LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 6: Appendix 8D - Habitats Regulations Assessment Screening

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Prepared by: Llŷr Floating Wind Ltd

FLOVENTIS ENERGY

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Acronyms and abbreviations

Acronym or abbreviation	Definition	Acronym or abbreviation	Definition
AA	Appropriate Assessment	NGR	National Grid Reference
AEoSI	Adverse Effect on Site Integrity	NFFO	National Federation of Fishermen's Organisations
BCT	Bat Conservation Trust	NRW	Natural Resources Wales
CBRA	Cable Burial Risk Assessment	OfECC	Offshore Export Cable Corridor
CCW	Countryside Council for Wales	OnECC	Onshore Export Cable Corridor
CEMP	Construction Environmental Monitoring Plan	OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
CJEU	Court of Justice of the European Union	PEDW	Planning and Environment Decisions Wales
CSZ	Core Sustenance Zone	PINS	Planning Inspectorate
DAS	Digital Aerial Survey	PLONOR	Pose Little or No Risk
DEMP	Decommissioning Environmental Management Plan	PLP	Project Array Layout Plan
EIA	Environmental Impact Assessment	RIAA	Report to Inform Appropriate Assessment
EMF	Electromagnetic Field	SAC	Special Area of Conservation
ES	Environmental Statement	SBP	Sub-Bottom Profiling
EU	European Union	SCOS	Scientific Committee On Seals
HDD	Horizontal Directional Drilling	SD	Standard Deviation
HRA	Habitats Regulations Assessment	SNCB	Statutory Nature Conservation Bodies
IAC	Inter-Array Cable	SOPEP	Shipboard Oil Pollution Emergency Plans
IAMMWG	Inter Agency Marine Mammal Working Group	SPA	Special Protection Area
IUCN	International Union for Conservation of Nature	SPMP	Scour Protection Management Plan
IMO	International Maritime Organisation	SSC	Suspended Sediment Concentration
INNS	Invasive Non-Native Species	SSSI	Site of Special Scientific Interest
IROPI	Imperative Reasons of Overriding Public Interest	TJB	Transition Joint Bay
JNCC	Joint Nature Conservation Committee	UK	United Kingdom
LSE	Likely Significant Effect	UKBAP	UK Biodiversity Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships	UXO	Unexploded Ordinance
MHWS	Mean High Water Springs	WTG	Wind Turbine Generator
MMMU	Marine Mammal Management Unit	ZoI	Zone of Influence

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Limited
Array	All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s).
Array Area	The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located
Floventis Energy	A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Limited is a wholly owned subsidiary.
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays (TJB).
Llŷr 1	The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases.
Marine Licence	A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team on behalf of the Welsh Ministers.
Offshore Development Area	The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor (OfECC), as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application
Offshore Export Cable	The cable(s) that transmit electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor(OfECC)	The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall.
Onshore Development Area	The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor (OnECC) and the Onshore Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
proposed Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.

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8. HABITATS REGULATIONS ASSESSMENT SCREENING

8.1 Introduction

1. The habitats regulations assessment (HRA) Screening is submitted in support of the application for the Llŷr 1 Floating Offshore Wind Farm (referred to as the proposed Project) on behalf of Llŷr Floating Wind Limited (hereafter 'The Applicant'). It supports consent applications for the proposed Project to the competent authority (in this case, Natural Resources Wales (NRW) Marine Licensing Team) under the Marine and Coastal Access Act 2009 (MCAA 2009). This HRA Screening Report also supports the Section 36 application (under the Electricity Act, 1989), to be determined by Planning and Environment Decisions Wales (PEDW) on behalf of the Welsh Government.
2. The information within this report draws upon project, baseline and impact assessment information from the following chapters and appendices from the proposed Project Environmental Statement (ES):
    - **Volume 1, Chapter 04: Description of the Proposed Project**;
    - **Volume 2, Chapter 08: Ecology and Biodiversity**;
    - **Volume 3, Chapter 17: Physical Environment**;
    - **Volume 3, Chapter 19: Benthic Ecology**;
    - **Volume 3, Chapter 20: Fish and Shellfish Ecology**;
    - **Volume 3, Chapter 21: Marine Mammals**;
    - **Volume 3, Chapter 22: Ornithology**;
    - **Volume 4, Chapter 30: Inter-related and Cumulative Effects**;
    - **Volume 6, Appendix 04B: INNS Plan**;
    - **Volume 6, Appendix 08A: Chough Survey Report**;
    - **Volume 6, Appendix 08D: Habitats Regulations Assessment Report to Inform Appropriate Assessment**; and
    - **Volume 6, Appendix 22B: Marine Ornithology Colony Apportioning**.

8.1.1. The Project

3. The proposed Project is a floating offshore wind development within Welsh waters, located 35 km from the northeastern corner of the Array Area to Linney Head (the closest location on the coast of Pembrokeshire) in the Celtic Sea(see **Figure 8D-1**). The proposed Project will make landfall at Freshwater West before connecting into Pembroke Dock power station and the national grid network.
4. The proposed Project comprises a floating offshore wind development, comprising up to ten wind turbine generators (WTG), inter array cables (IAC) and up to two offshore export cable circuits. The Array Area covers an outline area of interest of 45 km^2 and includes WTGs, floating platforms (along with associated anchors and mooring lines) and array cables. Each offshore export cable will connect to the respective onshore export cable via a transition joint bay (TJB), from which each onshore export cable will connect to the onshore substation and then on to one single grid connection at Pembroke Dock power station.
5. The proposed Project will comprise of the following key components:
    - Offshore infrastructure:

- Up to 10 WTGs;
- Up to 10 floating offshore wind platforms and associated moorings;
- Up to eight mooring lines per platform;
- Either drag embedment anchors or drilled pile anchors, up to eight anchors per platform;
- Up to 11 Offshore IACs and up to one subsea connector, with a total IAC length of 17.31 km;
- Up to two electricity export cables which will transfer electricity generated by the WTGs to the onshore cable circuits to the landfall site at Freshwater West - including associated cable protection measures. These will be up to 49 km in length; and
- Other associated infrastructure, such as navigational buoys.

- Onshore infrastructure:
  - Up to two TJBs to connect the offshore cables to the onshore cables;
  - Onshore cabling between the landfall and the grid connection at Pembroke Dock power station;
  - Onshore substation near to the grid connection point; and
  - Other associated infrastructure, such as temporary construction compounds.

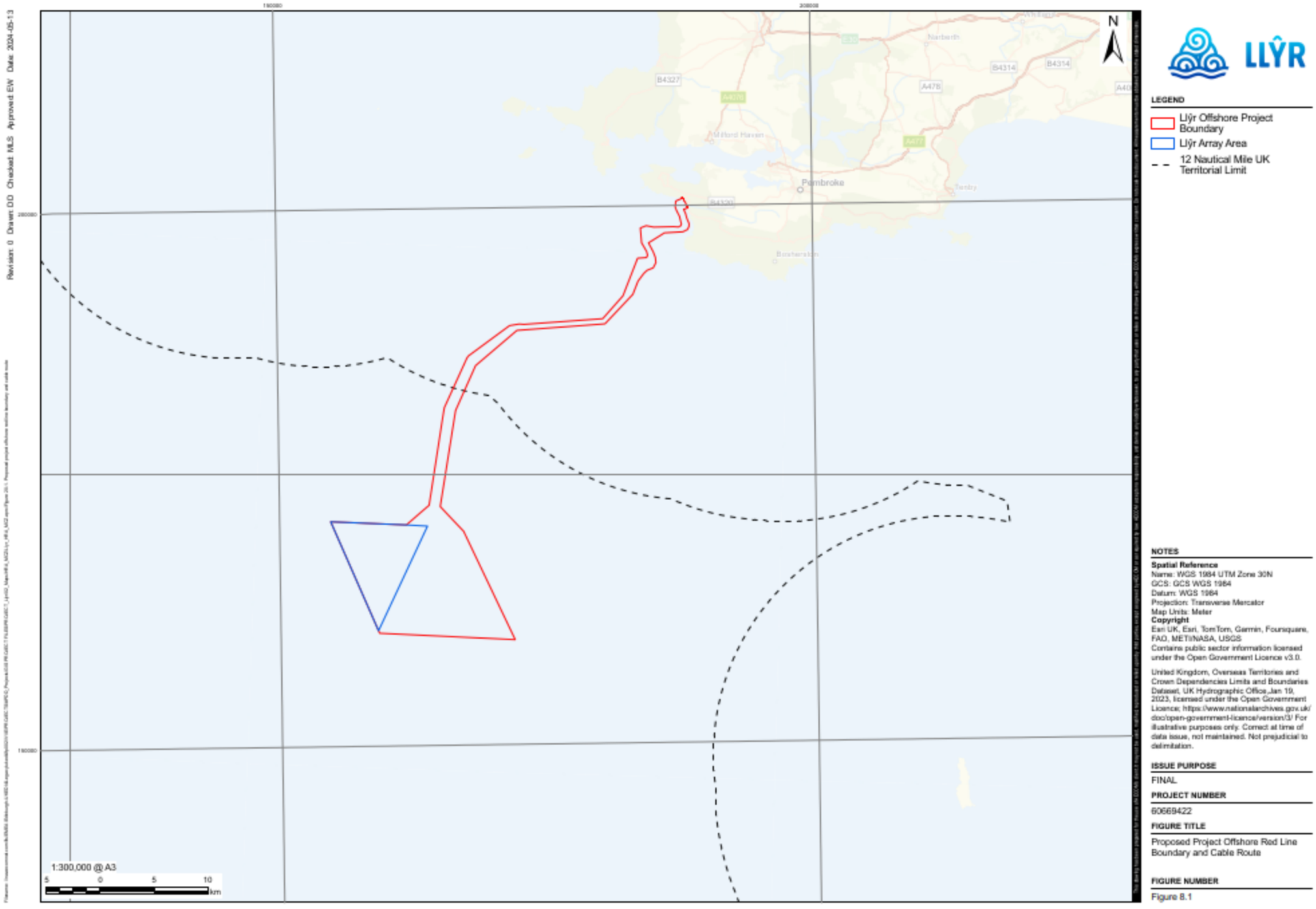

Figure 8D-1. Proposed project red line boundary and cable route

8.1.2. Embedded Mitigation

6. The design of the proposed Project will include embedded design control and mitigation measures that are designed to mitigate potential impacts wherever possible. In addition, a number of management plans will form conditions to any consent granted and these manage offshore construction, operation and maintenance and decommissioning activities in line with guidance and best practice as well as to further mitigate any potential impacts.
7. The embedded design control and mitigation measures and Management Plans for the proposed Project are presented in **Chapter 04: Description of the Proposed Project - Annex 4B**. A summary of relevant embedded mitigation measures [1] is provided in **Table 8D-1**.

[1] This aligns with the ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323 / 17).

Table 8D-1. Summary of relevant embedded mitigation measures adopted as part of the proposed Project

Embedded Mitigation Measures	Description
Route selection	Careful routing of the OfECC within the cable corridor to avoid sensitive features including Turbot Bank and St Gowan Shoal.
Site and routing selection and design to minimise potential for disturbance	Taking account of, and avoiding, potential hazards such as bathymetric features including rocks and sandbanks, shipping lanes and military exercise areas wherever possible will reduce the potential for spills or leaks occurring into the marine environment from collision with vessels (which can adversely affect marine water quality). Sensitive ecological, physical, and archaeological receptors within the Offshore Development Area will also be considered. This will be informed by pre installation surveys. Pre installation surveys will follow NRW guidance including 'Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to Inform EIA of Major Development Projects'.
Project Design – Hazard avoidance	Taking account of, and avoiding, potential hazards such as bathymetric feature such as rocks and sandbanks, shipping lanes and military exercise areas will reduce the chance of spills or leaks occurring into the marine environment from collision with vessels (which can adversely affect marine water quality). It will also consider sensitive ecological, physical, and archaeological receptors within the ZOI of the project. This will be in line with NRW guidance including 'Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to Inform EIA of Major Development Projects'. It will also be informed by pre installation surveys.
Pre-Construction drainage plan ('Drainage Strategy')	A pre-construction drainage plan ('Drainage Strategy') will be developed and implemented to minimise water within the trench and ensure ongoing drainage of surrounding land. Where water enters the trenches during installation, this will be pumped via the appropriate means to remove sediment, before being discharged into local ditches or drains via temporary interceptor drains.
Pre-construction ecological surveys	Comprehensive pre-installation ecological surveys have been conducted within the array area and offshore export cable route ZoI to identify any potential impacts or hazards.
Pre-construction ROV Survey	An ROV survey of the seabed on the cable route and mooring location will be undertaken immediately prior to the installation of the export cable and FLOW array. This will confirm that no hazardous obstructions or benthic or physical damage prior to the completion of the connection.

Embedded Mitigation Measures	Description
Pre-Construction surveys	Geophysical and geotechnical surveys will be carried out prior to construction across the Array Area and in the OfECC, to gather further information on debris, boulders, presence of seabed features and sediment depth, etc.
Route clearance activities, which may include a pre-lay grapnel run, boulder clearance and pre-sweeping of sand waves.	Depending on a review of site data along the export cable route, a pre-lay grapnel run will be undertaken by a fishing vessel (or similar) to confirm the complete clearance of any abandoned fishing equipment or other debris. Where boulders are present within the cable route, dedicated boulder grab equipment will be used to move larger boulders (more than 30 cm) approximately 15 m perpendicular to the cable route. The boulders would be relocated within the Offshore Cable corridor Boundary and no boulders will be removed from the seabed during this operation. The exact procedure which will be followed for boulder relocation and clearance is to be agreed with NRW post consent. Pre-sweeping of sand waves is usually required in order to level the seabed.
Sandwave Levelling	To facilitate the construction of the proposed Project, it will also be necessary to level out areas of sandwaves identified on the seabed. Geotechnical and geophysical survey data collected post consent will define the need for sandwave levelling, and it is anticipated following analysis of this survey data that the extent of sandwave levelling will reduce compared to this worst-case scenario.
Unexploded Ordnance (UXO)	Unexploded Ordnance (UXO) survey will be conducted across the array area and the OfECC. These surveys will use a magnetometer to identify potential obstructions relating to maritime UXO. The likely number of UXO and detection methods will be confirmed from the UXO survey prior to the installation of offshore infrastructure. UXO will be avoided where possible. However, if further mitigation such as clearance or detonation is required, this would be subject to separate assessment and applications.
Marine Mammal Mitigation Protocol (MMMP) (UXO clearance specific)	In consultation with NRW(A) and JNCC, a MMMP will be developed and subject to a separate Licence application should UXO clearance be required. As a minimum this will adhere to JNCC (2010b) guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives, and the BEIS Marine Environment: unexploded ordnance clearance joint interim position statement (2021) (A draft MMMP is provided in Appendix 4A: Outline Construction Environmental Management Plan).
Project Design - Minimal piling	The Applicant has committed to Piling only at one location at a time to reduce potential impacts to marine mammal receptors.

Embedded Mitigation Measures	Description
Project Design - Reduced Array Area	Reducing the extent of the Array Area helps to minimise displacement and barrier effects by presenting a smaller WTG area for birds to avoid or fly around.
Project Design - piling	Should impact piling be required, this will include soft-start and ramp up procedures in line with guidance (JNCC, 2010c).
Marine Mammal Mitigation Protocol (MMMP) (Piling specific)	In consultation with NRW (A) and JNCC, a MMMP will be developed and implemented and secured as a condition of the Marine Licence (A draft MMMP is provided in Appendix 4A: Outline Construction Environmental Management Plan). As a minimum, this will adhere to JNCC (2010c) Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.
Nacelle, tower, and rotor design	The nacelle, tower, and rotor will be designed and constructed in order to contain leaks thereby reducing the risk of spillage into the marine environment.
Project Design – turbine transport	Ensure the seaworthiness of the turbine transport to the Array Area, which will subsequently reduce the likelihood of spills or leaks occurring in the marine environment (which can adversely affect marine water quality). A check of towing calculations, condition and specification of the towing equipment, emergency procedure will be carried out by a Marine Warranty Surveyor. Above all suitable weather and sea state should be present for the transportation and installation of the turbines (windspeed 17 m/s or less, wave height less than 5m in height).
Micrositing of Wind Turbine Generators (WTGs) and associated offshore infrastructure including cable routes.	The final proposed Project layout will be presented within the Design Project Array Layout Plan (PLP), which is anticipated to form conditions of the Section 36 and/or Marine Licence consent. As part of the pre-construction survey (which will be agreed upon with NRW) data will be analysed to ascertain the locations of the WTGs and cable routes, with the potential for micro-siting of the proposed Project infrastructure. Where possible, the offshore export cable route(s) will aim to avoid more sensitive habitats and where this is not possible, the route should take the shortest distance possible through the sensitive areas
Micrositing to avoid sensitive ecological receptors	Micro-siting of export cable within the corridor to help to avoid any sensitive ecological receptors in the Zone of Influence (ZoI).
Use of Horizontal Directional Drilling (HDD) as the landfall cable installation option	The Applicant has confirmed HDD as the selected installation method at landfall. HDD reduces potential effects on coastal morphology and impacts on features within the Pembrokeshire Marine SAC

Embedded Mitigation Measures	Description
Drilling fluid – to be suitably selected to minimise environmental damage. Drilling fluid will be benign and will be PLONOR.	HDD drilling fluids will be tested and selected to curtail environmental damage and potential leakage. This chiefly includes using biodegradable substances that Pose Little or No Risk to the Environment (PLONOR) and adequate contamination testing and drilling fluid disposal. An environmental benign drill fluid such as bentonite will be used.
Excavation techniques and turbidity	To prevent disturbance by suspended sediment on benthic habitats in the jet trenching phase of cable installation 'OSPAR Commission Guidelines on Best Environmental Practice' in Cable Laying and Operation must be adhered to. This includes to minimise the number of export cables that require trenching, avoiding sensitive benthic habitats in the route design wherever possible.
Local disposal of dredged material	All material that is dredged from the seabed will be disposed of close to the dredge location to ensure material is retained within the local sediment transport system.
Pollution Prevention and Emergency Incident Response Plan	Construction practices will incorporate measures to prevent pollution. All construction work will be undertaken in accordance with a Pollution Prevention and Emergency Incident Response Plan.
Installation vessel requirements to reduce risk of accidents and collisions which may lead to spillage and deterioration of water quality.	500 m safety distances will be adopted around installation vessels. The presence of a guard vessel around the installation area perimeter will be required. All vessels will follow all international regulations governing safety at sea: • International Regulations for Preventing Collisions at Sea 1972 (COLREGS) • International Convention for the Safety of Life at Sea 1974 (SOLAS) • All vessels will follow the International Convention for the Prevention of Pollution from Ships (MARPOL). This will include shipboard oil pollution emergency plans (SOPEP). All of these measures will reduce the likelihood of accidents or collisions at sea, which could result in fuel spills, adversely affecting marine water quality.
Vessels will operate with dynamic positioning	Where possible, vessels will operate with dynamic positioning to minimise anchor disturbance on the seabed.
Adherence with the international Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the 'BWM Convention')	Ballast water discharges from vessels will be managed under the BWM Convention which aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Measures will be adopted to ensure that the discharge of ballast water with the potential to impact water quality during all proposed Project stages. Further information is presented in Volume 6, Appendix 04A, section 4.4.4.

Embedded Mitigation Measures	Description
Adherence with the International Convention for the Prevention of Pollution from Ships (MARPOL)	All vessels will operate in adherence with Marine Pollution (MARPOL) requirements. Accordance with this will help to ensure that the potential for release of pollutants is minimised during operation and maintenance. Further information is presented in Volume 6, Appendix 04A, section 4.4. This will include shipboard oil pollution emergency plans (SOPEP).
Best practice vessel handling protocols	Best practice vessel handling protocols will be adopted to minimise the potential for any impact on marine wildlife, including marine mammal receptors. For example, the Codes of Conduct provided by the WiSe Scheme, Scottish Marine Wildlife Watching Code and / or Best Practice for Watching Marine Wildlife will be adopted, as to be discussed and agreed with NRW (A) and JNCC. These will be set out within a Vessel Management Plan.
The use of guard vessels and Offshore Fisheries Liaison Officers, where required	The appointment of guard vessels and Offshore Fisheries Liaison Officers (FLO) during construction, major maintenance works and decommissioning works, where required, ensures effective communication with the fishing community during the Offshore Development Area activities and reduces the potential for interactions with fishing activities. Where possible, guard vessels will be sourced locally.
Notice to Mariners (NtMs), Kingfisher notifications, and other navigational warnings on the location, duration, and nature of works.	The Applicant will issue NtMs, Kingfisher notifications and other navigational warnings, as required in a timely and efficient manner. This will ensure navigational safety and minimise the risk of equipment snagging through the appropriate propagation of notices to other sea users.
Marine coordination for project vessels	Marine coordination for project vessels – Marine coordination will be implemented to manage project vessels throughout construction and maintenance periods.
The International Regulations for the Prevention of Collision at Sea (COLREGs) and the International Regulations for the Safety of Life at Sea (SOLAS	All vessels will comply with the relevant COLREGS and SOLAS provisions to ensure navigational safety and minimise the risk of equipment snagging. This will include the display of appropriate lights and shapes, such as when vessels are restricted in their ability to manoeuvre.
Marine Navigation	Navigational lighting will be used on the floating platforms including yellow flashing marine lanterns. Fog lighting visible from a range of at least 2 nm
Fisheries Liaison Officer (FLO)	A FLO will be appointed to establish effective communications surrounding the proposed Project with local fishermen and other sea users. The FLO will distribute information on the safe operations of fishing activities within the Array Area and will be a contact for fishermen and other sea users during the life cycle of the proposed Project. The specific roles and responsibilities will be defined within the Fisheries Liaison and Co-existence Plan (FLCP) (Volume 6, Appendix 4A, section 4.4.5).

Embedded Mitigation Measures	Description
Third party vessel communication and management	Effective communication vessels in the area throughout all stages of the project (pre lay surveys, installation, maintenance, and operation) using Notices to Mariners, Kingfisher Bulletins, Navigational Telex (NAVTEX), and NAVAREA warnings. This will reduce the likelihood of accidents or collisions at sea, which could result in fuel spills, adversely effecting marine water quality.
Procedures for dropped objects and claim processes for loss/damage to fishing gear/vessels	The FLCP will include protocols and procedures for dropped objects to minimise the risk of equipment snagging on large, dropped objects associated with the Offshore Development Area.
Cable burial	Cable burial as the preferred means of cable protection (where practicable) to minimise the requirement for surface laid protection.
Burial Depth	The target depth of burial will be 1 m (dependent on ground conditions) and minimum depth of cover will be 0.9 m.
Cable Burial Risk Assessment – to minimise sediment disturbance where possible	A Cable Burial Risk Assessment (CBRA) will be produced post-consent which will detail the minimum burial depths of the offshore export cables throughout the offshore export cable routes, and indicative proposed locations where the target depth of burial may not be achievable and external protection is expected to be required. The CBRA will also detail which type of cable protection measure would be located at which locations and will seek to minimise the amount of sediment disturbance to as little as possible.
Minimum depth of burial	Static cables will be buried to a target depth of 1.2m (a minimum depth of 0.8m). Where this cannot be achieved, cable protection will be applied. This will provide some separation between the cables and benthic ecology receptors, therefore reducing the effect of Electromagnetic Fields (EMF). The exact minimum cable burial depths along the OfECC will be informed by a Cable Burial Risk Assessment (CBRA) and implemented through the PLP produced post-consent.
Cable Protection	Cable protection to reduce seabed scouring will be used if deemed a requirement following a risk-based analysis in order to prevent the potential exposure or disturbance of marine historic environment assets that may lie unidentified below the surface of the seabed. Requirements would be informed by a CBRA and implemented through the PLP produced post-consent.

Embedded Mitigation Measures	Description
Rock placement will only be used where necessary.	Rock placement will be used sparingly. This will aid in avoiding the placement of rocks in habitats which otherwise consist of soft, sandy sediments, and will reduce the amount of permanent habitat loss. This will aid in avoiding the placement of rocks in habitats which otherwise consist of soft, sandy sediments, and will reduce the amount of permanent habitat loss.
Biosecurity and Invasive Non-Native Species (INNS) Method Statement	All construction work will be undertaken in accordance with an INNS Management Plan. An Outline INNS plan has been prepared (Appendix 04B: Outline INNS Plan)
Minimum number of WTGs	The Applicant has reduced the number of WTGs from 14 to 10 and the overall Array Area by 11% from that proposed during the scoping phase in order to reduce the spatial extent of potential impacts as far as practicable. In addition, the OfECC has been reduced in area, and refined particularly nearshore and at landfall, to refine the design and align with the selected landfall location at Freshwater West. In addition, the alternative landfall location to the south of West Angle Bay was removed following review of technical, engineering and environmental constraints and the selection of Freshwater West as the most appropriate landfall location.
Set wind speed range for operating turbines	The proposed wind turbines will operate within a set wind speed range, having both a minimum wind speed at which they start generating electricity, and a maximum wind speed at which turbines cannot generate and operate instead in a standby mode.
Distance between turbines	The minimum distance between turbines (centre to centre) will be 1000 m, with a minimum distance of 830 m between the blade tips.
Removal of debris from floating lines and cables	The accumulation of marine debris on floating lines and cables has the potential to generate adverse interactions between mobile marine species and project infrastructure. Derelict fishing gears are of particular concern due to the entanglement risk they introduce to marine megafauna, including marina mammals and basking sharks. Mooring lines and floating inter-array cables will be inspected during the operation and maintenance phase using a risk-based adaptive management approach. Mooring line and cable inspections are expected to occur at a higher frequency initially and then reduce in frequency over a number of years, with changes to inspection periods based on evidence of risk garnered from the inspections. Any inspected or detected debris on the floating lines and cables will be recovered, based on a risk assessment which considers the impact on the environment, risk to asset integrity, and cost of intervention.

Embedded Mitigation Measures	Description
Emergency Preparedness Plan	Prior to the commencement of operation of the proposed Project, an Emergency Preparedness Plan would be prepared to cover the actions to be taken in an emergency. The plan would outline the relevant scenarios in which it would apply and would set out the actions to be taken by Floventis to minimise any environmental consequences.
Decommissioning Environmental Management Plan (DEMP)	A DEMP will be developed prior to decommissioning. The development and agreement of a decommissioning programme will ensure that the process of decommissioning the proposed Project minimises effects on commercial fisheries.
Decommissioning	A decommissioning Plan will be agreed with NRW at the relevant time prior to the start of offshore decommissioning.

8.2 Legislative Framework

8.2.1. Legislative Requirement for an HRA

8. Protection of sites of nature conservation importance at a European level originated when the United Kingdom (UK) was part of the European Union (EU) and was required to enact EU laws into its domestic laws. The EU legislation relevant to such sites were European Directive 92 / 43 / EEC on the 'Conservation of Natural Habitats and Wild Fauna and Flora', referred to as the 'Habitats Directive', and Council Directive 2009 / 147 / EC (Birds Directive) the Conservation of Wild Birds (the codified version of Council Directive 79 / 409 / EEC on the conservation of wild birds) referred to as the 'Wild Birds Directive'. Sites falling under the definitions provided in these Directives are referred to as European sites[2] and reflect the fact that these sites are of a European level of importance. These directives were most recently transposed into domestic law by the Conservation of Habitats and Species Regulations 2017 (England and Wales) (as amended) (referred hereafter as 'the 2017 Habitats Regulations (as amended)').
9. The UK left the EU on 31 January 2020 under the terms set out in the EU (Withdrawal Agreement) Act 2020 ('the Withdrawal Act'). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within UK domestic law. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amended the 2017 Habitats Regulations to decouple the 2017 Habitats Regulations from the EU Directives, whilst maintaining the protection and processes related to European sites.
10. The 2017 Habitats Regulations (as amended) enable the protection of sites that host habitats and species of European importance. These sites are listed below and are collectively referred to as 'European Sites'. It is noted that the term 'habitats sites' has also come into use in England and Wales to refer to these sites following the UK's departure from the EU, however, the term European sites is used here for convenience and familiarity:
    - Special Area of Conservation (SAC) including candidate cSACs;
    - Special Protection Area (SPA), including proposed pSPAs; and
    - Ramsar Sites.
11. The list of sites covered by HRA includes Ramsar sites. These are not formally covered by the Regulations (since they do not stem from European Directives) but are included in the process in line with National Planning Policy Framework guidance, which takes account of the fact that they are wetlands of international importance.
12. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amended the 2017 Habitats Regulations through:
    - The creation of a National Site Network within the UK territory comprising the protected sites already designated under the Nature Directives, and any further sites designated under these Regulations;
    - The establishment of management objectives for the National Site Network (the 'network objectives');

[2] The collective term for both SACs and SPAs (excluding Ramsar sites) in the UK is the National Site Network.

- A duty for appropriate authorities to manage and where necessary adapt the National Site Network as a whole to achieve the network objectives;
- An amended process for the designation of SACs;
- Arrangements for reporting on the implementation of the Regulations, given that the UK no longer provides reports to the European Commission;
- Arrangements replacing the European Commission's functions with regard to the imperative reasons of overriding public interest (IROPI) test where a plan or project affects a priority habitat or species; and
- Arrangements for amending the schedules to the Regulations and the annexes to the Nature Directives that apply to the UK.

8.2.2. European Sites Legislation

13. SACs are protected areas in the UK designated under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea). SPAs are protected areas for birds in the UK that are classified under the Wildlife and Countryside Act 1981 (as amended) and the(2017 Habitats Regulations (as amended) in England and Wales.
14. Ramsar sites have been designated under the Ramsar Convention (1971). Sites are selected for their international significance relating to all ecology, botany, zoology, limnology, or hydrology wetland components. The designation recognises the importance of wetlands as economic, social, and environmental entities and the need to conserve them.

8.2.3. Requirements for an HRA

15. Regulation 63 of The Habitats Regulations sets out the requirement for HRA, stating that:

    'A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … must make an Appropriate Assessment of the implications for the plan or project in view of that site's conservation objectives… The competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site.'

16. Although an appropriate assessment (AA) itself is undertaken by the competent authority (in this case, NRW), Regulation 63(2) 63 requires that:

    'A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an Appropriate Assessment is required.'

17. There are four key stages of an HRA that are discussed in detail in **Section 8.4 Assessment Methodology** These stages include:

    - Stage 1 – Screening for likely significant effect (LSE);
    - Stage 2 – AA;
    - Stage 3 – Assessment of alternative solutions; and
    - Stage 4 - Assessment of IROPI.

18. This report comprises the first stage of the HRA process. This first stage requires the Applicant to provide sufficient information to allow the competent authority to decide if an AA is necessary. Should the first stage conclude that significant effects are likely, the Applicant must provide sufficient assessment information to allow the competent authority to undertake an

AA. Ordinarily, consent may only be given for the proposed scheme if, following an AA, it is established that it will not adversely affect the integrity of the European site:

> *'In the light of the conclusions of the assessment, and subject to [considerations of overriding public interest], the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be)'*

19. If an adverse effect on site integrity (AEoSI) is identified that cannot be sufficiently mitigated, or otherwise addressed, alternatives must be considered to avoid that effect. However, where no alternatives exist, and AEoSI remains, a further assessment is made, under regulation 64, as to whether the project is required for IROPI. If the project meets that IROPI test, compensatory measures will be required to maintain the overall National Site Network.
20. The overall process set out in the 2017 Habitats Regulations (as amended) is typically referred to as an 'HRA'. This has arisen to distinguish the overall process from the individual stage of 'Appropriate Assessment', which is carried out by the competent authority. Throughout this report the term HRA is used for the overall process and restricts the use of AA to the specific stage of that name.
21. The competent authority in the HRA is NRW Marine Licensing Team under jurisdiction of the Welsh Government.

8.3 Purpose Of This Report

22. This HRA Screening Report presents the screening exercise (also known as the Test of LSE) of the proposed Project, undertaken to determine the list of European designated sites and Ramsar sites that could be affected by the proposed Project, and which are assessed for potential for LSE. HRA is an iterative, methodical process undertaken in line Regulation 63 of The Habitats Regulations. This report comprises the first stage of that process and will be submitted for consultation. All other designated sites are assessed under the Environmental Impact Assessment (EIA) and Marine Conservation Zone Assessment processes rather than HRA.
23. Where best available evidence indicates that there is no risk that the Project activities will have an LSE on specific features of a European or Ramsar site, either alone or in-combination with other plans or projects, by undermining its conservation objective(s), these features have been screened out and will not require further assessment. Where such determination has been concluded, the justification is noted within the relevant chapters within the ES ((**Chapter 08: Ecology and Biodiversity**, **Chapter 19: Benthic Ecology**, **Chapter 20: Fish and Shellfish Ecology**, **Chapter 21: Marine Mammals**, and **Chapter 22: Ornithology**)
24. This HRA Screening Report is based on existing understanding of the baseline environment and project activities. This is in line with the precautionary principle (CIEEM, 2018). Where LSE cannot be ruled out, for example, a clear impact pathway for adverse effect is identified, or there is reasonable doubt whether the proposed Project will or will not result in LSE, in view of the conservation objectives, then the respective site and feature will be screened into the HRA, to be taken forward to the next stage, in which NRW will undertake the AA.
25. At the time that this HRA Screening Report is submitted, the Report to Inform Appropriate Assessment (RIAA) will also have been completed and submitted (**Appendix 08E: Habitats**

Regulations Assessment Report to Inform Appropriate Assessment). Together the HRA Screening and RIAA contain all relevant information for NRW to undertake the AA.

