittiwake qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (535km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the kittiwake qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (535km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for the kittiwake qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.65: LSE matrix for marine ornithological features of the Sule Skerry and Sule Stack SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Gannet <i>Morus bassanus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (573km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for gannet qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the Sule Skerry and Sule Stack SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (573km). However, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 7.5 equating to a 0.143% increase in baseline mortality for gannet). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the Sule Skerry and Sule Stack SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the gannet qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for the gannet qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (573km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition, collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for the gannet qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE. Furthermore, considering the large distance to the SPA (573km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.



- g. **In-combination effects** – SPA mortality numbers for the gannet qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

**Table 1.66: LSE matrix for marine ornithological features of the North Rona and Sula Sgeir SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European site qualifying feature	Temporary habitat loss/disturbance and increased SSC			Disturbance and displacement from airborne sound and presence of vessels and infrastructure			Collision risk			Barrier to movement			Changes in prey availability			Accidental pollution			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Kittiwake <i>Rissa tridactyla</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g
Gannet <i>Morus bassanus</i>	*a	*a	*a	*b	*b	*b		*c			*d		*e	*e	*e	*f	*f	*f	*g	*g	*g

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green

- a. **Temporary habitat loss/disturbance and increased SSC** – effects resulting from temporary habitat loss/disturbance and increased SSC are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (593km from the Mona Array Area). The likelihood of the Mona Offshore Wind Project resulting in effects for qualifying features of this SPA are low, due to the temporary and reversible nature of the relatively limited spatial extent of impacts particularly in the context of the large foraging ranges used by seabirds and the extent of marine habitats and prey available for foraging opportunities. On this basis, it is considered that there is no potential for LSE in relation to temporary habitat loss/disturbance and increased SSC for qualifying features of this SPA.
- b. **Disturbance and displacement from airborne sound, and presence of vessels and infrastructure**– the North Rona and Sula Sgeir SPA was not considered within the apportioning assessment (volume 6, annex 10.5: offshore ornithology apportioning assessment) due to the distance between the Mona Offshore Wind Project and this SPA (593km)., However as outlined in previous tables, all SPAs for which collision risk and displacement impacts were apportioned, each species represented well below 0.5% of the baseline mortality rate for the relevant reference populations (e.g. for Alisa Craig SPA adult mortality numbers were 0.1 equating to a 0.075% increase in baseline mortality for kittiwake and 7.5 equating to a 0.143% increase in baseline mortality for gannet). These SPAs assessed are located significantly closer to the Mona Offshore Wind Project and therefore collision risk associated with these SPAs is considered to be higher than for the North Rona and Sula Sgeir SPA. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA for the Mona Offshore Wind Project alone.
- c. **Collision risk** – see justification for disturbance and displacement from airborne sound and presence of vessels and infrastructure above. On this basis, it is considered that there is no potential for LSE in relation to collision risk for qualifying features of this SPA.
- d. **Barrier to movement** – effects resulting from barriers to movement are considered to be low for this SPA due to the distance from the Mona Offshore Wind Project (593km from the Mona Array Area), the likelihood of the Mona Array Area resulting in barrier effects for qualifying features of this SPA are low, particularly in the context of the large foraging ranges used by seabirds. In addition collision risk and displacement assessments have concluded low numbers of these species will be affected by these impacts, effects relating to barrier to movement are also considered to be of much lower magnitude compared with collision risk and displacement (see section 1.3.7, volume, annex 10.3: offshore ornithology non-migratory seabird collision risk modelling and volume 6, annex 10.2: offshore ornithology displacement assessment). Therefore, it is considered that there is no potential for LSE in relation to barrier to movement for qualifying features of this SPA.
- e. **Changes in prey availability** – as set out in paragraph 1.4.6.9 no LSEs are anticipated to occur as a result of changes in prey availability to bird populations during the construction phase for the majority of the SPA sites considered as effects will be temporary, reversible and relatively limited in extent when considering the large foraging ranges for these species. The potential for any adverse effects on prey are significantly reduced during the operations and maintenance phase and decommissioning phase compared to the construction phase as underwater sound will be substantially lower (i.e. no piling or similarly disturbing operations will be required). As such, it is concluded that there is no potential for LSE from changes in prey availability during the construction, operations and maintenance and decommissioning phases.
- f. **Accidental Pollution** - there is a risk of pollution being accidentally released during all phases of the Mona Offshore Wind Project from sources including vessels/vehicles and equipment/machinery. However, pollution events are considered unlikely, and should an event occur effects will be temporary, reversible and limited in spatial extent. In addition, it is anticipated that the risk of such events occurring will be further managed by the implementation of measures set out in standard post consent plans (e.g. an EMP including a MPCP) which will be implemented as part of the Mona Offshore Wind Project. While these plans are not considered in the determination of no LSE, they will nevertheless reduce the potential for LSE.

Furthermore, considering the large distance to the SPA (593km from the Mona Array Area) any effects should they occur, will not directly affect the SAC. On this basis, there is considered to be no potential for LSE on qualifying interest features of the SPA as a result of accidental pollution.

- g. **In-combination effects** – SPA mortality numbers for all qualifying features of the SPA are well below 0.5% of the baseline mortality as outlined in section 1.4.6, it can be concluded that the magnitude of the impact is too low for there to be any risk of LSE either alone or in-combination with other plans/projects (i.e. the effect will be inconsequential in the context of the natural variability in baseline mortalities associated with this SPA).

