MERC Consultants
environmental and conservation services

Natura Impact Statement

Survey and salvage work on RMS Laconia

Document control			
Document reference: NIS_RMS LACONIA			
Version	**Date**	**Authors**	**Approved by**
0.2	1/9/2026	Nick Pfeiffer Dr. Ronan Browne	Dr. Louise Scally

List of Tables

List of Figures

1. Introduction

Salvocean proposes to undertake a subsea survey and controlled salvage operation at the wreck of Royal Mail Ship (RMS) *Laconia*, hereafter referred to as the "proposed project". The RMS *Laconia* wreck is located within Ireland's Exclusive Economic Zone (EEZ) and over the State's continental shelf area known as the Porcupine Bank, approximately 150 miles (242 km) from the nearest point of land (Figure 1). Average water depths in the area are approximately 370–375m. Salvocean wish to apply to the Maritime Area Regulatory Authority (MARA) for a Marine Useage Licence (MUL) in respect of the proposed survey and salvage project.

A *Supporting Information for Screening for Appropriate Assessment* (SISAA) document has been prepared by MERC to assist MARA in undertaking the screening exercise for Appropriate Assessment. The SISAA identified a number of relevant SACs and SPAs on a precautionary basis, taking account of the potential for mobile receptors to occur within the project area. These include SACs designated for harbour porpoise, bottlenose dolphin and grey seal, together with SPAs supporting breeding seabird species whose foraging ranges may overlap the RMS *Laconia* project area.

Accordingly, this Natura Impact Statement (NIS) considers whether the proposed project, either alone or in combination with other plans or projects, has the potential to adversely affect the integrity of any relevant European site, having regard to the mitigation measures and project controls proposed in this document.

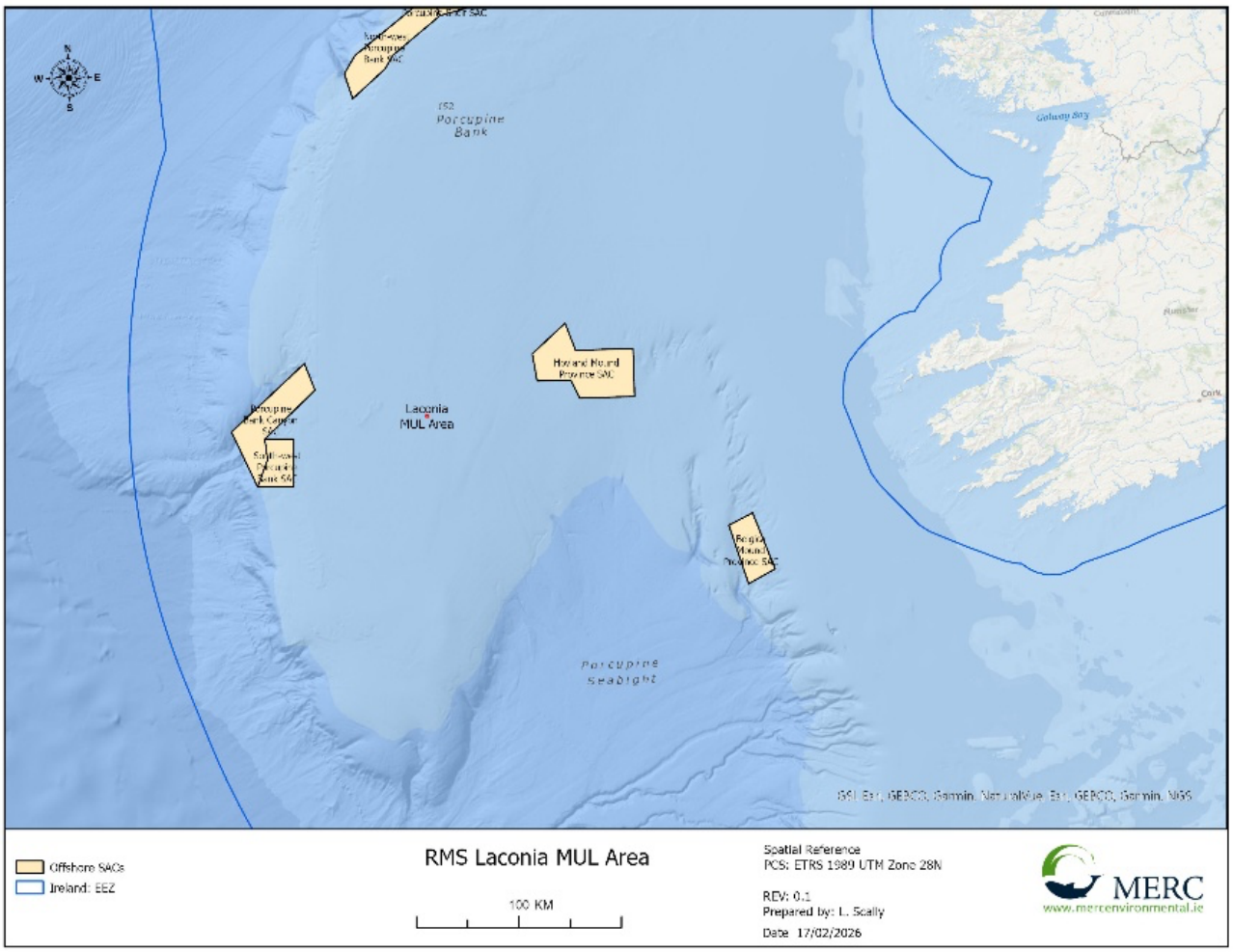

Figure 1 Proposed project site.

2. Statement of authority

This report was prepared by Nick Pfeiffer and Ronan Browne of MERC Consultants. MERC is a specialist marine ecological consultancy with extensive expertise in marine environmental assessment, ecological fieldwork and the management and conservation of marine ecosystems. MERC's team of professional ecologists have a combined practical experience spanning more than 60 years undertaking complex aquatic surveys and providing independent scientific advice in support of Marine Protected Areas, designated conservation sites and sustainable marine development.

MERC's senior ecologists are members of the Chartered Institute of Ecologists and Environmental Managers (CIEEM).

MERC also is also active in supporting public authorities, developers and marine operators throughout various consenting and regulatory processes, including for projects involving aquaculture, marine seabed surveys, shipwreck recovery and removal, port infrastructure and offshore renewable energy. Our work combines robust scientific methodology, extensive field experience and a detailed understanding of current national and EU environmental law and relevant marine regulatory requirements.

Through our broad technical expertise and proven knowledge and experience in challenging marine survey and rapidly changing regulatory environments, MERC provides credible, evidence-based ecological advice to inform sound environmental decision-making and support sustainable management of marine resources.

3. Methods

3.1 Guidelines and legislation

This report has been prepared, *inter alia*, with reference to the following European Directives, national legislation and guidance on the appropriate assessment of projects and plans with regard to the implementation of the provisions of Article 6(3) and (4) of the EU Habitats Directive 92/43/EEC.

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. Official Journal of the European Communities.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011.
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission 2018. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- Assessment of plans and projects significantly affecting Natura 2000 sites; Methodological Guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. 2021/C 437/01, Publication Office of the European Union.
- MARA (2025) Guidance for Applicants: Marine Usage Licence (MUL) Applications, Version 7; MARA (n.d.) Marine Usage Licence (MUL) Application Form;
- MARA (n.d.) Technical Mapping Guidance Notes for MAC/MUL Applications under the Marine Area Planning Act 2021; and the relevant UNESCO underwater cultural heritage references carried in the SISAA.

- Maritime Area Regulatory Authority (2024) Guidance for Consent Holders on the identification of Unexploded Ordnance (UXO) in the Maritime Area.
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Office of the Planning Regulator. March 2021.
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht, 2014.
- Relevant case law.

The Zone of Influence (ZoI) for the proposed survey and controlled salvage of RMS Laconia is defined conservatively by pathway. For underwater noise (vessels, DP, MBES, USBL/transponders, and ROV operations), the ZoI comprises the area over which sound may propagate to levels capable of eliciting behavioural responses in sensitive mobile receptors, noting frequency-dependent propagation and attenuation at approximately 370-375 m water depth. For vessel presence (transit, DP, lighting and activity), the ZoI comprises the operational area and immediately surrounding waters where disturbance could occur. For seabed/wreck interaction (ROV tooling, sediment clearance/removal, and recovery), the ZoI is confined to the direct wreck footprint (approximately 155 m x 25 m) and a limited surrounding area for localised resuspension and deposition of sediment. For accidental pollution, including hydrocarbons/HNS associated with cargo or vessel operations, the ZoI reflects a credible worst-case loss-of-containment scenario under offshore conditions; with standard controls, any such effect is expected to be short-lived and localised.

4. Proposed survey and salvage work

4.1 Overview

The proposed project consists of an offshore survey and salvage campaign at the RMS Laconia wreck site within the proposed Marine Usage Licence (MUL) area. All survey and salvage activities are confined to the immediate vicinity of the wreck (and associated equipment deployment footprint) and will be undertaken from a DP-capable salvage/survey vessel (Figure 1). Salvocean will undertake the works in accordance with MARA (2024) guidance on identifying unexploded ordnance (UXO). Salvage will concentrate on the bow and forward holds, more than 85 m from the identified shell-cargo stack in the stern/No. 4-5 hold area. Following UXO verification/fuse identification, frond matting will be placed over the exposed UXO/lard-crate area to secure it, promote sediment accumulation and provide in-situ protection without disturbing the ordnance. Standard hydrocarbon/HNS monitoring and waste/contaminated-material controls will continue to apply to the non-UXO salvage works.

Salvocean estimates an overall duration of 1,258 hours (53 days), including mobilisation, transit, demobilisation, a mid-project crew change and 20% weather downtime. The four offshore operational phases at the wreck site total approximately 32.4 days (Phase I 1 day; Phase II 1 day; Phase III 30 days; Phase IV 0.4 day). A two-year MUL is being sought to provide for weather, vessel availability, seasonality and operational contingencies.

The proposed project consists of survey and salvage work at the RMS Laconia wreck site; the survey elements are listed in Table 1, and the salvage components are listed in Table 2.

Table 1. Proposed survey elements

Survey type
Multibeam echosounder (MBES) survey (wreck site and surrounding seabed)

Use of historic sub-bottom profiler (SBP) survey data (previous survey).
Photogrammetry survey
Environmental survey
Hydrocarbon leak detection survey
Cultural heritage assessment survey
As Found/As Left survey reporting (incl. MBES, video/GVI, leak detection outputs as applicable)

The following salvage operations will be undertaken at the site and will be conducted using dynamic positioning.