8.3.1. Report Structure

26. This report will be is presented in the following sections:

- **Section 8.4** - Assessment methodology;
- **Section 8.5** – Stakeholder engagement and consultation;
- **Section 8.6** – the HRA screening is split into marine ecology (**Section 8.6.1**), including benthic habitats, fish, marine mammals, marine ornithology; and terrestrial ecology (**Section 8.6.2**), including terrestrial habitats, terrestrial flora, terrestrial mammals, and terrestrial ornithology; and
- **Section 8.6.3** - In-combination assessment.

8.4 Assessment Methodology

27. This HRA Screening Report has been developed with reference to general guidance on HRA published by the UK government in February 2021 (Defra, *et al.*, 2021), and takes account of relevant EU case law (for instance, the Holohan and People over Wind cases, discussed below), and Welsh Government advice 'Technical Advice Note 5 (Nature Conservation and Planning) 2009 and The Planning Series: 16 – Habitats Regulations Assessment'.

28. The four key stages of HRA, are outlined in **Figure 8D-2** below. Note that while **Figure 8D-2** indicates each stage of the HRA process, this document discusses stage 1 in further detail. Stage 2 will take place in parallel with the EIA with the results presented in the AA, as outlined above.

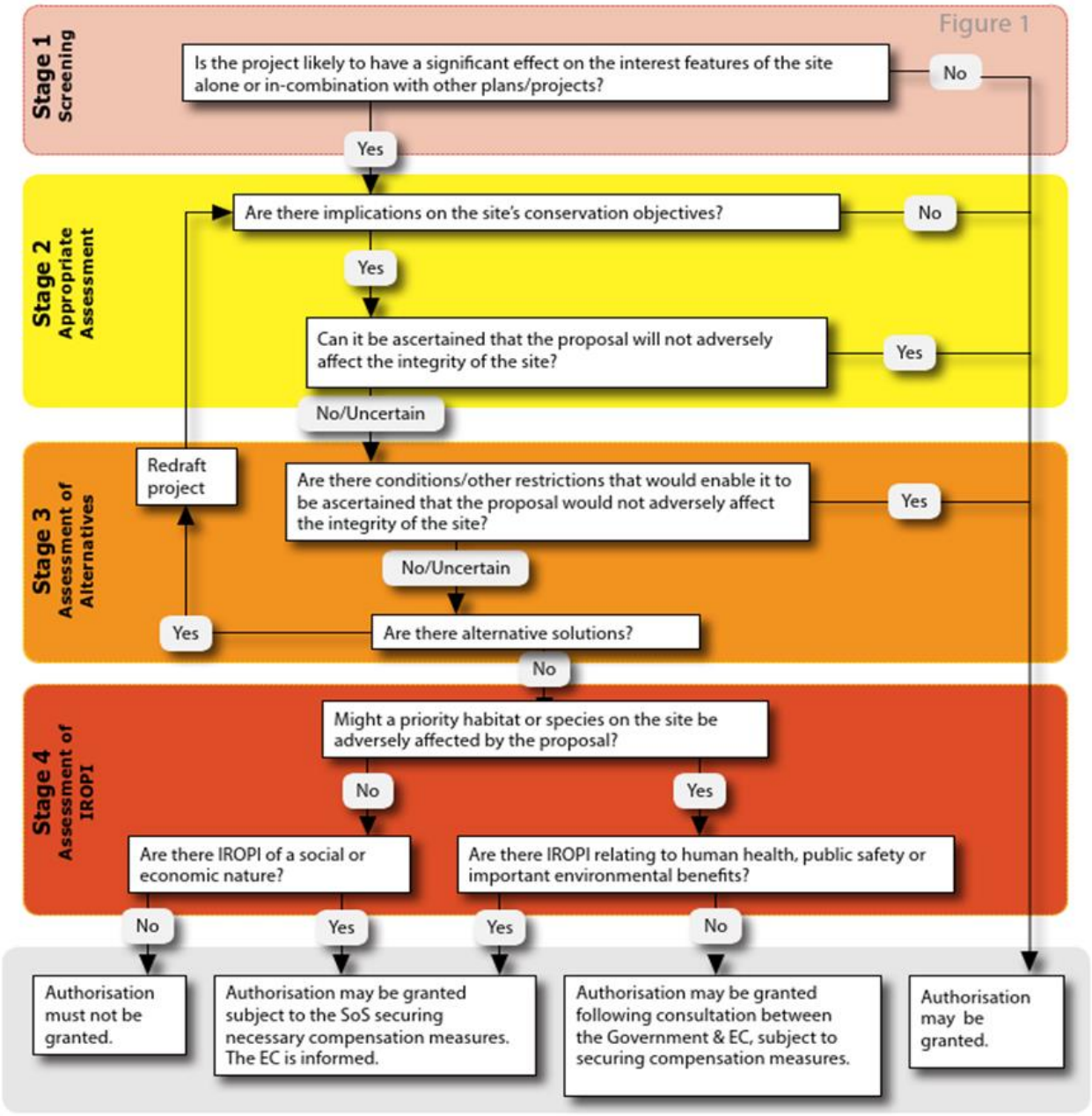

Figure 8D-2. Four stage approach to HRA of projects (from PINS advice note 10)

8.4.1. HRA Stage 1 – Screening for Likely Significant Effect

29. The objective of the LSE test is to 'screen out' those aspects of a project and / or the European sites that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites. This is typically able to be concluded where there is no mechanism for an adverse interaction (i.e., a pathway) with European sites. Where a LSE cannot be ruled out, the potential effect is taken forward for consideration within the AA. The assessment must also consider the potential for effects 'in combination' with other plans and projects.
30. This report has been prepared having regard to all relevant case law relating to the 2017 Habitats Regulations (as amended), the Habitats Directive and Birds Directive. This includes the ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323 / 17).
31. This case establishes that 'mitigation measures' specifically included to address effects on European sites rather than those embedded into the design of the cannot be considered at the screening stage, but they can be considered in an AA.
32. In 2018 the Holohan ruling was handed down by the CJEU. Paragraph 39 of the ruling states that 'As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site… typical habitats or species must be included in the Appropriate Assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area'. This ruling has been considered in relation to the proposed Project and European sites that are linked to the proposed Project via an impact pathway, such as consideration of impacts on qualifying features for European sites using habitat outside those sites.

8.4.2. HRA Stage 2 – Appropriate Assessment

33. If at screening stage (Stage 1) a conclusion of LSE on the European site cannot be ruled out, an AA must then be undertaken to assess whether the proposed Project will result in an AEoSI. An AEoSI is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant features as it did at the time of its designation. The favourable conservation status of a European site is defined through the conservation objectives for the site, which are the responsibility of NRW.
34. At this stage, mitigation measures (in addition to embedded measures) can be considered to inform any determination as to whether there is an AOESI.

8.4.3. HRA Stage 3 – Assessment of Alternative Solutions

35. In cases where it cannot be determined that a plan or project under consideration will not have an AEoSI, further mitigation measures must be undertaken such that the plan or project will not adversely affect the integrity of the site. Mitigation measures aim to minimise or cancel out the negative impact of a plan or project before or after its completion. Examples of mitigation measures are as follows:
    - Sensitive timing of operations e.g., not undertaking certain activities during the breeding, migrating or over wintering season of a particular species; and
    - Specific types of tools to be used e.g., to prevent damage to fragile habitats and noise pollution impacts.
36. If adequate mitigation is not possible then alternatives to the proposed Project that would not lead to an AEoSI must be explored. If it can be demonstrated that there are no alternative solutions to the proposed Project that would have a lesser effect or avoid an adverse effect,

the Project may still be granted consent if the competent authority is satisfied that the proposed Project must be carried out for reasons of IROPI.

8.4.4. HRA Stage 4 – Assessment of Imperative Reason of Overriding Public Interest

37. If the conclusion of the competent authority (NRW) is that the proposed alternative solutions do not avoid AEoSI relative to the original proposed Project, an assessment of IROPI must be undertaken. competent authority is satisfied that the proposed Project must be carried out for reasons of IROPI. IROPI needs to be agreed by the Welsh Government, and compensatory measures must be agreed with the competent authority and secured to offset potential identified damage done by the plan or project. Compensatory measures must allow the maintenance of the overall coherence of the European designated site network (Gov.Wales, 2021).
38. The HRA Report should provide justification alongside robust evidence for the continued development of the proposed Project despite the potential for AEoSI on scoped in European protected sites. Imperative reasons are commonly associated with advantageous socio-economic benefits of the proposed Project.
39. According to the Planning Inspectorate (PINS) Advice Note 10 the competent authority (NRW) requires the IROPI justification to be based on three factors:

    - 'Imperative – essential that it proceeds for public interest reasons;
    - In the public interest – that it has benefits for the public, not just benefits for private interests; and
    - Overriding – that the public interest outweighs the harm, or risk of harm, to the integrity of the European site(s) as predicted by the AA.'

8.4.5. The Rochdale Envelope

40. In July 2018, PINS published Advice Note Nine: Rochdale Envelope (The Planning Inspectorate, 2018)explaining how the principles of the Rochdale Envelope should be used by planning applications for the EIA process, though it is equally applicable to non-statutory Environmental Appraisal.
41. The Rochdale Envelope[3] is applicable where some of the details of a Proposed Development (in this case, proposed Project) cannot be confirmed when an application is submitted, and flexibility is needed to address uncertainty. Notwithstanding, all significant potential effects of the proposed Project must be properly addressed.
42. The Rochdale Envelope encompasses three key principles:

    - The assessment should use a cautious worst-case approach;
    - The level of information assessed should be sufficient to enable the LSEs of the proposed Project to be assessed; and

43. The allowance for flexibility should not be abused to provide inadequate descriptions of projects. This HRA Screening has given due consideration to the use of a Rochdale Envelope

[3] The Rochdale Envelope arises from two cases: R. v Rochdale MBC ex parte Milne (No.1) and R. v Rochdale MBC ex parte Tew [1999], which are cases that dealt with outline planning applications for a proposed business park in Rochdale.

approach. A realistic worst-case (i.e., the potentially most impactful) project design scenario has been assessed in relation to impact pathways.

8.4.6. In-Combination Scope

44. It is a requirement of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) and Regulation 28 of The Conservation of Offshore Marine Habitats and Species Regulations 2017, to not only assess the impacts of the proposed Project alone, but also to investigate whether there might be 'in-combination' effects with other projects or plans. In practice, such an 'in-combination' assessment is of greatest relevance when an impact pathway relating to a project would otherwise be screened out because it is considered not to result in LSE.

45. For the purposes of this HRA Screening, several projects (including those that have applications submitted, but are not yet approved and others already in operation), which may act in-combination with the proposed Project, have been identified. These projects are identified based on their potential impact pathways to the same European sites and are considered in **Section 8.6.3 Requirements for an HRA**.

8.5 Stakeholder Engagement and Consultation

46. Consultation with statutory nature conservation bodies (SNCB) and non-statutory organisations has been undertaken to inform the approach to, and scope of, the HRA Screening.

47. Stakeholders for the proposed Project include SNCBs, landowners, local communities, and other sea users. In addition to the statutory consultation process, there has been ongoing engagement with statutory and non-statutory consultees to steer the development of the proposed Project and this is detailed in **Table 8D-2**.

Table 8D-2. Summary of the key issues raised by consultees and how each issue was addressed

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
Scoping			
JNCC	Scoping opinion	JNCC note that "*a buffer distance of 10 km of the proposed Project has been considered which encompasses all likely zone of influence (ZoI) to benthic receptors within the subtidal*". We await the establishment of the Project's ZoI for further clarity as to how this has been determined.	Further information regarding the determination of the Study Area for benthic features has been provided in **Section 8.6.1**. The Study Area has been based on the greatest tidal excursion distance identified during project specific hydrodynamic modelling undertaken (see **Chapter 17: Physical Environment**).
JNCC	Scoping opinion	Overall JNCC agree with the potential impacts that will be scoped in and will require further assessment. However, we would like to highlight that impacts from the introduction of scour protection have not been, and should be, considered here.	The assessment of potential impacts of scour have now been included in **Section 8.6.1** and **Table 8D-3**.
JNCC	Scoping opinion	JNCC would consider, given that the turbine's anchor placement will be in place for the duration of the project, that these impacts on benthic ecology should be considered long term disturbance of the seabed. Further discussion on the timescales of what would be considered a permanent and / or temporary loss may be required.	Detail on the definition of temporary and permanent impacts has been added to **Section 8.6.1** and **Table 8D-3**. Further discussion of recovery timescales included in **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**.
JNCC	Scoping opinion	Underwater noise during the operational stage is not included as a potential impact pathway; this should be added. Please note that cable "*Thrums*" have not been well characterised in terms of underwater sound levels and potential to impact marine mammals either for individual turbines or arrays. This may require specific modelling or other studies. How turbine operating noise propagates from floating turbines is also poorly understood.	Operational noise impacts on marine mammals has been scoped in for assessment and is assessed in **Section 8.6.1** and **Table 8D-9**.
JNCC	Scoping opinion	It would be beneficial if the distance between protected sites and the array / cable scoping areas were separated as the potential impacts associated with each area could be different.	The distance to protected sites, has now been presented separately for the Array Area and OfECC. See **Section 8.6.1**.

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
NRW	Scoping opinion	For subtidal benthic ecology, "*a buffer distance of 10 km of the proposed Project has been considered, which encompasses all likely ZoI benthic receptors within the subtidal*". Please refer to comments made above in the Physical processes section with respect to screening distances applied to the ZoI.	Further information regarding the determination of the Study Area for benthic features has been provided in **Section 8.6.1**. The Study Area has been based on the greatest tidal excursion distance identified during project specific hydrodynamic modelling undertaken (see **Chapter 17: Physical Environment**).
NRW	Scoping opinion	We advise potential impacts to this designated site are also scoped in as the "*Submerged or partially submerged sea caves*" feature are cross-boundary features between the Limestone Coast SAC and the Pembrokeshire Marine SAC. Whilst we acknowledge the sensitivity of this feature to project secondary effects may be lower than for other habitat features, some biotopes within this feature may still be sensitive to project secondary effects.	Limestone Coast of South West Wales SAC has now been taken into consideration in the HRA Screening (**Section 8.6.1**; **Table 8D-4**).
NRW	Scoping opinion	We advise that the introduction and spread of INNS is also considered / assessed in the operation phase, including the ability for infrastructure to also act as a stepping-stone. Furthermore, the applicant should indicate the intention to undertake a biosecurity risk assessment for all stages of marine development and incorporate them into the PEMP. Moreover, it is important to note the introduction of hard substrate in a soft sediment habitat is a change of habitat type. The loss of a sedimentary habitat to a different habitat type is not beneficial even if the anthropogenic structure is colonised by local species as the sedimentary habitat is lost and will not be replaced.	Impact pathways associated with the introduction of hard substratum into sediment-based habitats are assessed as part of the introduction and spread of INNS impact pathway for benthic ecology receptors **Section 8.6.1** and **Table 8D-3**. An Outline INNS plan has been prepared (**Appendix 04B: INNS Plan**)
NRW	Scoping opinion	We advise that the impact of maintenance activities on benthic ecology impact pathway should be refined further as it currently encompasses a number of potential impacts. In this regard, we advise the following potential impact pathways should be scoped in for the operation phase:	The impact pathways listed in the response have been included for benthic ecology receptors in **Section 8.6.1** and **Table 8D-3**.

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
		• Temporary increase in SSC and sediment deposition leading to contaminant mobilisation turbidity and smothering effects – from maintenance operations; • Indirect habitat loss – potential impacts on adjacent benthic habitats from on-going scour, changes in hydrodynamics and abrasion from the movement of mooring chains; • Disturbance to benthic habitats – potential disturbance to benthic habitats from planned maintenance, cable failure, excavation but also disturbance from the movement of the mooring chains; • Habitat alteration; • Operation Effects of EMF emissions; and • Changes in hydrodynamics.	The following pathways have been merged together to be more concise as they address impacts which are interlinked, and are assessed as one: • Indirect habitat loss due on-going scour, changes in hydrodynamics and abrasions from the movement of mooring chains; • Alteration of habitat, including from the introduction of hard substrate resulting in increased heterogeneity and new biological communities, and ongoing scour resulting in changes in hydrodynamics, increased sedimentation, and smothering; and • Changes in hydrodynamics. All other operational impacts identified by NRW have been assessed separately.
NRW	Scoping opinion	NRW agrees that underwater noise from construction activities is likely to be a primary effect on fish, especially for fish where the swim bladder is near or connected to the ear, such as in the clupeids. Recent evidence has found that Twaite shad from the River Severn undertake long range migration across the Celtic sea, and NRW therefore recommend that to ensure any fish passing through the Fish Study Area are considered, a regional approach is taken, screening in all sites with noise sensitive fish features. Furthermore, NRW recommends that site and project specific noise modelling is undertaken to inform the detailed assessment.	A regional approach, to consider any migratory fish that could interact with the Project has been included in the determination of the Study Area (**Section 8.6.1**; **Figure 8D-4**; and **Figure 8D-5**). Underwater noise modelling has been undertaken in order to assess impacts on fish and has been included in **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**.
NRW	Scoping opinion	NRW advise that Cardigan Bay and River Teifi SAC, both of which have Annex II diadromous fish features, are borderline on the screening criteria but should be included on the map and scoped in for migratory fish.	These sites are now included in the HRA. See **Table 8D-6**.

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
NRW	Scoping opinion	Please see comment above relating to screening distances and inclusion of Cardigan Bay and River Teifi SAC Annex II features. NRW also advise that Atlantic salmon (Annex II migratory fish), and sea trout are included, as these are features of the Severn Estuary SAC / Ramsar site migratory fish assemblage. NRW welcomes the intention to screen in the Severn Estuary SAC but would advise that the rivers Usk and Wye SACs connected to the site, are also included and need to be scoped into the assessment.	Cardigan Bay SAC, River Teifi SAC, River Usk SAC, and River Wye SAC have been included in this appraisal. See **Section 8.6.1** and **Table 8D-6**. Impacts on sea trout are assessed in **Chapter 20: Fish and Shellfish Ecology.**
NRW	Scoping opinion	NRW agrees with the listed project and plans and advise that particular attention is paid to temporal and spatial cumulative effects on fish spawning and nursery habitats for fish receptors, as well as underwater noise.	The in-combination assessment completed in **Section 8.6.3**.
NRW	Scoping opinion	NRW agree that the Study Area will take into consideration marine mammal MUs published by the IAMMWG. NRW does not agree with the rationale of using an impact range for scoping of SACs, or for screening for the cumulative / in-combination assessment and advise that the Management Unit (MU) is used. NRW (A) does not agree with the rationale of using buffers for scoping purposes for cetaceans or grey seals. NRW consider the MUs and the SACs within them as functionally linked areas.	Study areas used in the assessments are defined in **Section 8.6.1**. In line with NRW advice, the species-specific IAMMWG (IAMMWG, 2022) MUs have been considered in the assessment of cetaceans, and OSPAR Region III interim MU in the identification of SACs designated for marine mammal features. The in-combination assessment methodology is detailed in **Section 8.6.3**.
NRW	Scoping opinion	NRW advise that the following SACs should be scoped into the assessment: • North Anglesey Marine SAC; • West Wales Marine SAC; • Bristol Channel Approaches SAC;	NRW guidance (NRW, 2022) has been considered in the screening of SACs designated for marine mammal features in the HRA process. See **Section 8.6.1** and **Table 8D-10**.

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
		• Lleyn Peninsula and the Sarnau SAC; • Cardigan Bay SAC; and • Pembrokeshire Marine SAC.	
NRW	Scoping opinion	Where the MUs include SACs outside of UK waters, transboundary impacts must also be considered, and the potential impacts on SACs within other jurisdictions should be assessed. Details of these sites can be found in NRW (2020).	Transboundary impacts on marine mammals have been considered in the HRA process as presented in **Section 8.6.1** and the **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**.
NRW	Scoping opinion	There are no SACs with bottlenose dolphin features within the Offshore Channel, Celtic Sea & SW England MU. NRW does not consider that the bottlenose dolphin features from SACs are likely to be found within the proposed Project impact area and therefore advise that there is no likely significant effect on this feature.	There is no potential for Likely Significant Effect (LSE) on any bottlenose dolphin feature of a SAC; therefore, they have been screened out from further assessment, as presented in **Section 8.6.1.**
NRW	Scoping opinion	NRW advise that the proposed works are likely to have a significant effect (either alone or in combination with other plans or projects) on the SACs with marine mammal features and therefore recommend that AA is carried out on all of the sites listed.	Following NRW (2020), the SACs therein have been considered in the HRA screening process in **Section 8.6.1** and have been assessed under Stage 2 of the HRA process (AA) in **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**..
NRW	Scoping opinion	NRW supports the inclusion of the Embedded and Good Practice Measures detailed to minimise the risk of impact to marine mammals.	Embedded mitigation and Good Practice Measures are listed in **Section 8.1.2**.
NRW	Scoping opinion	NRW agrees with the list of impact pathways as detailed in the scoping report, to be scoped into the assessment for marine mammals.	These impacts are assessed in **Section 8.6.1** and **Table 8D-9**.
NRW	Scoping responses	Concerns regarding potential for the proposed Project to have significant effect on terrestrial protected sites.	Assessment of terrestrial protected sites completed in **Section 8.6.2** and **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**.

Consultee	Consultation type	Comment raised	How issue has been addressed and location of response in chapter
NRW	Scoping responses	Identifies requirement for assessment of likely significant effects, including on the terrestrial SACs.	Assessment of LSE on terrestrial protected sites completed in **Section 8.6.2**.
NRW	Scoping responses	Identifies requirement for Appropriate Assessment and consultation with NRW on likely effect on the National Site Network for terrestrial ecology.	Assessment of terrestrial protected sites and requirement for AA completed in **Section 8.6.2**. Information required for AA included in **Appendix 8E: Habitats Regulation Assessment Report to Inform Appropriate Assessment**.
National Federation of Fishermen's Organisations (NFFO)	Scoping opinion	Recommended the potential impact of EMF on commercial fish and shellfish stocks or cetacean populations is scoped into the assessment.	This has been scoped in and is included in **Section 8.6.1**, **Table 8D-5** and **Table 8D-9**.
Pembrokeshire County Council (PCC)	Scoping opinion	Concerns regarding the number of cable route projects across the Angle peninsula and likely cumulative construction and operational effects.	The in-combination assessment is completed in **Section 8.6.3**.
Pembrokeshire Coast National Park Authority	Scoping opinion	Suggest that the effects of cable landfall and onshore works must also be considered in combination with other projects.	The in-combination assessment is completed in **Section 8.6.3**.

8.6 HRA Screening

8.6.1. Marine Ecology

Benthic Habitats

48. This section presents HRA screening for SACs designated for benthic habitat features. It includes a summary of the potential interactions between the proposed Project and this receptor group, which have been used to inform the screening.

49. Conservation objectives are set as overall targets applying to SAC designated features to contribute to maintaining or reaching favourable conservation status (European Commission, 2012). The favourable conservation status of a habitat is achieved when:

- Its natural range and areas it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for the long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of typical species if favourable.

50. To determine the impact of the Project on benthic habitats, the potential implications of the proposed Project on the conservation objectives of each relevant SAC have been individually considered in this HRA screening.

51. To screen for relevant designated sites, a precautionary study area must be defined to ensure the assessment incorporates all areas where potential impact pathways could occur, throughout all phases of proposed Project. For the purposes of this assessment, the study area for benthic ecology (here after referred to as the 'Benthic Study Area') is based on project specific hydrodynamic modelling to define the maximum tidal excursion distance (see **Chapter 18: Physical Environment**). The tidal excursion distance during a mean tide is approximately 6 – 8 km within the Array Area, 8 - 10 km within the centre of the OfECC and 14 km in the nearshore on approach to the landfall (**Chapter 17: Physical Environment**). Therefore, a Benthic Study Area consisting of a 14 km buffer around the Offshore Development Area has been used to screen for potential designated sites during this screening assessment.

Annex I Benthic Habitats

52. There are several benthic habitats which are listed under Annex II of the Habitats Directive, which may occur within the vicinity of the proposed Project and have therefore been considered in this HRA screening report. These are discussed below. The habitats considered here include those that extend up to mean high water springs (MHWS) which includes intertidal habitats.

53. All habitat and species present above MHWS will be covered within **Section 8.6.2.**

Sandbanks Which Are Slightly Covered By Sea Water All The Time (1110)

54. Sandbanks which are slightly covered by sea water all the time consist of sandy sediments and typically occur at depths of less than 20 m below Chart Datum. The habitat mainly consists of distinct banks, which may arise from horizontal or sloping plains of sandy sediment. Sandbanks can be rounded or elongated. The types of communities associated with this habitat are determined by the sediment type, chemical, hydrological, and physical factors (JNCC, 2021b).

Estuaries (1130)

55. Estuaries are habitat complexes which comprise an interdependent mosaic of subtidal and intertidal habitats, which are closely associated with surrounding terrestrial habitats. Estuaries

are defined as the downstream part of a river valley, subject to the tide and extending from the limit of brackish water. There is a gradient of salinity from freshwater in the river to increasingly marine conditions towards the open sea (JNCC, 2021b). In south west Wales the Daugleddau estuary discharges into the Celtic Sea. This estuary is associated with a wide range of environmental conditions, particularly seabed substrates, tidal streams and salinity gradients, there is a wide diversity of communities and species. Tide-swept sponge communities are found in the upper reaches, and wide intertidal mudflats support rich and productive invertebrate annelid and mollusc communities (JNCC, 2021a).

Mudflats And Sandflats Not Covered By Sea Water At Low Tide (1140)

56. Intertidal mudflats and sandflats are intertidal habitats, left exposed at low tide before submergence following tidal inundation. They can exist as components of other SAC features such as estuaries, and large shallow inlets and bays, or can occur independently. The physical structure of the intertidal flats ranges from mobile, coarse-sand beaches on wave-exposed coasts to stable, fine-sediment mudflats in estuaries and other marine inlets. This variation in sediment type, together with factors such as salinity, are important determinants of plant and animal communities that are found within these habitats (JNCC, 2021b).

Coastal Lagoons (1150)

57. Coastal lagoons are areas of shallow, coastal salt water, wholly or partially separated from the sea by sandbanks, shingle or, less frequently, rocks. The water in lagoons can vary in salinity from brackish to hypersaline. The plant and animal communities of lagoons vary according to the physical characteristics and salinity regime of the lagoon (JNCC, 2021b).

Large Shallow Inlets And Bays (1160)

58. Large shallow inlets and bays constitute coastal indentations that are generally more sheltered from wave action than the open coast, and the influence of freshwater is generally limited. They form large indentations of the coast where water depth is relatively shallow. This creates an environment that is generally more sheltered from wave action than open coastal waters. Habitat type and associated species composition can be highly variable between different inlet and bay features, this can be driven by differences in sediment type, level of wave exposure, or site size (JNCC, 2021b). South Wales includes several bays including Milford Haven, as well as the wide, shallow, predominantly sandy embayment of St Brides Bay. The wide range of environmental conditions, particularly seabed substrates, tidal streams, and salinity gradients, supports high community and species diversity. Intertidal sandy/muddy areas support extensive beds of narrow-leaved eelgrass (*Zostera angustifolia*) (JNCC, 2021a).

Reefs (1170)

59. Reefs can comprise rocky marine habitats or biogenic structures that are found on the seabed (JNCC, 2021b). Reefs in south-west Wales are largely composed of igneous rock but include areas of more friable Old Red Sandstone and some limestone. Extensive areas of sublittoral rocky reef stretch offshore from the west Pembrokeshire coast. The wide variation in exposure to water movement, the range of rock type, slope, topography, and the high water quality are reflected in the wide diversity and species abundance of biological communities. Offshore there are particularly extensive areas of tide-swept kelp across large areas of deeper rock reef, a wide range and abundance of invertebrate animal communities, with hydroid, bryozoan,

soft coral and anemone species. More sheltered reefs typically support diverse and species-rich sponge and ascidian-dominated communities (JNCC, 2021a).

Atlantic Salt Meadows Glauco-puccinellietalia maritimae (1330)

60. Atlantic salt meadows develop when halophytic vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. This vegetation forms the middle and upper reaches of saltmarshes, where tidal inundation still occurs but with decreasing frequency and duration, leading to a wide range of community types being represented (JNCC, 2021b).

Submerged Or Partially Submerged Sea Caves (8330)

61. Submerged or partially submerged sea caves vary in size, from only a few metres to more extensive systems, and they are typically associated with Reefs. Sea cave communities vary considerably depending on the structure and extent of the cave system, their degree of submergence and of exposure to sand scour and wave-surge, and their geology. Caves are typically colonised by encrusting animal species but may also support shade-tolerant seaweeds near their entrances. Physical conditions, such as inclination, wave surge, scour, and shade, change rapidly from cave entrance to the inner parts of a cave, and this often leads to a marked gradation in the communities present (JNCC, 2021b).

Potential Pathways for LSE

62. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on benthic ecology, screened into the HRA are outlined in **Table 8D-3:**

- Temporary physical disturbance to benthic habitats and species;
- Temporary increase in suspended sediment concentration (SSC) and sediment deposition leading to contaminant mobilisation, turbidity, and smothering effects;
- Impact of changes to marine water quality from the use of HDD drilling fluids;
- Impact of changes to marine water quality from accidental leaks and spills from vessels, including loss of fuel oils;
- Introduction and spread of INNS;
- Permanent direct loss and physical disturbance to benthic habitats and species;
- Alteration and / or indirect loss of habitat during the operational lifetime of the proposed Project;
- Changes to habitats due to on-going scour, changes in hydrodynamics, increased sedimentation and smothering, and abrasions, from the movement of mooring chains;
- Disturbance to benthic habitats during planned maintenance and instances of cable failure and excavation;
- Disturbance to benthic habitats and species due to subsea cable thermal emissions; and
- Effects of EMF emissions.