## 1.4.7 Assessment of LSE for onshore ornithological features

### Site overview

1.4.7.1 As outlined in section 1.3.8, a total of five European sites were identified in the initial screening process to be taken forward for determination of LSE. These sites and the associated qualifying features are set out in Table 1.67 below.

**Table 1.67: The SPAs and Ramsar sites taken forward for determination of LSE, with details of the associated qualifying features.**

The named components of the assemblage features which are listed exclude those which are also qualifying features in their own right.

Wintering and Passage qualifying features which are included on the basis of potential connectivity during the wintering season and the passage period.

European Site	Relevant Qualifying Features
Dee Estuary SPA	Pintail <i>Anas acuta</i> Teal <i>Anas crecca</i> Dunlin <i>Calidris alpina alpina</i> Knot <i>Calidris canutus</i> Oystercatcher <i>Haematopus ostralegus</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Curlew <i>Numenius arquata</i> Grey plover <i>Pluvialis squatarola</i> Shelduck <i>Tadorna tadorna</i> Redshank <i>Tringa totanus</i> Waterbird assemblage species in addition to those above: <ul style="list-style-type: none"> <li>• Sanderling <i>Calidris alba</i></li> <li>• Cormorant <i>Phalacrocorax carbo</i></li> <li>• Great crested grebe <i>Podiceps cristatus</i></li> <li>• Lapwing <i>Vanellus vanellus</i></li> </ul>
Ribble and Alt Estuaries SPA	Pintail <i>Anas acuta</i> Teal <i>Anas crecca</i> Wigeon <i>Anas penelope</i> Pink-footed goose <i>Anser brachyrhynchus</i> Sanderling <i>Calidris alba</i> Dunlin <i>Calidris alpina alpina</i> Knot <i>Calidris canutus</i> Ringed plover <i>Charadrius hiaticula</i> Bewick's swan <i>Cygnus columbianus bewickii</i> Whooper swan <i>Cygnus cygnus</i> Oystercatcher <i>Haematopus ostralegus</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Curlew <i>Numenius arquata</i> Ruff <i>Philomachus pugnax</i> Golden plover <i>Pluvialis apricaria</i>

European Site	Relevant Qualifying Features
	Grey plover <i>Pluvialis squatarola</i> Shelduck <i>Tadorna tadorna</i> Redshank <i>Tringa totanus</i> Waterbird assemblage species in addition to those above: <ul style="list-style-type: none"> <li>• Scaup <i>Aythya marina</i></li> <li>• Common scoter <i>Melanitta nigra</i></li> <li>• Whimbrel <i>Numenius phaeopus</i></li> <li>• Cormorant <i>Phalacrocorax carbo</i></li> </ul>
Mersey Narrows and North Wirral Foreshore SPA	Knot <i>Calidris canutus islandica</i> Little gull <i>Hydrocoloeus minutus</i> Bar-tailed godwit <i>Limosa lapponica</i> Waterbird assemblage species in addition to those above: <ul style="list-style-type: none"> <li>• Sanderling <i>Calidris alba</i></li> <li>• Dunlin <i>Calidris alpina alpina</i></li> <li>• Oystercatcher <i>Haematopus ostralegus</i></li> <li>• Cormorant <i>Phalacrocorax carbo</i></li> <li>• Grey plover <i>Pluvialis squatarola</i></li> <li>• Redshank <i>Tringa totanus</i></li> </ul>
Morecambe Bay and Duddon Estuary SPA	Pintail <i>Anas acuta</i> Pink-footed goose <i>Anser brachyrhynchus</i> Turnstone <i>Arenaria interpres</i> Sanderling <i>Calidris alba</i> Dunlin <i>Calidris alpina alpina</i> Knot <i>Calidris canutus</i> Ringed plover <i>Charadrius hiaticula</i> Whooper swan <i>Cygnus cygnus</i> Little egret <i>Egretta garzetta</i> Oystercatcher <i>Haematopus ostralegus</i> Lesser black-backed gull <i>Larus fuscus</i> Mediterranean gull <i>Larus melanocephalus</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Curlew <i>Numenius arquata</i> Ruff <i>Philomachus pugnax</i> Golden plover <i>Pluvialis apricaria</i> Grey plover <i>Pluvialis squatarola</i> Shelduck <i>Tadorna tadorna</i> Redshank <i>Tringa totanus</i> Waterbird assemblage species in addition to those above: <ul style="list-style-type: none"> <li>• Eurasian spoonbill <i>Platalea leucorodia</i></li> <li>• Light-bellied brent goose <i>Branta bernicla hrota</i></li> <li>• Wigeon <i>Anas penelope</i></li> </ul>

European Site	Relevant Qualifying Features
	<ul style="list-style-type: none"> <li>• Teal <i>Anas crecca</i></li> <li>• Green-winged teal <i>Anas carolinensis</i></li> <li>• Mallard <i>Anas platyrhynchos</i></li> <li>• Ring-necked duck <i>Aythya collaris</i></li> <li>• Eider <i>Somateria mollissima</i></li> <li>• Goldeneye <i>Bucephala clangula</i></li> <li>• Red-breasted merganser <i>Mergus serrator</i></li> <li>• Cormorant <i>Phalacrocorax carbo</i></li> <li>• Lapwing <i>Vanellus vanellus</i></li> <li>• Little stint <i>Calidris minuta</i></li> <li>• Spotted redshank <i>Tringa erythropus</i></li> <li>• Greenshank <i>Tringa nebularia</i></li> <li>• Black-headed gull <i>Croicocephalus ridibundus</i></li> <li>• Common gull <i>Larus canus</i></li> <li>• Herring gull <i>Larus argentatus</i></li> </ul>
Traeth Lafan/Lavan Sands, Conway Bay SPA	<p>Oystercatcher <i>Haematopus ostralegus</i></p> <p>Red-breasted merganser <i>Mergus serrator</i></p> <p>Curlew <i>Numenius arquata</i></p> <p>Great crested grebe <i>Podiceps cristatus</i></p> <p>Redshank <i>Tringa totanus</i></p>

1.4.7.4 Temporary habitat loss arising from the trenching and burying of the onshore export cable may occur during the construction phase of the Mona Offshore Wind Project. This is a temporary and relatively short-term effect of very small extent in relation to the construction period and is unlikely to be significant for waterbirds using the habitats near the onshore export cable. Any possible effect would also be masked by the effect of disturbance and displacement and this effect is therefore screened out.