Table 2. Proposed salvage elements

Salvage Operations
DP-capable salvage vessel (DP set-up and station keeping)
WROV / work-class ROV operations (GVI support, tooling, handling, dredge support)
Vector fly-out ROV (Snaeco, France) for internal bow compartment inspection
HiPAP/USBL positioning and seabed reference beacon(s) (deployment and recovery)
SVP (sound velocity profiling)
Heavy-lift crane (200 t SWL)
Secondary/auxiliary crane (deck handling/support)
Crane-deployed cutting/removal tooling: Hydraulic Shears (Tiny) and Deck Removal Tool (Deep Tek)
Sediment removal: ROV-mounted Excav8 Subsea 6" Dredge Pump and/or vessel-crane-deployed Controlled Flow Excavator, as required
Recovery baskets (secure baskets for cargoes/artefacts)
Open-top half-height recovery baskets/containers positioned adjacent to the worksite
Subsea grab operations for approved non-UXO cargo and artefact recovery; the identified ordnance/munition stack will not be disturbed.
Container cycling workflow (cycle to surface, empty using deck crane, redeploy)
Deck handling to recover seabed equipment and reference beacons

RMS Laconia

The shipwreck lies in the Irish Exclusive Economic Zone (EEZ), 150 miles (~240 km) NW by W of Fastnet, on the Porcupine Bank. The wreck is oriented from North-East to South-West. The topography of the site is that of an area of a gentle slope of soft and silty sediment, topped by a seabed dominated by foraminifera-rich (benthic and pelagic) glauconitic quartz sand.

Table 3. RMS Laconia: known details

Date of loss	25 February 1917
Position (GPS/PA)	5203711N 1331179W 52° 00.3079'N. 013° 58.2161'W
Water depth	~375 meters
Wreck footprint (approximate)	There have been a number of previous salvage attempts on the wreck, which have greatly reduced the wreck structure to approximately 155m x 25m (the wreck is in three sections).
Project description	The location of the wreck has been known since early salvage attempts (estimated at four salvage efforts) in the mid to late 20th century. The wreck's 1st- and 2nd-class accommodation levels have been removed, down to the 3rd-class accommodation level. The contents of the grab tools have been dumped from the port and starboard sides of the wreck, while

	significant areas of the stern and aft have been excavated by a mass flow excavator to a depth of a few meters. The wreck comprises three sections: Forward section (bow to forward funnel hatch): decks have collapsed, and both port and starboard hull plates are separating. Midship section (forward funnel hatch to aft end of engine room hatch): the central hull remains intact and upright on the seabed; the aft section continues at an angle of ~10–20° towards the stern. Stern section (aft end of engine room hatch to stern): largely indistinguishable, heavily damaged by two torpedo strikes and subsequent salvage attempts (including grabs, explosives, mass-flow excavator, and other tools).
SS Laconia particulars at the time of build in 1912	Tonnage of 18,099 grt, her dimensions were: 183.3m x 22.5m x 12.4m. Fitted with 2 x quadruple expansion engines, 6 boilers fuelled by coal, dual shaft, and 2 screws.
Cargo	Cargo on the final voyage included silver (bars/coins), mail and substantial shell and munitions cargo, alongside other bulk goods (Chronicle 2017). Salvocean's August 2026 UXO review records 11,628 cases of rifles and large-calibre shells with a gross weight of 4,831,028 lb; apart from identified proof-shell consignments, the shipping declaration does not establish whether the shells were primed or awaiting filling. 368 tons of lard – (140 tons of lard in crates, and 128 tons of lard in tierces (barrels or casks), 100 tons of block lard in crates). 1,201 barrels of mineral lubricating oil, 161 tons. 2,024.5 tons of brass shells (made up of 6-, 8-, 9.2- and 12-inch shells). Fuses, explosives, propellants and small arms ammunition. The munitions shipped on the *Laconia*, consisted of: • Guns: $5,200,000 • Rifles: $3,000,000 • Shells 6” and over: $71,000,000 • Shells under 6”: $47,000,000 • Fuses: $12,500,000 • Forgings: $25,000,000 • Explosives and Propellants: $27,500,000 • Small Arms and Ammunition: $14,800,000
Estimated time for the proposed survey and salvage works	Salvocean estimates an operational duration of 1,258 hours (53 days), including mobilisation, transit, demobilisation, a mid-project crew change and 20% weather downtime. The four offshore operational phases at the wreck site total approximately 32.4 days (Phase I 1 day; Phase II 1 day; Phase III 30 days; Phase IV 0.4 day). A two-year MUL is sought to provide for weather, vessel availability, seasonality and operational contingencies.

Figure 2 shows a Multi-Beam Echo Sounder map of the wreck and the surrounding debris field.

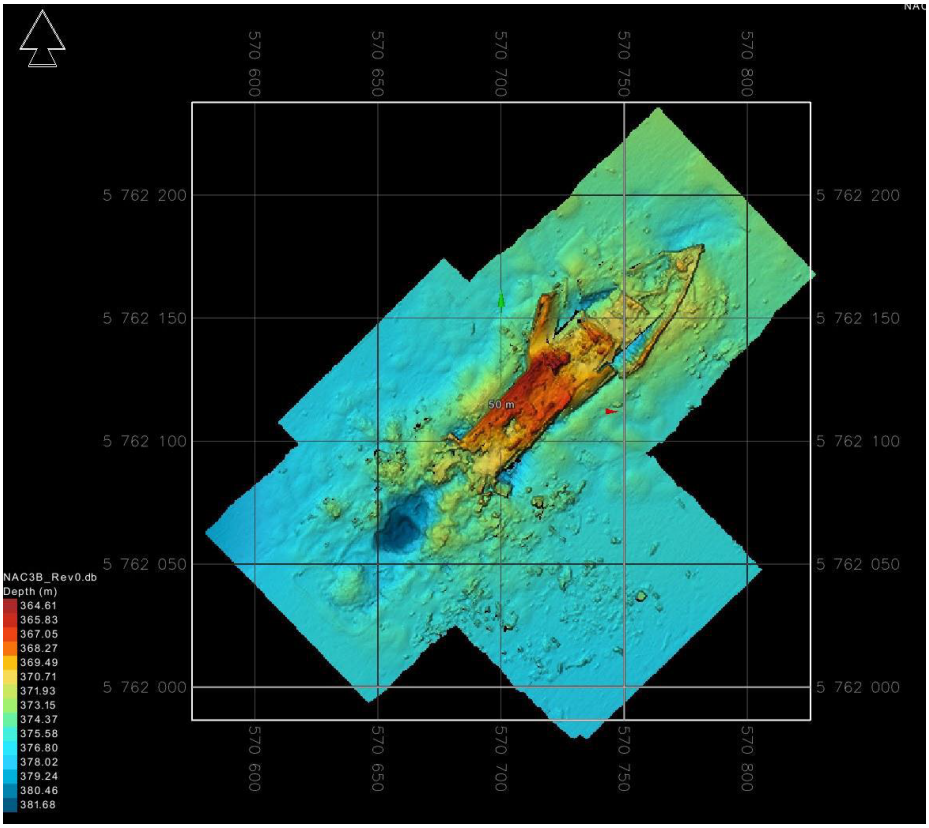

Figure 2 Multi-Beam Echo Sounder map of wreck and debris field

4.2 Survey and Salvage Equipment

A variety of equipment will be used for the survey and salvage, together with indicative sound pressure/source levels where available, as summarised in Table 4 and Table 5. The equipment list has been aligned with the SISAA and should be treated as indicative pending final vessel and equipment selection.

Table 4 summarises the principal survey and salvage equipment proposed for the RMS Laconia project, along with indicative underwater sound pressure/source levels where available.

Table 4. Equipment specification and sound pressure levels*

Equipment	Model	Deployment	Company	Sound Pressure Level Source Level (dB re 1 µPa)
Survey/salvage vessel	Type 639 Multipurpose Offshore Vessel (or similar)	Ocean surface	Aker Yards, Norway	165-175
Acoustic Transponders	EdgeTech CAT Coastal Acoustic Transponder	Equipment mounted	EdgeTech	192
Vessel DP	DP2 Kongsberg Kpos 21	Ships Hull	Kongsberg	178

Underwater Navigational Signals	Sonardyne Compatt 6 8300-3111 (USBL)	Equipment mounted	Sonardyne	187-196
Work Class ROV	Millennium® Plus Work Class ROV	Launched from Vessel	Oceaneering	130-160
Work Class ROV	Schilling Robotics HD Work Class ROV	Launched from Vessel	Schilling	130-160
Ultra-High Resolution MBES	Teledyne RESON SeaBat® 7125 or similar	ROV Mounted	Teledyne	196-224
Obstacle avoidance sonars	Teledyne	Equipment mounted	Teledyne	160-180
Fly-out ROV	Vector	ROV mounted	Snaeco, France	Estimated. 130 - 160

* While Salvocean cannot categorically state it will be the exact models as listed, should alternatives be utilised, then the sound pressure levels will fall within the parameters detailed in this table.

Table 5 groups the salvage equipment and provides an assessment of the mechanical sound type and potential impacts.

Table 5. Grouped mechanical-noise assessment for Salvage equipment.

Group	Items included	Mechanical sound type	Typical duration/duty cycle
ROV manipulators	T4 + Atlas Manipulators; Flange Splitter; PHINS; DVL	Mostly low-level hydraulic/electric actuation, short “servo” sounds; minor structure-borne vibration	Intermittent
Cutting/grinding / sawing tools	Grinders / Chop Saw; Track Saw (17" rotary saw); Diamond Wire Cutter (MMDWS); Hydraulic Shears (Tiny); Deck Removal Tool (Deep Tek)	Intermittent high-frequency tonal/rasping cutting noise; vibration transferred into the wreck structure; occasional impact sounds	Short bursts
Line cutters & small cutters	Soft line cutter; Hard line cutter;	Very brief mechanical snap/cut, possibly a short motor whine; minimal energy	Infrequent
Pump/jet / hydraulic flow tools	Dynajet pump; HP water jet; Excav8 Subsea 6" Dredge Pump; Controlled Flow Excavator	Broadband “hiss/jet” with pump whine; some low-frequency components; largely confined to a few metres	Intermittent

Grabs and baskets: contact/impact handling	Large Tine Grab (DWT OPG 2.2); Small Tine Grab (MEGA CLAW 3); Clam Shell Grab (DWT BAG10 Grab); Half Height Baskets	Intermittent low-frequency clunks/impacts, scraping/dragging depending on substrate	Intermittent

4.2.1 Survey/ salvage vessel

As a survey/salvage vessel will be chartered, the specific vessel cannot be confirmed at this stage, for example, a Type 639 Multipurpose Offshore Vessel or similar. MV Ocean Challenger from Aker Yards, Norway, is an indicative vessel with sound pressure levels of 165-175 dB re 1 µPa at 1 m, and a DP2 Kongsberg Kpos 21 system at the ship's hull with an indicative level of 178 dB re 1 µPa at 1 m. The Olympic Challenger shown below can also be used as an 'example' vessel for the survey/salvage operation (Table 6).