Table 8D-3. Potential impacts to intertidal and subtidal benthic habitats and species as a result of the proposed Project

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Temporary physical disturbance to benthic habitats and species	Several activities occurring within the Offshore Development Area during the construction phase may cause temporary loss and / or physical disturbance to the seabed habitats and benthic species. The sources of temporary habitat loss include: • HDD breakout point for 2 bores (total footprint of 100 m^2); • Sandwave levelling for a total length of 10,351 m and width of 30 m per cable (total disturbance of 621,048 m^2 for two cables); • Disturbance swathe of 25 m for construction of two cables, including clearance activities such as pre-grapnel run and boulder clearance over 49 km total length (total footprint 2,450,000 m^2); and • If burial is possible, the entire distance of the IACs in contact with the seabed of 17.10 km would be disturbed in a swathe of up to 25 m during burial (total footprint of 427,500 m^2). Therefore, the potential for LSE on benthic habitat features from temporary disturbance cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Temporary increase in SSC and sediment deposition leading to contaminant mobilisation, turbidity, and smothering effects	Construction activities associated with the proposed Project have the potential to temporarily increase SSC by creating sediment plumes in the water column which can travel away from the Offshore Development Area before depositing sediment elsewhere on the seabed. Increased SSC results can result in several potential effects to benthic receptors, including reduced rates of photosynthesis via a reduction in light availability, reduced feeding efficiency of filter feeders if clogging of filtering systems occurs, smothering of invertebrate species, and indirect effects on benthic species from the	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		release of sediment contaminants such as heavy metals and hydrocarbons. Therefore, the potential for LSE on benthic habitat features from increased SSC and deposition cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Impact of changes to marine water quality from the use of HDD drilling fluids	The use of HDD and vessels associated with the Project have the potential to alter marine water quality and negatively affect benthic receptors in the surrounding habitat. Small amounts of drilling fluid has the potential to be released at the HDD breakout location. Therefore, the potential for LSE on benthic habitat features from reduction in water quality cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Impact of changes to marine water quality from accidental leaks and spills from vessels, including loss of fuel oils	The construction phase of the proposed Project is expected to require up to 17 vessels. These vessels could have cleaning fluids, oils, and hydraulic fluids onboard, which could be accidentally discharged, releasing hydrocarbons and chemical pollutants into the surrounding seawater. The risk of an accidental spills occurring is very low and should an accidental spill or leak occur, it would be very small in extent and subject to immediate dilution and rapid dispersal within the marine environment. However, the potential for LSE on benthic habitat features from reduction in water quality cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Introduction and spread of INNS via vessel hull or ballast water and the placement of cable and scour protection during construction	The accidental introduction of INNS, such as from international vessels ballast water or through the installation of additional of substrate onto the seabed such as mechanical protection, has the potential to cause detrimental changes to benthic habitats.	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		The effect on benthic habitats if INNS were to be introduced by Project vessels could be long-term. Therefore, the potential for LSE on benthic habitat features from the introduction of INNS cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Underwater noise impacts on marine invertebrates	There is currently very limited evidence to suggest that the type and duration of underwater noise that will be generated by the proposed Project such as from geophysical surveys, dredging, ploughing, jetting, piling and associated vessel movements, will have any significant effect on benthic invertebrates or benthic communities. Thus, underwater noise disturbance in relation to benthic ecology is **screened out from requiring further assessment**.		✓
Operation and maintenance	Permanent direct loss and physical disturbance to benthic habitats and species	The placement of hard substrates on the seafloor, including cable and scour protection, can result in the permanent loss of benthic habitats and species. The sources of permanent habitat loss consist of: • 50 m^2 of protection, such as rock placement and/or concrete mattresses, per bore at HDD exit point (total footprint of 100 m^2); • Cable protection (excluding crossings) in OfECC over a total distance of 1,600 m per cable, with a worst-case scenario berm width of 5 m (total footprint of 16,000 m^2 for two cables); • Four cable crossings each requiring protection (none required for Greenlink) of 200 m length and 5 m width (footprint of 8,000 m^2 for two cables); • 6,200 m of articulated piping cable protection, 500 mm in diameter (total length of 6,200 m per export cable); • Assuming a worst-case scenario of 20% cable protection of the 17,100 m of IAC, with a berm width of 5 m, the total area of cable protection would be 17,100 m^2;	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA: Screened In	Further assessment required in HRA: Screened Out
		• Potential placement of anchor scour protection (total footprint 24,800 m^2), placement of clump weights (total footprint 8,000 m^2), and drag embedment anchor or drilled pile anchors (total footprint of 6,120 m^2); and • Subsea connector of 64 m^2. Therefore, the potential for LSE on benthic habitat features from permanent direct loss cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Temporary increase in SSC and sediment deposition associated with maintenance activities leading to contaminant mobilisation, turbidity and smothering effects	During cable repairs and / or the remedial reburial of exposed cables that may be required during the operational lifetime of the proposed Project, there is the potential for small, localised, temporary increases in SSC to occur throughout the Offshore Development Area, which could lead to the remobilisation of contaminants and increases in turbidity and smothering. It is anticipated that there will be up to five cable repairs. However, it is anticipated that during any required repairs or reburial, equipment similar to that used in the Construction Phase will be used, although this is expected over shorter period of time. Therefore, any local increases in SSC and therefore contaminants, turbidity and smothering will be no greater than that associated with Construction. Therefore, the potential for LSE on benthic habitat features from increased SSC and deposition cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Alteration and / or indirect loss of habitat during the operational lifetime of the proposed Project	Several activities which involve the introduction of new infrastructure as part of the proposed Project could result in the alteration and / or loss of habitat during its operational lifetime, by facilitating the growth	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		of new biological communities and / or changing the morphology of the seabed. The activities that may alter habitat include: • The placement of mechanical cable protection in the OfECC which would be left in place for the operation and maintenance phase; and • The placement of cable and scour protection on inter-array cables and associated mooring / anchoring systems and subsea connector. Such infrastructure results in the introduction of new, hard substrate into areas of seabed which may otherwise consist of soft sediments. Therefore, the potential for LSE on benthic habitat features from the alteration of habitat cannot be excluded, and the impact pathway has been **screened into the assessment.**		
	Changes to habitats due to on-going scour, changes in hydrodynamics, increased sedimentation and smothering, and abrasions, from the movement of mooring chains	The mooring chains on the seabed throughout the Array Area can lead to on-going scour, changes in hydrodynamics, increased sedimentation and smothering, and abrasions, throughout the operation and maintenance phase. This can lead to changes in habitat. Therefore, the potential for LSE on benthic habitat features from the ongoing scour and changes in hydrodynamics cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Disturbance to benthic habitats during planned maintenance and instances of cable failure and excavation	Maintenance and cable repair activities during instances of cable failure and excavation, where required, will be carried out using the same or similar methods as the Construction Phase activities, and therefore the potential pathways for impacts to benthic ecology are expected to be the same as those identified for the Construction Phase of the proposed Project. Therefore, the potential for LSE on benthic habitat features cannot be excluded, and the impact pathway has been **screened into the assessment.**	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	Disturbance to benthic habitats and species due to subsea cable thermal emissions	Operation of electricity cables generates heat due to resistance in the conductor components, which can warm the cable surface and adjacent environment (Meissner, *et al.*, 2008). Submarine power cables have been shown to generate and dissipate heat when active, with some reaching cable surface temperatures of up to 70°C **Invalid source specified.**. Temperatures such has this have the potential to modify chemical and physical properties of the substrate, such as oxygen concentration, microorganism communities, and / or bacterial activity. Increased temperatures can also cause sediment dwelling and demersal mobile organisms to move away from the affected area. Increased heat could also alter the physicochemical conditions and bacterial activity in surrounding sediments, which may result in alterations to faunal composition and localised ecological shifts (Meissner, *et al.*, 2008). Physiological changes in macrobenthic organisms living at the water-sediment interface and in the top sediment layers can also potentially occur. Therefore, the potential for LSE on benthic habitat features from thermal emissions cannot be excluded, and the impact pathway has been **screened into the assessment.**	✓	
	Effects of EMF emissions	Subsea cables associated with offshore wind farms are known to produce EMF emissions (Hutchison, *et al.,* 2020) and have the potential to affect the behaviour of species. EMF will be emitted for the duration of operational life of the proposed Project from the export cables and IACs. Therefore, the potential for LSE on benthic habitat features from EMF emissions cannot be excluded, and the impact pathway has been **screened into the assessment.**	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	Introduction and spread of INNS	There will be no further infrastructure installed on the seabed within the Offshore Development Area once the proposed Project is operational. Therefore, the most likely potential sources of INNS are considered to be from vessels carrying out maintenance or repair works. The accidental introduction of INNS, such as from international vessels ballast water has the potential to cause detrimental changes to benthic habitats. Whilst most non-native species are unlikely to become invasive, those that do can out-compete native species and introduce diseases which could result in significant changes to community composition and mortality (Bax, *et al.*, 2003). The number of vessels required during the operation and maintenance phase will be lower than during the construction phase. The effect on benthic habitats if INNS could be long-term. Therefore, the potential for LSE on benthic habitat features from the introduction of INNS cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Underwater noise impacts on marine invertebrates	There is currently very limited evidence to suggest that the type and duration of underwater noise that will be generated during the operation and maintenance phase, will have any significant effect on benthic invertebrates or benthic communities. Thus, underwater noise disturbance in relation to benthic ecology is **screened out from requiring further assessment**.		✓
Decommissioning	Temporary disturbance to benthic habitats and species	At the end of the operational life of the proposed Project, there will be a DEMP in place. Other proposed Project constraints will also be taken	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	Temporary increase in SSC and sediment deposition	into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the removal of all infrastructure from the seabed is considered a worst-case scenario for this assessment. Therefore, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**. At the end of the operational life of the proposed Project, there will be a DEMP in place. Other proposed Project constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible.		
	Spread of INNS during removal of proposed Project infrastructure			

Determination Of LSE

63. A Benthic Study Area consisting of a 14 km buffer around the Offshore Development Area, has been used to screen for potential designated sites (**Figure 8D-3**). The results of the assessment to determine whether there will be LSE on SAC benthic ecology features from the proposed Project are presented in **Figure 8D-3** and **Table 8D-4**. The sites that are screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

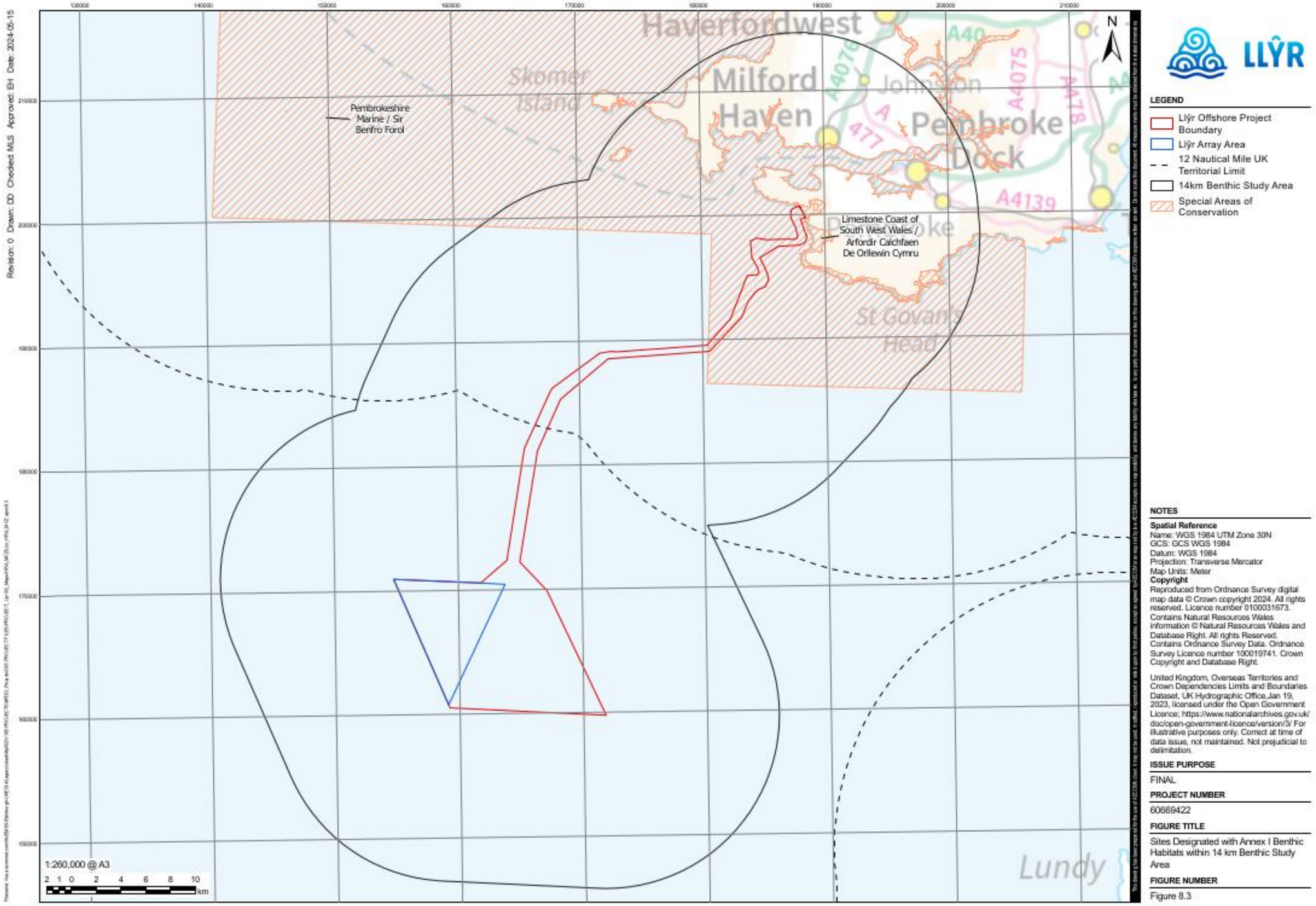

Figure 8D-3. Sites designated with Annex I benthic habitats within 14 km of the Llŷr Project

Table 8D-4. Determination of potential for LSE for designated sites for Annex I benthic habitats

Site name	Annex I Habitats	Distance to Llŷr Array Area (km)	Distance to OfECC (km)	Potential for LSE	Rationale behind screening decision
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	*Primary reason for site selection:* • Estuaries (1130); • Large shallow inlets and bays (1160); • Reefs (1170); and • Sandbanks which are slightly covered by sea water all the time (1110). *Other Annex I Habitats:* • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); and • Submerged or partially submerged sea caves (8330).	23.04	0.00	**Yes**	*Screened in for:* • Estuaries (1130); • Large shallow inlets and bays (1160); • Reefs (1170); • Sandbanks which are slightly covered by sea water all the time (1110); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); and • Submerged or partially submerged sea caves (8330). There is direct overlap between the SAC and the proposed Project. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
Limestone Coast of South West Wales / Arfordir Calchfaen de	*Primary reason for site selection:* • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230);	35.24	**0.00**	**Yes**	*Screened in for:* • Submerged or partially submerged sea caves (8330).

Site name	Annex I Habitats	Distance to Llŷr Array Area (km)	Distance to OfECC (km)	Potential for LSE	Rationale behind screening decision
Orllewin Cymru SAC (UK0014787)	• Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); *Other Annex I Habitats:* • European dry heaths (4030); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) (6210); • Caves not open to the public (8310); and • Submerged or partially submerged sea caves (8330).				There is direct overlap between the SAC and the proposed Project. Therefore, there is potential for LSE, and this feature has been screened in and will be considered within in the AA. Terrestrial components of this site are considered within **Section 8.6.2 Terrestrial Ecology**.

Fish

64. This section presents HRA screening for SACs designated for fish features. It includes a summary of the potential interactions between the proposed Project and this receptor group, which have been used to inform the screening.

65. Conservation objectives are set as overall targets applying to SAC designated features to contribute to maintaining or reaching favourable conservation status (European Commission, 2012). The favourable conservation status of a species is achieved when:

    - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitat;
    - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
    - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

66. To determine the impact of the Project on fish, the potential implications of the proposed Project on the conservation objectives of each relevant SAC have been individually considered in this HRA screening.

67. To screen for relevant designated sites, a precautionary study area must be defined to ensure the assessment incorporates all areas where potential impact pathways could occur, throughout all phases of proposed Project.

68. For the purposes of this assessment, the Study Area for migratory fish (here after referred to as the 'Migratory Fish Study Area') is based on project specific hydrodynamic modelling to define the maximum tidal excursion distance (see **Chapter 17: Physical Environment**). The tidal excursion distance during a mean tide is approximately 6 – 8 km within the Array Area, 8 - 10 km within the centre of the OfECC and 14 km in the nearshore on approach to the landfall (**Chapter 17: Physical Environment**). Therefore, a Migratory Fish Study Area of a 14 km buffer consisting of a 14 km buffer around the Offshore Development Area has been used to screen for potential designated sites during this screening assessment. Moreover, to determine if there are potential interactions between the proposed Project and the migratory routes of certain fish species which are a qualifying feature of a site outside the main Migratory Fish Study Area, a regional site screening approach has also been adopted (ABPMer, 2014) (**Figure 8D-5**).

Annex II Migratory Fish

69. There are several migratory fish which are listed under Annex II of the Habitats Directive, which may occur within the vicinity of the proposed Project and have therefore been considered in this HRA screening report. These are discussed below.

Allis Shad - Alosa alosa (1102)

70. Allis shad is a member of the herring family, and it is difficult to distinguish from the twaite shad. The allis shad grows in coastal waters and estuaries and then migrates up to 800 km upstream into rivers to spawn (JNCC, 2021c). The at-sea migration between sites for this species is not well understood. Allis shad are primarily found in pelagic waters during their adult life phases, mainly inshore along the coast. Migration is initiated by males and the females follow one to two weeks later (Matiland & Hatton-Ellis, 2003). During migration, these fish stop feeding and gather in the estuaries of suitable rivers in early summer (April-May), moving upstream to spawn from mid-May to mid-July (Matiland & Hatton-Ellis, 2003). The

distribution of allis shad is poorly understood but they appear to be primarily coastal and pelagic.

Twaite Shad - Alosa fallax (1103)

71. The twaite shad is a member of the herring family, and it is difficult to distinguish from the Allis shad. This species returns to freshwater from marine environments to spawn in spring (April-June) (JNCC, 2021c). Like allis shad, twaite shad are primarily found in pelagic waters during their adult life phases, mainly inshore along the coast. Migration is similarly initiated by males and the females follow one to two weeks later. During migration, these fish stop feeding and gather in the estuaries of suitable rivers in early summer (April-May), moving upstream to spawn from May to July. The majority of adults die after spawning, though UK populations appear to have an unusually high proportion of repeat spawners (JNCC, 2021c). Twaite shad feed on small fish such as sprats as well as plankton and this is likely to be reflected in their habitat selection. Specific localised distribution of twaite shad is poorly understood but they appear to be primarily coastal and pelagic (Matiland & Hatton-Ellis, 2003). In the Celtic Sea twaite shad are understood to feed and migrate though the waters of Carmarthen Bay to reach spawning sites. A large spawning population of twaite shad occurs in the Tywi, River Usk and River Wye. These rivers are three of only four sites in the UK where a known breeding population of twaite shad (JNCC, 2021c).

Atlantic Salmon - Salmo salar (1106)

72. Atlantic salmon have a complex life cycle, involving both freshwater and marine phases. This species is primarily found within marine waters but migrates upstream into freshwater as adults for reproduction and nursery phases. Juveniles spend between 2-4 years in rivers developing into 'smolts' before migrating to the sea, which normally occurs between April-June. The seawater phase is for development and rapid growth and Atlantic salmon can spend between 1-5 winters in marine environments before migrating back to freshwater to reproduce. Once salmon have spent another one to five years at sea, the adults then return to their spawning rivers, which in the UK usually peaks in June to August and October to December (Cowx & Fraser, 2003). This behaviour has resulted in genetically distinct stock between rivers and even within individual rivers (JNCC, 2021c). Atlantic salmon currently only qualifies as an Annex II protected species when present within freshwater habitats (Malcolm, *et al.*, 2010). There are known migrating populations of Atlantic salmon in the Rivers Tefi, Wye and Usk (JNCC, 2021c). Historically, the Wye is the most famous and productive river in Wales for Atlantic salmon, with high-quality spawning grounds and juvenile habitat in both the main channel and tributaries (JNCC, 2021c). In 1999, the highest egg deposition of any British river south of Cumbria was in the River Usk (JNCC, 2021c). The Usk has a mixed catchment with a largely unmodified river channel, no significant obstructions to salmon migration, good quality spawning gravels and a diversity of habitats providing excellent habitat for salmon parr.

Sea Lamprey - Petromyzon marinus (1095)

73. The sea lamprey is a primitive, jawless fish resembling an eel. This species occurs in Atlantic coastal areas of Europe and can reach over 50 cm in length. Metamorphosis from juvenile to adult life stage takes a couple of weeks and occurs between July and September. The sea lamprey adult phase is short and lasts around two years. In Europe, the spawning migration is normally between April and May, when the adults migrate back to rivers (Laughton & Burns, 2003). In this time, the species is parasitic, feeding on a variety of marine and anadromous fishes. Due to their parasitic nature, sea lamprey distribution is largely determined by their host. They have been found in both shallow coastal areas and deep offshore waters (Maitland, 2003). The River Usk is important for its population of sea lamprey, and the River Wye also

provides exceptionally good quality habitat for sea lamprey and supports a healthy population (JNCC, 2021c).

River Lamprey - Lampetra fluviatilis (1099)

74. The river lamprey is found in coastal waters, estuaries, and accessible rivers. This species is intermediate in size (average 30 cm) when compared to other UK lamprey species. River lamprey is a migratory species and grows to maturity in estuaries around the UK, before migrating upstream into fresh water to spawn in clean rivers and streams (Laughton & Burns, 2003). The growth phase of the river lamprey is restricted to estuaries, where it feeds on a variety of fish. After one to two years river lamprey stop feeding during autumn months and move upstream into rivers, usually migrating to fresh water from October to December (Maitland, 2003)). The Rivers Tefi, Usk and Wye each support a healthy population of river lamprey and is considered to provide exceptionally good quality habitat for the species, providing a mixture of substrates and in-stream features provides excellent habitat for juvenile lampreys (JNCC, 2021c).

Potential Pathways For LSE

75. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on fish ecology, screened into the HRA are outlined in **Table 8D-5**:

- Temporary physical disturbance to fish and shellfish habitats and species from increased SSC and sediment deposition;
- Impact of changes to marine water quality from the mobilisation of contaminants;
- Impact of changes to marine water quality from the use of drilling fluids at HDD break-out points;
- Impact of changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils;
- Underwater noise and vibration;
- Effects of EMF emissions;
- Disturbance effects to fish (such as barrier effects, collision, and entanglement) from the presence of floating offshore structures and associated tethering systems; and
- Effects to fish and shellfish from maintenance activities.

Table 8D-5. Potential impacts to Annex II migratory fish during as a of the proposed Project

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Temporary direct loss and physical disturbance to fish habitats	There are a number of route preparation and installation activities that will temporarily disturb and result in short-term loss of seabed habitats that could be important for fish habitat. Sensitivity to effects of habitat disturbance varies between receptors. Less mobile species / life stages are far less tolerant of disturbance, which may result in physical damage in some instances. However, mobile species and life stages have a greater capacity to accommodate such changes through movement to undisturbed areas. However, migratory fish are not considered to have functional associations with seabed habitats due to their life history strategies and transient presence within the Offshore Development Area. Therefore, potential effects of temporary direct loss and physical disturbance to fish habitats is **screened out of further assessment**.		✓
	Temporary physical disturbance to fish and shellfish habitats and species from increased SSC and sediment deposition	Seabed disturbance which occurs during pre-installation and installation activities has the potential to cause an increase in SSC and turbidity. This can result in a sediment plume in the water column which travels away from the Offshore Development Area before depositing sediment on the seabed. Several potential effects can arise from this, including the clogging of gills and feeding apparatus, reduced feeding success of visual predators due to decreased visibility, the mortality of eggs and larvae which have a lower tolerance to turbid conditions, and effects related to toxic conditions if sediment-bound contaminants are disturbed. Fish migration and movement between important areas such as spawning and feeding grounds could also be impacted. Therefore, the potential for LSE on migratory fish features from increased SSC and deposition cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Impact of changes to marine water quality from the mobilisation of contaminants	Sediment-bound contaminants including heavy metals and PAHs could have detrimental impacts on fish and shellfish when present in concentrations above relevant thresholds and resuspended during disturbance to the seabed. Impacts can include cell apoptosis in fish immune systems **Invalid source specified.**. Therefore,	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		the potential for LSE on migratory fish features from changes in marine water quality cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Impact of changes to marine water quality from the use of drilling fluids at HDD break-out points	The use of drilling fluids at the HDD breakout points could result in decreased water quality that can have effects on the health of fish and shellfish populations. Therefore, the potential for LSE on migratory fish features from changes in marine water quality cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Impact of changes to marine water quality from accidental leaks and spills from vessels, including loss of fuel oils	The accidental release of pollutants and planned release of wastewater could occur from any of the vessels associated with the Construction phase activities and any support vessels present and has the potential to alter water quality. Vessels could have cleaning fluids, oils, and hydraulic fluids onboard, which could be accidentally discharged, releasing hydrocarbons and chemical pollutants into the surrounding seawater, with consequences for migratory fish. The risk of an accidental spill occurring is very low and should an accidental spill or leak occur, it would be very small in extent and subject to immediate dilution and rapid dispersal within the marine environment. However, the potential for LSE on migratory fish features from changes in marine water quality cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Underwater noise and vibration	Underwater sound and vibration will be generated by a range of project construction activities including geophysical pre-installation surveys, the potential for impact piling or for the installation of piles in the seabed, and cable lay activities such as dredging, ploughing, jetting, and increased vessel noise. The sound characteristics of the proposed Project construction activities have been determined (**Chapter 20: Fish and Shellfish Ecology**), with sub bottom profiling (SBP) and impact piling determined to have the highest sound pressure level. Detonation of UXO have the potential to physically harm (possibly fatally) fish within the blast radius or resulting pressure wave. An explosion could also pose risk similar	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		to that of underwater noise to receptors. Underwater noise impacts associated with UXO detonation will be screened into the assessment. However, the determination of the presence of UXO will not be undertaken until a later stage of the proposed Project, and should UXO be found, and detonation required this will be subject to a separate application for consent. Fish use sound for communication, prey location and predator avoidance, and thus it is an important environmental cue **Invalid source specified.**. Fish ears and the lateral line perceive underwater sound through sensitivity to vibrations. Swim bladders, which are gas-filled sacs, are also used for sound detection in some teleost or bony fish **Invalid source specified.**. Sound sources, particularly of high intensity or long duration, have the potential to result in permanent and temporary injury and auditory effects and can result in masking and behavioural disturbance in fish. This includes the potential for underwater sound to act as a barrier to the movement of diadromous fish during key migratory periods. Therefore, the potential for LSE on migratory fish features from underwater noise and vibration cannot be excluded, and the impact pathway has been **screened into the assessment**.		
Operation and maintenance	Permanent direct loss of fish habitats	The placement of hard substrates on the seafloor, including cable and scour protection, can result in the permanent loss of fish and shellfish habitats and species. Permanent loss of will occur through the placement of turbine anchors. Moreover, Cable and scour protection are likely to be needed at some locations where the minimum cable burial depth of 0.8 m cannot be achieved or at locations where third-party cables are crossed. Introduction of hard substrate would replace existing bedrock or otherwise soft substrates, leading to permanent loss of these habitats and species. However, migratory fish are not considered to have functional associations with seabed habitats due to their life history strategies and transient presence within the		✓

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		Offshore Development Area. Therefore, potential effects of habitat permanent direct loss and physical disturbance to fish habitats is **screened out of further assessment**.		
	Increase in thermal emissions from cable operation	Subsea cables associated with the proposed Project, including both IAC and offshore export cables are known to produce heat during operation which, when buried in the seabed, can increase the temperature of surrounding sediment up to 70°C **Invalid source specified.**. Research indicates that there may be some increase in substratum temperature which could affect marine receptors within the sediment **Invalid source specified.**. Fish species are expected to be at lower risk of thermal effects from the buried cable, as any heat would be instantly dissipated by currents. Moreover, migratory fish are not considered to have functional associations with seabed habitats due to their life history strategies and transient presence within the Offshore Development Area. Therefore, potential impact of in thermal emissions from cable operation is **screened out of further assessment.**		✓
	Effects of EMF emissions	Subsea cables associated with the proposed Project, including both IACs and export cables are known to produce EMF emissions (Hutchison, *et al.*, 2020) and have the potential to affect foraging and migratory success and behaviour. Exposure to EMF emissions which have been artificially created can cause several impacts, including reduced swimming speeds in European eel (Westerberg & Langfelt, 2008), as well as altering the direction of fish migrations (Klimley, et al., 2021). Therefore, the potential for LSE on migratory fish features from EMF emissions cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Disturbance effects to fish (such as barrier effects, collision and entanglement) from the presence of floating	Floating platforms may act as fish aggregating devices, changing species composition and abundance at localised scales and foraging pressure for example, from seals (e.g., see Farr *et al.*,**Invalid source specified.**). The physical presence of floating offshore wind infrastructure also has the potential, depending on design, to cause barrier effects, entanglement, or collisions either directly or indirectly. Therefore, the	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	offshore structures and associated tethering systems	potential for LSE on migratory fish features from barrier effects and entanglement cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Underwater sound and vibration	During operation of the proposed Project, underwater noise can be produced from both the rotating machinery in the turbines (non-impulsive), and from cables that may 'snap' as cable tension is released in the mooring system (impulsive). Fish use sound for communication, prey location and predator avoidance, and thus it is an important environmental cue **Invalid source specified.**. Fish ears and the lateral line perceive underwater noise through sensitivity to vibrations. Swim bladders, which are gas-filled sacs, are also used for sound detection in some teleost or bony fish **Invalid source specified.**. Sound sources, particularly of high intensity or long duration, have the potential to result in permanent and temporary injury and auditory effects and can result in masking and behavioural disturbance in fish. This includes the potential for underwater noise to act as a barrier to the movement of diadromous fish during key migratory periods. Therefore, the potential for LSE on migratory fish features from underwater vibration cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Potential effects to fish from maintenance activities	Potential effects of maintenance activities will be of a lower magnitude or the same as construction phase. Maintenance activities and cable repair, where required, will be carried out using the same or similar methods as cable installation, and therefore the potential pathways for impact to fish and shellfish ecology would be the same as those identified for the construction phase of the proposed Project. Therefore, the potential for LSE on migratory fish features cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Decommissioning	Temporary physical disturbance to fish and shellfish habitats and species	At the end of the operational life of the proposed Project, there will be a DEMP in place. Other proposed Project constraints will also be taken into consideration (e.g.	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	from increased SSC and sediment deposition	safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**		
	Impact of changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils			
	Underwater noise and vibration			

Determination of LSE

76. A Migratory Fish Study Area, consisting of a 14 km buffer around the Offshore Development Area, has been used to screen for potential designated sites (**Figure 8D-4**). The results of the assessment to determine whether there will be LSE on SAC migratory fish features from the proposed Project are presented in **Figure 8D-4** and **Table 8D-6**. The sites that are screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

77. Moreover, to determine if there are potential interactions between the proposed Project and the migratory routes of certain fish species which are a qualifying feature of a site outside the main Migratory Fish Study Area, a regional site screening approach has also been adopted. Therefore, any relevant designated sites with a migratory fish feature that fall onshore of the proposed Project have also been assessed in **Table 8D-6.** This approach considers the potential for an interaction between the Offshore Development Area and potential migratory routes of migratory fish. This regional approach takes into consideration work by ABPmer (2014) (**Figure 8D-5**).

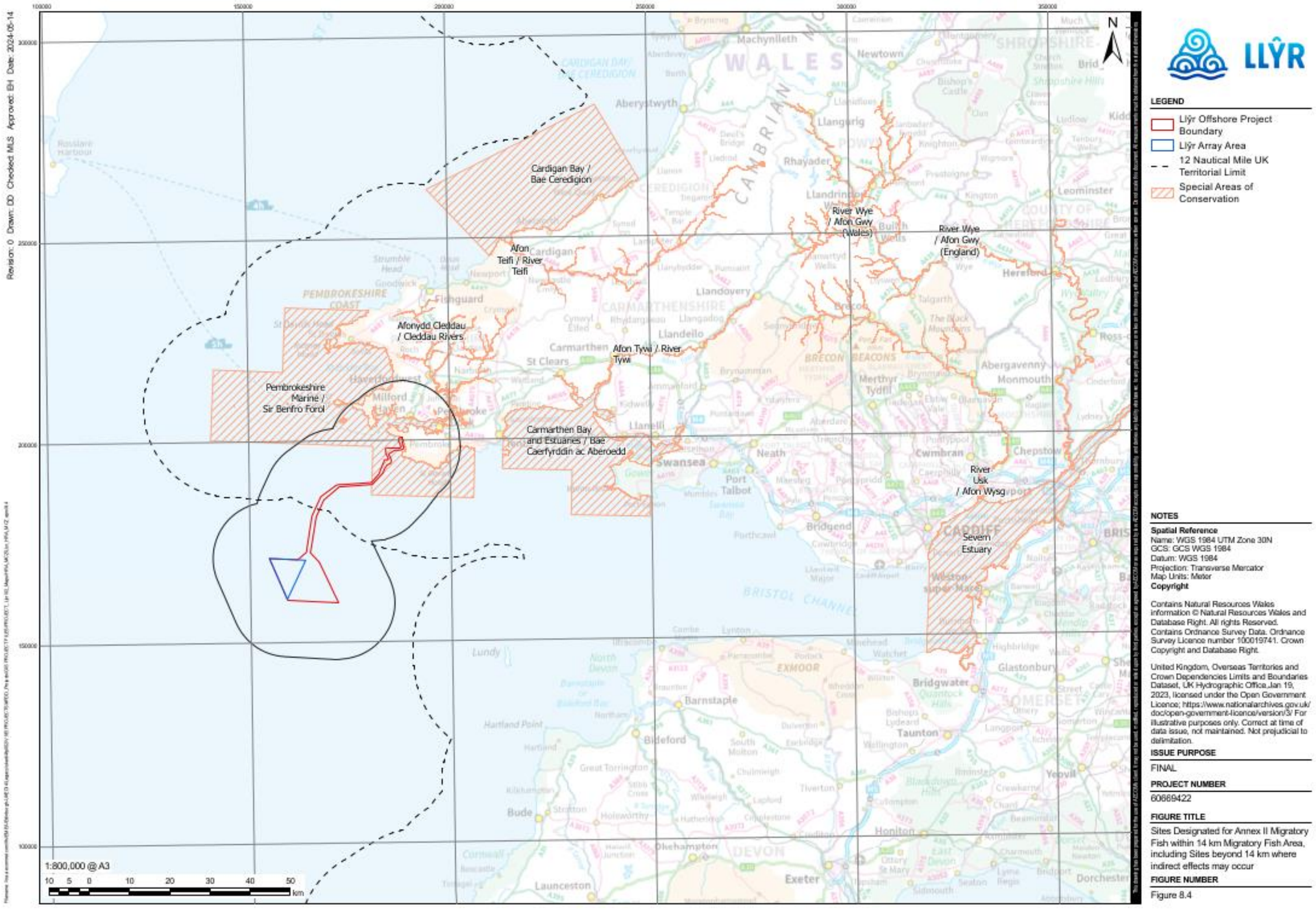

Figure 8D-4. Sites designated for Annex II migratory fish within 14 km of the Llŷr Project, including sites beyond 14 km where indirect effects may occur