**Permanent habitat loss/displacement**

1.4.7.5 Permanent habitat loss may occur during the construction of the onshore sub-station and associated infrastructure. Loss of key foraging and roosting habitats for waterbirds may occur. However, given the footprint of the sub-station and distance from the coastline the effect is unlikely to be significant for waterbird ornithological features of nearby SPAs and this potential effect is therefore screened out.

**Disturbance and displacement from presence of vehicles/heavy machinery**

1.4.7.6 For the purposes of determining LSE, disturbance and displacement are considered together although these effects will be treated as separate pathways in the assessment for adverse effects on integrity.

1.4.7.7 The presence of vehicle/heavy machinery and construction works may disturb waterbirds from the intertidal habitats in the short term, as waterbirds predominantly forage and roost in these habitats over the tidal cycle. This may cause change in behaviour (e.g. reduce feeding intake rate) or displace the birds from the affected area. The temporary disturbance/displacement may lead to a reduction in foraging opportunities or increased energy expenditure with the potential to affect fitness (e.g., body condition), which can have a detrimental impact on bird survival and productivity. This would only be likely to apply to waterbirds which use the area of onshore export cable (e.g. intertidal habitats and coastal habitats) in which construction activities will occur.

1.4.7.8 A two year programme of intertidal ornithology surveys commencing in December 2021 have been undertaken at the proposed landfall to characterise the baseline wintering waterbird utilisation of the intertidal zone and inshore (volume 7, annex 18.10: intertidal ornithology technical report). This HRA Screening report considers the preliminary finding from surveys conducted to date (December 2021 – April 2021 inclusive). The findings suggest that birds associated with the landfall are unlikely to be associated with the SPAs identified during the overwintering period. While some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a population of 22,677 birds associated with the Dee Estuary SPA. Due to the small number of birds recorded at the Mona Offshore Export Cable landfall and the distance from the nearest SPA there is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles/heavy machinery and infrastructure and the impact is screened out.

**Operations and maintenance phase**

1.4.7.9 During the operations and maintenance phase, the Mona Onshore Export Cable is an immobile, mostly buried structure with almost no long-term loss or change of habitats and minimal maintenance activity required throughout the phase. As such, there is

**Pathways for LSE: potential impacts on onshore ornithological features**

1.4.7.2 Potential impacts on the onshore ornithological features may occur during the construction and decommissioning phases of the Mona Offshore Wind Project. These are the impacts which are taken into account when determining the potential for LSE on the designated sites and waterbird features identified in Table 1.67. The list of potential impacts on wintering and migratory waterbirds has been compiled using the experience and knowledge gained from previous offshore wind farm projects, as well as published literature. At this stage in the Mona Offshore Wind Project Programme, full analysis of baseline survey information for the Mona Offshore Wind Project has not yet been completed, therefore a precautionary approach is taken to the HRA Screening.

1.4.7.3 Consideration of the potential impacts identified for the marine ornithological features is presented in the following sections to inform the determination of LSE. Many of the European sites screened in include an assemblage qualifying feature, with the named components of each of these assemblage features also being identified in Table 1.67. For the purposes of considering the potential effect pathways, these named components are treated as qualifying features (with the potential effect pathways also considered for the overall assemblage feature).

**Construction phase**

**Temporary habitat loss/disturbance and change in prey availability**

considered to be no potential for LSE on waterbirds associated with the onshore features of the Project during the operations and maintenance period.

- 1.4.7.10 As described above in the short-term for the construction phase, the long-term presence of the sub-station will not result in loss of habitats used by waterbirds and therefore there is no potential for LSE associated with permanent habitat loss.

**Decommissioning phase**

- 1.4.7.11 The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined above for the construction phase, because associated works are likely to be of smaller scale and shorter duration. There is no permanent habitat loss associated with decommissioning.

**Determination of LSE for waterbird ornithological features**

- 1.4.7.12 Table 1.68 to Table 1.72 present the results of the LSE determination assessment as a result of the Mona Offshore Wind Project on relevant qualifying waterbird features of the Dee Estuary SPA, Ribble and Alt Estuaries SPA, Mersey Narrows and North Wirral Foreshore SPA, Morecambe Bay and Duddon Estuary SPA, and Traeth Lafan/Lavan Sands, Conway Bay SPA, respectively. These assessments are made in the absence of mitigation measures. The footnotes to the following tables provide a brief assessment to support the screening in or out of each of the likely significant effects on the identified SPA features.