Table 6. An example of survey/ salvage vessel

Olympic Challenger **Type: Multipurpose Offshore Vessel** **MMSI: 257089810** **Call sign: LAZQ7** **IMO Number: 9398292** **Flag: Norway**	
Length OA	105.9m
Beam	21.0m
Draft Max (Loaded)	5.7m
Classification (RINA)	*DNV, 1A1 ICE-C SF COMF-V(3), HELD K(E) DYMPOS AUTR, CLEAN DESIGN DK (+)*
DP Type	DP2 – Kongsberg Kpos 2

4.2.2 Multibeam echosounder

A Teledyne RESON SeaBat 7125 ultra-high-resolution MBES, ROV-mounted, with an indicative sound pressure level of 196-224 dB re 1 µPa at 1 m. The MBES is used for the as-found and as-left surveys of the wreck and surrounding seabed.

4.2.3 Sub-bottom profiler

A sub-bottom profiler survey was previously undertaken over the wreck as part of the existing survey record.

4.2.4 Additional acoustic transponders

A number of additional transponders, as given in Table 4 will be required to aid in the positioning of the deployed equipment. All transponders operate by emitting and receiving acoustic signals and measuring time to calculate distance and direction by analysing the returning signal

4.3 Survey and Salvage Operations

On arrival on site, the vessel will set up DP and complete survey calibrations, then complete a baseline survey across the wreck and surrounding seabed (GVI, hydrocarbon leak detection, and MBES). ROVs will inspect compartments, after which controlled works will begin. Approved non-UXO cargoes and artefacts will be recovered using grabs, dedicated secure baskets and open-top half-height recovery baskets/containers. Recovery will follow a controlled sequence, with containers deployed on the seabed and the grab/ROVs transferring salvage into them. Containers will be brought to the surface and redeployed until salvage operations are complete. The works will finish with as-left surveys (MBES, video, and hydrocarbon leak detection), after which the vessel will depart the site. Hydrocarbon/HNS monitoring will be undertaken throughout the works, with stop-work and response procedures applied if evidence of significant release is observed.

Salvocean's divide the operational sequence into four phases: **Phase I** - as-found survey, hydrocarbon leak detection, MBES and detailed bow/holds 1-3 inspection; **Phase II** - survey point-fixing and installation of frond matting over the exposed UXO/lard area; **Phase III** - controlled bow access, systematic deck/overburden removal and recovery of selected cargoes/artefacts; and **Phase IV** - as-left video, MBES and hydrocarbon leak detection followed by recovery of seabed equipment.

MBES/survey verification

Position Approximate (PA) procedures may still be required to confirm the location and support on-site investigations. In such cases, the survey/salvage vessel will scan a pre-defined target box around the reported position to verify the wreck's precise footprint on the seabed. The preferred approach is MBES, supported by ROV-based visual inspection and positioning systems.

General visual inspection of the wreck

A video survey will be conducted at the shipwreck and its immediate vicinity. The adjacent areas will be surveyed to confirm the locations of debris, fishing nets, and similar items.

Digital video acquisition

One or more cameras mounted on a ROV will be used to record visual monitoring of the wreck and adjacent areas during the surveys, salvage and at the completion of works.

Multi-Beam Echo Sounder survey

The MBES will acquire data periodically throughout the work. The MBES settings shall be optimised to provide the best profile quality and ensure the ping interval is set to achieve the required sounding density. It is expected to achieve 2-3 soundings per cell at a ping rate of 10 Hz. This provides a real-time DTM so the data density can be reviewed. The ping rate can subsequently be increased or decreased as required.

Hydrocarbon Leak Detection Survey

Hydrocarbon and HNS monitoring will be undertaken during the works. If evidence of significant leakage or release is identified, works will pause where necessary to allow assessment and implementation of containment or mitigation measures in accordance with the vessel SOPEP and project pollution response procedures.

Salvocean will undertake project-specific HIRA before mobilisation; Permit-to-Work, Job Safety Analysis, lift-plan and recorded toolbox-talk controls; twice-daily/12-hour weather forecasts with

suspension of operations when operating limits are exceeded; spill kits at suitable locations; use of synthetic biodegradable hydraulic oils where oil-powered subsea tooling is required; segregation and compliant disposal of used spill materials; return of non-incinerator waste to port for compliant disposal; and defined notification/response arrangements for environmental incidents.

Photogrammetry survey

Photogrammetry files using a fly-out ROV as the Vector system (Snaeco, France), ROV-mounted, for close visual inspection of the bow compartments.

Vessel presence and dynamic positioning

The survey/salvage vessel will mobilise to the site and maintain station using DP while surveys and subsea works are undertaken. Vessel presence, thruster use and general operations contribute to the overall underwater noise environment.

Controlled access works

Controlled access works at the bow will use WROV cutting tools together with the crane-deployed Hydraulic Shears (Tiny) and Deck Removal Tool (Deep Tek). The deck removal tool will lift, and shift cut deck sections clear of the bow to a dedicated laydown zone, under the project lifting, rigging and HSE controls.

Sediment removal and clearance

Sediment removal will be undertaken where required to clear overburden and enable access to stowage compartments and recoverable materials. Clearance methods may include a mass-flow excavator (MFE) and/or ROV-deployed dredge systems (e.g., ~6”), depending on local conditions and access constraints.

Sediment removal (MFE – Mass Flow Excavator) uses seabed-mounted jets and a guided drag head/blade to fluidise and move unconsolidated sediment, typically reprofiling the seabed rather than lifting material to the surface like dredging. The principal effects are direct benthic habitat disturbance within the footprint, short-term suspended sediment/turbidity in the near field, localised redeposition/smothering potential, and temporary behavioural disturbance to fish/mobile fauna.

Cut deck sections/equipment and non-recovered overburden may be moved to dedicated local seabed laydown zones adjacent to the bow work area, while material considered of interest is placed in open-top half-height containers for recovery and surface inspection.

Recovery of cargoes and artefacts

Cargoes and artefacts will be recovered using dedicated secure baskets. Baskets will be positioned adjacent to the work area and recovered to the surface as required, with handling managed via ROV/vessel cranes and deck operations.

Containers and subsea collection workflow

Open-top half-height recovery baskets/containers will be positioned adjacent to the bow worksite for recovered cargoes/artefacts and material of interest. They will be recovered to the surface as required.

UXO avoidance and in-situ protection

Salvage will concentrate on the bow and forward holds, more than 85 m from the identified shell-cargo stack in the stern/No. 4-5 hold area. Following UXO verification/fuse identification, frond matting will

be placed over the exposed UXO/lard-crate area to secure it, promote sediment accumulation and provide in-situ protection without disturbing the ordnance.

Salvage efforts will concentrate on the bow and forward holds, more than 85 m from the identified shell-cargo stack in the stern/No. 4-5 hold area. Frond matting will be placed over the exposed UXO/lard-crate area to secure it, promote sediment accumulation and provide in-situ protection without disturbing the ordnance.

Salvocean will undertake the works in accordance with MARA (2024) guidance on the identification of unexploded ordnance (UXO).

Salvocean will undertake the works in accordance with MARA (2024) guidance on the identification of unexploded ordnance (UXO). Before salvage operations begin, a specialist underwater UXO consultant will be appointed, a project-specific UXO risk assessment and method statement will be prepared, and a UXO stop-work protocol will be implemented. Salvage will concentrate on the bow and forward holds, more than 85 m from the identified shell-cargo stack in the stern/No. 4–5 hold area. Following UXO verification/fuse identification, frond matting will be placed over the exposed UXO/lard-crate area to secure it, promote sediment accumulation and provide in-situ protection without disturbing the ordnance.

Deck operations and recovery of seabed equipment

Deck operations will support crane rigging, deployment and recovery of tooling, container emptying, and general handling. At completion, seabed equipment (including positioning beacons and any temporary subsea infrastructure) will be recovered.

Underwater noise source levels and unknowns

Where available, indicative source levels for key acoustic systems are provided in the associated equipment Table 4 (dB re 1 µPa). For equipment where a definitive referenced source level is not currently available, the source level is recorded as Unknown (TBC). For example, underwater noise from grabs is typically intermittent, has a low duty cycle, and is dominated by mechanical contact rather than sustained transmission.

The work-class ROV equipment includes T4 + Atlas Manipulators, RTIS, Grinders / Chop Saw, Dynajet Pump, Flange Splitter, Soft and Hard Line Cutters, Track Saw (Aleron), HP Water Jet, MBES, PHINS, DVL, SVP, USBL Beacons and a Diamond Wire Cutter. Remote-intervention equipment includes the DWT OPG 2.2 Large Tine Grab, MEGA CLAW 3 Small Tine Grab, DWT BAG10 Clam Shell Grab, Tiny Hydraulic Shears, Deep Tek Deck Removal Tool, Half Height Baskets and a Controlled Flow Excavator. Except for MBES/USBL, these items are not continuous acoustic transmitters; any underwater noise is expected to be intermittent and task-driven, driven by tool operation and contact with steel/sediment, and strongly dependent on settings and duty cycle. In the absence of equipment-specific referenced data, source levels are not assigned for these tools.

The USBL beacons are active acoustic sources for which indicative source levels are provided where available, while other navigation aids are not expected to generate material underwater noise unless they include active acoustic transmissions (to be confirmed).

5. Screening assessment

A SISAA report was prepared (MERC, 2026) to assist the Competent Authority in undertaking a screening exercise for Appropriate Assessment (AA). The SISAA concluded that "*the proposed project may give rise to significant effects on the conservation objectives of a number of European sites without mitigation"*. Accordingly, it concluded that an Appropriate Assessment of the proposed project was required.

Table 7. SACs within the ZoI which have been screened in.