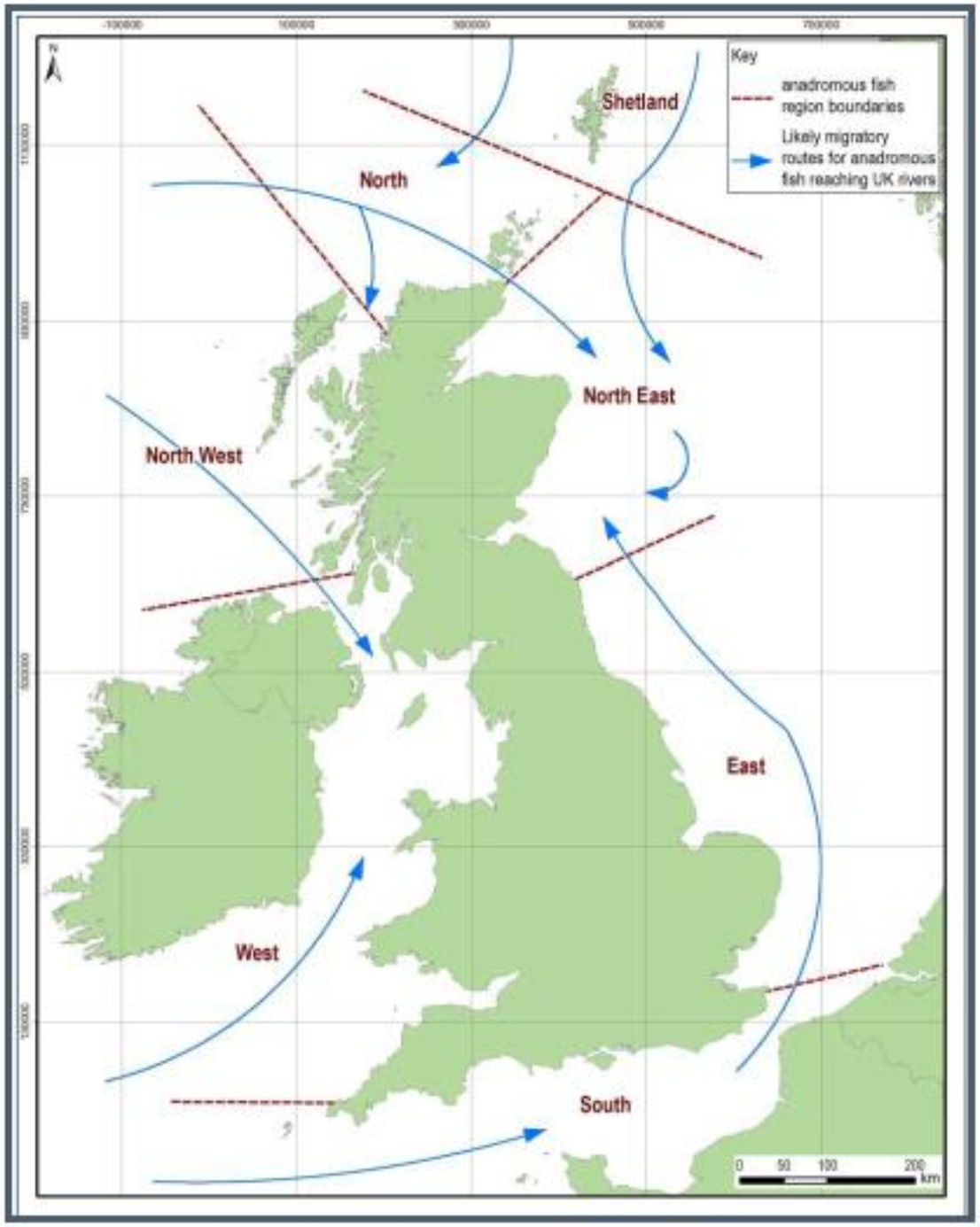

Figure 8D-5. Location and extent of coastal regions to be used for screening migratory fish features (ABPMer, 2014)

Table 8D-6. Determination of LSE for designated sites for Annex II migratory fish

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	*Annex II migratory fish:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103).	23.04	0.00	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103). The Annex II migratory fish species sea lamprey, river lamprey, allis shad, and twaite shad are qualifying features of this SAC though they are not a primary reason for site selection. However, there is direct overlap between Offshore Development Area. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
Cleddau Rivers / Afonydd Cleddau SAC (UK0030074)	*Primary reason for site selection:* • River lamprey *Lampetra fluviatilis* (1099); • Brook lamprey *Lampetra planeri* (1096); and • Bullhead *Cottus gobio* (1163).	55.03	16.52	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); and • Sea lamprey *Petromyzon marinus* (1095). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, this river drains directly into Milford Haven. It is therefore considered that there is a high probability that migratory lamprey individuals

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
	Other Annex II migratory fish: • Sea lamprey *Petromyzon marinus* (1095).				would pass through / close to the Offshore Development Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA. Brook lamprey and bullhead are not migratory and therefore would not be affected.
Carmarthen Bay and Estuaries / Bae Caerfyddin ac Aberoedd SAC (UK0020020)	*Primary reason for site selection:* • Twaite shad *Alosa fallax* (1103). *Other Annex II migratory fish:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); and • Allis shad *Alosa alosa* (1102).	53.94	24.63	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, due to the location of the Offshore Development Area, it is possible that migratory species from Carmarthen Bay will pass through / close to the Offshore Development Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OffECC (km)	Potential for LSE	Rationale behind screening decision
Cardigan Bay / Bae Ceredigion SAC (UK0012712)	*Annex II migratory fish:* • Sea lamprey *Petromyzon marinus* (1095); and • River lamprey *Lampetra fluviatilis* (1099).	88.42	50.18	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); and • Sea lamprey *Petromyzon marinus* (1095). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area . However, due to the location of the Offshore Development Area, it is possible that migratory species from Cardigan Bay will pass through the Migratory Fish Study Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
Afon Teifi / River Teifi SAC (UK0012670)	*Primary reason for site selection:* • Brook lamprey *Lampetra planeri* (1096); • River lamprey *Lampetra fluviatilis* (1099); • Atlantic salmon *Salmo salar* (1106); and • Bullhead *Cottus gobio* (1163).	89.87	51.22	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); and • Atlantic salmon *Salmo salar* (1106). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, due to the location of the Offshore Development Area, it is possible that migratory species from the River Teifi will pass through the Migratory Fish Study Area during seasonal migration. Therefore,

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
	Other Annex II migratory fish: • Sea lamprey *Petromyzon marinus* (1095).				there is potential for LSE, and these features have been screened in and will be considered within the AA. Brook lamprey and bullhead are not migratory and therefore would not be affected.
River Tywi / Afon Tywi SAC (UK0013010)	*Primary reason for site selection:* • Twaite shad *Alosa fallax* (1103). *Other Annex II migratory fish:* • Sea lamprey *Petromyzon marinus* (1095); • Brook lamprey *Lampetra planeri (*1096*);* • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); and • Bullhead *Cottus gobio* (1163).	90.19	55.07	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, the site is connected to the Carmarthen Bay and Estuaries SAC. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA. Brook lamprey and bullhead are not migratory and therefore would not be affected.
River Usk / Afon Wysg SAC (UK0013007)	*Primary reason for site selection:* • Sea lamprey *Petromyzon marinus* (1095);	131.13	98.15	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Atlantic salmon *Salmo salar* (1106);

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
	• Brook lamprey *Lampetra planeri* (1096); • River lamprey *Lampetra fluviatilis* (1099); • Twaite shad *Alosa fallax* (1103); • Atlantic salmon *Salmo salar* (1106); • Bullhead *Cottus gobio* (1163). *Other Annex II migratory fish:* • Allis shad *Alosa alosa* (1102).				• Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, due to the location of the Offshore Development Area, it is possible that migratory species from the River Usk will pass through the Migratory Fish Study Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA. Brook lamprey and bullhead are not migratory and therefore would not be affected.
Severn Estuary Ramsar (UK11081)	*Designated for Ramsar criteria:* 1. contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region; 3. supports populations of plant and / or animal species important for maintaining the biological diversity of a particular biogeographic region; 4. It supports plant and / or animal species at a critical stage in their life	155.94	138.89	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis*; • Sea lamprey *Petromyzon marinus*; • Atlantic salmon *Salmo salar*; • Allis shad *Alosa alosa*; and • Twaite shad *Alosa fallax.* Distance from the Offshore Development Area exceeds the e Migratory Fish Study Area. However, due to the location of the Offshore Development

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
	cycles, or provides refuge during adverse conditions; 5. it regularly supports 20,000 or more waterbirds; 6. it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird; and 8. is an important source of food for fishes, spawning ground, nursery and / or migration path on which fish stocks, either within the wetland or elsewhere, depend. Specifically noting River lamprey (*Lampetra fluviatilis)*, sea lamprey (*Petromyzon marinus)*, Atlantic salmon (*Salmo salar)*, Allis shad (*Alosa alosa)*, Twaite shad (*Alosa fallax)*, and sea trout (*Salmo trutta*) within Criteria 4 and 8.				Area, it is possible that migratory species will pass through the Migratory Fish Study Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA. Sea trout *Salmon trutta* included in the assemblage of this site considered within **Chapter 20: Fish and Shellfish Ecology**
Severn Estuary / Môr Hafren SAC (UK0013030)	*Primary reason for site selection:* • Twaite shad *Alosa fallax* (1103); • River lamprey *Lampetra fluviatilis* (1099); and	154.78	132.98	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); and • Twaite shad *Alosa fallax* (1103).

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
	• Sea lamprey *Petromyzon marinus* (1095).				Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, due to the location of the Offshore Development Area, it is possible that migratory species from the River Severn will pass through the Migratory Fish Study Area during seasonal migration. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
River Wye / Afon Gwy SAC (UK0012642)	*Primary reason for site selection:* • Sea lamprey *Petromyzon marinus* (1095); • Brook lamprey *Lampetra planeri* (1096); • River lamprey *Lampetra fluviatilis* (1099); • Twaite shad *Alosa fallax* (1103); • Atlantic salmon *Salmo salar* (1106); and • Bullhead *Cottus gobio* (1163). *Other Annex II migratory fish:* • Allis shad *Alosa alosa* (1102).	174.80	141.17	**Yes**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Atlantic salmon *Salmo salar* (1106); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103). Distance from the Offshore Development Area exceeds the Migratory Fish Study Area. However, due to the location of the Offshore Development Area, it is possible that migratory species from the River Wye will pass through the Migratory Fish Study Area during seasonal migration. Therefore, there is potential for LSE, and these features have

Site name	Annex II migratory fish	Distance to Llŷr Array Area (km)	Distance OfECC (km)	Potential for LSE	Rationale behind screening decision
					been screened in and will be considered within the AA. Brook lamprey and bullhead are not migratory and therefore would not be affected.

Marine Mammals

78. This section presents HRA screening with respect to the National Site Network for marine mammal SACs based on Guidance produced by NRW (NRW, 2022). It includes a summary of the potential interactions between the proposed Project and this receptor group, which have been used to inform the screening.

79. Conservation objectives are set as overall targets applying to SAC designated features to contribute to maintaining or reaching favourable conservation status at national, biogeographical, or European level (European Commission, 2012). The favourable conservation status of a species is achieved when:

    - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitat;
    - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
    - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

80. Conservation objectives for SACs which are designated for marine mammals aim to maintain the current range, population and / or habitat for the species. The potential implications of the proposed Project on the conservation objectives of each relevant SAC have been individually considered in this HRA screening.

Annex II Marine Mammals

81. There are four marine mammal species which are listed under Annex II of the Habitats Directive, which may occur in the vicinity of the proposed Project and have therefore been considered in this HRA screening report:

    - Harbour porpoise (*Phocoena phocoena*);
    - Bottlenose dolphin (*Tursiops tuncatus*);
    - Grey seal (*Halichoerus grypus*); and
    - Harbour seal (*Phoca vitulina*).

82. European otter are also listed as an Annex II species under the Habitats Directive but this species will be covered within **Section 8.6.2**.

Identification of Sites

83. To identify relevant sites designated with marine mammal qualifying interests which have potential connectivity with the proposed Project, the following criteria have been used:

    - Designated sites where there is direct spatial overlap with the Offshore Development Area; and
    - Designated sites which are located within the species-specific Marine Mammal Management Unit (MMMU).

84. To account for the highly mobile and transient nature of marine mammal species, and potential implications of local impacts on wider populations, all designated sites within the species-specific MMMUs, published by the Inter Agency Marine Mammal Working Group (IAMMWG) (IAMMWG, 2022), are screened in. These MMMUs have been defined by the IAMMWG based on their understanding of the biological population structure of these species, and the ecological differentiation of these populations (considering political boundaries and the management of human activities). There are currently no IAMMWG agreed MMMUs for seals, therefore all designated sites within Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) Region III are screened in.

These areas have also been used in accordance with the advice received from NRW (scoping opinion received 23rd May 2022). The MMMUs which are applicable for the proposed Project, and have subsequently been used in this HRA screening, are given in **Table 8D-5.**

Table 8D-7. Relevant MMMU

Species	MMMU	Reference
Harbour porpoise	Celtic and Irish Seas	IAMMWG, 2022
Bottlenose dolphin	Offshore Channel, Celtic Sea and SW England	IAMMWG, 2022
Grey seal	OSPAR Region III	OSPAR, 2017
Harbour seal	OSPAR Region III	OSPAR, 2017

Initial Long List

85. Based on the potential pathways identified for LSE**,** 33 protected sites designated for Annex II marine mammals with potential connectivity to the proposed Project have been identified to be taken forward for determination of LSE (**Table 8D-8**). This includes 13 sites within UK waters and 20 transboundary European sites.

86. Two sites with Annex II marine mammal qualifying features overlap with the Offshore Development Area. The Offshore Development Area overlaps with the West Wales Marine / Gorllewin Cymru Forol and Pembrokeshire Marine / Sir Benfro Forol SACs and have been taken forward for the determination of LSE on this basis. All other protected sites listed in the table have been taken forward for the determination of LSE as they are within the species-specific MMMUs, as presented in **Table 8D-7**, **Figure 8D-6**, and **Figure 8D-7**.

87. Bottlenose dolphin have been screened out, as the proposed Project is located within the Offshore Channel, Celtic Sea, and SW England MMMU for the species, inside which there are no SACs designated for their protection. This is consistent with the advice received from NRW (NRW scoping opinion, received 23rd May 2022) which stated: '*We do not consider that the bottlenose dolphin features from the SACs listed above* [Pen Llŷn a'r Sarnau and Cardigan Bay] *are likely to be found within the project impact area and therefore advise that there is no LSE on this feature*.'

88. Harbour seal have been screened out of the assessment as they are rare in Welsh waters and only incidentally haul out along the Welsh coast. This is supported by very low counts and at-sea usage estimates (SCOS, 2021; Carter, et al., 2022) and a lack of observations in site-specific digital aerial surveys (DAS) (Pavat, *et al.*, In Prep.). Furthermore, the nearest SAC for harbour seals is Slaney River Valley SAC near Wexford Ireland. This is greater than 100 km from the proposed Project location. Harbour seals tend to remain within ~50 km from the SAC boundary (Carter, et al., 2022) therefore there is no LSE for this species.

89. As bottlenose dolphin and harbour seal features have been screened out of assessment, only sites designated for harbour porpoise and grey seal have been taken forward for determination of LSE and are presented in **Table 8D-8.**

Table 8D-8. Summary of SACs designated for marine mammal qualifying features with potential connectivity to the proposed Project. Distances between the protected sites and the Offshore Development Area were measured as the shortest boundary-to-boundary at-sea distances

Site name	Country	Marine mammal qualifying feature	Distance to Llŷr Array Area (km)	Distance to OFECC (km)
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	Wales	• Harbour porpoise.	13.65	0.00
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	Wales	• Grey seal.	23.04	0.00
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)	England / Wales	• Harbour porpoise.	12.11	1.94
Lundy SAC (UK0013114)	England	• Grey seal.	51.77	40.72
Cardigan Bay / Bae Ceredigion SAC (UK0012712)	Wales	• Grey seal.	88.42	50.18
Saltee Islands SAC (IE0000707)	Ireland	• Grey seal.	101.59	99.94
Lleyn Peninsula and the Sarnau / Pen Llyn a`r Sarnau SAC (UK0013117)	Wales	• Grey seal.	139.08	100.38
Isles of Scilly Complex SAC (UK0013694)	England	• Grey seal.	154.04	153.86
North Anglesey / Gogledd Môn Forol SAC (UK0030398)	Wales	• Harbour porpoise.	208.79	174.30
Rockabill to Dalkey Island SAC (IE0003000)	Ireland	• Harbour porpoise.	209.43	186.52
Lambay Island SAC (IE000204)	Ireland	• Grey seal.	235.60	211.95
Nord Bretagne DH SAC (FR2502022)	France	• Harbour porpoise.	218.76	214.09
Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015)	France	• Harbour porpoise.	246.37	246.15
Roaringwater Bay and Islands SAC (IE0000101)	Ireland	• Harbour porpoise; and • Grey seal	266.62	266.61

Site name	Country	Marine mammal qualifying feature	Distance to Llŷr Array Area (km)	Distance to OFECC (km)
Côte de Granit rose-Sept-Iles SAC (FR5300009)	France	• Harbour porpoise.	279.30	273.47
North Channel SAC (UK0030399)	Northern Ireland	• Harbour porpoise.	309.93	279.66
Tregor Goëlo SAC (FR5300010)	France	• Harbour porpoise.	291.53	284.63
Baie de Morlaix SAC (FR5300015)	France	• Harbour porpoise.	297.69	293.18
Abers - Côte des légendes SAC (FR5300017)	France	• Harbour porpoise.	297.54	294.23
Ouessant-Molène SAC (FR5300018)	France	• Harbour porpoise; and • Grey seal.	309.50	308.53
Blasket Islands SAC (IE0002172)	Ireland	• Harbour porpoise; and • Grey seal.	348.56	348.56
Chaussée de Sein SAC (FR5302007)	France	• Harbour porpoise; and • Grey seal.	358.90	357.09
The Maidens SAC (UK0030384)	Northern Ireland	• Grey seal.	387.78	359.08
Slyne Head Islands SAC (IE000328)	Ireland	• Grey seal.	388.93	388.93
Inishbofin and Inishshark SAC (IE000278)	Ireland	• Grey seal.	398.56	398.14
Slieve Tooey / Tormore Island / Loughros Beg Bay SAC (IE000190)	Ireland	• Grey seal.	421.86	410.42
Récifs du talus du golfe de Gascogne SAC (FR5302016)	France	• Harbour porpoise.	412.70	412.58
Duvillaun Islands SAC (IE000495)	Ireland	• Grey seal.	432.41	430.07
Horn Head and Rinclevan SAC (IE000147)	Ireland	• Grey seal.	450.61	434.12

Site name	Country	Marine mammal qualifying feature	Distance to Llŷr Array Area (km)	Distance to OFECC (km)
Inishkea Islands SAC (IE000507)	Ireland	• Grey seal.	437.68	435.18
Treshnish Isles SAC (UK0030289)	Scotland	• Grey seal.	569.03	542.03
Monach Isles SAC (UK0012694)	Scotland	• Grey seal.	693.84	669.59
North Rona SAC (UK0012696)	Scotland	• Grey seal.	860.34	830.31

Potential Pathways for LSE

90. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on marine mammals, screened into the HRA are outlined in **Table 8D-9**:

    - Underwater noise;
    - Airborne sound and visual disturbance (pinnipeds only);
    - Collision with project vessels;
    - Accidental pollution or contamination;
    - Potential for indirect effects through impacts upon prey species;
    - Underwater noise from floating turbines;
    - Barrier effects from mooring lines and cables between platform and anchor;
    - Entanglement with mooring lines and cables; and
    - EMF emissions.

91. Impact pathways which have been screened in have been assessed when determining the potential for LSE on the qualifying interests of the designated sites.

Table 8D-9. Potential pathways for LSE on marine mammal qualifying features within SACs

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Effects of underwater noise	Underwater noise may be generated by a range of activities, including geophysical surveys, UXO clearance, piling or drilling, cable installation and vessel traffic during the Construction phase. Underwater noise has the potential to affect marine mammals through injury, by causing physiological damage to the individuals' auditory or other internal organs, and temporary or continuous disturbance, which includes disruption to behavioural patterns such as migration, nursing, breeding, foraging, socialising and / or sheltering (JNCC, *et al.*, 2010). Therefore, the potential for LSE on marine mammal features from underwater noise cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Collision with Project vessels	There will be an increase in vessel activity, compared to baseline levels, which may increase the risk of vessel collisions with marine mammals and can result in lethal and sub-lethal injury. Therefore, the potential for LSE on marine mammal features from collision risk cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Accidental pollution or contamination	Accidental / unplanned release of pollutants such as fuels from vessels, equipment and machinery could impact upon marine mammals by altering local water quality (Reijinders, *et al.*, 2009). Embedded mitigation will include a Marine Pollution Contingency Plan (**Volume 6, Appendix 4A: Outline CEMP**) which will implement measures to prevent and contain accidental release of pollutants and spills and set out industry good practice in line with OSPAR, International Maritime Organisation (IMO) and MARPOL guidelines for preventing pollution at sea. However, as the risk of accidental pollution cannot be eliminated, the potential for LSE on marine mammals from unplanned releases, accidental leaks or spills cannot be excluded at this stage, and the impact pathway has been **screened into the assessment**.	✓	
	Potential for indirect effects through impacts upon prey species	There is potential for changes in the abundance and distribution of prey from activities which change or disturb the seabed, result in increased SSC, or generate underwater noise, which could affect prey availability **Invalid source specified.**.	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		Therefore, at this stage the potential for LSE on marine mammal features from potential indirect effects through impacts upon prey species cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Airborne sound and visual disturbance (pinnipeds only)	Airborne sound and visual disturbance from vessels for example, when cable installation activities are close to shore**Invalid source specified.**. Therefore, the potential for LSE on pinniped features from airborne sound and visual disturbance cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Operation	Effects of underwater noise from floating turbines	There is potential for underwater noise to be generated by the mooring lines between the platform and the anchor, vessel activity and for noise propagation from the floating turbines. Therefore, the potential for LSE on marine mammal features from underwater noise associated with floating turbines cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Barrier effects from mooring lines and cables between platform and anchor	The presence of sub-surface structures may present a barrier to movement and migratory pathways **Invalid source specified.**. Therefore, the potential for LSE on marine mammal features from barrier effects cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Entanglement with mooring lines and cables	The floating configuration of the WTGs requires up to 1,250 m long mooring lines to connect WTGs with their anchors, thus posing an entanglement risk for marine mammals. These lines may also ensnare derelict fishing gear, which would also pose an entanglement risk **Invalid source specified.**. Therefore, the potential for LSE on marine mammal features from entanglement with mooring lines and cables cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Effects of EMF emissions	Marine mammals may be able to detect variations in magnetic fields and may utilise the Earth's magnetic field for navigation (Normandeau, Exponent Inc, *et al.*, 2011). Therefore, there is potential for EMF emitted from the inter-array and export cables to interfere with marine mammal behaviour and so the potential for LSE on marine	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		mammal features from EMF emissions cannot be excluded, and the impact pathway has been **screened into the assessment**.		
Decommissioning	Potential effects the same as construction phase	At the end of the operational life of the proposed Project, there will be a Decommissioning Environmental Management Plan in place. Other proposed Project constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**	✓	

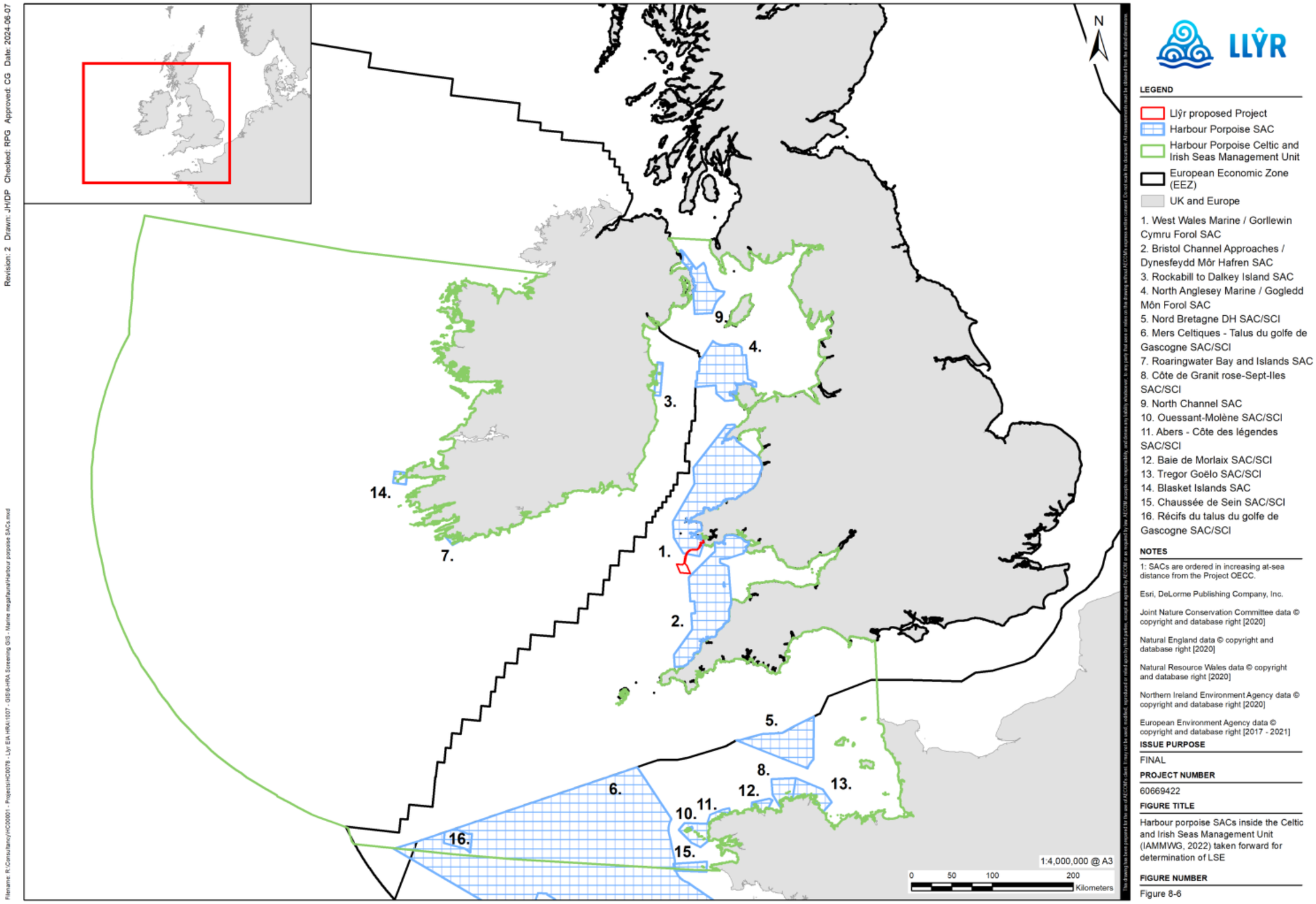

Figure 8D-6. Harbour porpoise SACs inside the Celtic and Irish Seas Management Unit (IAMMWG, 2022) taken forward for determination of LSE

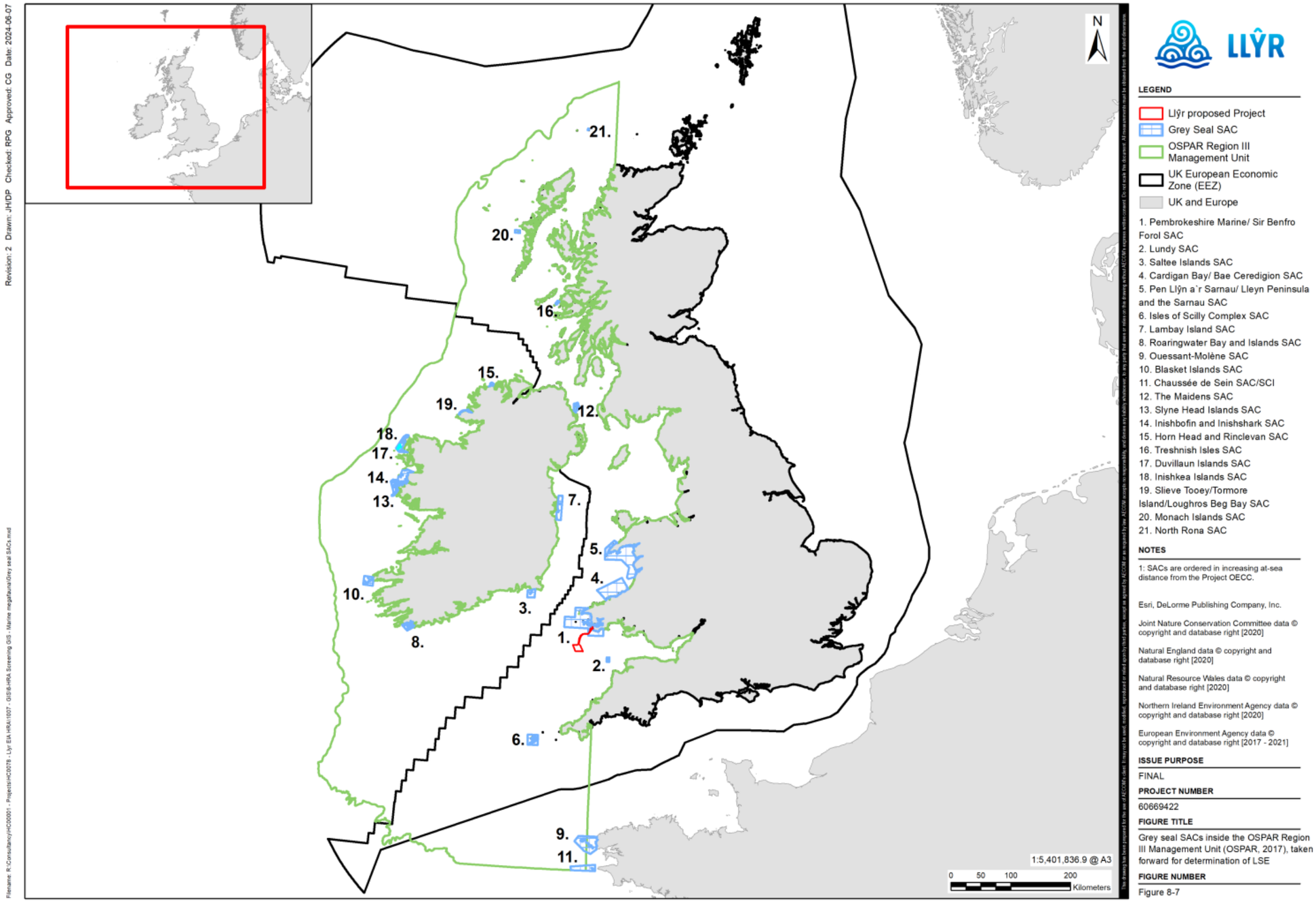

Figure 8D-7. Grey seal SACs inside the OSPAR Region III Management Unit (OSPAR, 2017), taken forward for determination of LSE

Determination of LSE

92. The results of the assessment to determine whether there could be LSE on SAC marine mammal features from the proposed Project are presented in **Table 8D-10.** Due to the mobile nature of marine mammal species, there is potential for marine mammal features of the sites to travel and thus be impacted by activities throughout the entire MU (NRW, 2022). Therefore, as per NRW (2022), all UK SACs spatially overlapping with the proposed Project and / or located within the species-specific MMMUs will be screened in and taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

Table 8D-10. Determination of LSE for designated sites for marine mammal qualifying features

Sites	Annex II marine mammals	Distance to Llŷr Array Area (km)	Distance to OfECC (km)	Potential for LSE	Rationale behind screening decision
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	Harbour porpoise *Phocoena Phocoena* (1351)	13.65	0.00	**Yes**	Due to the mobile nature of marine mammal species, there is potential for marine mammal features of the sites to travel and thus be impacted by activities throughout the entire management unit (NRW, 2022). Therefore, as per NRW (2022), all SACs spatially overlapping with the proposed Project and / or located within the species-specific MMMU have been screened in due to the potential for LSE and will be considered within the AA.
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)		12.11	1.94		
North Anglesey / Gogledd Môn Forol SAC (UK0030398)		208.79	174.30		
Rockabill to Dalkey Island SAC (IE0003000)		209.43	186.52		
Nord Bretagne DH SAC (FR2502022)		218.76	214.09		
Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015)		246.37	246.15		
Roaringwater Bay and Islands SAC (IE0000101)		266.62	266.61		
Côte de Granit rose-Sept-Iles SAC (FR5300009)		279.30	273.47		
Tregor Goëlo SAC (FR5300010)		291.53	284.63		
Baie de Morlaix SAC (FR5300015)		297.69	293.18		
Abers - Côte des légendes SAC (FR5300017)		297.54	294.23		
Ouessant-Molène SAC (FR5300018)		309.50	308.53		
Blasket Islands SAC (IE0002172)		348.56	348.56		
Chaussée de Sein SAC (FR5302007)		358.90	357.09		

Sites	Annex II marine mammals	Distance to Llŷr Array Area (km)	Distance to OfECC (km)	Potential for LSE	Rationale behind screening decision
Récifs du talus du golfe de Gascogne SAC (FR5302016)		412.70	412.58		
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	Grey seal *Halichoerus grypus* (1364)	23.04	0.00	**Yes**	Due to the mobile nature of marine mammal species, there is potential for marine mammal features of the sites to travel and thus be impacted by activities throughout the entire MU (NRW, 2022). Therefore, as per NRW (2022), all SACs spatially overlapping with the proposed Project and / or located within the species-specific MMMUs have been screened in due to the potential for LSE and will be considered within the AA.
Lundy SAC (UK0013114)		51.77	40.72		
Cardigan Bay / Bae Ceredigion SAC (UK0012712)		88.42	50.18		
Saltee Islands SAC (IE0000707)		101.59	99.94		
Lleyn Peninsula and the Sarnau / Pen Llyn a`r Sarnau SAC (UK0013117)		139.08	100.38		
Isles of Scilly Complex SAC (UK0013694)		154.04	153.86		
Lambay Island SAC (IE000204)		235.60	211.95		
Roaringwater Bay and Islands SAC (IE0000101)		266.62	266.61		
Blasket Islands SAC (IE0002172)		348.56	348.56		
Chaussée de Sein SAC (FR5302007)		358.90	357.09		
The Maidens SAC (UK0030384)		387.78	359.08		
Slyne Head Islands SAC (IE000328)		388.93	388.93		
Inishbofin and Inishshark SAC (IE000278)		398.56	398.14		
Slieve Tooey / Tormore Island / Loughros Beg Bay SAC (IE000190)		421.86	410.42		
Duvillaun Islands SAC (IE000495)		432.41	430.07		

Sites	Annex II marine mammals	Distance to Llŷr Array Area (km)	Distance to OfECC (km)	Potential for LSE	Rationale behind screening decision
Horn Head and Rinclevan SAC (IE000147)		450.61	434.12		
Inishkea Islands SAC (IE000507)		437.68	435.18		
Treshnish Isles SAC (UK0030289)		569.03	542.03		
Monach Isles SAC (UK0012694)		693.84	669.59		
North Rona SAC (UK0012696)		860.34	830.31		

Marine Ornithology

93. This section presents the HRA screening for SPAs designated for marine ornithological features, primarily their breeding colony locations on land. For the purposes of HRA screening, this section includes a summary of the potential interactions between the proposed Project and the species within this receptor group (as SPA qualifying interests), which have been used to inform the screening.