**Table 1.68: LSE matrix for waterbird ornithological features of the Dee Estuary SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European Site Qualifying Feature	Temporary habitat loss/disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Pintail <i>Anas acuta</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Teal <i>Anas crecca</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Dunlin <i>Calidris alpina alpina</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Knot <i>Calidris canutus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Oystercatcher <i>Haematopus ostralegus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Bar-tailed godwit <i>Limosa lapponica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Black-tailed godwit <i>Limosa limosa islandica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Curlew <i>Numenius arquata</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Grey plover <i>Pluvialis squatarola</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Shelduck <i>Tadorna tadorna</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Redshank <i>Tringa totanus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Sanderling <i>Calidris alba</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Cormorant <i>Phalacrocorax carbo</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Great crested grebe <i>Podiceps cristatus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Lapwing <i>Vanellus vanellus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and changes in prey availability** - as stated in paragraph 1.4.7.4, LSE on the qualifying features of this SPA as a result of temporary habitat loss or disturbance associated with the construction, operations and maintenance or decommissioning of the onshore export cable is screened out due to the small-scale, temporary nature of any loss or disturbance of habitats used by qualifying features. There are no effects on qualifying features during operation because the export cable is an immobile, mostly buried structure requiring minimal maintenance. There is no potential for LSE from temporary habitat loss/disturbance and changes in prey availability on qualifying features of the Dee Estuary SPA.
- b. **Permanent habitat loss / displacement** - although the construction of a sub-station may result in permanent habitat loss and potential displacement of waterbird features, the distribution of these qualifying features is concentrated on the intertidal habitats and coastal fields of this SPA, so that there is no potential for LSE from habitat loss associated with the construction or long-term presence of the sub-station located further inland. There is no potential for LSE from permanent habitat loss/disturbance and changes in prey availability on qualifying features of the Dee Estuary SPA.
- c. **Disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure** – as outlined in section 1.4.7.8 birds recorded at the landfall are not considered to be associated with the Dee Estuary SPA (volume 7, annex 18.10: intertidal ornithology technical report) due to the distance to the SPA (13km from the Mona Onshore Cable Corridor). The intertidal surveys recorded low number of birds at the landfall, and while some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a background population of 22,677 birds associated with the SPA. There is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles/heavy machinery and infrastructure on qualifying features of the Dee Estuary SPA.

- d. **In-combination effects** - other plans or projects which have the potential to cause effects on the qualifying features of this SPA may combine with potential effects associated with the onshore export cable, as stated above, no potential LSEs have been identified and therefore the potential for LSE can be excluded in relation to in-combination effects during construction and decommissioning.



**Table 1.69: LSE matrix for waterbird ornithological features of the Ribble and Alt Estuaries SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European Site Qualifying Feature	Temporary habitat loss / disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Pintail <i>Anas acuta</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Teal <i>Anas crecca</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Wigeon <i>Anas penelope</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Pink-footed goose <i>Anser brachyrhynchus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Sanderling <i>Calidris alba</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Dunlin <i>Calidris alpina alpina</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Knot <i>Calidris canutus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Ringed plover <i>Charadrius hiaticula</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Bewick's swan <i>Cygnus Columbianus bewickii</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Whooper swan <i>Cygnus cygnus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Oystercatcher <i>Haematopus ostralegus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Bar-tailed godwit <i>Limosa lapponica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Black-tailed godwit <i>Limosa limosa islandica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Curlew <i>Numenius arquata</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Ruff <i>Philomachus pugnax</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Golden plover <i>Pluvialis apricaria</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Grey plover <i>Pluvialis squatarola</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Shelduck <i>Tadorna tadorna</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Redshank <i>Tringa totanus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Scaup <i>Aythya marina</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Common scoter <i>Melanitta nigra</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Whimbrel <i>Numenius phaeopus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Cormorant <i>Phalacrocorax carbo</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a ✗ symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and changes in prey availability** - as stated in paragraph 1.4.7.4, LSE on the qualifying features of this SPA as a result of temporary habitat loss or disturbance associated with the construction, operations and maintenance or decommissioning of the onshore export cable is screened out due to the small-scale, temporary nature of any loss or disturbance of habitats used by qualifying features. There are no effects on qualifying features during operation because the export cable is an immobile, mostly buried structure

requiring minimal maintenance. There is no potential for LSE from temporary habitat loss/disturbance and changes in prey availability on qualifying features of the Ribble and Alt Estuaries SPA.

- b. **Permanent habitat loss / displacement** - although the construction of a sub-station may result in permanent habitat loss and potential displacement of waterbird features, the distribution of these qualifying features is concentrated on the intertidal habitats and coastal fields of this SPA, so that there is no potential for LSE from habitat loss associated with the construction or long-term presence of the sub-station located further inland. There is no potential for LSE from permanent habitat loss/disturbance and changes in prey availability on qualifying features of the Ribble and Alt Estuaries SPA.
- c. **Disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure** - as outlined in section 1.4.7.8 birds recorded at the landfall are not considered to be associated with the Dee Estuary SPA (volume 7, annex 18.10: intertidal ornithology technical report) due to the distance to the SPA (39km from the Mona Onshore Cable Corridor). The intertidal surveys also recorded low number of birds at the landfall, while some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a background of 18,535 birds associated with the SPA. There is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure on qualifying features of the Ribble and Alt Estuaries SPA.
- d. **In-combination effects** - other plans or projects which have the potential to cause effects on the qualifying features of this SPA may combine with potential effects associated with the onshore export cable, as stated above, no potential LSEs have been identified and therefore the potential for LSE can be excluded in relation to in-combination effects during construction and decommissioning.