NPWS Site code	Site name	Qualifier for screening in	Distance (km) to SAC	RMS Laconia inside/outside MU for HP or BND	Screened in	Screening Rationale
3001	Porcupine Bank Canyon SAC	Reefs [1170]; Bottlenose dolphin [1349]	56	MU overlap	Yes (precautionary)	Nearest offshore SAC; direct mobile cetacean disturbance pathway plausible
2328	Hovland Mound Province SAC	Reefs [1170]	56	N/A	No	Offshore reef feature; no direct/indirect habitat pathway plausible
2329	South-West Porcupine Bank SAC	Reefs [1170]; Bottlenose dolphin [1349]	69	MU overlap	Yes (precautionary)	Mobile Annex IV receptor; underwater noise pathway plausible
2327	Belgica Mound Province SAC	Reefs [1170]; Harbour porpoise [1351]; Bottlenose dolphin [1349]	159	MU overlap	Yes (precautionary)	Mobile Annex IV receptors; exposure via noise/disturbance plausible
2330	North-West Porcupine Bank SAC	Reefs [1170]	183	N/A	No	Offshore reef feature; no direct/indirect habitat pathway plausible
2953	Blackwater Bank SAC	Harbour porpoise [1351]	226	MU overlap	Yes (precautionary)	Mobile Annex IV receptors; exposure via noise/disturbance plausible
2165	Lower River Shannon SAC	Reefs [1170]; Bottlenose dolphin [1349]	277	MU overlap	Yes (precautionary)	Mobile Annex IV receptors; exposure via noise/disturbance plausible
2998	*West Connacht Coast SAC*	*Harbour porpoise [1351]; Bottlenose dolphin [1349]*	*340*	*MU overlap*	*Yes (precautionary)*	*Large coastal SAC supporting wide-ranging cetaceans; precautionary screen-in*

NPWS Site code	Site name	Qualifier for screening in	Distance (km) to SAC	RMS Laconia inside/outside MU for HP or BND	Screened in	Screening Rationale
495	*Duvillaun Islands SAC*	*Bottlenose dolphin [1349]; Grey seal [1364]*	*341*	*MU overlap*	*Yes (precautionary)*	*Mobile Annex IV receptors; offshore range overlap possible*
507	*Inishkea Islands SAC*	*Grey seal [1364]*	*340*	*N/A*	*Yes (precautionary)*	*Grey seal capable of wide offshore foraging movements*
2278	*Southern Canyons SAC*	*Reefs [1170]*	*350*	*N/A*	*No*	*Offshore reef feature; no direct/indirect habitat pathway plausible*
3002	*South-East Rockall Bank SAC*	*Reefs [1170]*	*404*	*N/A*	*No*	*Offshore reef feature; no direct/indirect habitat pathway plausible*

SPAs, with breeding seabirds within the foraging range of the MUL area, and therefore within the ZoI and screened in, are given in Table 8.

Table 8. SPAs within the ZoI which have been screened.

Species	Foraging range (km)	Distance to SPA (km)	SPA (Code)
Kittiwake	156.1	N/A	N/A
Fulmar	542.3	261	Beara Peninsula SPA (004155)
		256	Deenish Island and Scariff Island SPA (004175)
		244	Iveragh Peninsula SPA (004154)
		238	Skelligs SPA (004007)
		245	Puffin Island SPA (004003)
		230	Blasket Islands SPA (004008)
		320	Cliffs of Moher SPA (004005)
		302	High Island, Inishshark and Davillaun SPA (004144)
		329	Clare Island SPA (004136)
		341	Duvillaun Islands SPA (004111)
		457	West Donegal Coast SPA (004150)
Guillemot	73.2	N/A	N/A
Razorbill	88.7	N/A	N/A
Puffin	137.1	N/A	N/A
Manx shearwater	1346.8	256	Deenish Island and Scariff Island SPA (004175)
		238	Skelligs SPA (004007)
		245	Puffin Island SPA (004003)
		230	Blasket Islands SPA (004008)
		303	Cruagh Island SPA (004170)
		473	Seas off Wexford SPA (004237)
		<1346	North-west Irish Sea SPA (004236)
Storm petrel	336	254	The Bull and The Cow Rocks SPA (004066)
		256	Deenish Island and Scariff Island SPA (004175)
		238	Skelligs SPA (004007)
		245	Puffin Island SPA (004003)
		230	Blasket Islands SPA (004008)
		269	Magharee Islands SPA (004125)
		326 (precautionary)	Bills Rocks SPA (004177)

6. Impact assessment

The SISAA identified the following without mitigation as having the potential for likely significant effects.

- Disturbance, harm or injury as a result of vessel and survey operations on marine mammals and birds.
- Disturbance & displacement by underwater noise with the potential for adverse effects on seabirds and marine mammals.

This section identifies and considers potential impacts; direct and indirect, on the conservation status of the QIs and SCIs for all sites within the ZoI by reference to their defined attributes, measures and targets as set out by NPWS in the relevant site-specific Conservation objectives for each site.

6.1 Review of sources of impact

6.1.1 Vessel disturbance and collision risk

The presence of vessels in an area also has the potential to lead to disturbance to marine mammals and birds. Although, depending on the location, these species may also become habituated to vessel presence.

The risk of collision causing injury to marine mammals is a directly related to the speed and size of the vessel. A vessel poses a higher risk when traveling at a higher speed, because higher speeds result in a stronger impact (i.e., higher force) and increase the risk of serious blunt force trauma (Wang *et al*., 2007). Smaller vessels, generally capable of higher speeds, also represent a collision risk. However, Wang *et al* note that according to impact and momentum physics, speed is more important than ship size in determining a lethal injury.

6.1.2 Noise disturbance and displacement

Marine mammals: Marine mammal sensory systems are adapted to life in the water or, in the case of seals, both in water and on land. Marine mammals rely on sound to navigate, to communicate with one another and to sense and interpret their surroundings. Behavioural responses of marine mammals to a sound are known to be strongly influenced by the context of the event and individual factors such as the animal's experience, motivation, conditioning and activity (Nowacek *et al*, 2007, Southall *et al*, 2007, 2019, Wartzok, *et al* 2003 and NOAA, 2024). Such features and variability may also require consideration in the case-specific assessment of impact on marine mammals from introduced sound sources (NPWS 2014).

Seabirds: The impacts of underwater noise on diving seabirds is poorly understood and there is a paucity of data on the potential effects of underwater noise on diving seabirds. Recent reviews (e.g. Hartley Anderson Limited. 2020, Harding, 2022) have noted that evidence of harm to diving seabirds as a result of underwater noise is limited, but some studies have shown behavioural effects in diving seabirds. Research suggests (Yelverton *et al*. 1973, Cooper 1982, Stemp 1985, Danil & St Leger 2011) that likely impacts would be confined to areas within very close proximity of very high-amplitude low-frequency underwater noise (10's of metres) to the sound source. These studies relate to the use of explosives and there is a paucity of data on the effects of other forms of acoustic instrumentation including multibeam echosounders.

Very high-amplitude low-frequency underwater noise may result in acute trauma to diving birds, with several studies reporting mortality of diving birds in close proximity (i.e. tens of metres) to underwater explosions (Yelverton *et al*. 1973, Stemp 1985 and Danil K and St. Leger JA. 2011). Some studies (Cooper J. 1982) reported mortality in Penguins resulting from blasting, but details of the nature of the noise sources and distance to the species are lacking. Others (Danil K and St. Leger JA. 2011) reported mortality in diving seabirds associated with underwater detonation exercises. However, again the distance and profile of the blast is not documented. (Stemp, 1985) reported no significant difference in the abundance of thick-billed murre (Brünnich's guillemot) during seismic surveys using explosives and air guns) over 3 years. Stemp (1985) reported some mortality of birds in close proximity to explosive charges (up to 11 meters), but none associated with airguns.

The existing reviews recommend the need for dedicated research on the impacts of underwater noise from various sound sources on diving seabirds, while also suggesting a range of potential mitigations in the interim.

6.2 Assessment of Likely Significant effects (LSEs)

An assessment of LSEs on the QIs and SCIs of all European sites within the ZoI is provided below.

6.2.1 Vessel disturbance, vessel noise and collision risk

Vessels produce what is referred to as non-pulse (non-impulsive) sounds with acoustic characteristics represented by single or multiple discrete sound events within 24 hrs, with a continuous sound event without a rapid pulse rise time. Sound waves, from such sources, dissipate through the water with distance from the source. While local oceanographic conditions affect the path of the sound and its transmission. The effects of non-impulsive sound on marine mammals is well documented and depending on its nature and intensity such underwater noise has the potential to disturb or injure marine mammals and potentially birds.

Fishing vessel activity is a feature of the area within and surrounding the MUL area. The noise levels contributed by the survey/salvage vessel would be within the background level of underwater noise in this area and marine mammals would be habituated to such levels of noise.

Collision risk is considered negligible as the vessel will be moving at very slow speed during survey/salvage operations and therefore does not pose a significant collision risk.

The vessel presence may cause disturbance to seabirds, should they be foraging in the area at the same time as the proposed survey. However, given the large expanses of alternative available foraging habitat and the limited scale and duration of the proposed project, no adverse effects on the conservation objectives of seabirds which form a SCI for any SPA are considered likely.

Conclusion: Vessel collision, disturbance and noise, with the potential to lead to LSEs on seabirds and marine mammals within or associated with any European site, is considered highly unlikely.

6.2.2 Equipment noise

Cetaceans

Underwater noise can lead to disturbance, harm or injury to cetaceans depending on the type and frequency of the noise and distance of the receptor.

Cetacean sensory systems are adapted to life in the water. They rely on sound to navigate, to communicate with one another and to sense and interpret their surroundings. Behavioural responses of marine mammals, including cetaceans, to a sound are known to be strongly influenced by the context of the event and individual factors such as the animal's experience, motivation, conditioning and activity (Southall *et al*, 2007). Such features and variability may also require consideration in the case-specific assessment of impact on marine mammals from introduced sound sources (NPWS 2014). Sound waves dissipate through the water with distance from the source. While local oceanographic conditions affect the path of the sound and its transmission.

Depending on the exposure levels from underwater noise, auditory injury to marine mammals can occur. This may result in temporary loss in hearing sensitivity, known as **Temporary Threshold Shift (TTS)** or more permanent damage, known as **Permanent Threshold Shift (PTS)**. The potential for auditory injury is related to the noise frequency relative to the hearing bandwidth of the marine mammal and is also influenced by the duration of exposure. The level of impact on an individual is a function of the **Sound Exposure Level (SEL)** that an individual receives as a result of underwater noise.