94. Some of the SPAs included in this HRA screening report are also designated as Sites of Special Scientific Interest (SSSIs), where the earlier SSSI designation underpins the selection of the SPA (it is the larger colonies where there is this dual SPA / SSSI designation). These underpinning SSSIs are included in this report for information only as the HRA screening process does not apply to them. All SSSIs are taken forward for assessment under EIA rather than HRA and **Appendix 22B: Marine Ornithology Colony Apportioning** provides the long-list of the SSSIs included under EIA in respect of the proposed Project.

95. Conservation objectives are set as overall targets applying to SPA designated features to contribute to maintaining or reaching favourable conservation status at national, biogeographical, or European level. The favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitat;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

96. Conservation objectives for SPAs which are designated for ornithological features aim to maintain the current range, population and / or habitat for the species. The potential implications of the proposed Project on the conservation objectives of each relevant SPA have been individually considered in this HRA screening.

Relevant Ornithological Features

97. **Table 8D-11** presents a summary of raw survey counts for the proposed Project Array Area collected during the 24 months of DAS conducted by HiDef Aerial Surveying Ltd (Pavat, *et al.*, In Prep).

98. Despite the very low observations of lesser black-backed gulls during the two-years of DAS, this species has been included in the HRA screening due to the close proximity of the proposed Project to important breeding colonies at Skomer and Skokholm (JNCC, 2021e), and due to their high sensitivity to collision risk from offshore wind farms (Furness, et al., 2013).

99. There were very low observations of European storm-petrels; however, this species has been included in the HRA screening due to the presence of important breeding colonies at Skomer, Skokholm and the Seas off Pembrokeshire SPA as well as the Isles of Scilly SPA (the latter being requested for inclusion by JNCC). European storm-petrels forage offshore during daylight and commute back to the colony during low light and at night (Bolton, 2021; Thomas, et al., 2006), which may have affected their detection during the two-year DAS. Due to the very low numbers recorded it will only be possible to qualitatively address this species under HRA.

100. Balearic shearwaters were not detected during the two-year DAS. Therefore, this species has not been considered further within the HRA screening. However, due to their conservation value (including red-listed as a Bird of Conservation Concern in Wales,

International Union for Conservation of Nature (IUCN) Critically Endangered and a UK Biodiversity Action Plan (UKBAP) Priority species, Section 7 species of principal importance under the Environment (Wales) Act 2016 and listed on Annex I of the EU Birds Directive (2009 / 147 / EEC)) this species will be considered in the **Volume 3, Chapter 22: Ornithology**.

101. The species in the unshaded rows in **Table 8D-11** have been screened into the assessment, whereas those in shaded rows have been screened out (due to the very low numbers recorded).

Table 8D-11. Summary of survey observations for seabirds within the proposed Project Array Area throughout the two years of Digital Aerial Survey (DAS) (Pavat, et al., In Prep). Shaded rows have been screened out of further assessment

Species	Llŷr Array Area
Black-legged kittiwake (*Rissa tridactyla*)	308
Common guillemot (*Uria aalge*)	2,239
Razorbill (*Alca torda*)	265
Atlantic puffin (*Fratercula arctica*)	77
Manx shearwater (*Puffinus puffinus*)	594
Northern gannet (*Morus bassanus*)	123
Black-headed gull (*Chroicocephalus ridibundus*)	0
Common gull (*Larus canus*)	3
Great black-backed gull (*Larus marinus*)	4
Lesser black-backed gull (*Larus fuscus*)	4
Sandwich tern (*Sterna sandvicensis*)	0
Common tern (*Sterna hirundo*)	0
Arctic tern (*Sterna paradisaea*)	0
Great skua (*Stercorarius skua*)	1
European storm-petrel (*Hydrobates pelagicus*)	1
Northern fulmar (*Fulmarus glacialis*)	1
Balearic shearwater (*Puffinus mauretanicus*)	0
European shag (*Gulosus aristotelis*)	0

Identification of Sites

102. During the breeding season, seabirds are constrained to the breeding colony by their need to provision for their chicks. The distance from the colony that seabirds will forage is dependent on the species (Woodward, *et al.*, 2019). During the non-breeding season, seabirds are less territorial and will forage over wide areas.

103. Key seabird breeding colonies in Wales are designated as SPAs (relevant for consideration under HRA) with a further number also protected as SSSIs (to be assessed under EIA). To identify the SPAs with potential connectivity to the proposed Project, criterion 1 in **Table 8D-12** was used, as advised by NRW and Joint Nature Conservation Committee (JNCC) in the scoping opinion. **Table 8D-13** presents each species' foraging range used for the connectivity screening under criterion 1. Potential connectivity of the proposed Project with marine SPAs was also considered under criterion 2 and this is presented in **Table 8D-14**.

104. Distances between the protected sites and the proposed Project were measured as the shortest boundary-to-boundary at-sea distances. In the case of four SPAs protecting surrounding marine waters (Skomer, Skokholm and the Seas off Pembrokeshire; Grassholm;

Aberdaron Coast and Bardsey Island; Isles of Scilly), distances were measured to the closest section of land within the SPA.

Table 8D-12. Description of the two criteria used in the HRA screening process to identify relevant SPAs for marine ornithological features

Number	Criteria
1	All SPAs designated to protect colonies of the relevant breeding seabird features were analysed if they were within the mean maximum foraging range (km) plus 1 standard deviation (SD) (Woodward, *et al.*, 2019) of the relevant species from the Offshore Development Area.
2	Marine SPAs for aggregations of seabirds at-sea that overlap or are adjacent to the Offshore Development Area

105. It should be noted that JNCC advised a smaller foraging range to be used for guillemot (95.2 km instead of 153.7 km) and razorbill (122.2 km instead of 164.6 km) outside of the Northern Isles to exclude data collected at Fair Isle (which presents an unusually high foraging range due to a lack of food). JNCC also advised that site-specific foraging data from Grassholm SPA be used for gannets (516.7 km instead of 509.4 km) (JNCC scoping opinion received 18th May 2022). This advice is presented in **Table 8D-13** and adopted in the connectivity screening undertaken for these three species.

Table 8D-13. Mean maximum foraging ranges (km) and SD (km) used for the marine ornithology HRA screening process, based on Woodward et al. (2019) as recommended by JNCC and NRW

Species	Mean maximum foraging range (km)	SD (km)	Mean maximum foraging range + 1 SD (km)	Alternative mean maximum foraging range + 1 SD (km) recommended by JNCC
Kittiwake	156.1	144.5	300.6	-
Lesser black-backed gull	127.0	109.0	236.0	-
Guillemot	73.2	80.5	153.7	95.2**
Razorbill	88.7	75.9	164.6	122.2**
Puffin	137.1	128.3	265.4	-
European storm-petrel	336.0	-	336.0	-
Manx shearwater	1,346.8	1,018.7	2,365.5	-
Gannet	315.2	194.2	509.4	516.7*

**For gannets at Grassholm SPA*

***For guillemots and razorbills outside of the Northern Isles*

Initial Long List

106. Based on the criteria outlined in Table 8D-12, 36 SPAs have been identified to be taken forward for determination of LSE (Table 8D-14; Figure 8D-8). This includes eight SPAs within UK waters, 13 SPAs within Irish waters and 15 other transboundary SPAs. The underpinning SSSIs, which overlap spatially with an SPA, and protect the same qualifying (seabird) interests

are noted for reference in Table 8D-14 but do not require separate consideration in HRA screening.

107. The proposed OfECC overlaps with Skomer, Skokholm and the Seas off Pembrokeshire SPA. All other SPAs included are within mean maximum foraging range + 1 SD of at least one of their qualifying seabird features (**Table 8D-14**).

108. Several transboundary SPAs (including Mers Celtiques and Nord Bretagne) lie within mean maximum foraging range plus 1 SD but are not screened in for connectivity, using criterion 1, as they are 100% marine, protecting 'at sea' concentrations of seabirds. It is therefore criterion 2 that applies to these sites rather than criterion 1 (which only relates to breeding seabird colonies) as set out in **Table 8D-12**.

109. Similarly, the following sites protect wintering seabird assemblages rather than breeding populations and are not screened in as criterion 1 does not apply: Cabo Busto-Luanco SPA for Manx shearwater and Ballycotton Bay SPA, Ballymacoda Bay SPA, Cork Harbour SPA and Wexford Harbour and Slobs SPA for lesser black-backed gull.

110. The Irish Sea Front SPA, located north of the proposed Project Array Area, has been included for consideration in the HRA due to the site's conservation objective to 'ensure access to the site from linked breeding colonies', despite being a 100% marine site (JNCC, 2021d). Manx shearwater individuals that utilise the Irish Sea Front SPA predominantly originate from colonies in the wider region, including Lundy SSSI (JNCC, 2021d) located southeast of the proposed Project Array Area. HRA will therefore qualitatively consider the potential risk the proposed Project may present to Manx shearwater travelling between these two sites.

Table 8D-14. Long-list of designated sites for marine ornithology features with potential connectivity to the proposed Project

Site	Country	Qualifying key marine ornithology features for which foraging range overlaps between the proposed Project and the site	Distance to proposed Project Array Area (km)	Distance to the OfECC (km)	Number in Figure 8D-8
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component Site of Special Scientific Interest (SSSI):* • *Skomer Island and Middlehom SSSI*; and • *Skokholm SSSI*	Wales	• European storm petrel *Hydrobates pelagicus* (A014); • Manx shearwater *Puffinus puffinus* (A013); • Atlantic puffin *Fratercula arctica* (A204); and • Lesser Black-backed Gull *Larus fuscus* (A183). *Species included in the SPA seabird assemblage:* • Kittiwake; • Guillemot; and • Razorbill.	9.57	0.00	1
Grassholm / Ynys Gwales SPA (UK9014041) *Component SSSI:* • *Grassholm / Ynys Gwales SSSI*	Wales	• Gannet *Morus bassanus* (A016).	36.36	21.23	2
Saltee Islands SPA (IE004002)	Ireland	• Gannet *Morus bassanus* (A016); • Lesser Black-backed Gull *Larus fuscus* (A183); • Kittiwake *Rissa tridactyla* (A188); • Razorbill *Alca torda* (A200); and • Atlantic puffin *Fratercula arctica* (A204).	110.05	108.12	3
Glannau Aberdaron ac Ynys Enlli / Aberdaron Coast and Bardsey Island SPA (UK9013121) *Component SSSI:*	Wales	• Manx shearwater *Puffinus puffinus* (A013). *Interest feature of the SSSI only:* • Puffin.	146.78	111.64	4

Site	Country	Qualifying key marine ornithology features for which foraging range overlaps between the proposed Project and the site	Distance to proposed Project Array Area (km)	Distance to the OfECC (km)	Number in Figure 8D-8
• *Ynys Enlli SSSI; and* • *Ynysoedd Y Gwylan: Gwylan Islands SSSI.*					
Wicklow Head SPA (IE004127)	Ireland	• Kittiwake *Rissa tridactyla* (A188).	177.75	157.01	7
Helvick Head to Ballyquin SPA (IE004192)	Ireland	• Kittiwake *Rissa tridactyla* (A188).	157.07	157.07	6
Isles of Scilly SPA (UK9020288)	England	• European storm petrel *Hydrobates pelagicus* (A014); and • Lesser Black-backed Gull *Larus fuscus* (A183).	157.15	156.98	5
Howth Head Coast SPA (IE004113)	Ireland	• Kittiwake *Rissa tridactyla* (A188).	222.51	199.83	9
Ireland's Eye SPA (IE004117)	Ireland	• Kittiwake *Rissa tridactyla* (A188).	226.69	203.94	10
Lambay Island SPA (IE004069)	Ireland	• Kittiwake *Rissa tridac*tyla (A188); and • Atlantic puffin *Fratercula arctica* (A204).	235.29	211.62	11
Old Head of Kinsale SPA (IE0040210)	Ireland	• Kittiwake *Rissa tridactyla* (A188).	211.01	211.01	8
Irish Sea Front SPA (UK9020328) *Component SSSI:* • *Lundy SSSI.*	UK Offshore / England	• Manx shearwater *Puffinus puffinus* (A013).	248.49	216.39	12
Côte de Granit Rose-Sept-Iles SPA (FR5310011)	France	• Kittiwake *Rissa tridactyla* (A188); • European storm petrel *Hydrobates pelagicus* (A014); • Manx shearwater *Puffinus puffinus* (A013); and	279.30	273.47	14

Site	Country	Qualifying key marine ornithology features for which foraging range overlaps between the proposed Project and the site	Distance to proposed Project Array Area (km)	Distance to the OfECC (km)	Number in Figure 8D-8
		• Gannet *Morus bassanus* (A016).			
Baie de Morlaix SPA (FR5300015)	France	• European storm petrel *Hydrobates pelagicus* (A014); and • Manx shearwater *Puffinus puffinus* (A013).	297.69	293.18	15
Ouessant-Molène SPA (FR5310072)	France	• European storm petrel *Hydrobates pelagicus* (A014); • Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	309.50	308.53	13
Deenish Island and Scariff Island SPA (IE004175)	Ireland	• Manx shearwater *Puffinus puffinus* (A013).	327.31	327.31	17
The Bull and The Cow Rocks SPA (IE004066)	Ireland	• Gannet *Morus bassanus* (A016).	330.33	330.33	16
Puffin Island SPA (IE004003)	Ireland	• Manx shearwater *Puffinus puffinus* (A013).	341.30	341.30	19
Cap d'Erquy-Cap Fréhel SPA (FR5300011)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	349.36	341.10	22
Skelligs SPA (IE004007)	Ireland	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	347.88	347.88	18
Blasket Islands SPA (IE004008)	Ireland	• Manx shearwater *Puffinus puffinus* (A013).	353.01	353.01	20

Site	Country	Qualifying key marine ornithology features for which foraging range overlaps between the proposed Project and the site	Distance to proposed Project Array Area (km)	Distance to the OfECC (km)	Number in Figure 8D-8
Dunes et côtes de Trévignon SPA (FR5312010)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	392.35	338.47	23
Archipel de Glenan SPA (FR5310057)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	392.31	388.54	24
Ailsa Craig SPA (UK9003091)	Scotland	• Gannet *Morus bassanus* (A016).	428.2	396.60	21
Cruagh Island SPA (IE004170)	Ireland	• Manx shearwater *Puffinus puffinus* (A013).	397.30	397.30	29
Littoral seino-marin SPA (FR2310045)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	412.84	400.98	27
Baie de Quiberon SPA (FR5310093)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	444.21	438.95	25
Rivière de Pénerf SPA (FR5310092)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	462.91	456.89	28
Iles Houat-Hoedic SPA (FR5300033)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	462.47	457.20	26

Site	Country	Qualifying key marine ornithology features for which foraging range overlaps between the proposed Project and the site	Distance to proposed Project Array Area (km)	Distance to the OfECC (km)	Number in Figure 8D-8
Baie de Vilaine SPA (FR5310074)	France	• Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).	465.85	459.53	30
Estuaire de la Loire SPA (FR5210103)	France	• Manx shearwater *Puffinus puffinus* (A013).	502.78	496.02	31
Rum SPA (UK9001341)	Scotland	• Manx shearwater *Puffinus puffinus* (A013).	615.41	587.27	32
St Kilda SPA (UK9001031)	Scotland	• Manx shearwater *Puffinus puffinus* (A013).	733.97	711.19	33
Urdaibaiko itsasadarra / Ría de Urdaibai SPA (ES0000144)	Spain	• Manx shearwater *Puffinus puffinus* (A013).	894.46	891.04	34
Estuaire de la Bidassoa et baie de Fontarabie SPA (FR7212013)	France	• Manx shearwater *Puffinus puffinus* (A013).	912.41	907.95	35
Maciço Montanhoso Oriental da Ilha da Madeira SPA (PTZPE0041)	Portugal	• Manx shearwater *Puffinus puffinus* (A013).	2276.19	2276.04	36

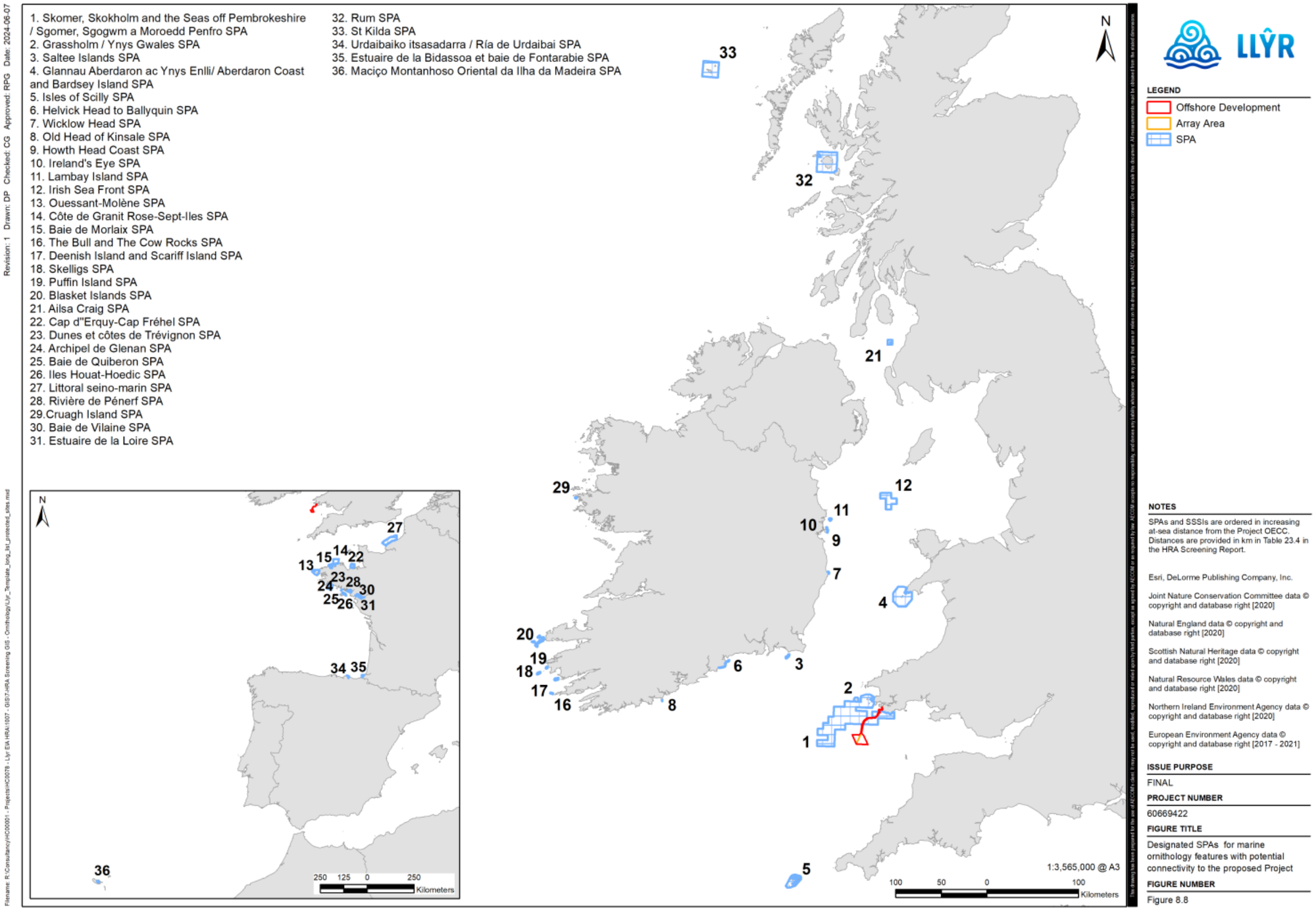

Figure 8D-8. SPAs for marine ornithology features with potential connectivity to the proposed Project

Potential Impact Pathways for LSE

111. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on marine ornithology features, screened into the HRA are outlined in **Table 8D-16**. Impact pathways which have been screened in have been assessed when determining the potential for LSE on the qualifying interests of the designated sites within foraging range plus 1 SD of the proposed Project.

- Disturbance and / or displacement associated with vessels and other offshore activities;
- Effects of underwater noise on diving seabirds;
- Indirect effects due to changes in habitat and / or prey availability and distribution;
- Disturbance and / or displacement due to the presence of WTGs and associated maintenance activities;
- Barrier effect due to presence of WTGs;
- Collision risk with WTGs;
- Entanglement with mooring lines and cables;
- Attraction of nocturnal seabirds to proposed Project infrastructure lighting; and
- Creation of roosting habitat for birds due to presence of floating platforms and associated infrastructure.

112. In **Table 8D-16**, consideration of disturbance and / or displacement and collision risk impact pathways has been undertaken with reference to species sensitivity scorings provided by Furness *et al.* (2013) and discussed in SNCB (guidance (SNCB, 2022).

113. Furness *et al.* (2013) suggest species with scores below eight are 'very unlikely' to be affected by disturbance and / or displacement. Therefore, a threshold of eight has been used to determine whether to screen species in for LSE in respect of this impact pathway during the construction and decommissioning phases (**Table 8D-15**; **Table 8D-16**).

114. Despite a 'disturbance susceptibility' score below eight in Furness *et al.* (2013), there is evidence that gannets, Manx shearwaters and European storm-petrels may be sensitive to displacement and barrier effects from offshore wind farms (SNCB, 2022; Krijsveld, *et al.*, 2011; Vanermen, *et al.*, 2013; Wade, *et al.*, 2016). Therefore, these species have been screened in for LSE for displacement and / or displacement during the operation and maintenance phase.

115. For collision risk, species with a total risk score of 100 or more (Furness, *et al.*, 2013) have been screened in for further consideration under this impact pathway **Table 8D-15.**

Table 8D-15. Species concern scores for displacement and / or disturbance and collision risk, as outlined in Furness et al. (2013)

Species	Disturbance				Collision				
	Conservation importance score	Disturbance by ship and helicopter traffic	Habitat use flexibility	Species concern index value	Flight % at blade height	Flight agility	% of time flying	night flight	Total risk score
Kittiwake	14	2	2	6	16	1	3	3	523
Lesser black-backed gull	16	2	1	3	30	1	2	3	960
Guillemot	16	3	3	14	1	4	1	2	37
Razorbill	16	3	3	14	1	4	1	1	32

Species	Disturbance				Collision				
	Conservation importance score	Disturbance by ship and helicopter traffic	Habitat use flexibility	Species concern index value	Flight % at blade height	Flight agility	% of time flying	night flight	Total risk score
Puffin	16	2	3	10	1	3	1	1	27
European storm-petrel	17	1	1	2	2	1	3	4	91
Manx shearwater	17	1	1	2	0	3	3	3	0
Gannet	17	2	1	3	16	3	3	2	725

116. On the basis of **Table 8D-15** and NRW / JNCC advice, it is proposed to undertake quantitative displacement assessment for guillemot, razorbill, puffin and gannet (following SNCB guidance (2022)) and quantitative collision risk modelling for kittiwake, lesser black-backed gull and gannet within the RIAA during stage 2 (AA) (using agreed methodology based on Band (2012)).

Table 8D-16. Potential impact pathways to the protected sites with marine ornithology features throughout the different phases of the proposed Project

Project phase	Potential Impact Pathway	Rationale	Species Screening Outcomes
Construction	Disturbance and / or displacement associated with vessels and other offshore activities	Birds may be disturbed and / or displaced from foraging or resting areas, which could lead to a temporary reduction in foraging opportunities or an increase in energy expenditure, resulting in a decrease in survival or productivity. Disturbance and / or displacement may be caused by the presence of vessels, as well as above water noise and visual disturbance associated with other construction and decommissioning activities including pre-installation surveys, route preparation, UXO clearance, cable installation* and piling or drilling. The species concern index from Furness *et al.*, (2013), presented in **Table 8D-15**, has been used to determine species-specific vulnerability to this impact. Species which have been assigned a score lower than eight have been screened out from further assessment for this impact.	**Potential for impact for guillemot, puffin and razorbill** No potential for impact for European storm-petrel, kittiwake, lesser black-backed gull, gannet and Manx shearwater
	Effects of underwater noise on diving seabirds	Underwater noise may be generated by a range of proposed Project activities, including geophysical surveys, UXO clearance, piling or drilling, cable installation and vessel traffic. Diving seabirds may be temporarily displaced and / or disturbed by underwater noise generating activities, which could result in behavioural changes, such as changes in swimming direction, diving duration and / or avoidance of the area and reduce foraging success. There is potential for impact on seabirds which typically dive for prey as part of their foraging behaviour, which includes gannet, Manx shearwater, common guillemot, razorbill and puffin **Invalid source specified.**. Kittiwake, lesser black-backed gull and European storm-petrel typically feed at the water surface so are unlikely to be affected by underwater noise impacts (Flood, 2009; Mitchell, et al., 2018; Schwimmer & Garthe, 2005).	**Potential for impact for gannet, guillemot, Manx shearwater, puffin and razorbill** No potential for impact for European storm-petrel, kittiwake and lesser black-backed gull
	Indirect effects due to changes in habitat	There is potential for changes to the abundance and distribution of prey from activities which disturb the seabed, resulting in an increase in SSC, or generation of underwater	**Potential for impact for all seabird species**

Project phase	Potential Impact Pathway	Rationale	Species Screening Outcomes
	and / or prey availability and distribution	noise. This may reduce the foraging success of seabirds, which could result in reduced survival and productivity. There is potential for impact from this impact on all seabird species which have been screened in.	
Operation and maintenance	Disturbance and / or displacement due to the presence of WTGs and associated maintenance activities	Birds may be disturbed and / or displaced from foraging or resting areas, which could lead to a reduction in foraging opportunities or an increase in energy expenditure, resulting in a decrease in survival or productivity. Disturbance and / or displacement may be caused by the presence of WTGs, or by associated maintenance activities such as the presence of vessels. Gull species, such as lesser black-backed gull are not considered to be sensitive to the effects of displacement from offshore wind farms (Furness *et al.*, 2013). Despite a 'disturbance susceptibility' score below eight in Furness *et al.*, (2013) (**Table 8D-15**), there is evidence that gannets, Manx shearwaters and European storm-petrels may be sensitive to displacement and barrier effects from offshore wind farms (Wade, et al., 2016; SNCB, 2022). Therefore, there is potential for impact from this impact on all seabird species which have been screened in, with the exception of lesser black-backed gull (SNCB, 2022).	**Potential for impact for European storm-petrel, gannet, guillemot, Manx shearwater, puffin and razorbill** No potential for impact for kittiwake and lesser black-backed gull
	Barrier effect due to presence of WTGs	The presence of the offshore arrays may result in a barrier effect to bird movements, which could lead to a reduction in foraging opportunities or an increase in energy expenditure, resulting in a decrease in survival or productivity. This will have the greatest impact on seabirds which commute frequently across the Onshore Development Area, such as those travelling to foraging areas during the breeding season. There is potential for impact from this impact on all seabird species which have been screened in.	**Potential for impact for all seabird species**
	Collision risk with WTGs	Birds in flight are at direct risk of injury or mortality due to collision with the offshore WTGs. The risk is greatest for species which fly at higher altitude (e.g., kittiwake, gulls, and gannet) as they are more likely to fly at a height that overlaps with the rotor blade swept area, while species that remain at low altitude in flight (e.g., auks, storm petrels and shearwaters) have a very low risk of collision. The species-specific vulnerability to	**Potential for impact for gannet, kittiwake and lesser black-backed gull** No potential for impact for European storm

Project phase	Potential Impact Pathway	Rationale	Species Screening Outcomes
		this impact has been determined using the collision risk calculated in Furness *et al.*, (2013), presented in **Table 8D-15**. Species which have been assigned a score lower than 100 have been screened out from further assessment for this impact.	petrel, guillemot, Manx shearwater, puffin and razorbill
	Entanglement with mooring lines and cables	The floating configuration of the array requires long mooring lines to connect turbines with their anchors, thus posing an entanglement risk for diving seabirds, with potential to cause injury or mortality. These lines may also ensnare derelict fishing gear, which pose an additional entanglement risk. There is potential for impact on seabirds which typically dive for prey as part of their foraging behaviour, which includes gannet, Manx shearwater, common guillemot, razorbill and puffin. Kittiwake, lesser black-backed gull and European storm-petrel typically feed at the water surface so are unlikely to be at risk of entanglement with mooring lines and cables.	**Potential for impact for gannet, guillemot, Manx shearwater, puffin and razorbill**
			No potential for impact for European storm-petrel, kittiwake and lesser black-backed gull
	Attraction of nocturnal seabirds to proposed Project infrastructure lighting	Nocturnal seabirds, such as shearwaters and petrels, may be attracted to the offshore proposed Project infrastructure lighting causing them to become disorientated and / or increase their risk of collision with the offshore arrays. Therefore, there is potential for impact on Manx shearwater and European storm-petrel from this impact.	**Potential for impact for European storm-petrel and Manx shearwater**
			No potential for impact for gannet, guillemot, kittiwake, lesser black-backed gull, puffin, and razorbill
	Creation of roosting habitat for birds due to presence of floating platforms and associated infrastructure	The introduction of floating platforms and associated infrastructure presents the opportunity for new roosting habitat and may provide easier access to foraging grounds. The floating platform may also provide a perching and resting location during foraging or in storm conditions. However, there is also potential for seabirds which are attracted to and utilise the floating platforms to be subject to an increased collision risk. There is potential for impact from this impact on all seabird species which have been screened in.	**Potential for impact for all seabird species**

Project phase	Potential Impact Pathway	Rationale	Species Screening Outcomes
	Indirect effects due to changes in habitat and / or prey availability and distribution	There is potential for changes to the abundance and distribution of prey from maintenance activities which disturb the seabed, resulting in an increase in SSC, or generation of underwater noise. Installation of anchors for mooring lines and other installations on the seabed such as scour protection or cable protection* may also lead to some habitat loss for key prey species. This may reduce the foraging success of seabirds, which could result in reduced survival and productivity. There is potential for impact from this impact on all seabird species which have been screened in.	**Potential for impact for all seabird species**
Decommissioning	Potential effects the same as construction phase	At the end of the operational life of the proposed Project, there will be a DEMP in place. Other proposed Project constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**	**Potential for impact the same as construction phase.**

**The proposed offshore export cable will run through the marine section of Skomer, Skokholm and Seas Off Pembrokeshire SPA and so will receive specific attention in this regard*

Determination of LSE

117. **Table 8D-17** summarises the SPAs (and component SSSIs) where there is potential for LSE to be determined (SSSIs are addressed under EIA rather than HRA). These sites will be screened in and taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

Table 8D-17. Determination of LSE for designated sites for seabird qualifying interests / features, listed by species. SPAs and component SSSIs have only been listed for relevant seabird species which have been screened in through the above criteria.

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	Kittiwake *Rissa tridactyla* (A188)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA. No LSE has been determined for kittiwake from Côte de Granit Rose-Sept-Iles SPA, on the basis that the most recent available data form for this SPA estimates the population size of kittiwake at this SPA to be zero (EEA, 2017).
Saltee Islands SPA (IE004002)		110.05	108.12		
Wicklow Head SPA (IE004127)		177.75	157.01		
Helvick Head to Ballyquin SPA (IE004192)		157.07	157.07		
Howth Head Coast SPA (IE004113)		222.51	199.83		
Ireland's Eye SPA (IE004117)		226.69	203.94		
Lambay Island SPA (IE004069)		235.29	211.62		
Old Head of Kinsale SPA (IE0040210)		211.01	211.01		
Côte de Granit Rose-Sept-Iles SPA (FR5310011)		279.30	273.47	No	
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	Lesser Black-backed Gull *Larus fuscus* (A183)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA.