**Table 1.70: LSE matrix for waterbird ornithological features of the Mersey Narrows and North Wirral Foreshore SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

European Site Qualifying Feature	Temporary habitat loss / disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Knot <i>Calidris canutus islandica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Little gull <i>Hydrocoloeus minutus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Bar-tailed godwit <i>Limosa lapponica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Sanderling <i>Calidris alba</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Dunlin <i>Calidris alpina alpina</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Oystercatcher <i>Haematopus ostralegus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Cormorant <i>Phalacrocorax carbo</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Grey plover <i>Pluvialis squatarola</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Redshank <i>Tringa totanus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and changes in prey availability** - as stated in paragraph 1.4.7.4, LSE on the qualifying features of this SPA as a result of temporary habitat loss or disturbance associated with the construction, operations and maintenance or decommissioning of the onshore export cable is screened out due to the small-scale, temporary nature of any loss or disturbance of habitats used by qualifying features. There are no effects on qualifying features during operation because the export cable is an immobile, mostly buried structure requiring minimal maintenance. There is no potential for LSE from temporary habitat loss/disturbance and changes in prey availability on qualifying features of the Mersey Narrows and North Wirral Foreshore SPA.
- b. **Permanent habitat loss / displacement** - although the construction of a sub-station may result in permanent habitat loss and potential displacement of waterbird features, the distribution of these qualifying features is concentrated on the intertidal habitats and coastal fields of this SPA, so that there is no potential for LSE from habitat loss associated with the construction or long-term presence of the sub-station located further inland. There is no potential for LSE from permanent habitat loss/disturbance and changes in prey availability on qualifying features of the Mersey Narrows and North Wirral Foreshore SPA.
- c. **Disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure** - as outlined in section 1.4.7.8 birds recorded at the landfall are not considered to be associated with the Mersey Narrows and North Wirral Foreshore SPA (volume 7, annex 18.10: intertidal ornithology technical report) due to the distance to the SPA (26km from the Mona Onshore Cable Corridor). The intertidal surveys also recorded low number of birds at the landfall, while some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a background of 2,718 birds associated with the SPA. There is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure on qualifying features of the Mersey Narrows and North Wirral Foreshore SPA.
- d. **In-combination effects** - other plans or projects which have the potential to cause effects on the qualifying features of this SPA may combine with potential effects associated with the onshore export cable, as stated above, no potential LSEs have been identified and therefore the potential for LSE can be excluded in relation to in-combination effects during construction and decommissioning.

**Table 1.71: LSE matrix for waterbird ornithological features of the Morecambe Bay and Duddon Estuary SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning)

	Temporary habitat loss / disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Pintail <i>Anas acuta</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Pink-footed Goose <i>Anser brachyrhynchus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Turnstone <i>Arenaria interpres</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Sanderling <i>Calidris alba</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Dunlin <i>Calidris alpina alpina</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Knot <i>Calidris canutus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Ringed plover <i>Charadrius hiaticula</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Whooper swan <i>Cygnus cygnus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Little egret <i>Egretta garzetta</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Oystercatcher <i>Haematopus ostralegus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Lesser black-backed gull <i>Larus fuscus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Mediterranean gull <i>Larus melanocephalus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Bar-tailed godwit <i>Limosa lapponica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Black-tailed godwit <i>Limosa limosa islandica</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Curlew <i>Numenius arquata</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Ruff <i>Philomachus pugnax</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Golden plover <i>Pluvialis apricaria</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Grey plover <i>Pluvialis squatarola</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Shelduck <i>Tadorna tadorna</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Redshank <i>Tringa totanus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Eurasian spoonbill <i>Platalea leucorodia</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Light-bellied brent goose <i>Branta bernicla hrota</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Wigeon <i>Anas penelope</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Teal <i>Anas crecca</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Green-winged teal <i>Anas carolinensis</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Mallard <i>Anas platyrhynchos</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Ring-necked duck <i>Aythya collaris</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

	Temporary habitat loss / disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
Eider <i>Somateria mollissima</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Goldeneye <i>Bucephala clangula</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Red-breasted merganser <i>Mergus serrator</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Cormorant <i>Phalacrocorax carbo</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Lapwing <i>Vanellus vanellus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Little stint <i>Calidris minuta</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Spotted redshank <i>Tringa erythropus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Greenshank <i>Tringa nebularia</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Black-headed gull <i>Croicocephalus ridibundus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Common gull <i>Larus canus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Herring gull <i>Larus argentatus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and changes in prey availability** - as stated in paragraph 1.4.7.4, LSE on the qualifying features of this SPA as a result of temporary habitat loss or disturbance associated with the construction, operations and maintenance or decommissioning of the onshore export cable is screened out due to the small-scale, temporary nature of any loss or disturbance of habitats used by qualifying features. There are no effects on qualifying features during operation because the export cable is an immobile, mostly buried structure requiring minimal maintenance. There is no potential for LSE from temporary habitat loss/disturbance and changes in prey availability on qualifying features of the Morecambe Bay and Duddon Estuary SPA.
- b. **Permanent habitat loss / displacement** - although the construction of a sub-station may result in permanent habitat loss and potential displacement of waterbird features, the distribution of these qualifying features is concentrated on the intertidal habitats and coastal fields of this SPA, so that there is no potential for LSE from habitat loss associated with the construction or long-term presence of the sub-station located further inland. There is no potential for LSE from permanent habitat loss/disturbance and changes in prey availability on qualifying features of the Morecambe Bay and Duddon Estuary SPA.
- c. **Disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure** - as outlined in section 1.4.7.8, birds recorded at the landfall are not considered to be associated with the Morecambe Bay and Duddon Estuary SPA (volume 7, annex 18.10: intertidal ornithology technical report) due to the distance to the SPA (58.7km from the Mona Onshore Cable Corridor). The intertidal surveys also recorded low number of birds at the landfall, while some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a background of 55,888 birds associated with the SPA. There is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles/heavy machinery and infrastructure on qualifying features of the Morecambe Bay and Duddon Estuary SPA.
- d. **In-combination effects** - other plans or projects which have the potential to cause effects on the qualifying features of this SPA may combine with potential effects associated with the onshore export cable, as stated above, no potential LSEs have been identified and therefore the potential for LSE can be excluded in relation to in-combination effects during construction and decommissioning.