Table 9 details the various functional groups relative to hearing for the majority of cetaceans encountered in Irish waters.

Table 9. Cetacean functional groups relative to hearing at different sound frequencies

Low frequency 7 Hz-22 kHz	**Mid-frequency** 150 Hz-160 kHz	**High frequency** 200 Hz–180 kHz
Baleen whales	Most toothed whales, dolphins	Certain toothed whales, porpoise
Species- Ireland Humpback whale Blue whale Fin whale Sei whale Minke whale	**Species– Ireland** Sperm whale Killer whale Long-finned pilot whale Beaked whale species Dolphin species	**Species– Ireland** Pygmy sperm whale Harbour porpoise

Southall *et al* (2007) describes the sound pressure levels associated with the various functional groups as detailed in Table 10. This has been revised (Southall *et al,* 2019) to further refine functional hearing groups but similar injury criteria as relevant to the proposed project apply.

Table 10. Sound pressure levels associated with Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS)

Functional group	**Injury Criteria (based on single pulse)**	
	TTS	**PTS**
Low frequency cetaceans	224dB re: 1µPa (peak)	230dB re: 1µPa (peak)
Mid frequency cetaceans	224dB re: 1µPa (peak)	230dB re: 1µPa (peak)
High frequency cetaceans	224dB re: 1µPa (peak)	230dB re: 1µPa (peak)
Pinnipeds (in water)	212dB re: 1µPa (peak)	218 dB re: 1µPa (peak)

The Sound Pressure Source Levels (dB re 1 µPa) of the various survey instruments are within the hearing range of Bottlenose dolphin and Harbour porpoise. While the sound will rapidly dissipate from source, thereby contributing to a very limited ZoI, it has the potential to lead to temporary disturbance. While any such disturbance would be highly unlikely to lead to LSEs on the Conservation Objectives of these species within any European site, mitigation to avoid disturbance to these species is proposed out of an abundance of caution and in line with MARA practices.

Conclusion: While impacts on the conservation objectives of harbour porpoise and bottlenose dolphin due to underwater noise are considered highly unlikely, mitigation to avoid LSEs have been proposed.

Pinnipeds

Underwater noise resulting from the proposed survey has the potential to lead to disturbance to Harbour seal should they be within the ZoI of the survey during operations. The foraging range of harbour seal is currently believed to be up to 273km (Carter *et al*, 2022). The nearest site designated for harbour seal to the proposed project site is Rutland Island and Sound SAC, which is 97km distant at its nearest point. It is considered that, as the Conservation Objectives for harbour seal in Ireland are relevant to the species **within their site** and as the distance from the proposed project area to the nearest site is 97km away, the ZoI caused by artificial barriers (acoustic noise) will not extend to this site or any additional site designated for this species. Therefore, no potential for impact on the Conservation Objectives for harbour seal within their site/s is likely. However, with due regard to MARA practices and out of an abundance of caution, mitigation to ensure the proposed surveys do not give rise to LSEs on any European Site designated for harbour seal, mitigation is proposed.

Similarly for Grey seal, while disturbance to the species may occur should they be utilising the waters around either of the proposed MUL areas during survey operations, adverse effects on their conservation objectives within any European site are not considered possible. The nearest European site designated for Grey seal to the MUL area is Horn Head and Rinclevan SAC, which is 71Km away. However, with due regard to MARA practices and out of an abundance of caution, mitigation to ensure the proposed surveys do not give rise to LSEs on any European Site designated for harbour seal, mitigation is proposed.

Conclusion: While impacts on the conservation objectives of Grey seal and Harbour due to underwater noise are considered highly unlikely, mitigation to avoid LSEs have been proposed.

Seabirds

The SISAA identified a number of SPAs supporting breeding seabird species whose indicative foraging ranges overlap the Zone of Influence of the proposed works. These sites have therefore been carried forward for consideration in the NIS.

It is recognised that diving birds can be sensitive to disturbance from underwater noise and fatalities can occur at close distance. However, flushing disturbance can be expected to displace these diving seabirds from close proximity to the survey/salvage vessel, thereby limiting their exposure to the highest sound pressures generated. The likelihood of these birds being in the vicinity of a noise

generating operation is low due to the surface activity associated with such operations disturbing the birds prior to commencement of the underwater noise. There is a low likelihood of interaction between the sound source and diving birds due to the relatively short exposure time, the temporary nature of the survey work, the mobile nature of the birds and the displacement of most diving species due to flushing disturbance. Therefore, it is considered that underwater noise would be highly unlikely to have a significant effect on diving seabirds in the vicinity of the survey area.

Taking account of the scale, location, duration and nature of the proposed works, no adverse effect on the integrity of the screened-in SPAs, alone or in combination with other plans or projects, is predicted.

Conclusion: Impacts on the conservation objectives of any SPA designated for seabirds are considered highly unlikely to arise.

7. In-combination effects

7.1 Approach to the assessment of in-combination effects

Potential project-related impacts were identified in section 6 of this SISAA and included potential pressures resulting from: vessel presence and acoustic surveys. Additional projects identified as having potential to act in combination with the proposed project are considered to be those projects most likely to contribute to these pressures and generate additional underwater noise, vessel disturbance and impacts on benthic habitats.

MARA has developed a stepwise approach for identifying in-combination plans and projects. As such, using professional and scientific judgement, the key steps for assessing cumulative effects employed were as follows:

- Defining the Cumulative Effects Spatial Scope (CESS)
- Defining the Cumulative Effects Temporal Scope (CETS)
- Impact identification
- Pathway identification
- Prediction
- Identification of Plans or Projects that could act in combination
- Screening Stage Cumulative Effects Assessment conclusion
- Managing cumulative impacts identified - to be carried out as part of Stage 2 AA process

The CESS is defined as 25 km from the boundary of the proposed MUL area. Salvocean estimates approximately 32.4 days of Phase I-IV operational activity at the wreck site, within an overall campaign of 1,258 hours (53 days) including mobilisation, transit, demobilisation, a mid-project crew change and 20% weather downtime. The MUL application is for a two-year period to facilitate roll out and completion of project phases availing of optimal oceanographic and meteorological conditions as they

arise, whilst also allowing for operational and logistical contingencies. The CESS is defined based on the effective deterrence ranges of acoustic survey equipment, as per JNCC (2020), and expanded to 25 km as a precaution for migratory Atlantic salmon and marine mammals. The CETS is the Maritime Usage Licence period. The nearest proposed project to the MUL application area is MUL230036 (Table 11), approximately 24 km away, and proposes similar project activity (salvage/ROV survey) on a known shipwreck.

Table 11. Potential In-Combination Projects

Ref	Regime (as per doc)	Approx. distance from wreck	Status	Location (as per doc)	Works description (as per doc)	Applicant	Term/date (as per doc)	Relevance for in combination
MUL230 036 (SEATEC)	MUL	24 km 51ºN 52.720; 014ºW 16.880 Depth 330 meters	MUL applicati on with MARA	SS Ohio wreck site (far offshore; 142 NM from Irish territorial waters)	Salvage of non-ferrous metals from a WWI steamship wreck; minimise environmenta l impact	(SEATEC)	The licence is proposed for a duration of 2 years to accommoda te salvage operations depending on weather conditions.	Similar project activity (salvage/ROV/lifts) - possible cumulative vessel activity, seabed interaction, pollution risk pathways.

Table 12 summarises national and sectoral plans reviewed for potential in-combination interactions with the proposed project—namely Ireland's Climate Action Plan 2023, River Basin Management Plans (RBMPs) and Designated Maritime Area Plans (DMAPs)—which collectively guide sustainable development and environmental management in the maritime area (including delivery of offshore renewables to support the ambition for 80% renewable electricity by 2030); however, no in-combination effects were identified, as the proposed project does not introduce impact pathways that could interact with plan-led activities to cause adverse effects.

Table 12: Policy and Strategic Plans Considered for In-Combination Assessment

	Plans		
1	**The Climate Action Plan 2023**	These plans promote sustainable development in the maritime environment, particularly in line with Ireland's Climate Action Plan's renewable electricity target of 80% of energy generated from renewable sources by 2030.	No element of the proposed project has the potential to act in-combination with any of the 3 identified projects to result in any negative in-combination effects. Rather, the proposed project may contribute to positive, sustainable development in the maritime environment without causing negative impacts on any European site.
2	**River Basin Management Plans (RBMP)**		
3	**Designated Maritime Area Plans (DMAPs)**		

7.2 Assessment of In-Combination Effects

Based on the available information, significant in combination effects are unlikely. The proposed RMS Laconia project and the proposed survey/salvage project for the nearby SS Ohio are both highly localised, short-duration, and spatially discrete (with effects largely confined to immediate operational footprints and associated vessel movements).

A review of the MARA website for current licence applications proposed or determined does not indicate any additional projects for the MUL area that could act in combination with the proposed project with regard to cumulative effects. Similarly, no plans for the proposed MUL area or its environs were identified.

Therefore, it is concluded that the proposed project does not have the potential to act in combination with other projects and plans that could result in a significant effect on the conservation objectives of any European site.

8. Mitigation measures

The following measures are recommended to mitigate the potential for LSE's on the conservation objectives of any European Sites.

8.1 Bottlenose dolphin and Harbour porpoise

NPWS (2014) provides guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. This document provides guidance and mitigation measures to address key potential sources of anthropogenic sound that may impact negatively on marine mammals in Irish waters. The mitigation that will be implemented closely follow the guidance prescribed by the National Parks and Wildlife Service. Specifically, in relation to acoustic surveys, such as proposed in this project, the guidance set out in NPWS (2014), as detailed below, will be fully implemented.

1. A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms (Appendix 6, NPWS, 2014).
2. Unless information specific to the location and/or plan/project is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, acoustic surveying using the above equipment shall not commence if marine mammals are detected within a 500m radial distance of the sound source intended for use, i.e., within the Monitored Zone.

Pre-Start Monitoring

3. Sound-producing activities shall only commence where effective visual monitoring can be achieved. Where effective visual monitoring, as determined by the MMO, is not possible, sound-producing activities shall be postponed until effective monitoring is possible.
4. An agreed and clear on-site communication signal shall be used between the MMO and the Works Superintendent/Salvage Master to confirm whether the relevant activity may proceed or resume following a break. Activities shall only proceed following positive confirmation from the MMO.
5. Prior to commencement of any sound-producing activity, the MMO shall undertake 60 minutes of pre-start monitoring of a 500 m monitored zone around the sound source. Sound-producing activity shall not commence until the pre-start monitoring period has been completed and no marine mammals have been detected within the monitored zone.
6. Pre-start monitoring shall be followed by the applicable Ramp-Up Procedure, with continued monitoring by the MMO.