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
Saltee Islands SPA (IE004002)		110.05	108.12		
Isles of Scilly SPA (UK9020288)		157.15	156.98		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*		9.57	0.00		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	Razorbill *Alca torda* (A200)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA.
Saltee Islands SPA (IE004002)		110.05	108.12		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	Atlantic puffin *Fratercula arctica* (A204)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA.
Saltee Islands SPA (IE004002)		110.05	108.12		

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
Lambay Island SPA (IE004069)		235.29	211.62		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	European storm petrel *Hydrobates pelagicus* (A014)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA. For European storm-petrel, the foraging range in Woodward *et al.*, (2019) has poor confidence as the only available foraging range data in the UK was unpublished GPS data from one study in County Galway, Ireland. Telemetry data from tagged birds at Ouessant-Molène SPA recorded a maximum foraging distance of 240 km to the Isles of Scilly, with individuals mostly foraging closer to the colony (Mahéo & Cadiou, 2021). Therefore, whilst there is potential for European storm-petrel from French SPAs to have connectivity with the proposed Project based on Woodward *et al.*, (2019), local telemetry data suggest that it is unlikely that a significant number of birds from these SPAs will be within the proposed Project area. Therefore, there is no potential for LSE to the European storm-petrel feature of the Côte de Granit Rose-Sept-Iles SPA, Ouessant-Molène SPA or Baie de Morlaix SPA.
Isles of Scilly SPA (UK9020288)		157.15	156.98		
Côte de Granit Rose-Sept-Iles SPA (FR5310011)		279.30	273.47	No	
Baie de Morlaix SPA (FR5300015)		297.69	293.18		
Ouessant-Molène SPA (FR5310072)		309.50	308.53		

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051) *Component SSSI:* • *Skomer Island and Middleholm; and* • *Skokholm.*	Manx shearwater *Puffinus puffinus* (A013)	9.57	0.00	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA. No LSE has been concluded for transboundary SPAs which are located in French, Spanish and Portuguese waters and designated for Manx shearwater. Whilst there is potential for connectivity between the proposed Project and these SPAs, the majority of birds are likely to be within the mean foraging range plus 1 SD of the SPAs, which is 136.1 km (±88.7 SD) for Manx shearwater (Woodward, *et al.*, 2019). Additionally, the area of marine habitat within mean maximum foraging range plus 1 SD from these SPAs is between 9,517,105 km^2 (at Estuaire de la Bidassoa et Baie de Fontarabie SPA) and 12,042,948 km^2 (at Maciço Montanhoso Oriental da Ilha da Madeira SPA) for Manx shearwater. The Llŷr Array Area with a 4 km buffer therefore constitutes between 0.003% and 0.004 % of the marine habitat available for Manx shearwater from these SPAs. There is unlikely to be a significant portion of individuals from these SPAs within the Llŷr Array Area and the area of marine habitat available to the species will not be significantly reduced. Therefore,
Glannau Aberdaron ac Ynys Enlli / Aberdaron Coast and Bardsey Island SPA (UK9013121) *Component SSSI:* • *Ynys Enlli; and* • *Ynysoedd Y Gwylan: Gwylan Islands.*		146.78	111.64		
Irish Sea Front SPA (UK9020328) *Component SSSI:* • *Lundy.*		248.49	216.39		
Deenish Island and Scariff Island SPA (IE004175)		327.31	327.31		
Puffin Island SPA (IE004003)		341.30	341.30		
Skelligs SPA (IE004007)		347.88	347.88		
Blasket Islands SPA (IE004008)		353.01	353.01		
Cruagh Island SPA (IE004170)		397.30	397.30		
Rum SPA (UK9001341)		615.41	587.27		

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
St Kilda SPA (UK9001031)		733.97	711.99		there is no potential for LSE to the colonies from these SPAs.
Côte de Granit Rose-Sept-Iles SPA (FR5310011)		279.30	273.47	No	
Baie de Morlaix SPA (FR5300015)		297.69	293.18		
Ouessant-Molène SPA (FR5310072)		309.50	308.53		
Cap d'Erquy-Cap Fréhel SPA (FR5300011)		349.36	341.10		
Dunes et côtes de Trévignon SPA (FR5312010)		392.35	388.47		
Archipel de Glenan SPA (FR5310057)		392.31	388.54		
Littoral seino-marin SPA (FR2310045)		412.84	400.98		
Baie de Quiberon SPA (FR5310093)		444.21	438.95		
Rivière de Pénerf SPA (FR5310092)		462.91	456.89		
Iles Houat-Hoedic SPA (FR5300033)		462.47	457.20		
Baie de Vilaine SPA (FR5310074)		465.85	459.53		
Estuaire de la Loire SPA (FR5210103)		502.78	496.02		
Urdaibaiko itsasadarra / Ría de Urdaibai SPA (ES0000144)		894.46	891.04		
Estuaire de la Bidassoa et baie de Fontarabie SPA (FR7212013)		912.41	907.95		
Maciço Montanhoso Oriental da Ilha da Madeira SPA (PTZPE0041)		2276.19	2276.04		
Grassholm / Ynys Gwales SPA (UK9014041) *Component SSSI:* • *Grassholm / Ynys Gwales.*	Gannet *Morus*	36.36	21.23	**Yes**	SPAs within UK and Irish waters and mean maximum foraging range have been screened in due to the potential for LSE and will be considered within the AA.

Sites	Species	Distance to Llŷr Array Area (km)	Distance OFECC (km)	Potential for LSE	Rationale behind screening decision
Saltee Islands SPA (IE004002)	*bassanus* (A016)	110.05	108.12		No LSE has been concluded for transboundary SPAs which are located in French, Spanish and Portuguese waters and designated for gannet. Whilst there is potential for connectivity between the proposed Project and these SPAs, the majority of birds are likely to be within the mean foraging range plus 1 SD of the SPAs, which is 120.4 km (±50.0 SD) for gannet (Woodward, *et al.*, 2019). None of the SPAs located in French, Spanish or Portuguese waters are within these distances (**Table 8D-14**). Additionally, the area of marine habitat within mean maximum foraging range plus 1 SD from these SPAs is between 348,853 km^2 (at Littoral seino-marin SPA) and 628,149 km^2 (at Ouessant-Molène SPA) for gannet. The Llŷr Array Area with a 4 km buffer therefore constitutes between 0.066% and 0.119% for gannet from these SPAs. There is unlikely to be a significant portion of individuals from these SPAs within the proposed Llŷr Array Area and the area of marine habitat available to the species will not be significantly reduced. Therefore, there is no potential for LSE to the colonies from these SPAs.
The Bull and The Cow Rocks SPA (IE004066)		330.33	330.33		
Skelligs SPA (IE004007)		347.88	347.88		
Ailsa Craig SPA (UK9003091)		428.20	396.60		
Côte de Granit Rose-Sept-Iles SPA (FR5310011)		279.3	273.47	No	
Ouessant-Molène SPA (FR5310072)		309.5	308.53		
Cap d'Erquy-Cap Fréhel SPA (FR5300011)		349.36	341.10		
Dunes et côtes de Trévignon SPA (FR5312010)		392.35	388.47		
Archipel de Glenan SPA (FR5310057)		392.31	388.54		
Littoral seino-marin SPA (FR2310045)		412.84	400.98		
Baie de Quiberon SPA (FR5310093)		444.21	438.95		
Iles Houat-Hoedic SPA (FR5300033)		462.47	457.20		
Rivière de Pénerf SPA (FR5310092)		462.91	456.89		
Baie de Vilaine SPA (FR5310074)		465.85	459.53		

8.6.2. Terrestrial Ecology

Terrestrial habitats

118. Screening for potential LSE has been completed with respect to onshore Annex I habitats. It is assumed that for Annex I Habitats, any SAC or Ramsar site that overlaps directly with the Onshore Development Area has the potential to be affected. For the purposes of this assessment, it is assumed that wetland habitat impacts due to indirect drainage effects may extend out to 250 m from infrastructure due to possible hydrological connections. This is also the survey buffer used to inform the Preliminary Ecological Assessment (PEA). Therefore, any SAC or Ramsar site for which such overlap is identified will be screened in for further assessment within the AA.

119. For the purposes of considering terrestrial habitats within this HRA screening report, a 10 km search buffer has been applied, which is a standard buffer for European sites and formed the basis of the Study Area PEA, from the Project cable corridor and has been used to identify SAC or Ramsar sites needing to be considered. Once European sites have been identified, Annex I Habitat qualifying features have been considered in terms of potential impact pathways.

120. Please note that Annex I Habitats located within the intertidal zone, i.e., the area where the sea meets the land between high and low tides, are considered in **Section 8.6.1** of this screening report.

Annex I Terrestrial Habitats

121. There are several terrestrial habitats which are listed under Annex I of the Habitats Directive, which may occur within the vicinity of the Onshore Development Area and have therefore been considered in this HRA screening report. These are discussed below. The habitats considered here are those that extend inland from MHWS i.e., terrestrial habitats. All habitats and species present below MHWS are covered within **Section 8.6.1**.

Vegetated Sea Cliffs of the Atlantic and Baltic Coasts (1230)

122. Vegetated sea cliffs are steep slopes fringing hard or soft coasts, created by past or present marine erosion, and supporting a wide diversity of vegetation types with variable maritime influence. Exposure to the sea is a key determinant of the type of sea cliff vegetation. The most exposed areas support maritime vegetation dominated by a range of salt-tolerant plants. More sheltered cliffs support communities closely related to those found on similar substrates inland, such as grassland and heath, with only a minor maritime element in the flora.

*'Fixed Coastal Dunes with Herbaceous Vegetation ('Grey Dunes)' *Priority Feature (2130)*

123. Fixed dune vegetation occurs mainly on the largest dune systems, being those that have the width to allow it to develop. It typically occurs inland of the zone dominated by marram (*Ammophila arenaria)* on coastal dunes and represents the vegetation that replaces marram as the dune stabilises and the organic content of the sand increases.

124. Fixed dunes with herbaceous vegetation occur widely around the coasts of the UK and are a major component of many sand dune systems.

European Dry Heaths (4030)

125. European dry heaths typically occur on freely draining, acidic to circumneutral soils with generally low nutrient content. Ericaceous dwarf-shrubs dominate the vegetation. The most common is heather (*Calluna vulgaris)*, which often occurs in combination with gorse

(*Ulex* spp.), bilberry (*Vaccinium* spp.) or bell heather (*Erica cinerea)*, though other dwarf-shrubs are important locally. Nearly all dry heath is semi-natural, being derived from woodland through a long history of grazing and burning. Most dry heaths are managed as extensive grazing for livestock or, in upland areas, as grouse moors.

*Semi-Natural Dry Grasslands and Scrubland Facies on Calcareous Substrates (Festuco-Brometalia) (*Important Orchid Sites) (6210)*

126. *Festuco-Brometalia* grasslands are found on thin, well-drained, lime-rich soils associated with chalk and limestone. They occur predominantly at low to moderate altitudes in England and Wales, extending locally into upland areas in northern England, Scotland, and Northern Ireland. Most of these calcareous grasslands are maintained by grazing. A large number of rare plants are associated with this habitat, including purple milk-vetch (*Astragalus danicus)*, dwarf sedge (*Carex humilis)*, spotted cat's-ear (*Hypochaeris maculate)*, spring cinquefoil (*Potentilla tabernaemontani)*, pasqueflower (*Pulsatilla vulgaris)*, bastard-toadflax (*Thesium humifusum)* and the Annex II species early gentian (*Gentianella anglica)*, as well as various bryophytes and lichens. The invertebrate fauna is also noteworthy and includes rarities such as the adonis blue *(Lysandra bellargus)* and silver-spotted skipper (*Hesperia comma) butterflies*.

Caves Not Open to the Public (8310)

127. Caves are formed by the erosion of soluble rocks, such as limestones. They typically form the subterranean components of a distinctive 'karst' landscape, and are associated with various topographic features, including gorges, dry valleys, limestone pavements, and dolines (surface depressions and hollows). Caves not open to the public is interpreted as referring to natural caves which are not routinely exploited for tourism, and which host specialist or endemic cave species or support important populations of Annex II species.

Potential Pathways for LSE

128. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on terrestrial habitats, screened into the HRA are outlined in **Table 8D-18:**

- Physical change of habitat
- Physical disturbance
- Physical loss of habitat
- Pollution / contamination; and
- Introduction and spread of INNS.

Table 8D-18. Potential impacts to terrestrial habitats as a result of the proposed Project

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Physical change of habitat	Construction impacts have the potential to result in a change of designated habitats and supporting processes. This can include a changed hydrological regime from drainage which, for wetland habitats, results in a shift to a drier habitat type. There is the potential for both temporary and permanent habitat loss and disturbance during the proposed onshore works, depending on the approach to be taken (i.e., HDD and trenching along the cabling route). Any resultant habitat change is expected to be limited to areas of direct overlap between the Onshore Development Area and any Annex I Habitat features that may be present, although for wetland habitat features this may extend out to 250 m. It should be noted that overlap between Project activities and Annex I features within a SAC site will be limited to the OnECC and associated infrastructure, including all works and activities associated with the substation (the working width of construction activities within the OnECC will be 30 m, reduced to 10 m through hedgerows). Therefore, the potential for LSE on terrestrial habitat features from physical change cannot be excluded, and the impact pathway has been **screened into the assessment**. The effects from the proposed works on physical processes are expected to be limited to the Onshore Development Area and up to a 250 m buffer, depending on hydrological regime and substrate types.	✓	
	Physical disturbance	Potential construction phase effect on habitats relates to physical disturbance of habitats, such as damage caused by tracking by installation machinery. For the purposes of the assessment, the OnECC and associated infrastructure is expected to utilise a 30 m wide corridor and an additional 10 m buffer either side of the corridor has been assumed in terms of such disturbance to account for scenarios where a 30 m working width may not be feasible. Therefore, the potential for LSE on terrestrial habitat features from physical disturbance cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
	Physical loss of habitat	Areas of designated habitat may be lost owing to land take by the Onshore Development Area, noting that Substation location(s) are yet to be confirmed. The proposed approach to breaching landfall is expected to be HDD, with trenching along the cable route. The exact areas anticipated to be lost are still not clear at the time of writing. As such, following a precautionary approach, consideration of permanent habitat loss of Annex I Habitat will need to be further assessed once the data, specific locations / routes and methods are confirmed. Therefore, the potential for LSE on terrestrial habitat features from physical loss cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Pollution / contamination	During the works there is a risk of pollution events from installation machinery and vehicles. In the event of a pollution incident, it may impact upon aquatic communities within watercourses due to contaminants and cause a reduction in diversity, abundance and / or biomass. However, pollution events are unlikely, and the associated impacts would be highly localised and small scale but may potentially result in LSE from this pathway. Therefore, the impact pathway has been **screened into the assessment**.	✓	
	Introduction and spread of INNS	There is potential for the introduction or spread of INNS within the Onshore Development Area. However, any existing stands of INNS will be identified during the pre-installation surveys and appropriate management / protection measures will be implemented, as per national legislation. In the absence of such mitigation and the data available indicating known stands of INNS, LSE from this pathway cannot excluded, and the impact pathway has been **screened into the assessment**.	✓	
Operation and maintenance	Physical disturbance	Potential operation and maintenance phase effect on habitats relates to physical disturbance of habitats, such as damage caused by maintenance activities. For the purposes of the assessment, the OnECC and associated infrastructure is expected to utilise a 30 m wide corridor and an additional 10 m buffer either side of the corridor has been assumed in terms of such disturbance to account for scenarios where a 30 m working	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		width may not be feasible. This is anticipated to be of considerably lower levels of disturbance in the operation and maintenance phase.		
Decommissioning	Potential effects the same as construction phase	At the end of the operational life of the proposed Project, there will be a Decommissioning Environmental Management Plan in place. Other proposed Project constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**	✓	

Determination of LSE

129. It is likely that the proposed Project will result in direct impacts where Annex I Habitats overlap with the OnECC and substation location, and indirect impacts to Annex I Habitats within a range of 250 m from the Onshore Development Area, depending on hydrologically connected habitats.

130. The results of the assessment to determine whether there will be LSE on SAC terrestrial habitat features from the proposed Project and require taking forward to AA are presented in **Figure 8D-9** and **Table 8D-19**. The sites that area screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

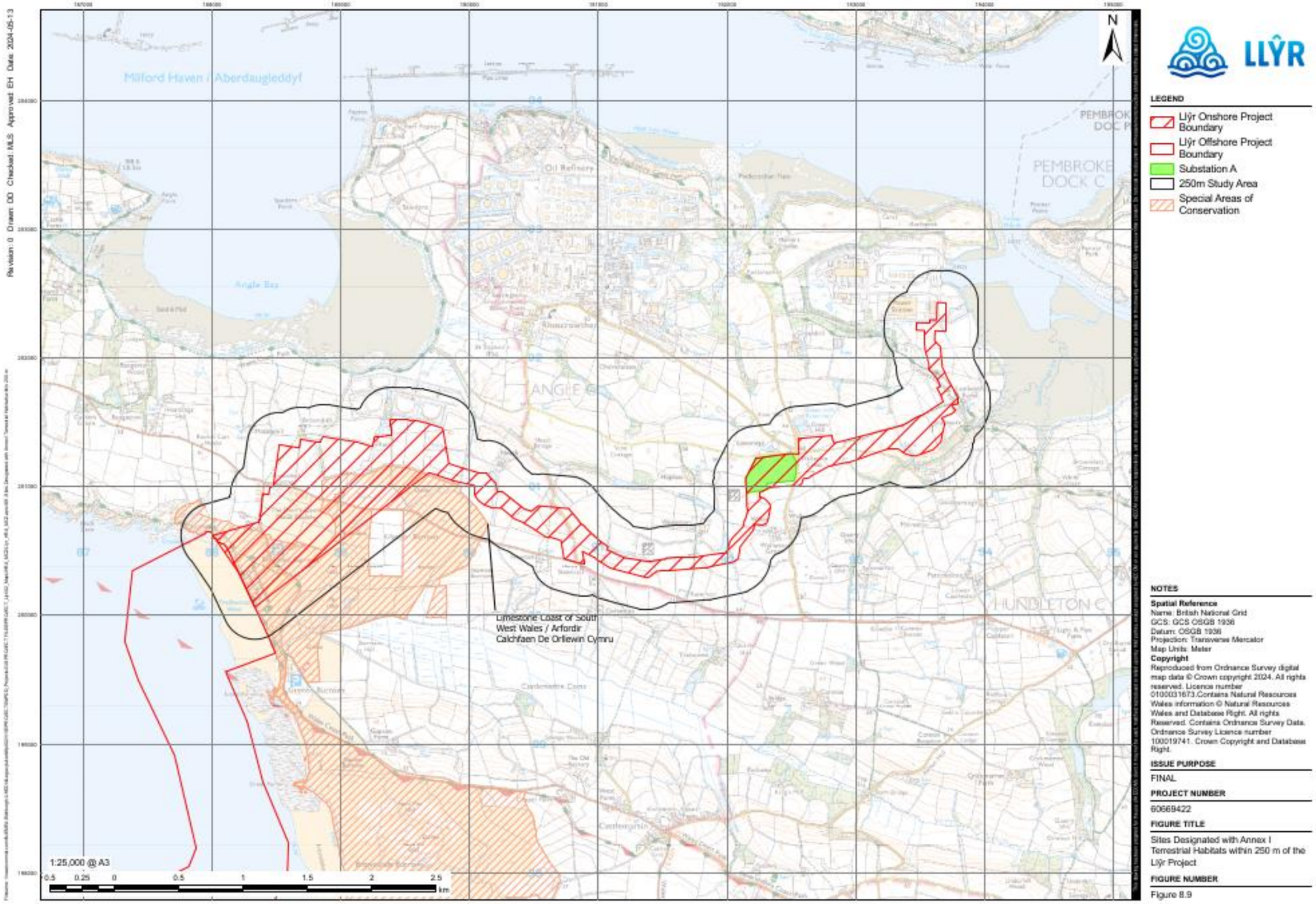

Figure 8D-9. Sites designated with Annex I terrestrial habitats within 250 m of the proposed Project

Table 8D-19. Determination of LSE for designated sites for Annex I terrestrial habitats

Site name	Annex I Habitats	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC (UK0014787)	*Primary reason for site selection:* • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); and • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130). *Other Annex I Habitats:* • European dry heaths (4030); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) (6210); • Caves not open to the public (8310); and • Submerged or partially submerged sea caves (8330).	0.00	**Yes**	*Screened in for:* • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • European dry heaths (4030); and • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) (6210). There is potential for adverse effects on Annex I Habitats. There is direct overlap between the Onshore Development Area and Annex I Habitats, although this may change depending on the final method to breaching landfall. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA. Please note that Annex I Habitats located within the intertidal zone are considered **Section 8.6.1** of this screening report.

Terrestrial Flora

131. Screening for potential LSE has been completed with respect to onshore Annex II species of plant. Details of exposure pathways and the potential impacts identified are similar in nature to those considered for Annex I terrestrial habitats. It is assumed that for Annex II species of plant, any SAC or Ramsar site that overlaps directly with the Onshore Development Area will be affected. Therefore, any SAC or Ramsar site for which such overlap is identified will be screened in for further assessment within Stage 2 (AA).

Annex II Flora

Early Gentian Gentiianella anglica (1654)

132. Early gentian is an annual plant, occurring in calcareous grassland, mainly on steep, south-facing slopes. It grows on bare ground or in thin turf that is kept open by a combination of rabbit or sheep-grazing and trampling by livestock on thin droughted soils. In dense turf it becomes shaded out and unable to compete with other more vigorous species. It is found on a variety of substrates and in different habitats but is particularly frequent in coastal grasslands.

133. Early gentian occurs mainly on chalk escarpments in southern central England, but its range extends westwards to Cornwall and south-west Wales, and northwards to Lincolnshire.

Petalwort Petalophyllum ralfsii (1395)

134. Petalwort is a pale green thalloid liverwort with erect lamellae on its upper surface, that grows in open, damp, calcareous dune slacks, often on low hummocks rather than on the very wet ground, on compacted sandy / muddy bryophyte-rich turf. Most localities are referable to Annex I type 2190 Humid dune slacks. It has occasionally been recorded in other coastal grassland where conditions are similar. Closely associated species may include the mosses *Barbula convoluta, Bryum* spp., *Didymodon tophaceus, Ditrichum flexicaule* (*sensu lato*), *Hypnum lacunosum*, glaucous sedge (*Carex flacca)*, the grasses common bent (*Agrostis capillaris)*, red fescue (*Festuca rubra),* Yorkshire-fog (*Holcus lanatus)*, and buck's-horn plantain (*Plantago coronopus)*. At some sites, it appears to be increasing as a result of trampling and soil compaction. At one site, the area where petalwort grows is used by vehicles and it can be found on the sides of paths. It does not grow in water-filled slacks or in slacks where willow (*Salix* spp.) scrub predominates.

135. Petalwort has always been widely but sparsely distributed in the UK. A high proportion of the known localities are in south-west England and Wales. Many of the sites support large populations but in some parts of the species' range only small populations occur. All the sites are large dune systems with extensive dune slack habitat. Petalwort is classed as lower risk (nationally scarce) in Britain.

Shore Dock Rumex rupestris (1441)

136. Shore dock (*Rumex rupestris)* grows on rocky, sandy, and raised beaches, shore platforms and the lower slopes of cliffs, and rarely in dune slacks. Plants can be found growing in isolation on the strandline, through to tall-herb perennial communities at the base of flushed cliffs. However, it occurs only where a constant source of freshwater, running or static, is available. It is most commonly found growing by the side of streams entering beaches, on oozing soft-rock cliffs, and in rock clefts where flushing occurs. Populations of shore dock are known to fluctuate according to the severity of winter storms.

137. Culverting of streams, coastal defence, and boat-ramp installation on beaches have altered many of the shore dock's former localities, making them unsuitable for its survival by

separating perennial vegetation at the bases of cliffs from the strand-line community and interfering with the natural geomorphological processes of slumping cliffs and streams entering beaches. Visitor pressure appears to be a significant factor in the decline of shore dock at several sites.

138. In the UK, *R. rupestris* is currently known from about 40 locations in south-west England and Wales. The species is extinct in the former easternmost part of its range in Dorset. Several new colonies have been found in recent years as a result of systematic surveys of coastlines with suitable habitat in south-west England and south and west Wales. Population size varies greatly between sites, with the largest colonies supporting 50-100 individuals, most others (especially those on rocky shores) generally holding fewer than ten individuals, and several sites comprising single plants. The total UK population is estimated to comprise <650 plants.

Potential Pathways for LSE

139. The potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on terrestrial flora are the same as those screened into the HRA for terrestrial habitats. Thus, the following potential impact pathways are screened into the HRA and are outlined in **Table 8D-18:**

- Physical change of habitat
- Physical disturbance
- Physical loss of habitat
- Pollution / contamination; and
- Introduction and spread of INNS.

Determination of LSE

140. It is likely that the proposed Project will result in direct impacts where SAC habitats overlap with the OnECC and potentially indirect impacts to habitats within a range of 10 m from the Onshore Development Area, depending on hydrologically connected habitats. Based on guidance published by the Institute of Air Quality Management, a standard 50 m buffer distance for dust deposition should also be considered. Therefore, a precautionary approach is to be taken where, if the Onshore Development Area and the wider 50 m buffer overlap with a designated habitat (or suitable habitat for Annex II Plant species associated with an SAC), then LSE will be assumed, and the qualifying feature taken forward to Stage 2 (AA).

141. The results of the assessment to determine whether there will be LSE on SAC terrestrial flora features from the proposed Project are presented in **Figure 8D-10** and **Table 8D-20**. The sites that area screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

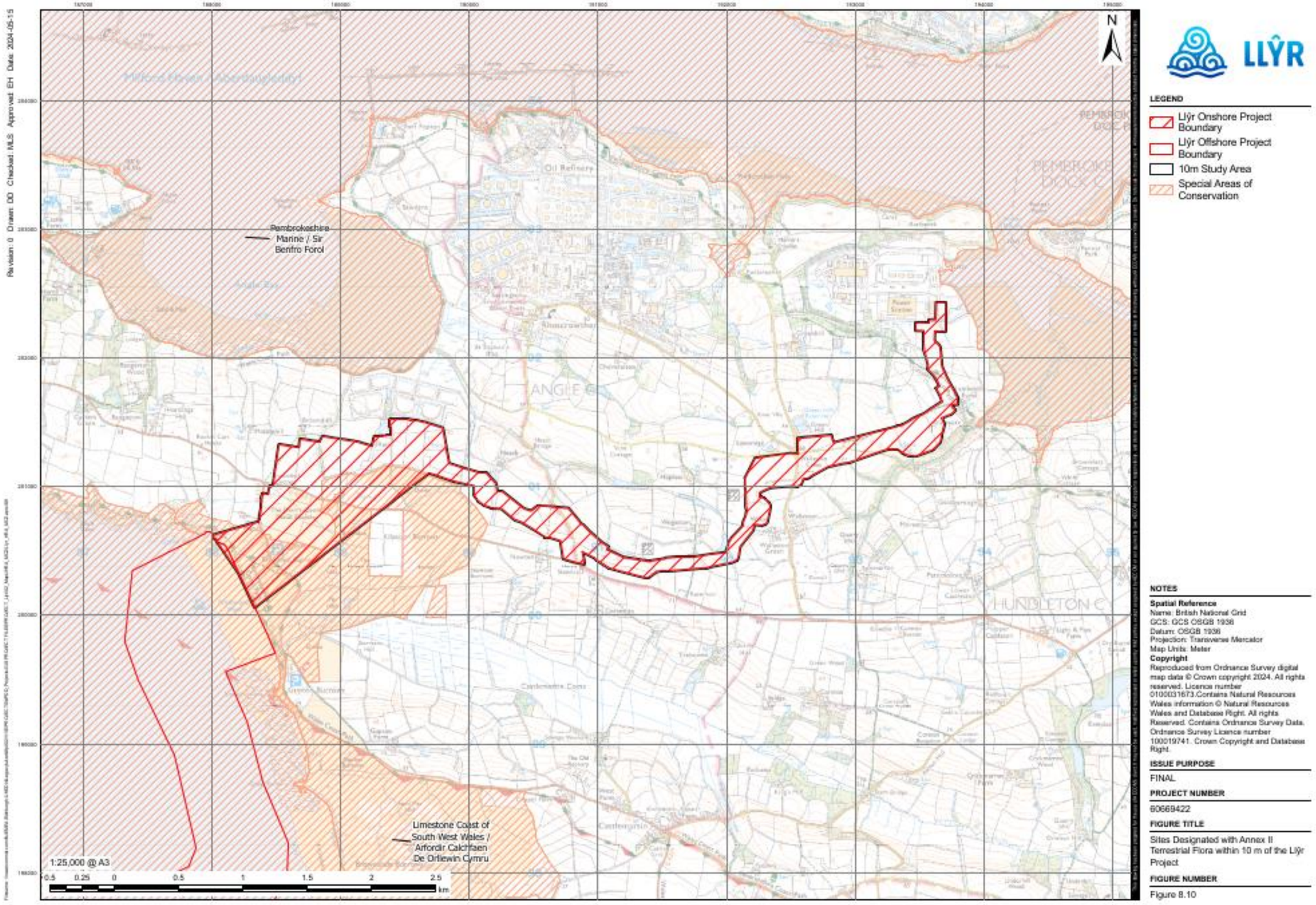

Figure 8D-10. Sites designated with Annex II terrestrial flora within 10 m of the Llŷr Project

Table 8D-20. Determination of LSE for designated sites for Annex II terrestrial flora

Site name	Annex II terrestrial flora	Distance to Onshore development Area (km)	Potential for LSE	Rationale behind screening decision
Limestone Coast of South West Wales / Arfordir Calchfaen de Orllewin Cymru SAC (UK0014787)	*Primary reason for site selection:* • Early gentian *Gentianella anglica* (1654). *Other Annex II species of plant:* • Petalwort *Petalophyllum ralfsii* (1395).	0.00	**Yes**	*Screened in for:* • Early gentian *Gentianella anglica* (1654); and • Petalwort *Petalophyllum ralfsii* (1395). There is potential for adverse effects on Annex II Plants. There is direct overlap between the SAC and the Onshore Development Area. Review of NBN Atlas Wales reveals records of petalwort in proximity to the HDD landfall working areas. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	*Primary reason for site selection:* • Shore dock *Rumex rupestris* (1441).	0.00	**No**	Although there is direct overlap between the Onshore Development Area and the SAC habitats, records of shore dock presence are limited to the Marloes Peninsula, and the Offshore Development Area will make landfall in the Castlemartin peninsula. Therefore, there is no spatial overlap with the Onshore Development Area and it is not considered that there is potential for LSE, and these features have been screened out of further assessment.

Terrestrial Mammals

142. Screening for potential LSE has been completed with respect to terrestrial mammals. It is assumed that for Annex II mammals, any SAC that overlaps directly with the Onshore Development Area has the potential to be affected. Given the highly mobile nature of mammals, the ZoI for protected species is considered to extend beyond a designated site boundary. Connective distances vary by species and behaviour as well as by topographical features and habitats. Therefore, to enable a precautionary approach to be taken, any SAC for which such overlap is identified will be screened in for further assessment within Stage 2 (AA).

143. For the purposes of considering onshore Annex II species of mammal within this HRA screening report, a 10 km buffer has been applied from the Onshore Development Area and has been used to identify European sites needing to be considered. This distance would capture sites where mobile species such as otter would most likely be affected (general guidance for otters is a 200 m buffer zone around holts and shelter (Nature Scot, 2023)), and bats, as they have a variable commuting or foraging range depending on the species being assessed, but all within a 10 km range. Potential for connectivity with the proposed works will be assessed using each species known foraging and commuting range from identified roosts and / or hibernacula based on the Bat Conservation Trust (BCT) guidance relating to Core Sustenance Zones (CSZ). These CSZs can range from 1 – 6 km depending on the species and the appropriate CSZs have been applied to this Screening Report. Once European sites have been identified, onshore Annex II species of mammal qualifying features that have not been captured within the above marine European sites have been considered in terms of potential impact pathways, as discussed in **Section 8.6.1**.

Annex II Terrestrial Mammals

Otter Lutra lutra (1355)

144. The otter is a semi-aquatic mammal, which occurs in a wide range of ecological conditions, including inland freshwater and coastal areas (particularly in Scotland). Populations in coastal areas utilise shallow, inshore marine areas for feeding but also require fresh water for bathing and terrestrial areas for resting and breeding holts. Coastal otter habitat ranges from sheltered wooded inlets to more open, low-lying coasts. Inland populations utilise a range of running and standing freshwaters. These must have an abundant supply of food (normally associated with high water quality), together with suitable habitat, such as vegetated riverbanks, islands, reedbeds and woodland, which are used for foraging, breeding, and resting.

Greater Horseshoe Bat Rhinolophus ferrumequinum (1304)

145. The greater horseshoe bat is one of the largest bats in the UK. During the summer, they form maternity colonies, generally in large old buildings, and forage in pasture, edges of mixed deciduous woodland and hedgerows. Such mixed land-use, especially on south-facing slopes, favours the beetles, moths, and other insects on which the bats feed. In winter they depend on caves, abandoned mines, and other underground sites for undisturbed hibernation. A system or series of sites is required, offering a range of temperatures and air-flow patterns. Summer and winter roosts are usually less than 20 - 30 km apart. The bats are vulnerable to the loss of insect food supplies due to insecticide use, changing farming practices and the loss of broad-leaved tree cover, and to the loss or disturbance of underground roost sites.

146. The greater horseshoe bat has suffered a loss of over half its range in the UK. In the UK populations are close to the climatic limits for this species. The total UK population of

approximately 4,000 individuals can be divided into about twelve discrete populations, based on maternity (summer) roosts and their associated hibernation sites (hibernacula). Populations range in size from about 80 to 600 breeding females and there is relatively little interchange between populations.

147. According to the BCT guidance discussed above, the CSZ radius for greater horseshoe bat is 3 km, and this is therefore the distance that has been used throughout this Screening Report in order to determine whether greater horseshoe bats are likely to be significantly affected by the proposed Project onshore activities.

Lesser Horseshoe Bat Rhinolophus hipposideros (1303)

148. The lesser horseshoe bat is one of the smallest bats in the UK. During the summer they form maternity colonies in old buildings and emerge to hunt in nearby woodland. The species prefers sheltered valleys with extensive deciduous woods or dense scrub, close to roost sites. Where habitat is fragmented, linear features such as hedgerows are important corridors between roosts and foraging areas. Ideally, roost sites offer a range of temperature conditions in different parts of a single site, allowing the bats to change location; otherwise breeding females are likely to change site during the summer. In winter they hibernate in caves, mines, and other cave-like places. Summer and winter roosts are usually less than 5 - 10 km apart. The bats are vulnerable to the loss or disturbance of both summer and winter roost sites and the removal of linear habitat corridors.

149. According to the BCT guidance discussed above, the CSZ radius for lesser horseshoe bat is 2 km, and this is therefore the distance that has been used throughout this Screening Report in order to determine whether lesser horseshoe bats are likely to be significantly affected by the proposed Project onshore activities.

Potential Pathways for LSE

150. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on terrestrial mammal species, screened into the HRA are outlined in **Table 8D-21:**

- Physical change of habitat;
- Physical disturbance;
- Physical loss of habitat; and
- Visual and noise disturbance.