**Table 1.72: LSE matrix for waterbird ornithological features of the Traeth Lafan/Lavan Sands, Conway Bay SPA.**

(C = construction, O&M = operations and maintenance, D = decommissioning; P = potential for LSE, O = no potential for LSE)

European Site Qualifying Feature	Temporary habitat loss / disturbance and change in prey availability			Permanent habitat loss / displacement			Disturbance and displacement from airborne sound, and presence of vehicles / heavy machinery and infrastructure			In-combination effects		
	C	O&M	D	C	O&M	D	C	O&M	D	C	O&M	D
Oystercatcher <i>Haematopus ostralegus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Red-breasted merganser <i>Mergus serrator</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Curlew <i>Numenius arquata</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Great crested grebe <i>Podiceps cristatus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d
Redshank <i>Tringa totanus</i>	*a	*a	*a	*b	*b		*c		*c	*d		*d

The notes below explain the conclusion of whether or not LSE can be ruled out for a given impact. The impacts are categorised by letter which correspond to a letter within the table. Within the table where a LSE cannot be ruled out for a given impact a ✓ symbol is included and the box is highlighted in blue, where a LSE has been ruled out a \* symbol is included and highlighted green.

- a. **Temporary habitat loss/disturbance and changes in prey availability** - as stated in paragraph 1.4.7.4, LSE on the qualifying features of this SPA as a result of temporary habitat loss or disturbance associated with the construction, operations and maintenance or decommissioning of the onshore export cable is screened out due to the small-scale, temporary nature of any loss or disturbance of habitats used by qualifying features. There are no effects on qualifying features during operation because the export cable is an immobile, mostly buried structure requiring minimal maintenance. There is no potential for LSE from temporary habitat loss/disturbance and changes in prey availability on qualifying features of the Traeth Lafan/Lavan Sands, Conway Bay SPA.
- b. **Permanent habitat loss / displacement** - although the construction of a sub-station may result in permanent habitat loss and potential displacement of waterbird features, the distribution of these qualifying features is concentrated on the intertidal habitats and coastal fields of this SPA, so that there is no potential for LSE from habitat loss associated with the construction or long-term presence of the sub-station located further inland. There is no potential for LSE from permanent habitat loss/disturbance and changes in prey availability on qualifying features of the Traeth Lafan/Lavan Sands, Conway Bay SPA.
- c. **Disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure** - As outlined in section 1.4.7.8 birds recorded at the landfall are not considered to be associated with the Traeth Lafan/Lavan Sands, Conway Bay SPA (volume 7, annex 18.10: Intertidal Ornithology Technical Report) due to the distance to the SPA (14.8km from the Mona Onshore Cable Corridor). The intertidal surveys also recorded low number of birds at the landfall, while some birds from SPAs may be present during the passage period, the numbers of birds present are small, particularly in the context of the SPA populations. For example, up to 14 oystercatchers were recorded at the landfall during the passage period, against a background of 5,500 birds associated with the SPA. There is no potential for LSE disturbance and displacement from airborne sound and presence of vehicles / heavy machinery and infrastructure on qualifying features of the Traeth Lafan/Lavan Sands, Conway Bay SPA.
- d. **In-combination effects** - other plans or projects which have the potential to cause effects on the qualifying features of this SPA may combine with potential effects associated with the onshore export cable, as stated above, no potential LSEs have been identified and therefore the potential for LSE can be excluded in relation to in-combination effects during construction and decommissioning.

## 1.5 Approach to the in-combination assessment

- 1.5.1.1 The Habitats Regulations require the consideration of the potential effects of a project on European sites both alone and in-combination with other plans or projects.
- 1.5.1.2 The in-combination assessment will consider all other relevant plans, projects and activities where information to inform the assessment is publicly available three months prior to the Mona Offshore Wind Project application.
- 1.5.1.3 For the Mona Offshore Wind Project in-combination assessment a tiered approach has been adopted. This approach provides a framework for placing relative weight on the potential for each project/plan to be included in the in-combination assessment to ultimately be realised, based upon the project/plan's current stage of maturity and certainty in the project's parameters. The allocation of each project, plan and activity into tiers is not affected by the screening process but is merely a categorisation applied to all projects, plans and activities that have been screened in for assessment.
- 1.5.1.4 The tiered approach uses the following categorisations:
- Tier 1
    - Under construction
    - Permitted application
    - Submitted application
    - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an on-going impact
  - Tier 2
    - Scoping report has been submitted and is in the public domain
  - Tier 3
    - Scoping report has not been submitted
    - Identified in a relevant development plan
    - Identified in other plans and programmes.
- 1.5.1.5 An overview of the projects or activities which will be considered for in-combination with the Mona Offshore Wind Project include (but are not limited to):
- Other offshore wind farms and associated cabling and infrastructure
  - Oil and gas infrastructure/development (cables and pipelines)
  - Other forms of cabling (i.e. telecommunications and interlinks)
  - Beach replenishment schemes
  - Navigation and shipping
  - Aggregate extraction and disposal of dredging spoil.