Ramp-up Procedure

7. In commencing an acoustic survey operation using the proposed acoustic equipment, the following Ramp-up Procedure (i.e., "soft-start") must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m:

   (a) Where it is possible according to the operational parameters of the equipment concerned, the device's acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.

(b) This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
(c) Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output.

8. In all cases where a Ramp-Up Procedure is employed the delay between the end of ramp-up and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment.
9. Once the Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source, i.e., within the Monitored Zone.

Line Changes (NPWS Guidance mitigations relating to line changes are not considered appropriate to the present RMS Laconia project, and are marked as 'Not Applicable'

10. NA
11. NA

Breaks in sound output

12. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) must be undertaken.
13. NA (No higher out acoustic emissions such as air-guns or sparkers are proposed). Standard NPWS mitigations for risks of injurious levels of underwater sound are therefore not considered necessary)

Reporting

14. Full reporting on MMO operations and mitigation undertaken must be provided to the Regulatory Authority as outlined in Appendix 6 of NPWS (2014).

8.2 Mitigation measures: Grey seal

In line with the guidance to manage the risk to marine mammals (NPWS, 2014), the mitigation proposed in section 8.1 for Cetacean species is also proposed for grey and harbour seals.

8.3 UXO-related environmental mitigation

Before salvage operations begin, a specialist underwater UXO consultant will be appointed, a UXO risk assessment and method statement will be prepared, and a UXO stop-work protocol will be implemented. Salvocean will undertake the works in accordance with MARA (2024) guidance on the identification of unexploded ordnance (UXO).

No ordnance is to be disturbed. If an unexpected suspect item is encountered outside the identified shell-cargo area, work will stop, and the item will remain in situ pending specialist assessment.

Salvage will concentrate on the bow and forward holds, more than 85 m from the identified shell-cargo stack in the stern/No. 4-5 hold area. Frond matting will be placed over the exposed UXO/lard crate area to secure it, promote sediment accumulation and provide in-situ protection without disturbing the ordnance.

Frond mats will be deployed individually by vessel crane using a purpose-built lifting frame and positioned by the WROV. The mats are a soft, reversible in-situ preservation measure intended to reduce scour and promote sediment accumulation over the exposed UXO/land area. This does not alter the UXO control that the identified ordnance is not to be disturbed.

No intentional detonation, UXO recovery or disturbance of the identified shell-cargo stack forms part of the current MUL application.

9. Transboundary effects

Transboundary effects refer to significant effects that a proposed development in one country may have on the environment of another. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, (referred to as the 'Espoo Convention') adopted in 1991 documents the requirement to consider transboundary impacts. The Espoo Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

Since 1 January 2021, nature conservation areas in the UK (including Northern Ireland) are no longer part of the Natura 2000 network. On this basis, the nearest European sites outside Ireland's jurisdiction are located on mainland Europe. Given the offshore, localised and temporary nature of the proposed works, together with the absence of a credible transboundary impact pathway, no potential for likely significant effects on European sites associated with other EU Member States was identified.

10. Residual impacts

Residual effects are predicted to be negligible, temporary and localised. The project has been assessed on a precautionary basis for mobile marine mammal receptors, including bottlenose dolphin, harbour porpoise and grey seal, and for relevant seabird receptors and Annex II fish species. Having regard to the scale, duration, depth and offshore location of the proposed works, together with the mitigation and operational controls set out in this NIS, no significant residual impact is predicted.

The residual-risk conclusion reflects the proposed bow/forward-hold salvage from the identified shell-cargo stack by more than 85 m. With non-disturbance, qualified UXO oversight and frond-mat in-situ protection, Salvocean characterises UXO risk for the proposed scope as very low.

11. Assessment of impacts with mitigation

This NIS assesses whether adverse effects on the integrity of any relevant European site can be excluded, in view of the relevant site-specific conservation objectives. Considering the precautionary screening-in of mobile receptors, this assessment is carried out with respect to relevant European marine mammal and seabird sites, both individually and in combination with other plans or projects. Table 13 summarises the assessment of effects with mitigation.

Table 13. Assessment of likely significant effects with mitigation

Note: Mobile marine mammal receptors are carried forward on a precautionary basis where management unit overlap applies. Reefs [1170] are included separately for completeness.

* Where Conservation Objective attributes and targets are not defined for a site, the same attributes and targets developed for other sites were applied.

Qualifying interest (QI)	European site (SAC)	NPWS site code	Distance to SAC (km)	Attribute/target (summary)	Potential for LSEs (with mitigation)	LSE
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Porcupine Bank Canyon SAC	3001	56	Access to suitable habitat; disturbance — Species range within the site should not be restricted by artificial barriers to site use, and human activity should occur at levels that do not adversely affect the bottlenose dolphin population at the site.	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	South-West Porcupine Bank SAC	2329	69	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Belgica Mound Province SAC	2327	159	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Lower River Shannon SAC	2165	277	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	West Connacht Coast SAC	2998	340	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Duvillaun Islands SAC	495	341	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No

Qualifying interest (QI)	European site (SAC)	NPWS site code	Distance to SAC (km)	Attribute/target (summary)	Potential for LSEs (with mitigation)	LSE
Phocoena phocoena (Harbour Porpoise) [1351]	Belgica Mound Province SAC	2327	159	Access to suitable habitat; disturbance — Species range within the site should not be restricted by artificial barriers to site use, and human activity should occur at levels that do not adversely affect the harbour porpoise population at the site.	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Phocoena phocoena (Harbour Porpoise) [1351]	Blackwater Bank SAC	2953	226	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Phocoena phocoena (Harbour Porpoise) [1351]	West Connacht Coast SAC	2998	340	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Halichoerus grypus (Grey Seal) [1364]	Inishkea Islands SAC	507	340	Access to suitable habitat; breeding/resting behaviour; disturbance — Species range within the site should not be restricted by artificial barriers to site use; breeding and resting/haul-out behaviour should be maintained in a natural condition; and human activities should occur at levels that do not adversely affect the grey seal population at the site.	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Halichoerus grypus (Grey Seal) [1364]	Duvillaun Islands SAC	495	341	as above	With mitigation no likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	Hovland Mound Province SAC	2328	56	Habitat area/distribution; physical structure/community function — The area, distribution and extent of reef habitat should be maintained, subject to natural processes; and reef structure, supporting communities and associated natural processes should be maintained.	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of Hovland Mound Province SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No

Qualifying interest (QI)	European site (SAC)	NPWS site code	Distance to SAC (km)	Attribute/target (summary)	Potential for LSEs (with mitigation)	LSE
Reefs [1170]	Porcupine Bank Canyon SAC	3001	56	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	South-West Porcupine Bank SAC	2329	69	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	Belgica Mound Province SAC	2327	159	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	North-West Porcupine Bank SAC	2330	183	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	Lower River Shannon SAC	2165	277	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	Southern Canyons SAC	2278	350	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No
Reefs [1170]	South-East Rockall Bank SAC	3002	404	as above	The proposed works are confined to the RMS Laconia wreck footprint within the MUL area and do not overlap the designated reef feature of this SAC. There is no direct habitat pathway to the reef qualifying interest. No likely significant effect is predicted for this qualifying interest at the site.	No

12. Conclusion

This assessment is based on complete, precise and definitive findings in the light of the best scientific knowledge. It objectively concludes that provided the mitigation measures described in this document are fully implemented, **no adverse effect on the integrity** of any European site will occur.

13. References

Biodiversity Data Centre (2024) Maps. Available at: https://maps.biodiversityireland.ie/Map.

Carter MID, Boehme L, Cronin MA, Duck CD, Grecian WJ, Hastie GD, Jessopp M, Matthiopoulos J, McConnell BJ, Miller DL, Morris CD, Moss SEW, Thompson D, Thompson PM and Russell DJF (2022). Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Front. Mar. Sci. 9:875869. doi: 10.3389/fmars.2022.875869.

Cooper J. 1982. Methods of reducing mortality of seabirds caused by underwater blasting. Cormorant 10, 109-113.

Danil K, St. Leger JA. 2011. Seabird and dolphin mortality associated with underwater detonation exercises. Marine Technology Society Journal 45, 89-95.

European Marine Observation and Data Network (EMODnet). Available at: https://emodnet.ec.europa.eu/en/seabed-habitats.

INFOMAR Seabed and sediment data. Available at: https://www.infomar.ie/maps/interactive-maps/seabed-and-sediment.

JNCC, 2020 - JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 65.JNCC, 2020 - JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 65.

MARA 2024. Guidance for Consent Holders on the identification of Unexploded Ordnance (UXO) in the Maritime Area. Guidance Note 001 – October 2024. https://www.maritimeregulator.ie/wp-content/uploads/2025/10/CER-Guidance-001-UXO-Unexploded-Ordinance.pdf

NPWS (2014). Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of arts, Heritage and the Gaeltacht.

National Oceanic and Atmospheric Administration (2024). Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) [Report]. - Silver Spring: National Marine Fisheries Service, 2024.

Nowacek, D. P., Thorne, L. H., Johnston, D. W. and Tyack,P. L. (2007). Responses of cetaceans to anthropogenic noise. Mammal Review37(2):81-115.

ObSERVE Aerial Surveys for Seabirds and Cetaceans in the Irish Atlantic Margin. Available at: https://maps.biodiversityireland.ie/Dataset/322.

Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene., C. R. Jr., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P. E., Richardson, W. J., Thomas, J. A., and Tyack, P. L. (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals 33(4): 411-521.

Southall, B., Finneran, J., Reichmuth, C., Nachtigall, P., Ketten, D., Bowles, A., Ellison. W., Nowacek, D., Tyack, P. (2019). Marine Mammal Noise Exposure Criteria. Updated Scientific Recommendations for Residual Hearing Effects. Aquatic Mammals. 45. 125-232. 10.1578/AM.45.2.2019.12nd shipboard surveys. Final report published 29 September 2023. 64 pp. https://www.tiho-hannover.de/itaw/scans-iv-survey

Stemp R. 1985. Observations on the effects of seismic exploration on seabirds. In: Greene GD, Engelhardt FR, Paterson RJ (eds) Proceedings of the workshop on effects of explosives use in the marine environment, Halifax, Canada, 29-31 January, 1985.