Table 8D-21. Potential impacts to terrestrial mammals as a result of the proposed Project

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Physical change of habitat	Construction impacts have the potential to result in a change of designated habitats and supporting processes. This can include a changed hydrological regime from drainage, which results in a shift to a drier habitat type. There is the potential for both temporary and permanent habitat loss and disturbance during the proposed onshore works, depending on the approach to be taken (i.e., trenching or HDD). Any resultant habitat change is expected to be limited to areas of direct overlap between the Onshore Development Area, although for wetland habitats this may be extended out to 250 m where there is a hydrological connection. It should be noted that overlap between Project activities and Annex I features within a SAC site will be limited to the extent of the Onshore Development Area. The effects from the proposed works on terrestrial physical processes are expected to be limited to the direct overlap with Onshore Development Area and up to a 250 m buffer depending on the hydrological regime and substrate types. Furthermore, terrestrial construction activities may overlay existing protected mammal places of rest and / or nest / dens sites. Therefore, , following the precautionary principle, the potential for LSE on terrestrial mammal features from physical mammal change cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Physical disturbance	Potential construction phase effects on Annex II species of mammal relates to physical disturbance of habitats, such as tracking by installation machinery, and vibrational disturbance. This relates particularly to the physical disturbance of resting places such as hibernacula and otter natal holts, which may result in the physical harm to adults and / or cubs. Therefore, the potential for LSE on terrestrial mammal features from physical disturbance cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Physical loss of habitat	Areas of habitat may be lost owing to land take by the Onshore Development Area. The exact areas anticipated to be lost are still not clear at the time of writing. As such, following	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		a precautionary approach, consideration of permanent habitat loss associated with Annex II mammals will need to be further assessed once the data, specific locations/ routes and methods are confirmed. Therefore, at this stage of the project, the potential for LSE on terrestrial mammal features from loss of habitat cannot be excluded, and the impact pathway has been **screened into the assessment**.		
	Visual and noise disturbance	There is potential for the proposed Project to generate both visual and noise disturbance; however, levels during the construction phase would be markedly more pronounced than that of the operation and maintenance phase. Such disturbance is likely to occur from any works taking place at night (i.e., light pollution) and vibrational tremors from groundworks transmitted through the substrate to the wider area. Such disturbance levels are generally considered to be relatively minor; however, proximity of groundworks to any places of rest or natal dens / roosts will be critical in terms of LSE Therefore, the potential for LSE on terrestrial mammal features from visual and noise disturbance cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Operation and maintenance	Visual and noise disturbance	There is potential for all phases of the proposed Project to generate both visual and noise disturbance; however, levels during the operation and maintenance phase would be markedly less pronounced than that of the construction phase. Such disturbance is likely to occur from any works taking place at night (i.e., light pollution). Such disturbance levels are generally considered to be relatively minor; however, proximity of works to any places of rest or natal dens / roosts will be critical in terms of LSE. Therefore, the potential for LSE on terrestrial mammal features from physical change cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Decommissioning	Potential effects the same as construction phase	At the end of the operational life of the proposed Project, there will be a Decommissioning Environmental Management Plan in place. Other proposed Project	✓	

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**		

Determination of LSE

151. Due to the mobile nature of terrestrial mammal species, there is potential for mammal features of the sites to travel and thus be impacted by the proposed Project.

152. The results of the assessment to determine whether there will be LSE on SAC terrestrial mammal features from the proposed Project are presented in **Figure 8D-11** and **Table 8D-22.** The sites that are screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

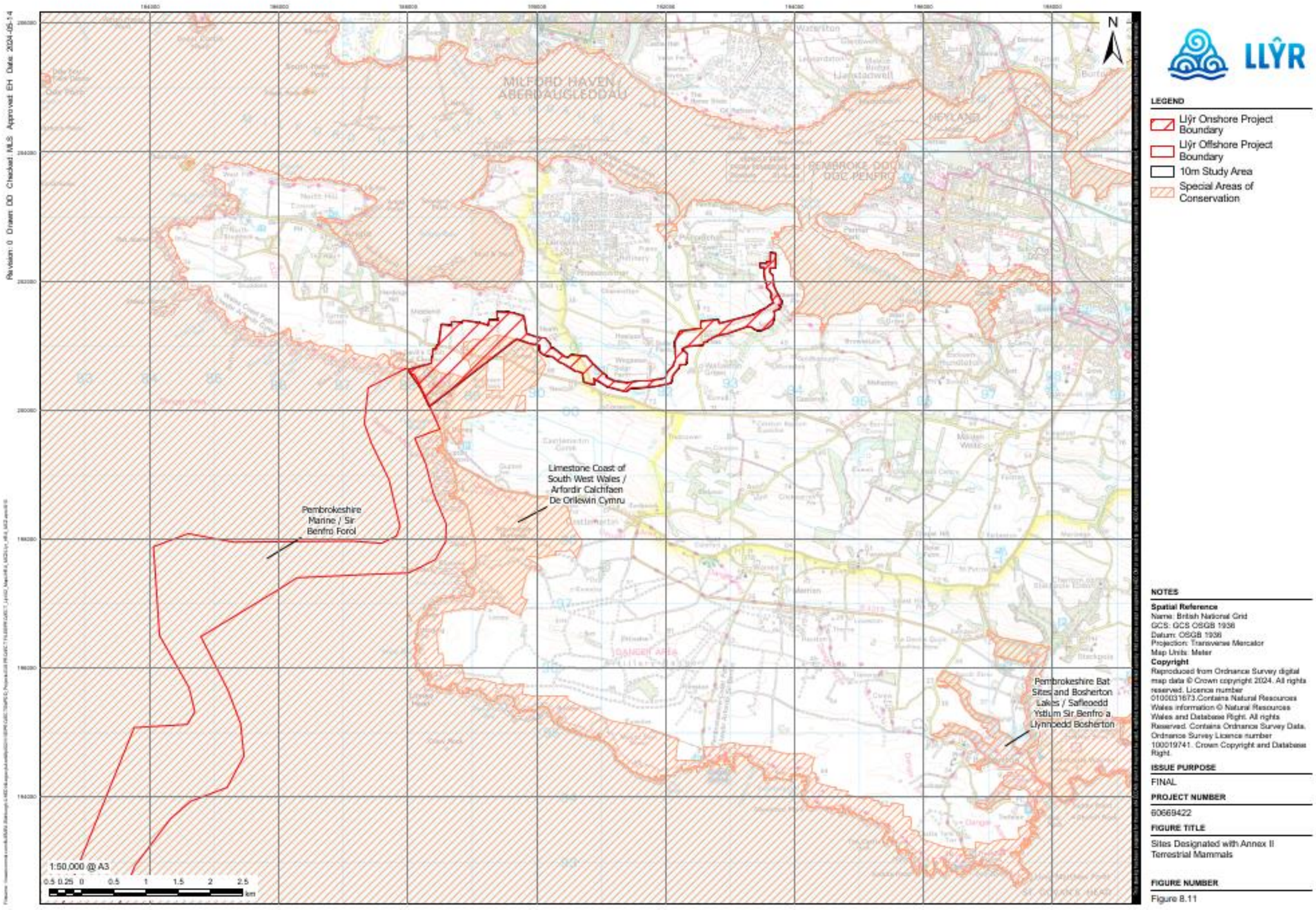

Figure 8D-11. Sites designated with Annex II terrestrial mammals

Table 8D-22. Determination of LSE for designated sites for Annex II terrestrial mammals

Site name	Annex II terrestrial mammals	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
Limestone Coast of South West Wales / Arfordir Calchfaende Orllewin Cymru SAC (UK0014787)	*Primary reason for site selection:* • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304).	0.00	**Yes**	*Screened in for:* • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304). There is potential for adverse effects on Annex II mammals. There is direct overlap between the Onshore Development Area and the European site. The central section of the Onshore Development Area passes within and immediately adjacent to the SAC boundary. The proposed construction works may have LSE on the foraging activities of greater horseshoe bat originating from hibernacula within the SAC. Therefore, there is potential for LSE, and these features have been screened in and will be considered within the AA.
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	*Annex II terrestrial mammals:* • Otter *Lutra lutra* (1355).	0.00	**Yes**	*Screened in for:* • Otter *Lutra lutra* (1355).

Site name	Annex II terrestrial mammals	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
				There is direct overlap between the Onshore Development Area and the SAC boundary at the landfall area. Otter may forage or use the rocky shore as a place of rest / for denning. Following a precautionary approach this site is taken forward for further assessment in terms of LSE on otter.
Pembrokeshire Bat Sites and Bosherston Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC (UK0014793)	*Primary reason for site selection:* • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304). *Other Annex II terrestrial mammals:* • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); and • Otter *Lutra lutra* (1355).	2.80	**Yes**	*Screened in for:* • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); and • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304). There is no direct overlap between the Onshore Development Area and the designated site. However, the eastern-most reach of the Offshore Development Area passes within 3 km of the SAC boundary. The BCT identifies a weighted average CSZ of 3 km for greater horseshoe

Site name	Annex II terrestrial mammals	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
				bats and 2 km for lesser horseshoe bats and so the cable workings are located within what could be considered potentially connected distance for this species. As such, there is potential for LSE for both greater and lesser horseshoe bat features (following a precautionary approach), and both have been screened in and will be considered within the AA. Otters are a feature associated specifically with the Bosherston Lakes part of the SAC (i.e. Management Units 1a, 1b and 1c), located approximately 7.5 km southeast of the Onshore Development Area, and so are not considered to be within connective distance of the proposed works. As such, there is no potential for LSE, and otter have

Site name	Annex II terrestrial mammals	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
				been screened out of further assessment.

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153. Screening has been completed with respect to the terrestrial qualifying features of SPAs within 10 km of the Onshore Development Area to ensure functionally linked land is included for qualifying features. It is assumed that any European site that overlaps directly with the Onshore Development Area will be potentially affected and will be screened in for further assessment within Stage 2 (AA).

154. Two SPAs fall within the 5 km search criteria for any European sites from the Onshore Development Area and associated infrastructure: Castlemartin Coast SPA and Skomer, Skokholm and the Seas off Pembrokeshire SPA.

155. Castlemartin Coast SPA is designated for supporting between 12 – 14 breeding pairs of chough (*Pyrrhocorax pyrrhocorax)* which equates to approximately 4% of the UK population. The SPA overlies much of the Limestone Coast of South West Wales SAC and the chough rely heavily on the associated habitats of the SAC for nesting and foraging. As such, the conservation objectives of the SPA are dependent on the core management of the SAC land parcels and the habitats therein. Given the specific nature of chough ecology, the conservation objectives for the SPA are more targeted (CCW, 2008b):

- *'A breeding chough population will occur along the limestone coast, between Freshwater West and Barafundle Bay;*
- *This population will be maintained at a minimum of 12 breeding pairs (representing 3.5% of the GB population, at the 1993 SPA designation level);*
- *Choughs will continue to, feed, roost and breed successfully, unhindered by human recreational activities (e.g. climbing);*
- *The majority of pairs will rear young each year, with an annual average productivity of at least two young per occupied territory;*
- *Choughs will continue to have access to large amounts of optimal feeding habitat (open areas with very short grassland and heath vegetation <1cm to <3cm in height) within all cliff-top management units and within dune grassland management units at Broomhill Burrows, Brownslade and Linney Burrows and on Stackpole Warren;*
- *Yellow ant-hills, an important summer food resource, will occur in coastal turf, throughout the SPA, at densities up to approximately 550 ant-hills per ha; and*
- *A non-breeding chough population (variable in number between 10 and 50 birds) made up largely of juvenile and sub-adult birds will occur at any season.'*

156. Skomer, Skokholm and the Seas off Pembrokeshire SPA is designated for four breeding pairs of chough (approximately 1.2% of the UK population) and six breeding pairs of short-eared owl (*Asio flammeus*) (approximately 0.6% of the UK population). The marine features of interest (European storm-petrel (*Hydrobates pelagicus)*, Manx shearwater

(*Puffinus puffinus),* Atlantic puffin *(Fratercula arctica),* lesser black-backed gull *(Larus fuscus),* seabird assemblage) are discussed in **Section** Error! Reference source not found. of this report.

157. Skomer, Skokholm and the Seas off Pembrokeshire SPA lies immediately adjacent to much of the Limestone Coast of South West Wales SAC and the chough may rely heavily on the associated habitats of the SAC for foraging. At the time of writing, the draft conservation objectives for this SPA did not include terrestrial qualifying features and, therefore, necessary information has been gleaned from the Countryside Council for Wales (CCW) Core Management Plan (CCW, 2008).

Annex I Terrestrial Birds

Chough Pyrrhocorax pyrrhocorax (A346)

158. Chough are an Annex I / Schedule 1-listed species of corvid that are found breeding primarily amongst the deep cracks of rocky cliff and coastlines, with some birds having been found breeding within sea caves (Pembrokeshire Biodiversity Partnership, 2014). The chough associated with Pembrokeshire and the Castlemartin Coast SPA are monitored carefully, given that the 12-14 breeding pairs here constitutes approximately 4% of the UK population. The breeding chough of the Castlemartin Coast SPA have been shown to be reasonably stable, although concerns relating to genetic diversity have been made, and the areas used for breeding along the coast are well known (CCW, 2008b). Chough have specific dietary requirements and so the habitats where such prey are found can be derived: unimproved grassland and coastal heath for invertebrates, as well as yellow ants found amongst the dune networks of the southern Pembrokeshire coastline (Pembrokeshire Biodiversity Partnership, 2014).

159. In order to inform this HRA screening report, four transect surveys with chough as the target species were conducted by AECOM along the Pembrokeshire coast path between Angle Bay (National Grid Reference (NGR) SM 85314 03026) and Freshwater West Bay (NGR SM 88119 00592) to determine the current distribution of chough nesting and foraging sites in relation to the Onshore Development Area. The surveys were undertaken between July and June 2022.

160. Chough were recorded during all four surveys; within the Angle Peninsula SSSI and within 100 m of the Onshore Development Area. No chough were recorded within the section of the transect located to the southeast that incorporates Castlemartin Coast SPA. The approximate number of individual chough recorded during each survey ranged from between 19 to 50 birds. From all surveys, one instance of possible nesting, 13 instances of foraging and 17 flights of individual or groups of chough were recorded. The possible nest was located within a sea cave at approximately NGR SM 84496 02192. Chough were typically seen flying along the cliffs and foraging on grassland adjacent to the cliffs (for the full report please refer to **Appendix 8A: Chough Survey Report)**.

Short-Eared Owl Asio flammeus (A222)

161. Short-eared owl are an Annex I listed species. Short-eared owls have bred on Skomer since at least the late 1900s. A pair bred from 1961-66. Since 1967 between 2-6 pairs have bred most years, however, it is noted that there was no breeding in 1973 and 1974 while exceptional numbers were recorded in 1993 (14 pairs) and 1994 (nine pairs). In 1997, 6 pairs bred. However, the Core Management Plan (2008) states *'for the last 5 years, no more than 4*

pairs have bred. The higher numbers form 1997 may reflect the level of effort at the time' (CCW, 2008). At present, the population is considered unfavourable.

162. The population uses Skomer Island as a breeding site. In the past short-eared owls appear to have used nest sites within heathland. Nests have been found in heather but also in dead bracken amongst bluebells. A key role of island management is to limit human disturbance to breeding birds, typically between March – June inclusive.

Potential Pathways for LSE

163. The following potential impact pathways for all stages of the proposed Project (construction, operation and maintenance, and decommissioning) on terrestrial ornithology, screened into the HRA are outlined in **Table 8D-23:**

- Disturbance / displacement; and
- Habitat loss / loss of functionally linked land.

Table 8D-23. Potential impacts to terrestrial ornithology as a result of the proposed Project

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
Construction	Accidental pollution	During construction there is a risk of accidental pollution from construction equipment and activities. Pollution incidents may impact upon birds through chemical contamination. This may adversely affect breeding and, in some cases, can be fatal. However, such pollution events are unlikely and the associated impacts would be highly localised, small scale and located out-with preferential foraging habitats. As such, it is considered there is **no potential LSE** from this impact due to a lack of overlap between suitable foraging habitats and the Onshore Development Area where activities will occur. Therefore, this impact pathway has been **screened out of further assessment**.		✓
	Disturbance / displacement	Birds may experience noise and visual disturbance resulting from the construction phase. This may cause displacement behaviour or avoidance of the area surrounding the construction works and infrastructure. Therefore, the potential for LSE on terrestrial ornithology features from disturbance / displacement cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
	Habitat loss / loss of functionally linked land.	Any habitat loss caused by Project activities may lead to adverse impacts on ornithological populations that use the area as foraging grounds. Habitat loss may occur due to changing / recovering habitats as a result of ground disturbance following cable laying and permanent loss at the substation location. The Onshore Development Area will be very small relative to the overall habitat available to bird species (chough are known to forage primarily within the Pembrokeshire Coast National Park and rarely more than 1 - 2 km inland). Given the highly specialised foraging requirements of chough and the distances from the Onshore Development Area and the coastal breeding locations, it is thought highly unlikely that LSE will result from the onshore construction phase. However, f the precautionary principle, the potential for LSE on terrestrial ornithology features from habitat loss cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Operation and maintenance	Accidental pollution	During operation and maintenance there is a risk of accidental pollution from operational activities. Pollution incidents may impact upon birds through chemical contamination.		✓

Project Phase	Potential impact pathway	Rationale	Further assessment required in HRA	
			Screened In	Screened Out
		This may adversely affect breeding and, in some cases, can be fatal. However, such pollution events are unlikely and the associated impacts would be highly localised, small scale and located out-with preferential foraging habitats. As such, it is considered there is no potential LSE from this impact due to a lack of overlap between suitable foraging habitats and the Onshore Development Area where activities will occur. Therefore, this impact pathway has been **screened out of further assessment**.		
	Disturbance / displacement	Birds may experience noise and visual disturbance resulting from activities associated with the operation and maintenance phase. This may cause displacement behaviour or avoidance of the area surrounding the operation and maintenance activities. Therefore, the potential for LSE on terrestrial ornithology features from disturbance / displacement cannot be excluded, and the impact pathway has been **screened into the assessment**.	✓	
Decommissioning	Potential effects the same as construction phase	At the end of the operational life of the proposed Project, there will be a Decommissioning Environmental Management Plan in place. Other proposed Project constraints will also be taken into consideration (e.g. safety and liability), with the least environmentally damaging option chosen if possible. The full details of the proposed decommissioning will not be agreed until towards the end of the 30-year operational lifetime of the proposed Project. However, the decommissioning phase is expected to largely mirror the construction process over a period of 12 months (see **Chapter 04: Description of the Proposed Project**). Therefore, the impacts of the decommissioning stage are not expected to exceed impacts of the construction phase, and the potential for LSE cannot be excluded, thus the impact pathway has been **screened into the assessment**	✓	

Determination of LSE

164. As many species of bird tend to commute and forage across wider areas than those prescribed in protected areas, a 2 km buffer was applied to the onshore development area to determine an avian ZoI based on the known foraging ranges of the qualifying species i.e., chough and short-eared owl.

165. The Castlemartin Coast SPA supports breeding chough, although the distances from suitable breeding habitats for this species are considered to be beyond potential connective distance to result in disturbance issues although, as discussed above, this species does need to range considerably from nest sites in order to find suitable food in the right habitats.

166. Short-eared owl nest and forage on Skomer Island (16.95 km away from the Onshore Development Area) and have relatively small nesting territories and home ranges (a typical home range is around 200 ha).

167. The results of the assessment to determine whether there will be LSE on SAC terrestrial ornithology features from the proposed Project are presented in **Figure 8D-12** and **Table 8D-24**. The sites that are screened in will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA).

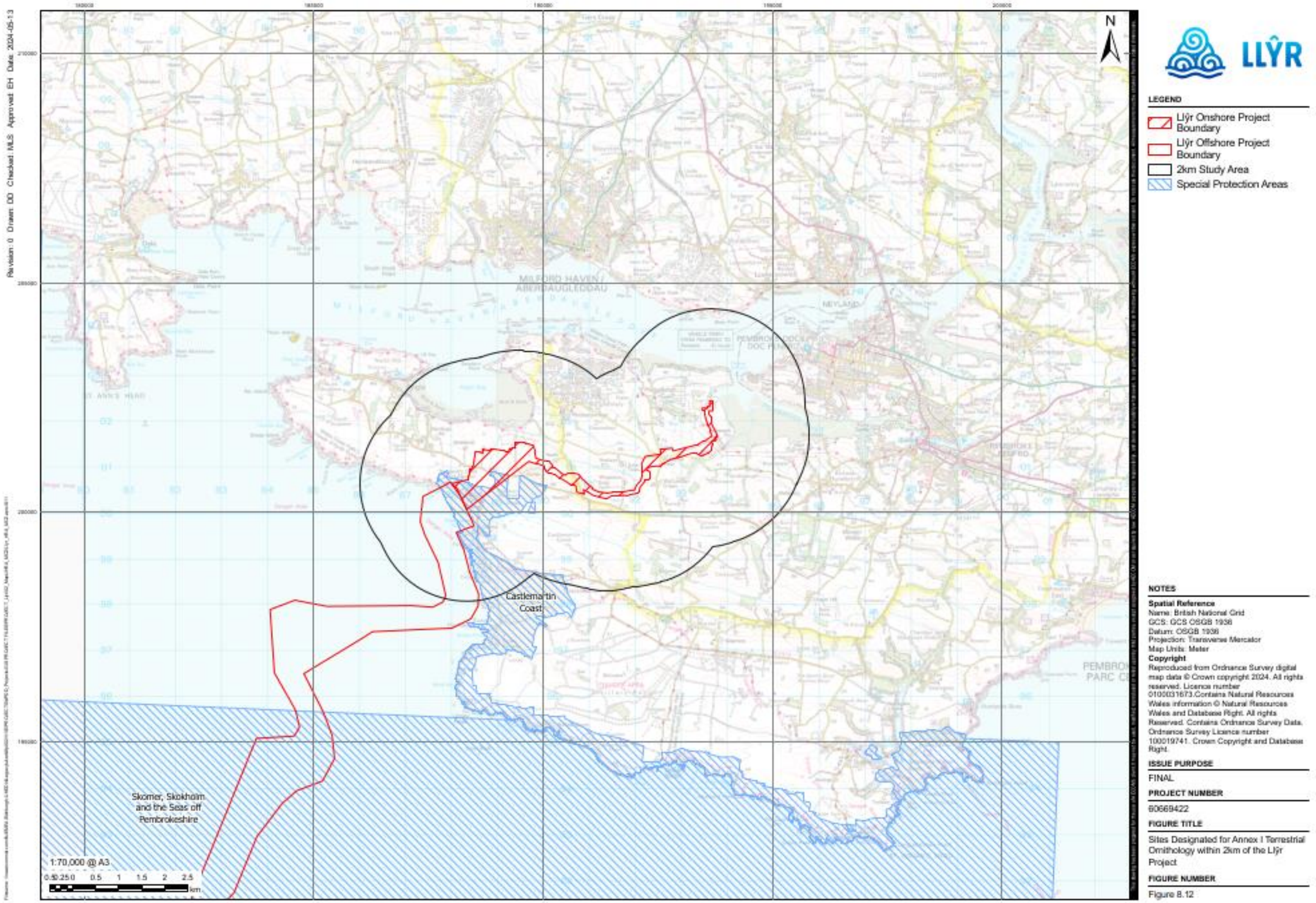

Figure 8D-12. Sites designated for Annex I terrestrial ornithology within 2 km of the Llŷr Project

Table 8D-24. Determination of LSE for designated sites for Annex I terrestrial ornithology

Site name	Annex I Birds	Distance to Onshore Development Area (km)	Potential for LSE	Rationale behind screening decision
Castlemartin Coast SPA (UK9014061)	*Primary reason for site selection:* • Chough *Pyrrhocorax pyrrhocorax* (A346).	0.00	**Yes**	*Screened in for:* • Chough *Pyrrhocorax pyrrhocorax* (A346). There is no direct overlap between the Onshore Development Area and part of the coastal and clifftop habitats that may constitute part of the foraging grounds for chough. However, the Project is within close proximity. This may change depending on the final method to breaching landfall. Thus, following the precautionary principle chough are screened in and will be considered within in the AA.
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051)	*Primary reason for site selection:* • Red-billed chough *Pyrrhocorax pyrrhocorax* (A346); and • Short-eared owl *Asio flammeus* (A222).	4.54	**No**	Chough are breeding on Skokholm Island (14.62 km away from the Onshore Development Area), and Skomer Island (16.95 km away). The habitats of the Castlemeratin Coast SAC are well beyond the foraging distances for chough, which is typically between 1.2 km and 2 km (Robertson, *et al.*, 1995) Short-eared owl nest and forage on Skomer Island (16.95 km away from the Onshore Development Area) and have relatively small nesting territories and home ranges (a typical home range is around 200 ha). Given the distances between the Onshore Development Area and these islands, chough associated with this SPA can be screened out, as can short-eared owl. Therefore, these features have been screened out of further assessment.

8.6.3. In-Combination Assessment

168. **Chapter 30: Inter-related and Cumulative Effects** reports the approach to the assessment of cumulative effects of the proposed Project during construction, operation and maintenance, and decommissioning phases.

169. A Long list of projects was identified based on spatial overlaps with the proposed Project. In addition, temporal overlaps were also considered with construction of other plans and projects assessed if they fall concurrently or within one year of the programmed construction of the proposed Project. This long list included a range of projects, including wave and tidal energy, offshore wind, subsea cabling, and carbon capture projects.

170. Following the identification of the long list of projects, a short list of projects was identified informed by factors including availability of published information regarding the likely environmental impacts and effects of projects, the geographical relationship of projects to the Proposed Project, the potential for temporal overlaps between projects and the proposed Project, and the current status and position of projects in the planning process.

171. **Table 8D-25** and **Table 8D-26** list the short list of projects screened in for in-combination effects on marine ecology and terrestrial ecology, respectively. This is based on temporal and spatial overlaps with impact pathways that have the potential to interact in-combination with the proposed Project (**Chapter 08: Ecology and Biodiversity**, **Chapter 19: Benthic Ecology**, **Chapter 20: Fish and Shellfish Ecology**, **Chapter 21: Marine Mammals**, and **Chapter 22: Ornithology**).

Table 8D-25. Short list of projects scoped for in-combination effects on marine ecology based on temporal and spatial overlaps with the proposed Project receptor pathways

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Llyr 2 Floating Offshore Wind Project Offshore Wind Pre-Application	0.00	0.00	Benthic ecology	This project has been screened as there is potential interaction with benthic receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality; • Direct permanent habitat loss; • EMF emissions; • Thermal emissions; and • Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Temporary physical disturbance to fish and shellfish habitats and species from increased SSC and sediment deposition; • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; • Underwater sound and vibration; • Effects of EMF emissions;

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Aggregation of fish and associated effects such as barrier effects, collision, and entanglement from the presence of floating offshore structures and associated tethering systems; and • Effects to fish and shellfish from maintenance activities; and • Decommissioning effects.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Valorous / Blue Gem Wind Offshore wind Planned	0.00	0.00	Benthic habitat	This project has been screened as there is potential interaction with benthic habitat receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality; • Direct permanent habitat loss; • EMF emissions; • Thermal emissions; and • Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Temporary physical disturbance to fish and shellfish habitats and species from increased SSC and sediment deposition;

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; • Underwater sound and vibration; • Effects of EMF emissions; • Aggregation of fish and associated effects such as barrier effects, collision, and entanglement from the presence of floating offshore structures and associated tethering systems; and • Effects to fish and shellfish from maintenance activities; and • Decommissioning effects.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Erebus Offshore wind Consented	5.00	5.00	Benthic ecology	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality; • Direct permanent habitat loss; • EMF emissions;

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Thermal emissions; and • Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
			Marine mammals	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Potential impacts arising from interconnector installation projects; • Potential impacts arising from tidal-stream-energy projects; • Disturbance arising from underwater noise during construction of offshore renewable energy projects; and • The potential for disturbance from vessel activity during pre-construction, construction, operation and maintenance, and decommissioning.
			Marine ornithology	This project has been screened in for a quantitative assessment of impacts due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				The Erebus project has also been included in the cumulative scenario for the SeabORD displacement modelling undertaken for the proposed Project.
Greenlink Interconnector Interconnector Construction	29.00	0.00	Benthic habitats	This project has been screened as there is potential interaction with benthic habitat receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality; • Direct permanent habitat loss; • EMF emissions; • Thermal emissions; and Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Temporary physical disturbance to fish and shellfish habitats and species from increased SSC and sediment deposition; • Changes to marine water quality from the use of drilling fluids at HDD break-out points and

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; • Underwater sound and vibration; • Effects of EMF emissions; • Aggregation of fish and associated effects such as barrier effects, collision, and entanglement from the presence of floating offshore structures and associated tethering systems; and • Effects to fish and shellfish from maintenance activities; and Decommissioning effects.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Dragon Energy Project Inshore Energy Pre-Application	45.00	7.00	Benthic habitats	This project has been screened as there is potential interaction with benthic habitat receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality;

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Direct permanent habitat loss; • EMF emissions; • Thermal emissions; and • Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
South Pembrokeshire Demonstration Zone Wave Energy Pre-application	11.00	8.00	Benthic habitats	This project has been screened as there is potential interaction with benthic habitat receptors via the following impact pathways: • Temporary physical disturbance to habitats and species; • Increased SSC in subtidal habitats; • Changes to water quality; • Direct permanent habitat loss; • EMF emissions; • Thermal emissions; and

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Decommissioning effects.
			Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
Llewelyn Offshore wind Pre-application	15.00	15.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the ue of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Trivane Demonstrator Offshore wind Pre-application	46.00	15.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways:

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
White Cross Offshore wind Application submitted	19.00	17.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
			Marine mammals	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Potential impacts arising from interconnector installation projects; • Potential impacts arising from tidal-stream-energy projects; • Disturbance arising from underwater noise during construction of offshore renewable energy projects; and

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
				• The potential for disturbance from vessel activity during pre-construction, construction, operation and maintenance, and decommissioning.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts due to potential in-combination effects on Annex I ornithological features. The White Cross project has also been included in the cumulative scenario for the SeabORD displacement modelling undertaken for the proposed Project.
Telecommunication Cable - FR 0000084477 00001 Telecommunications cable Consented	30.00	23.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works; • Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and • Underwater sound and vibration.
Gwynt Glas Offshore wind Pre-application	29.00	27.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via the following impact pathways: • Changes to marine water quality from the use of drilling fluids at HDD break-out points and resuspension of sediment contamination during seabed installation works;

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
			• Changes to marine water quality as a result of accidental leaks and spills from vessels, including loss of fuel oils; and Underwater sound and vibration.	
		Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.	
Ramsey Sound Tidal Energy Operational	55.00	29.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Nobel Banks Mineral Aggregate Site Operational	55.00	33.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
Celtic Deep Phase 1 Offshore wind Pre-application	41.00	34.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
Celtic Deep Phase 2 Offshore wind Pre-application	44.00	35.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
Telecommunication Cable - FR 0000266176 00003 Telecommunications cable	44.00	37.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Consented				
Petroc Offshore wind Pre-application	39.00	39.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
			Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Celtic Sea RWE Renewables Offshore wind Pre-application	51.00	39.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
Morwind Offshore wind Pre-application	65.00	61.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.
Telecommunication Cable - FR 0000266175 00003 Telecommunications cable Consented	65.00	62.00	Migratory fish	This project has been screened as there is potential interaction with migratory fish receptors via underwater sound and vibration.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
TwinHub Offshore wind Consented	102.00	102.00	Marine mammals	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Potential impacts arising from interconnector installation projects; • Potential impacts arising from tidal-stream-energy projects; • Disturbance arising from underwater noise during construction of offshore renewable energy projects; and • The potential for disturbance from vessel activity during pre-construction, construction, operation and maintenance, and decommissioning.
			Marine ornithology	This project has been screened in for a quantitative assessment of impacts due to potential in-combination effects on Annex I ornithological features.
South Irish Sea Array Offshore wind Application submitted	137.00	119.00	Marine mammals	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Potential impacts arising from interconnector installation projects; • Potential impacts arising from tidal-stream-energy projects; • Disturbance arising from underwater noise during construction of offshore renewable energy projects; and • The potential for disturbance from vessel activity during pre-construction, construction, operation and maintenance, and decommissioning.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Inis Ealga Marine Energy Park Offshore wind Pre-application	136.00	136.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Arklow Bank Offshore wind Operational	159.00	137.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Celtic Interconnector Interconnector Consented	143.00	143.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Codling Wind Park Offshore wind Pre-application	188.00	162.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Dublin Array Offshore wind Pre-application	198.00	174.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
		Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.	
Morlais Orbital O2 Tidal energy Consented	218.00	184.00	Marine ornithology	This project has been screened in for a quantitative assessment of impacts due to potential in-combination effects on Annex I ornithological features.
Rhyl Flats Offshore wind farm Operational	251.00	212.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
North Celtic Sea Offshore wind Pre-application	214.00	216.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Awel y Mor Offshore wind Consented	251.00	214.00	Marine mammals	This project has been screened as there is potential interaction with marine mammal receptors via the following impact pathways: • Potential impacts arising from interconnector installation projects; • Potential impacts arising from tidal-stream-energy projects; • Disturbance arising from underwater noise during construction of offshore renewable energy projects; and

Project	Distance to the Llŷr Array Area (km)		Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
					• The potential for disturbance from vessel activity during pre-construction, construction, operation and maintenance, and decommissioning.
				Marine ornithology	This project has been screened in for a quantitative assessment of impacts due to potential in-combination effects on Annex I ornithological features.
North Irish Sea Array Offshore wind Pre-application	242.00	217.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.	
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.	
Gwynt y Mor Offshore wind Operational	257.00		218.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
North Hoyle Offshore wind Operational	260.00		222.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Burbo Bank Extension Offshore wind Operational	272.00		233.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Cooley Point (now Clogherhead) Offshore wind Pre-application	263.00	237.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Burbo Bank Offshore wind Operational	277.00	238.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Mona Offshore wind Pre-application	289.00	251.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Morecambe Offshore wind Pre-application	305.00	267.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
West of Duddon Sands Offshore wind farm Operational	313.00	275.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Morgan Offshore wind Pre-application	314.00	277.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened as there is potential interaction with marine ornithology receptors via the following impact pathways: • Disturbance and/or displacement associated with vessels and other offshore activities; • Effects of underwater noise on diving seabirds; • Indirect effects due to changes in habitat and/ or prey availability and distribution; • Entanglement with mooring lines and cables ; • Attraction of nocturnal seabirds to project infrastructure lighting; • Creation of roosting habitat for birds due to presence of floating platforms and associated infrastructure; and • Decommissioning effects.
Walney Extension Offshore wind	317.00	279.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Operational				
Arklow Bank 2 Offshore wind Pre-application	330.00	280.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Walney Phase 1 Offshore wind Operational	319.00	281.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Walney Phase 2 Offshore wind Operational	320.00	283.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Barrow Offshore wind Operational	321.00	283.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Ormonde Offshore wind Operational	327.00	289.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Rampion I Offshore wind Operational	316.00	345.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Project	Distance to the Llŷr Array Area (km)	Distance to the Llŷr OfECC (km)	Receptor	Potential interaction details
Rampion 2 Offshore wind Pre-application	342.00	327.00	Marine mammals	This project is within Tier 4, thus the timing of construction is particularly uncertain. The in-combination assessment is therefore unable to predict the potential impact of the project with any certainty. However, an indication in the level of risk for these projects is presented in **Chapter 21: 'Marine Mammals**.
			Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.
Robin Riggs Offshore wind Operational	389.00	353.00	Marine ornithology	This project has been screened in for a qualitative assessment of impacts on due to potential in-combination effects on Annex I ornithological features.