## 1.6 Summary of LSE

1.6.1.1 Table 1.73 provides a summary of the European sites, qualifying interest features and potential impacts for which a potential for a LSE has been identified as a result of the Mona offshore wind project alone and/or in combination with other plans or projects. The table excludes all features which have been screened out as no potential for LSE has been identified. These sites and features will be taken forward for consideration in the ISAA.

1.6.1.2 In total, 45 SACs are being taken forward for consideration in the ISAA. No European sites were considered for LSE with Annex I habitats (onshore) listed as designated features.

1.6.1.3 In relation to European sites designated for Annex I Habitats (offshore), the assessment of LSE undertaken in section 1.4.3 considered three European sites for which the potential for LSE could not be discounted. An appropriate assessment will be undertaken for these sites in the ISAA with respect to:

- Temporary habitat loss/disturbance (Mona Offshore Cable Corridor only) (for Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC only)
- Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)
- Release of sediment bound contaminants (Mona Offshore Cable Corridor only)
- EMF (for Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC only)
- Changes in physical processes (Mona Offshore Cable Corridor only)
- Long-term habitat loss during the operations and maintenance phase and decommissioning phase (Mona Offshore Cable Corridor only) (for Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC only)
- Accidental pollution (for Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC only)
- In-combination effects.

1.6.1.4 Nine SACs were considered for Annex II diadromous fish species in section 1.4.4. All eight of these sites were progressed to stage two of the HRA with respect to:

- Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only and for the Dee Estuary/Aber Dyfrdwy SAC only)
- Release of sediment bound contaminants (Mona Offshore Cable Corridor only and for the Dee Estuary/Aber Dyfrdwy SAC only)
- Underwater sound
- EMF
- In-combination effects.

1.6.1.5 With respect to marine mammals, the assessment of LSE undertaken in section 1.4.5, considered 33 European sites (including 10 SACs in the UK and Ireland and 17 French sites). Of these, the potential for LSE could not be discounted with respect to the following impacts for all sites considered:

- Underwater sound from piling

- Underwater sound from clearance of UXO
- Underwater sound from pre-construction site surveys
- Underwater sound from vessels and other vessel activities
- Changes in prey availability (North Anglesey Marine/Gogledd Môn Forol only)
- In-combination effects.

1.6.1.6 No sites were considered for Annex II species (onshore) (otter)).

1.6.1.7 In relation to the SPAs (and associated Ramsar sites included on the basis of their ornithological features), the assessment of LSE undertaken in section 1.4.6 above, resulted in the eight SPAs listed in Table 1.73 being taken forward for consideration in the ISAA, these include marine SPAs, breeding seabird colony SPAs and migratory waterbird SPAs (and Ramsar sites). The following impacts will be considered for all SPAs outlined in Table 1.73:

- Temporary habitat loss/disturbance and increased SSC (Liverpool Bay/Bae Lerpwl SPA only)
- Disturbance and displacement from airborne sound, vessels and infrastructure (Liverpool Bay/Bae Lerpwl SPA only)
- Changes in prey availability (Liverpool Bay/Bae Lerpwl SPA, Ribble Alt Estuaries SPA, Morecambe Bay and Duddon Estuary SPA and Irish Sea Front SPA)
- Accidental pollution (Liverpool Bay/Bae Lerpwl SPA)
- In-combination effects
  - disturbance and displacement from airborne sound, vessels and infrastructure:
    - guillemot qualifying feature only (Lambay Island SPA and Ireland's Eye SPA)
    - gannet qualifying feature only (Grassholm SPA and Ailsa Craig SPA)
  - collision risk:
    - gannet qualifying feature only (Grassholm SPA and Ailsa Craig SPA).



**Table 1.73: Summary of European Sites and relevant qualifying features for which potential LSEs have been identified and screened in for further assessment in the ISAA.**