Wang, C., Lyons, S. B., Corbett, J. J., and Firestone, J. (2007). Using ship Speed and Mass do Describe Potential Collision Severity with Whales: an Application of the Ship Traffic, Energy and Environment Model (STEEM) [Report by the University of Delaware]. https://tethys.pnnl.gov/sites/default/files/publications/Wang-et-al-2007.pdf

Wartzok, D., Popper, A. N., Gordon, J., & Merrill, J. (2004). Factors affecting the responses of marine mammals to acoustic disturbance. Marine Technology Society Journal 37: 6-15.

Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724.

Yelverton JT, Richmond DR, Fletcher ER, Jones RK. 1973. Safe distances from underwater explosions for mammals and birds. Report to the Defence Nuclear Agency. National Technical Information Service, US Department of Commerce, 64pp.

Appendix 1 European Sites assessed (QIs and SCIs)

European site	QIs Screened
SACs -SPAs	
Porcupine Bank Canyon SAC (003001)	Reefs [1170]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]
Hovland Mound Province SAC (002328)	Reefs [1170]
South-West Porcupine Bank SAC (002329)	Reefs [1170]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]
Belgica Mound Province SAC (002327)	Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]
North-West Porcupine Bank SAC (002330)	Reefs [1170]
Blasket Islands SAC (002172)	European dry heaths [4030]; Halichoerus grypus (Grey Seal) [1364]; Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]; Submerged or partially submerged sea caves [8330]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Blackwater Bank SAC (002953)	Phocoena phocoena (Harbour Porpoise) [1351]; Sandbanks which are slightly covered by sea water all the time [1110]
Valentia Harbour / Portmagee Channel SAC (002262)	Annual vegetation of drift lines [1210]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Coastal lagoons [1150]; Embryonic shifting dunes [2110]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Machairs (* in Ireland) [21A0]; Mudflats and sandflats not covered by seawater at low tide [1140]; Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]; Perennial vegetation of stony banks [1220]; Phoca vitulina (Harbour Seal) [1365]; Reefs [1170]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Mount Brandon SAC (000375)	Alpine and Boreal heaths [4060]; Blanket bogs (* if active bog) [7130]; Calcareous rocky slopes with chasmophytic vegetation [8210]; European dry heaths [4030]; Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]; Northern Atlantic wet heaths with Erica tetralix [4010]; Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]; Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]; Siliceous rocky slopes with chasmophytic vegetation [8220]; Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]; Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]; Vandenboschia speciosa (Killarney Fern) [6985]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]

European site	QIs Screened
SACs -SPAs	
Killarney National Park, MacGillycuddy's Reeks and Caragh River Catchment SAC (000365)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]; Alosa fallax killarnensis (Killarney Shad) [5046]; Alpine and Boreal heaths [4060]; Blanket bogs (* if active bog) [7130]; Calaminarian grasslands of the Violetalia calaminariae [6130]; Depressions on peat substrates of the Rhynchosporion [7150]; Euphydryas aurinia (Marsh Fritillary) [1065]; European dry heaths [4030]; Geomalacus maculosus (Kerry Slug) [1024]; Juniperus communis formations on heaths or calcareous grasslands [5130]; Lampetra fluviatilis (River Lamprey) [1099]; Lampetra planeri (Brook Lamprey) [1096]; Lutra lutra (Otter) [1355]; Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]; Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]; Najas flexilis (Slender Naiad) [1833]; Northern Atlantic wet heaths with Erica tetralix [4010]; Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]; Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]; Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]; Petromyzon marinus (Sea Lamprey) [1095]; Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]; Salmo salar (Salmon) [1106]; Taxus baccata woods of the British Isles [91J0]; Vandenboschia speciosa (Killarney Fern) [6985]; Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
Kenmare River SAC (002158)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Calaminarian grasslands of the Violetalia calaminariae [6130]; European dry heaths [4030]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Juniperus communis formations on heaths or calcareous grasslands [5130]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Perennial vegetation of stony banks [1220]; Phoca vitulina (Harbour Seal) [1365]; Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]; Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Submerged or partially submerged sea caves [8330]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]; Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
Kerry Head Shoal SAC (002263)	Reefs [1170]
Magharee Islands SAC (002261)	Reefs [1170]
Tralee Bay and Maghardees Peninsula, West to Cloghane SAC (002070)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]; Annual vegetation of drift lines [1210]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Coastal lagoons [1150]; Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]; Embryonic shifting dunes [2110]; Estuaries [1130]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Humid dune slacks [2190]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Perennial vegetation of stony banks [1220]; Petalophyllum ralfsii (Petalwort) [1395]; Reefs [1170]; Salicornia and other annuals colonising mud and sand [1310]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Kilkee Reefs SAC (002264)	Large shallow inlets and bays [1160]; Reefs [1170]; Submerged or partially submerged sea caves [8330]

European site	QIs Screened
SACs -SPAs	
Castlemaine Harbour SAC (000343)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]; Annual vegetation of drift lines [1210]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]; Embryonic shifting dunes [2110]; Estuaries [1130]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Humid dune slacks [2190]; Lampetra fluviatilis (River Lamprey) [1099]; Lutra lutra (Otter) [1355]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Perennial vegetation of stony banks [1220]; Petalophyllum ralfsii (Petalwort) [1395]; Petromyzon marinus (Sea Lamprey) [1095]; Salicornia and other annuals colonising mud and sand [1310]; Salmo salar (Salmon) [1106]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Lower River Shannon SAC (002165)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Coastal lagoons [1150]; Estuaries [1130]; Lampetra fluviatilis (River Lamprey) [1099]; Lampetra planeri (Brook Lamprey) [1096]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Perennial vegetation of stony banks [1220]; Petromyzon marinus (Sea Lamprey) [1095]; Reefs [1170]; Salicornia and other annuals colonising mud and sand [1310]; Salmo salar (Salmon) [1106]; Sandbanks which are slightly covered by sea water all the time [1110]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]; Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
Akeragh, Banna and Barrow Harbour SAC (000332)	Annual vegetation of drift lines [1210]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Embryonic shifting dunes [2110]; European dry heaths [4030]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Humid dune slacks [2190]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Salicornia and other annuals colonising mud and sand [1310]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Sheep's Head SAC (000102)	European dry heaths [4030]; Geomalacus maculosus (Kerry Slug) [1024]; Northern Atlantic wet heaths with Erica tetralix [4010]
Three Castle Head to Mizen Head SAC (000109)	European dry heaths [4030]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Barley Cove to Ballyrisode Point SAC (001040)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; European dry heaths [4030]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Perennial vegetation of stony banks [1220]; Petalophyllum ralfsii (Petalwort) [1395]; Salicornia and other annuals colonising mud and sand [1310]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Farranamanagh Lough SAC (002189)	Coastal lagoons [1150]; Perennial vegetation of stony banks [1220]
Cregduff Lough SAC (001251)	Najas flexilis (Slender Naiad) [1833]; ransition mires and quaking bogs [7140]
Inishbofin and Inishshark SAC (000278)	Coastal lagoons [1150]; European dry heaths [4030]; Halichoerus grypus (Grey Seal) [1364]; Northern Atlantic wet heaths with Erica tetralix [4010]; Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
Roaringwater Bay and Islands SAC (000101)	European dry heaths [4030]; Halichoerus grypus (Grey Seal) [1364]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Phocoena phocoena (Harbour

European site	QIs Screened
SACs -SPAs	
	Porpoise) [1351]; Reefs [1170]; Submerged or partially submerged sea caves [8330]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Omey Island Machair SAC (001309)	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]; Machairs (* in Ireland) [21A0]; Petalophyllum ralfsii (Petalwort) [1395]
Aughrusbeg Machair and Lake SAC (001228)	Northern Atlantic wet heaths with Erica tetralix [4010]; Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]
Inishmore Island SAC (000213)	Alpine and Boreal heaths [4060]; Coastal lagoons [1150]; Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]; Embryonic shifting dunes [2110]; European dry heaths [4030]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Humid dune slacks [2190]; Limestone pavements [8240]; Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]; Machairs (* in Ireland) [21A0]; Perennial vegetation of stony banks [1220]; Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]; Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Submerged or partially submerged sea caves [8330]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]; Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
Murvey Machair SAC (002129)	Machairs (* in Ireland) [21A0]; Petalophyllum ralfsii (Petalwort) [1395]
Kilkieran Bay and Islands SAC (002111)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Coastal lagoons [1150]; Large shallow inlets and bays [1160]; Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]; Lutra lutra (Otter) [1355]; Machairs (* in Ireland) [21A0]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Najas flexilis (Slender Naiad) [1833]; Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]; Phoca vitulina (Harbour Seal) [1365]; Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]
Dog's Bay SAC (001257)	Annual vegetation of drift lines [1210]; Embryonic shifting dunes [2110]; European dry heaths [4030]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Carrowmore Point to Spanish Point and Islands SAC (001021)	Coastal lagoons [1150]; Perennial vegetation of stony banks [1220]; Petrifying springs with tufa formation (Cratoneurion) [7220]; Reefs [1170]
Carrowmore Dunes SAC (002250)	Embryonic shifting dunes [2110]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Reefs [1170]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
Inishmaan Island SAC (000212)	Embryonic shifting dunes [2110]; European dry heaths [4030]; Limestone pavements [8240]; Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]; Machairs (* in Ireland) [21A0]; Perennial vegetation of stony banks [1220]; Reefs [1170]; Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
Black Head–Poulsallagh Complex SAC (000020)	Alpine and Boreal heaths [4060]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Juniperus communis formations on heaths or calcareous grasslands [5130]; Limestone pavements [8240]; Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]; Perennial vegetation of stony banks [1220]; Petalophyllum ralfsii (Petalwort) [1395]; Petrifying springs with tufa formation (Cratoneurion) [7220]; Reefs [1170]; Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]; Submerged or partially submerged sea caves [8330]; Water