Table 8D-26. Short list of projects scoped for in-combination effects on terrestrial ecology based on temporal and spatial overlaps with the proposed Project receptor pathways

Project	Distance to the Llŷr OnECC (km)	Receptor	Potential interaction details
Greenlink Interconnector Interconnector Approved	0.00	Terrestrial ecology	This project has been screened as there is potential interaction with terrestrial ecology receptors during the operational phase of the proposed Project.
Erebus Offshore wind farm	5.00	Terrestrial ecology	This project has been screened as there is potential interaction with terrestrial ecology receptors during the operational phase of the proposed Project.

Project	Distance to the Llŷr OnECC (km)	Receptor	Potential interaction details
Consented			
Valorous Offshore wind Planned	0.00	Terrestrial ecology	This project has been screened as there is potential interaction with terrestrial ecology receptors during the operational phase of the proposed Project.

8.6.4. Summary

172. This HRA Screening Report has been produced for the proposed Project. The screening of LSE, Stage 1 of the HRA has been undertaken in **Section 8.6**. This assessment consisted of the identification of key receptors and potential impact pathways associated with the proposed Project, before then determining the potential for LSE on any European sites.

173. A total of 66 European sites have been screened in and will be taken forward to determine any AEoSI which will be considered during Stage 2 (AA) (**Table 8D-27**).

Table 8D-27. Summary of European Sites screened into the AA

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Castlemartin Coast SPA (UK9014061)	*Annex I Species:* • Chough *Pyrrhocorax pyrrhocorax* (A346).	-	-	0.00	**LSE**	*Screened in for:* • Chough *Pyrrhocorax pyrrhocorax* (A346).
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (UK9014051)	*Breeding species:* • European storm petrel *Hydrobates pelagicus* (A014); • Red-billed chough *Pyrrhocorax pyrrhocorax* (A346); • Short-eared owl *Asio flammeus* (A222); • Manx shearwater *Puffinus puffinus* (A013); • Atlantic puffin *Fratercula arctica* (A204); and • Lesser Black-backed Gull *Larus fuscus* (A183). *Seabird assemblage* (including kittiwake, guillemot, razorbill)	9.57	0.00	4.54	**LSE**	*Screened in for:* • Kittiwake *Rissa tridac*tyla (A188); • Lesser Black-backed Gull *Larus fuscus* (A183); • Guillemot *Uria aalge* (A199); • Razorbill *Alca torda* (A200); • Atlantic puffin *Fratercula arctica* (A204); • European storm petrel *Hydrobates pelagicus* (A014); and • Manx shearwater *Puffinus puffinus* (A013).
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	*Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351).	13.65	0.00	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Pembrokeshire Marine / Sir Benfro Forol SAC (UK0013116)	*Annex I Habitats:* • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); • Twaite shad *Alosa fallax* (1103); • Otter *Lutra lutra* (1355); • Grey seal *Halichoerus grypus* (1364); and	23.04	0.00	0.00	**LSE**	*Screened in for:* • Estuaries (1130); • Large shallow inlets and bays (1160); • Reefs (1170); • Sandbanks which are slightly covered by sea water all the time (1110); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Submerged or partially submerged sea caves (8330); • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); • Twaite shad *Alosa fallax* (1103); • Otter *Lutra lutra* (1355); and • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Shore dock *Rumex rupestris* (1441).					
Limestone Coast of South West Wales / Arfordir Calchfaende Orllewin Cymru SAC (UK0014787)	*Annex I Habitats:* • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • European dry heaths (4030); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) (6210); • Caves not open to the public (8310); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304); • Petalwort *Petalophyllum ralfsii* (1395); and • Early gentian *Gentianella anglica* (1654).	35.24	0.00	0.00	**LSE**	*Screened in for:* • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304); • Petalwort *Petalophyllum ralfsii* (1395); • Early gentian *Gentianella anglica* (1654); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • European dry heaths (4030); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) (6210); • Caves not open to the public (8310); and • Submerged or partially submerged sea caves (8330).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)	*Annex II Species:* • Harbour porpoise *Phocoena phocoena*.	12.11	1.94	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).
Pembrokeshire Bat Sites and Bosherston Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC (UK0014793)	*Annex I Habitats:* • Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. *Annex II Species:* • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304); and • Otter Lutra lutra (1355).	-	-	2.80	**LSE**	*Screened in for:* • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); and • Greater Horseshoe bat *Rhinolophus ferrumequinum* (1304).
Cleddau Rivers / Afonydd Cleddau SAC (UK0030074)	*Annex I Habitats:* • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260); • Active raised bogs (7110); and • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*) (91E0)	55.03	16.52	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); and • River lamprey *Lampetra fluviatilis* (1099).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	Annex II Species: • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Brook lamprey *Lampetra planeri (*1096*);* • Bullhead *Cottus gobio (*1163*);* and • Otter *Lutra lutra* (1355).					
Grassholm / Ynys Gwales SPA (UK9014041)	*Breeding species:* • Gannet *Morus bassanus* (A016).	36.36	21.23	-	**LSE**	*Screened in for:* • Gannet *Morus bassanus* (A016).
Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC (UK0020020)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • *Salicornia* and other annuals colonizing mud and sand (1310); and	53.94	24.63	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330). *Annex II Species:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); • Otter *Lutra lutra* (1355); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103).					
Lundy SAC (UK0013114)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Reefs (1170); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Grey seal Halichoerus grypus (1364).	51.77	40.72	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Cardigan Bay / Bae Ceredigion SAC (UK0012712)	*Annex I Habitats:* • Reefs (1170); • Sandbanks which are slightly covered by sea water all the time (1110); and	88.42	50.18	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); and

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Submerged or partially submerged sea caves (8330). *Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Bottlenose dolphin *Tursiops truncatus* (1349); and • Grey seal *Halichoerus grypus* (1364).					• Grey seal *Halichoerus grypus* (1364).
Afon Teifi / River Teifi SAC (UK0012670)	*Annex I Habitats:* • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and / or of the Isoëto-Nanojuncetea (3130); and • Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation (3260). *Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095). • Brook lamprey *Lampetra planeri (*1096*);* • River lamprey *Lampetra fluviatilis* (1099); • Atlantic salmon *Salmo salar* (1106);	89.87	51.22	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); • Twaite shad *Alosa fallax* (1103); and • Atlantic salmon *Salmo salar* (1106);

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Bullhead *Cottus gobio (*1163*);* • Otter *Lutra lutra* (1355); and • Floating water-plantain *Lumonium natans* (1831).					
River Tywi / Afon Tywi SAC (UK0013010)	*Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095); • Brook lamprey *Lampetra planeri (*1096*);* • River lamprey *Lampetra fluviatilis* (1099); • Twaite shad *Alosa fallax* (1103); • Allis shad *Alosa alosa* (1102); • Bullhead *Cottus gobio (*1163*);* and • Otter *Lutra lutra* (1355).	90.19	55.07	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); and • Twaite shad *Alosa fallax* (1103).
River Usk / Afon Wysg SAC (UK0013007)	*Annex I Habitats:* • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260). *Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095); • Brook lamprey *Lampetra planeri (*1096*);* • River lamprey *Lampetra fluviatilis* (1099);	131.13	98.15	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); • Twaite shad *Alosa fallax* (1103); and • Atlantic salmon *Salmo salar* (1106).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Twaite shad *Alosa fallax* (1103); • Atlantic salmon *Salmo salar* (1106); • Bullhead *Cottus gobio (*1163); • Otter *Lutra lutra* (1355); and • Allis shad *Alosa alosa* (1102).					
Saltee Islands SAC (IE0000707)	*Annex I Habitats:* • Mudflats and sandflats not covered by seawater at low tide (1140); • Large shallow inlets and bays (1160); • Reefs (1170); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364).	101.59	99.94	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351); and • Grey seal *Halichoerus grypus* (1364).
Lleyn Peninsula and the Sarnau / Pen Llyn a`r Sarnau SAC (UK0013117)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130);	139.08	100.38	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • *Salicornia* and other annuals colonizing mud and sand (1310); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); • Otter *Lutra lutra* (1355); and • Grey seal *Halichoerus grypus* (1364).					
Saltee Islands SPA (IE004002)	*Breeding species:* • Fulmar *Fulmarus glacialis* (A009); • Gannet *Morus bassanus* (A016); • Cormorant *Phalacrocorax carbo* (A017);	110.05	108.12	-	**LSE**	*Screened in for:* • Gannet *Morus bassanus* (A016); • Lesser Black-backed Gull *Larus fuscus* (A183); • Kittiwake *Rissa tridactyla* (A188);

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Shag *Phalacrocorax aristotelis* (A018); • Lesser Black-backed Gull *Larus fuscus* (A183); • Herring Gull *Larus argentatus* (A184); • Kittiwake *Rissa tridactyla* (A188); • Guillemot *Uria aalge* (A199); • Razorbill *Alca torda* (A200); and • Atlantic puffin *Fratercula arctica* (A204).					• Razorbill *Alca torda* (A200); and • Atlantic puffin *Fratercula arctica* (A204).
Glannau Aberdaron ac Ynys Enlli / Aberdaron Coast and Bardsey Island SPA (UK9013121)	*Breeding species:* • Manx shearwater *Puffinus puffinus* (A013); and • Chough *Pyrrhocorax pyrrhocorax* (A346). • *Non-breeding:* • Chough *Pyrrhocorax pyrrhocorax* (A346).	146.78	111.64	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).
Severn Estuary Ramsar (UK11081)	*Designated for Ramsar criteria:* 1. contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region; 3. supports populations of plant and / or animal species important for maintaining	155.94	138.89	-	**LSE**	*Screened in for:* • River lamprey *Lampetra fluviatilis*; • Sea lamprey Petromyzon marinus; • Atlantic salmon *Salmo salar*; • Allis shad *Alosa alosa*;

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	the biological diversity of a particular biogeographic region; 4. It supports plant and / or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions; 5. it regularly supports 20,000 or more waterbirds; 6. it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird; and 8. is an important source of food for fishes, spawning ground, nursery and / or migration path on which fish stocks, either within the wetland or elsewhere, depend. Specifically noting River lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, Atlantic salmon *Salmo salar*, Allis shad *Alosa alosa*, Twaite shad *Alosa fallax,* and sea trout *Salmo trutta* within Criteria 4 and 8.					• Twaite shad *Alosa fallax*; and • Sea trout *Salmo trutta*
Severn Estuary / Môr Hafren SAC (UK0013030)	*Annex I Habitats:* • Mudflats and sandflats not covered by seawater at low tide (1140); • Reefs (1170);	154.78	132.98	-	**LSE**	*Screened in for:* • River lamprey *Lampetra fluviatilis* (1099); • Sea lamprey *Petromyzon marinus* (1095); and

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Sandbanks which are slightly covered by sea water all the time (1110); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); and • Estuaries (1130). *Annex II Species:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); and • Twaite shad *Alosa fallax* (1103).					• Twaite shad *Alosa fallax* (1103).
River Wye / Afon Gwy SAC (UK0012642)	*Annex I Habitats:* • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260); and • Transition mires and quaking bogs (7140). *Annex II Species:* • White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* (1092); • Sea lamprey *Petromyzon marinus* (1095); • Brook lamprey Lampetra planeri (1096);	174.80	141.17	-	**LSE**	*Screened in for:* • Sea lamprey *Petromyzon marinus* (1095); • River lamprey *Lampetra fluviatilis* (1099); • Allis shad *Alosa alosa* (1102); • Twaite shad *Alosa fallax* (1103); and • Atlantic salmon *Salmo salar* (1106);

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• River lamprey Lampetra fluviatilis (1099); • Allis shad Alosa alosa (1102); • Twaite shad Alosa fallax (1103); • Atlantic salmon Salmo salar (1106); • Otter Lutra lutra (1355); and • Bullhead Cottus gobio (1163).					
Isles of Scilly Complex SAC (UK0013694)	*Annex I Habitats:* • Mudflats and sandflats not covered by seawater at low tide (1140); • Reefs (1170); and • Sandbanks which are slightly covered by sea water all the time (1110). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364); and • Shore dock *Rumex rupestris* (1441).	154.04	153.86	-		*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Wicklow Head SPA (IE004127)	*Qualifying interest features:* • Kittiwake *Rissa tridac*tyla (A188).	177.75	157.01	-	**LSE**	*Screened in for:* • Kittiwake *Rissa tridactyla* (A188).
Isles of Scilly SPA (UK9020288)	*Breeding species:* • European storm petrel *Hydrobates pelagicus* (A014);	157.15	156.98	-	**LSE**	*Screened in for:* • European storm petrel *Hydrobates pelagicus* (A014); and

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Shag *Phalacrocorax aristotelis* (A018); • Lesser Black-backed Gull *Larus fuscus* (A183); and • Great Black-backed Gull *Larus marinus* (A187).					• Lesser Black-backed Gull *Larus fuscus* (A183).
Helvick Head to Ballyquin SPA (IE004192)	*Qualifying interest features:* • Cormorant *Phalacrocorax carbo* (A017); • Peregrine *Falco peregrinus* (A103); • Herring Gull *Larus argentatus* (A184); • Kittiwake *Rissa tridactyla* (A188); and • Chough *Pyrrhocorax pyrrhocorax* (A346).	157.07	157.07	-	**LSE**	*Screened in for:* • Kittiwake *Rissa tridactyla* (A188).
North Anglesey / Gogledd Môn Forol SAC (UK0030398)	*Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351).	208.79	174.30	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).
Rockabill to Dalkey Island SAC (IE0003000)	*Annex I Habitats:* • Reefs (1170). *Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351).	209.43	186.52	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Howth Head Coast SPA (IE004113)	*Qualifying interest features:* • Kittiwake *Rissa tridac*tyla (A188).	222.51	199.83	-	**LSE**	*Screened in for:* • Kittiwake *Rissa tridactyla* (A188).
Ireland's Eye SPA (IE004117)	*Qualifying interest features:* • Cormorant *Phalacrocorax carbo* (A017); • Herring Gull *Larus argentatus* (A184); • Kittiwake *Rissa tridactyla* (A188); • Guillemot *Uria aalge* (A119); and • Razorbill *Alca torda* (A200).	226.69	203.94	-	**LSE**	*Screened in for:* • Kittiwake *Rissa tridactyla* (A188).
Lambay Island SPA (IE004069)	*Qualifying interest features:* • Fulmar *Fulmarus glaciallis* (A009); • Cormorant *Phalacrocorax carbo* (A017); • Shag *Phalacrocorax aristotelis* (A018); • Greylag goose *Anser anser* (A043); • Lesser Black-backed Gull *Larus fuscus* (A183); • Herring Gull *Larus argentatus* (A184); • Kittiwake *Rissa tridactyla* (A188); • Guillemot *Uria aalge* (A119); • Razorbill *Alca torda* (A200); and	235.29	211.62		**LSE**	*Screened in for:* • Kittiwake *Rissa tridac*tyla (A188); and • Atlantic puffin *Fratercula arctica* (A204).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Atlantic puffin *Fratercula arctica* (A204).					
Old Head of Kinsale SPA (IE0040210)	*Qualifying interest features:* • Guillemot *Uria aalge* (A119); and • Kittiwake *Rissa tridac*tyla (A188).	211.01	211.01	-	**LSE**	*Screened in for:* • Kittiwake *Rissa tridactyla* (A188).
Lambay Island SAC (IE000204)	*Annex I Habitats:* • Reefs (1170); and • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230). • *Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351); and Grey seal *Halichoerus grypus* (1364).	235.60	211.95	-	**LSE**	*Screened in for:* Grey seal *Halichoerus grypus* (1364).
Nord Bretagne DH SAC (FR2502022)	*Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); and • Harbour porpoise *Phocoena phocoena* (1351).	218.76	214.09	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).
Irish Sea Front SPA (UK9020328)	*Breeding species:* • Manx shearwater *Puffinus puffinus* (A013).	248.49	216.39	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015)	*Annex I Habitats:* • Reefs (1170). *Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351); and • Bottlenose dolphin *Tursiops truncatus* (1349).	246.37	245.15	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).
Roaringwater Bay and Islands SAC (IE0000101)	*Annex I Habitats:* • Large shallow inlets and bays (1160); • Reefs (1170); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Submerged or partially submerged sea caves (8330); and • European dry heaths (4030). *Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351); • Otter *Lutra lutra* (1355); and • Grey seal *Halichoerus grypus* (1364).	266.62	266.61	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351); and • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Côte de Granit rose-Sept-Iles SAC (FR5300009)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • Annual Vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Salicornia and other annual colonising mud and sand (1310); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Mediterranean salt meadows *Juncetalia maritime* (1410); • Halo-nitrophilous scrubs Pegano-Salsoletea (1430);	279.30	273.47	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • Atlantic decalcified fixed dunes Calluno-ulicetea (2150); • Humid dune slacks (2190); • Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* (3110); • Natural eutrophic lakes with Magnopotamion or Hydrocharition -type vegetation (3150); • European dry heaths (4030); • Molinia meadows on calcareous, peaty or clayey-silt-laden soils *Molinion caeruleae* (6410); • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430); • Siliceous rocky slopes with chasmophytic vegetation (8220);					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dilleniid (8230); • Asperulo-Fagetum beech forests (9103); and • Tilio-Acerion forests of slopes, screes and ravines (9180). *Annex II Species:* • *Elona quimperiana* (1007); • Stag beetle *Lucanus cervus* (1083); • Great sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); • Black salmon *Salmo salar* (1106); • Shad *Alosa fallax* (1130); • Greater horseshoe bat *Rhinolophus ferrumequinum* (1304); • Bottlenose dolphin *Tursiops truncatus* (1349); • Harbour porpoise *Phocoena phocoena* (1351);					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Grey seal *Halichoerus grypus* (1364); • Harbour seal *Phoca vitulina* (1365); • *Trichomanes speciosum* (1421); and • Shore dock *Rumex rupestris* (1441).					
North Channel SAC (UK0030399)	*Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351).	309.93	279.66	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).
Tregor Goëlo SAC (FR5300010)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • Annual Vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220);	291.53	284.63	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Salicornia and other annual colonising mud and sand (1310); • Spartina swards *Spartinion maritimae* (1320); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Mediterranean and thermo-Atlantic halophilous scrubs *Sarcocornetea fruticose* (1420); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • Humid dune slacks (2190); • Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* (3110); • Oligotrophic waters containing very few minerals generally on sandy soils of the					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	West Mediterranean, with *Isoetes* spp. (3120); • Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* (4020); • European dry heaths (4030); • Molinia meadows on calcareous, peaty or clayey-silt-laden soils *Molinion caeruleae* (6410); • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430); • Siliceous rocky slopes with chasmophytic vegetation (8220); • Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dilleniid (8230); • Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion) (9120); • Asperulo-Fagetum beech forests (9103); • Tilio-Acerion forests of slopes, screes and ravines (9180); and					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) (91E0). *Annex II Species:* • *Elona quimperiana* (1007); • Southern Coenagrion *Coenagrion mercurial* (1044); • Stag beetle *Lucanus cervus* (1083); • Brook lamprey *Lampetra planeri* (1096); • Great sea lamprey Petromyzon marinus (1095); • Allis shad *Alosa alosa* (1102); • Black salmon *Salmo salar* (1106); • Shad *Alosa fallax* (1130); • Freshwater sculpin *Cottus gobio* (1163); • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); • Greater horseshoe bat *Rhinolophus ferrumequinum* (1304); • Barbastelle *Barbastella barbastellus* (1308);					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Geoffroy's bat *Myotis emarginatus* (1321); • Bechstein's bat *Myotis bechsteinii* (1323); • Greater mouse-eared bat *Myotis myotis* (1324); • Bottlenose dolphin *Tursiops truncatus* (1349); • Harbour porpoise *Phocoena phocoena* (1351); • Otter *Lutra lutra* (1355); • Grey seal *Halichoerus grypus* (1364); • Shore dock *Rumex rupestris* (1441); • *Trichomanes speciosum* (1421); • Shore dock *Rumex rupestris* (1441); and • *Cottus perifretum* (5315);					
Baie de Morlaix SAC (FR5300015)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130); • Mudflats and sandflats not covered by seawater at low tide (1140);	297.69	293.18	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Large shallow inlets and bays (1160); • Reefs (1170); • Annual Vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Salicornia and other annual colonising mud and sand (1310); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Halo-nitrophilous scrubs Pegano-Salsoletea (1430); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • European dry heaths (4030); • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430); • Siliceous rocky slopes with chasmophytic vegetation (8220);					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*) (91E0). • Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion) (9120); and • Tilio-Acerion forests of slopes, screes and ravines (9180). *Annex II Species:* • Great sea lamprey *Petromyzon marinus* (1095); • Allis shad *Alosa alosa* (1102); • Black salmon *Salmo salar* (1106); • Shad *Alosa fallax* (1130); • Lesser horseshoe bat *Rhinolophus hipposideros* (1303); • Greater horseshoe bat *Rhinolophus ferrumequinum* (1304); • Barbastelle *Barbastella barbastellus* (1308);					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Harbour porpoise *Phocoena phocoena* (1351); • Otter *Lutra lutra* (1355); • Grey seal *Halichoerus grypus* (1364); and • *Trichomanes speciosum* (1421).					
Abers - Côte des légendes SAC (FR5300017)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Estuaries (1130); • Mudflats and sandflats not covered by seawater at low tide (1140); • Coastal lagoons (1150); • Large shallow inlets and bays (1160); • Reefs (1170); • Annual Vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Salicornia and other annual colonising mud and sand (1310);	297.54	294.23	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Halo-nitrophilous scrubs Pegano-Salsoletea (1430); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • Dunes with Salix repens spp argentea *Salicion arenariae* (2170); • Humid dune slacks (2190); • European dry heaths (4030); • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430); • Siliceous rocky slopes with chasmophytic vegetation (8220); • Asperulo-Fagetum beech forests (9103); and • Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	shrublayer (Quercion robori-petraeae or Ilici-Fagenion) (9120). *Annex II Species:* • *Elona quimperiana* (1007); • Southern Coenagrion *Coenagrion mercurial* (1044); • Black salmon *Salmo salar* (1106); • Barbastelle *Barbastella barbastellus* (1308); • Bottlenose dolphin *Tursiops truncatus* (1349); • Harbour porpoise *Phocoena phocoena* (1351); • Otter *Lutra lutra* (1355); • Grey seal *Halichoerus grypus* (1364); • Harbour seal *Phoca vitulina* (1365); and • *Liparis loselii* (1903). • Bottlenose dolphin *Tursiops truncatus* (1349).					

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Ouessant-Molène SAC (FR5300018)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); • Reefs (1170); • Annual Vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Salicornia and other annual colonising mud and sand (1310); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Halo-nitrophilous scrubs Pegano-Salsoletea (1430); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • Atlantic decalcified fixed dunes Calluno-ulicetea (2150);	309.50	308.53	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* (3110); • Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with *Isoetes* spp. (3120); • European dry heaths (4030); • Alkaline fens (7230); and • Siliceous rocky slopes with chasmophytic vegetation (8220). *Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); • Harbour porpoise *Phocoena phocoena* (1351); • Otter *Lutra lutra* (1355); • Grey seal *Halichoerus grypus* (1364); and • Shore dock *Rumex rupestris* (1441).					
Deenish Island and Scariff Island SPA (IE004175)	*Qualifying interest features:* • Fulmar *Fulmarus glaciallis* (A009);	327.31	327.31	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Manx shearwater *Puffinus puffinus* (A013); • European storm Petrel *Hydrobates pelagicus* (A014) • Lesser Black-backed Gull *Larus fuscus* (A183); and • Arctic tern *Sterna paradisaea* (A194).					
The Bull and The Cow Rocks SPA (IE004066)	*Qualifying interest features:* • European storm Petrel *Hydrobates pelagicus* (A014); • Gannet *Morus bassanus* (A016); and • Atlantic puffin *Fratercula arctica* (A204).	330.33	330.33	-	**LSE**	*Screened in for:* • Gannet *Morus bassanus* (A016).
Puffin Island SPA (IE004003)	*Qualifying interest features:* • Fulmar *Fulmarus glaciallis* (A009); • Manx shearwater *Puffinus puffinus* (A013); • European storm Petrel *Hydrobates pelagicus* (A014); • Lesser Black-backed Gull *Larus fuscus* (A183); • Razorbill *Alca torda* (A200); and • Atlantic puffin *Fratercula arctica* (A204).	341.30	341.30	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Skelligs SPA (IE004007)	*Qualifying interest features:* • Fulmar *Fulmarus glaciallis* (A009); • Manx shearwater *Puffinus puffinus* (A013); • European storm Petrel *Hydrobates pelagicus* (A014); • Gannet *Morus bassanus* (A016); • Guillemot *Uria aalge* (A119); • Kittiwake *Rissa tridactyla* (A188); and • Atlantic puffin *Fratercula arctica* (A204).	347.88	347.88	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013); and • Gannet *Morus bassanus* (A016).
Blasket Islands SAC (IE0002172)	*Annex I Habitats:* • Reefs (1170); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); and • European dry heaths (4030); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Harbour porpoise *Phocoena phocoena* (1351); and • Grey seal *Halichoerus grypus* (1364).	348.56	348.56	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351); and • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Blasket Islands SPA (IE004008)	*Qualifying interest features:* • Fulmar *Fulmarus glaciallis* (A009); • Manx shearwater *Puffinus puffinus* (A013); • European storm Petrel *Hydrobates pelagicus* (A014); • Gannet *Morus bassanus* (A016); • Shag *Phalacrocorax aristotelis* (A018); • Guillemot *Uria aalge* (A119); • Lesser Black-backed Gull *Larus fuscus* (A183); • Herring Gull *Larus argentatus* (A184); • Kittiwake *Rissa tridactyla* (A188); • Arctic Tern *Sterna paradisaea* (A194); • Razorbill *Alca torda* (A200); • Atlantic puffin *Fratercula arctica* (A204); and • Chough *Pyrrhocorax pyrrhocorax* (A346).	353.01	353.01	-		*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).
Chaussée de Sein SAC (FR5302007)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110);	358.90	357.09	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351); and

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Reefs (1170); • *Salicornia* and other annuals colonizing mud and sand (1310); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Annual vegetation of drift lines (1210); • Perennial vegetation of stony banks (1220); and • Embryonic shifting dunes (2110); and • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130). *Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); • Harbour porpoise *Phocoena phocoena* (1351); and • Grey seal *Halichoerus grypus* (1364).					• Grey seal *Halichoerus grypus* (1364).
The Maidens SAC (UK0030384)	*Annex I Habitats:* • Sandbanks which are slightly covered by sea water all the time (1110); and • Reefs (1170).	387.78	359.08	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	Annex II Species: • Grey seal *Halichoerus grypus* (1364).					
Slyne Head Islands SAC (IE000328)	*Annex I Habitats:* • Reefs (1170). *Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); and • Grey seal *Halichoerus grypus* (1364).	388.93	388.93	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Ailsa Craig SPA (UK9003091)	*Breeding species:* • Gannet *Morus bassanus* (A016); • Guillemot *Uria aalge* (A119); • Lesser Black-backed Gull *Larus fuscus* (A183); • Herring Gull *Larus argentatus* (A184); and • Kittiwake *Rissa tridac*tyla (A188).	428.20	396.60	-	**LSE**	*Screened in for:* • Gannet *Morus bassanus* (A016).
Cruagh Island SPA (IE004170)	*Qualifying interest features:* • Manx shearwater *Puffinus puffinus* (A013); and • Barnacle goose *Branta leucopsis* (A045).	397.30	397.30	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Inishbofin and Inishshark SAC (IE000278)	*Annex I Habitats:* • Coastal lagoons (1150); • Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* (3110); • Northern Atlantic wet heaths with *Erica tetralix* (4010); and • European dry heaths (4030). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364).	398.56	398.14	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Slieve Tooey / Tormore Island / Loughros Beg Bay SAC (IE000190)	*Annex I Habitats:* • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (1330); • Mediterranean salt meadows (*Juncetalia maritimi*) (1410); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130);	421.86	410.42	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Decalcified fixed dunes with *Empetrum nigrum* (2140); • Atlantic decalcified fixed dunes *Calluno-Ulicetea* (2150); • Dunes with Salix repens ssp. argentea *Salicion arenariae* (2170); • Humid dune slacks (2190); • Alpine and Boreal heaths (4060); and • Blanket bogs (* if active bog) (7130). *Annex II Species:* • Narrow-mouthed Whorl Snail *Vertigo angustior* (1014); • Otter *Lutra lutra* (1355); and • Grey seal *Halichoerus grypus* (1364).					
Récifs du talus du golfe de Gascogne SAC (FR5302016)	*Annex I Habitats:* • Reefs (1170). *Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); and • Grey seal *Halichoerus grypus* (1364).	412.70	412.58	-	**LSE**	*Screened in for:* • Harbour porpoise *Phocoena phocoena* (1351).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Duvillaun Islands SAC (IE000495)	*Annex II Species:* • Bottlenose dolphin *Tursiops truncatus* (1349); and • Grey seal *Halichoerus grypus* (1364).	432.41	430.07	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Horn Head and Rinclevan SAC (IE000147)	*Annex I Habitats:* • Machairs (* in Ireland) (21A0); • Embryonic shifting dunes (2110); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); • Dunes with *Salix repens* ssp. argentea *Salicion arenariae* (2170); • Humid dune slacks (2190); and • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and / or *Isoeto-Nanojuncetea* (3130). *Annex II Species:* • Geyer's Whorl Snail *Vertigo geyeri* (1013); • Grey seal *Halichoerus grypus* (1364);	450.61	434.12	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Petalwort *Petalophyllum ralfsii* (1395); and • Slender Naiad *Najas flexilis* (1833).					
Inishkea Islands SAC (IE000507)	*Annex I Habitats:* • Machairs (in Ireland) (21A0). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364); and • Petalwort *Petalophyllum ralfsii* (1395).	437.68	435.18	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Treshnish Isles SAC (UK0030289)	*Annex I Habitats:* • Reefs (1170). *Annex II Species:* • Grey seal Halichoerus grypus (1364).	569.03	542.03	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
Rum SPA (UK9001341)	*Breeding species:* • Golden Eagle *Aquila chrysaetos* (A091); • Red-throated diver *Gavia stellata* (A001); • Manx shearwater *Puffinus puffinus* (A013); • Kittiwake *Rissa tridac*tyla (A188); and • Guillemot *Uria aalge* (A119). *Seabird assemblage.*	615.41	587.27	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
Monach Isles SAC (UK0012694)	*Annex I Habitats:* • Machairs (21A0); • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120); and • Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364).	693.84	669.59	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).
St Kilda SPA (UK9001031)	*Breeding species:* • Fulmar *Fulmarus glaciallis* (A009); • Manx shearwater *Puffinus puffinus* (A013); • European storm Petrel *Hydrobates pelagicus* (A014); • Leach's storm petrel *Oceanodroma leucorhoa* (A015); • Gannet *Morus bassanus* (A016); • Great skua *Stercorarius skua* (A175); • Kittiwake *Rissa tridactyla* (A188); • Guillemot *Uria aalge* (A119); • Razorbill *Alca tor*da (A200); and	733.97	711.99	-	**LSE**	*Screened in for:* • Manx shearwater *Puffinus puffinus* (A013).

Designated site	Designated features	Distance to Llŷr array (km)	Distance to OFECC (km)	Distance to Onshore Development Area (km)	Screening Decision	Features screened in
	• Atlantic puffin *Fratercula arctica* (A204). *Seabird assemblage*					
North Rona SAC (UK0012696)	*Annex I Habitats:* • Reefs (1170); • Vegetated sea cliffs of the Atlantic and Baltic coasts (1230); and • Submerged or partially submerged sea caves (8330). *Annex II Species:* • Grey seal *Halichoerus grypus* (1364).	860.34	830.31	-	**LSE**	*Screened in for:* • Grey seal *Halichoerus grypus* (1364).

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