ID	European Site	Relevant qualifying features	Project phase	Impact		
1	Dee Estuary/Aber Dyfrdwy SAC	Estuaries	Construction	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>		
			Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>		
			Decommissioning	N/A		
		Mudflats and sandflats not covered by seawater at low tide	Construction	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>		
			Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>		
			Decommissioning	N/A		
		Sea lamprey <i>Petromyzon marinus</i>	Construction	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>		
			Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• EMF</li> <li>• In-combination effects</li> </ul>		
		River lamprey <i>Lampetra fluviatilis</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>		
			Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• EMF</li> <li>• In-combination effects</li> </ul>		
		2	Dee Estuary Ramsar	Estuaries	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>
					Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
		Mudflats and sandflats not covered by seawater at low tide	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• In-combination effects</li> </ul>
3	Menai Strait and Conwy Bay/Y Fenai a Bae Conwy SAC	Reefs	Construction	<ul style="list-style-type: none"> <li>• Temporary habitat loss/disturbance (Mona Offshore Cable Corridor only)</li> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• Accidental pollution</li> <li>• In-combination effects</li> </ul>
Operations and maintenance			<ul style="list-style-type: none"> <li>• Temporary habitat loss/disturbance (Mona Offshore Cable Corridor only)</li> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Long-term subtidal habitat loss (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• EMF</li> <li>• Accidental pollution</li> <li>• In-combination effects</li> </ul>	
Decommissioning			<ul style="list-style-type: none"> <li>• Long-term subtidal habitat loss/alteration (Mona Offshore Cable Corridor only)</li> </ul>	
		Sandbanks which are slightly covered by seawater all the time	Construction	<ul style="list-style-type: none"> <li>• Temporary habitat loss/disturbance (Mona Offshore Cable Corridor only)</li> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Release of sediment bound contaminants (Mona Offshore Cable Corridor only)</li> <li>• Accidental pollution</li> <li>• In-combination effects</li> </ul>
Operations and maintenance			<ul style="list-style-type: none"> <li>• Temporary habitat loss/disturbance (Mona Offshore Cable Corridor only)</li> <li>• Increase in SSC and sediment deposition (Mona Offshore Cable Corridor only)</li> <li>• Long-term subtidal habitat loss (Mona Offshore Cable Corridor only)</li> <li>• Changes in physical processes (Mona Offshore Cable Corridor only)</li> <li>• EMF</li> <li>• Accidental pollution</li> <li>• In-combination effects</li> </ul>	
Decommissioning			<ul style="list-style-type: none"> <li>• Long-term subtidal habitat loss/alteration (Mona Offshore Cable Corridor only)</li> </ul>	
4	River Dee and Bala Lake/Afon Dyfrydwy a Llyn Tegid SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
Operations and maintenance			<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>	
		Sea lamprey <i>Petromyzon marinus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
		River lamprey <i>Lampetra fluviatilis</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
5	River Ehen SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
		Freshwater pearl mussel <i>Margaritifera margaritifera</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
6	River Eden SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
		Sea lamprey <i>Petromyzon marinus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
		River lamprey <i>Lampetra fluviatilis</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
7	River Derwent and Bassenthwaite SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>
		Sea lamprey <i>Petromyzon marinus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>• Underwater sound</li> <li>• In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>• EMF</li> <li>• In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
		River lamprey <i>Lampetra fluviatilis</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
8	Solway Firth SAC	Sea lamprey <i>Petromyzon marinus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
		River lamprey <i>Lampetra fluviatilis</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
9	River Kent SAC	Freshwater pearl mussel <i>Margaritifera margaritifera</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
10	River Bladnoch SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
11	Afon Gwyrfaï a Llyn Cwellyn SAC	Atlantic salmon <i>Salmo salar</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>EMF</li> <li>In-combination effects</li> </ul>
12	North Anglesey Marine/Gogledd Môn Forol SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>Changes in prey availability (construction only)</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
13	North Channel SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
14	Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC	Bottlenose dolphin <i>Tursiops truncatus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
		Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
15	West Wales Marine/Gorllewin Cymru Forol SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
16	Cardigan Bay/Bae Ceredigion SAC	Bottlenose Dolphin <i>Tursiops truncatus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
		Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
17	Pembrokeshire Marine/Sir Benfro Forol SAC	Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
18	Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
19	Isles of Scilly Complex SAC	Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
20	Lundy SAC	Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
21	The Maidens SAC	Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
22	Strangford Lough SAC	Harbour seal <i>Phoca vitulina</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
23	Murlough SAC	Harbour seal <i>Phoca vitulina</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
24	Rockabill to Dalkey Island SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
25	Roaringwater Bay and Islands SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
26	Blasket Islands SAC	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>

ID	European Site	Relevant qualifying features	Project phase	Impact
27	Saltee Islands SAC	Grey seal <i>Halichoerus grypus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
28-45	17 French Sites	Harbour Porpoise <i>Phocoena phocoena</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Underwater sound from piling</li> <li>Underwater sound from clearance of UXO</li> <li>Underwater sound from pre-construction site surveys</li> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Underwater sound from vessels and other vessel activities</li> <li>In-combination effects</li> </ul>

**Seabird sites**

1	Liverpool Bay/Bae Lerpwl SPA	Red-throated diver <i>Gavia stellata</i> Little gull <i>Hydrocoloeus minutus</i> Common scoter <i>Melanitta nigra</i> Little tern <i>Sternula albifrons</i> Common tern <i>Sterna hirundo</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Temporary habitat loss/disturbance and increased SSC</li> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure</li> <li>Changes in prey availability (construction only)</li> <li>Accidental pollution</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Temporary habitat loss/disturbance and increased SSC</li> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure</li> <li>Accidental pollution</li> <li>In-combination effects</li> </ul>
2	Irish Sea Front SPA	Manx shearwater <i>Puffinus puffinus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Changes in prey availability (construction only)</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	N/A
3	Ribble Alt Estuaries SPA	Lesser black-backed gull <i>Larus fuscus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Changes in prey availability (construction only)</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	N/A
4	Morecambe Bay and Duddon Estuary SPA	Lesser black-backed gull <i>Larus fuscus</i> Herring gull <i>Larus argentatus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Changes in prey availability (construction only)</li> <li>In-combination effects</li> </ul>
			Operations and maintenance	N/A
5	Lambay Island SPA	Guillemot <i>Uria aalge</i>	Construction/decommissioning	Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)
			Operations and maintenance	Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)
6	Grassholm SPA	Gannet <i>Morus bassanus</i>	Construction/decommissioning	Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)



ID	European Site	Relevant qualifying features	Project phase	Impact
			Operations and maintenance	<ul style="list-style-type: none"> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)</li> <li>Collison risk (in-combination effect only)</li> </ul>
7	Ailsa Craig SPA	Gannet <i>Morus bassanus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)</li> <li>Collison risk (in-combination effect only)</li> </ul>
8	Ireland's Eye SPA	Guillemot <i>Morus bassanus</i>	Construction/decommissioning	<ul style="list-style-type: none"> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)</li> </ul>
			Operations and maintenance	<ul style="list-style-type: none"> <li>Disturbance and displacement from airborne sound and presence of vessels and infrastructure (in-combination effect only)</li> </ul>

## 1.7 References

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