European site	QIs Screened
SACs -SPAs	
	courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
Achill Head SAC (002268)	Large shallow inlets and bays [1160]; Mudflats and sandflats not covered by seawater at low tide [1140]; Reefs [1170]
Inagh River Estuary SAC (000036)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Salicornia and other annuals colonising mud and sand [1310]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Lough Hyne Nature Reserve and Environs SAC (000097)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]; European dry heaths [4030]; Large shallow inlets and bays [1160]; Padion, Alnion incanae, Salicion albae) [91E0]; Reefs [1170]; Submerged or partially submerged sea caves [8330]
Croaghaun/Slievemore SAC (001955)	Alpine and Boreal heaths [4060]; Blanket bogs (* if active bog) [7130]; European dry heaths [4030]; Northern Atlantic wet heaths with Erica tetralix [4010]; Siliceous rocky slopes with chasmophytic vegetation [8220]; Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]
Inishkea Islands SAC (000507)	Halichoerus grypus (Grey Seal) [1364]; Machairs (* in Ireland) [21A0]; Petalophyllum ralfsii (Petalwort) [1395]
West Connacht Coast SAC (002998)	Phocoena phocoena (Harbour Porpoise) [1351]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]
Duvillaun Islands SAC (000495)	Halichoerus grypus (Grey Seal) [1364]; Tursiops truncatus (Common Bottlenose Dolphin) [1349]
Clew Bay Complex SAC (001482)	Annual vegetation of drift lines [1210]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Coastal lagoons [1150]; Embryonic shifting dunes [2110]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Machairs (* in Ireland) [21A0]; Mudflats and sandflats not covered by seawater at low tide [1140]; Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]; Perennial vegetation of stony banks [1220]; Phoca vitulina (Harbour Seal) [1365]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Mullet/Blacksod Bay Complex SAC (000470)	Alkaline fens [7230]; Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Large shallow inlets and bays [1160]; Lutra lutra (Otter) [1355]; Machairs (* in Ireland) [21A0]; Mudflats and sandflats not covered by seawater at low tide [1140]; Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]; Petalophyllum ralfsii (Petalwort) [1395]; Reefs [1170]; Salicornia and other annuals colonising mud and sand [1310]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Southern Canyons SAC (002278)	Reefs [1170]
South-East Rockall Bank SAC (003002)	Reefs [1170]
Streedagh Point Dunes SAC (001680)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Mediterranean salt meadows (Juncetalia maritimi) [1410]; Mudflats and sandflats not covered by seawater at low tide [1140]; Perennial vegetation of stony banks [1220]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]; Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]

European site	QIs Screened
SACs -SPAs	
Rathlin O'Birne Island SAC (000181)	Reefs [1170]
Bunduff Lough & Machair/Trawalua And Mullagh SAC (000625)	Alkaline fens [7230]; Euphydryas aurinia (Marsh Fritillary) [1065]; Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]; Humid dune slacks [2190]; Juniperus communis formations on heaths or calcareous grasslands [5130]; Large shallow inlets and bays [1160]; Machairs (* in Ireland) [21A0]; Mudflats and sandflats not covered by seawater at low tide [1140]; Petalophyllum ralfsii (Petalwort) [1395]; Phocoena phocoena (Harbour Porpoise) [1351]; Reefs [1170]; Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]; Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
Termon Strand SAC (001195)	Coastal lagoons [1150]
Tory Island Coast SAC (002259)	Coastal lagoons [1150]; Perennial vegetation of stony banks [1220]; Reefs [1170]; Submerged or partially submerged sea caves [8330]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
SPAs	
Blasket Islands SPA SPA (004008)	Arctic Tern (Sterna paradisaea) [A194]; Chough (Pyrrhocorax pyrrhocorax) [A346]; Fulmar (Fulmarus glacialis) [A009]; Herring Gull (Larus argentatus) [A184]; Kittiwake (Rissa tridactyla) [A188]; Lesser Black-backed Gull (Larus fuscus) [A183]; Manx Shearwater (Puffinus puffinus) [A013]; Puffin (Fratercula arctica) [A204]; Razorbill (Alca torda) [A200]; Shag (Phalacrocorax aristotelis) [A018]; Storm Petrel (Hydrobates pelagicus) [A014]
Skelligs SPA SPA (004007)	Fulmar (Fulmarus glacialis) [A009]; Gannet (Morus bassanus) [A016]; Guillemot (Uria aalge) [A199]; Kittiwake (Rissa tridactyla) [A188]; Manx Shearwater (Puffinus puffinus) [A013]; Puffin (Fratercula arctica) [A204]; Storm Petrel (Hydrobates pelagicus) [A014]
Iveragh Peninsula SPA SPA (004154)	Chough (Pyrrhocorax pyrrhocorax) [A346]; Fulmar (Fulmarus glacialis) [A009]; Guillemot (Uria aalge) [A199]; Kittiwake (Rissa tridactyla) [A188]; Peregrine (Falco peregrinus) [A103]
Puffin Island SPA SPA (004003)	Fulmar (Fulmarus glacialis) [A009]; Lesser Black-backed Gull (Larus fuscus) [A183]; Manx Shearwater (Puffinus puffinus) [A013]; Puffin (Fratercula arctica) [A204]; Razorbill (Alca torda) [A200]; Storm Petrel (Hydrobates pelagicus) [A014]
The Bull and The Cow Rocks SPA SPA (004066)	Gannet (Morus bassanus) [A016]; Puffin (Fratercula arctica) [A204]; Storm Petrel (Hydrobates pelagicus) [A014]
Deenish Island and Scariff Island SPA SPA (004175)	Arctic Tern (Sterna paradisaea) [A194]; Fulmar (Fulmarus glacialis) [A009]; Lesser Black-backed Gull (Larus fuscus) [A183]; Manx Shearwater (Puffinus puffinus) [A013]; Storm Petrel (Hydrobates pelagicus) [A014]
Beara Peninsula SPA SPA (004155)	Chough (Pyrrhocorax pyrrhocorax) [A346]; Fulmar (Fulmarus glacialis) [A009]
Castlemaine Harbour SPA SPA (004029)	Wetland and Waterbirds [A999]
Tralee Bay Complex SPA SPA (004188)	Wetland and Waterbirds [A999]
Loop Head SPA SPA (004119)	Kittiwake (Rissa tridactyla) [A188]
Sheep's Head to Toe Head SPA SPA (004156)	Chough (Pyrrhocorax pyrrhocorax) [A346]; Peregrine (Falco peregrinus) [A103]
River Shannon and River Fergus Estuaries SPA SPA (004077)	Wetland and Waterbirds [A999]

European site	QIs Screened
SACs -SPAs	
Slyne Head to Ardmore Point IslanSPA (004159)	Little Tern (Sternula albifrons) [A885]
Cliffs of Moher SPA (004005)	Puffin (Fratercula arctica) [A204]
Inishkea Islands SPA (004004)	Shag (Phalacrocorax aristotelis) [A018] Barnacle Goose (Branta leucopsis) [A045] Ringed Plover (Charadrius hiaticula) [A137] Sanderling (Calidris alba) [A144] Purple Sandpiper (Calidris maritima) [A148] Turnstone (Arenaria interpres) [A169] Common Gull (Larus canus) [A182] Herring Gull (Larus argentatus) [A184] Arctic Tern (Sterna paradisaea) [A194] Dunlin (Calidris alpina schinzii) [A466] Little Tern (Sternula albifrons) [A885]
Blacksod Bay/Broad Haven SPA (004037)	Red-throated Diver (Gavia stellata) [A001] Great Northern Diver (Gavia immer) [A003] Slavonian Grebe (Podiceps auritus) [A007] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Common Scoter (Melanitta nigra) [A065] Red-breasted Merganser (Mergus serrator) [A069] Ringed Plover (Charadrius hiaticula) [A137] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Dunlin (Calidris alpina schinzii) [A466] Sandwich Tern (Thalasseus sandvicensis) [A863] Wetland and Waterbirds [A999]
Inishmurray SPA (004068)	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]
Sheskinmore Lough SPA (004090)	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]
Duvillaun Islands SPA (004111)	Fulmar (Fulmarus glacialis) [A009] Storm Petrel (Hydrobates pelagicus) [A014] Barnacle Goose (Branta leucopsis) [A045]
Illaunonearaun SPA (004114)	Barnacle Goose (Branta leucopsis) [A045]
Inishkeel SPA (004116)	Barnacle Goose (Branta leucopsis) [A045]
Rathlin O'Birne Island SPA (004120)	Barnacle Goose (Branta leucopsis) [A045]
Roaninish SPA (004121)	Barnacle Goose (Branta leucopsis) [A045] Herring Gull (Larus argentatus) [A184]
Magharee Islands SPA (004125)	Storm Petrel (Hydrobates pelagicus) [A014] Shag (Phalacrocorax aristotelis) [A018] Barnacle Goose (Branta leucopsis) [A045] Common Gull (Larus canus) [A182] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Little Tern (Sternula albifrons) [A885]
Illancrone and Inishkeeragh SPA (004132)	Barnacle Goose (Branta leucopsis) [A045] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Little Tern (Sternula albifrons) [A885]
Ardboline Island and Horse Island SPA (004135)	Cormorant (Phalacrocorax carbo) [A017] Barnacle Goose (Branta leucopsis) [A045]
Clare Island SPA (004136)	Fulmar (Fulmarus glacialis) [A009] Shag (Phalacrocorax aristotelis) [A018] Common Gull (Larus canus) [A182] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200]

European site	QIs Screened
SACs -SPAs	
	Chough (Pyrrhocorax pyrrhocorax) [A346]
High Island, Inishshark and Davillaun SPA (004144)	Fulmar (Fulmarus glacialis) [A009] Barnacle Goose (Branta leucopsis) [A045] Arctic Tern (Sterna paradisaea) [A194]
West Donegal Coast SPA (004150)	Fulmar (Fulmarus glacialis) [A009] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Peregrine (Falco peregrinus) [A103] Herring Gull (Larus argentatus) [A184] Kittiwake (Rissa tridactyla) [A188] Razorbill (Alca torda) [A200] Chough (Pyrrhocorax pyrrhocorax) [A346]
Inishmore SPA (004152)	Kittiwake (Rissa tridactyla) [A188] Arctic Tern (Sterna paradisaea) [A194] Guillemot (Uria aalge) [A199] Little Tern (Sternula albifrons) [A885]
Dingle Peninsula SPA (004153)	Fulmar (Fulmarus glacialis) [A009] Peregrine (Falco peregrinus) [A103] Chough (Pyrrhocorax pyrrhocorax) [A346]
Cruagh Island SPA (004170)	Manx Shearwater (Puffinus puffinus) [A013] Barnacle Goose (Branta leucopsis) [A045]
Bills Rocks SPA (004177)	Storm Petrel (Hydrobates pelagicus) [A014] Puffin (Fratercula arctica) [A204]
Mid-Clare Coast SPA (004182)	Cormorant (Phalacrocorax carbo) [A017] Barnacle Goose (Branta leucopsis) [A045] Ringed Plover (Charadrius hiaticula) [A137] Sanderling (Calidris alba) [A144] Purple Sandpiper (Calidris maritima) [A148] Dunlin (Calidris alpina) [A149] Turnstone (Arenaria interpres) [A169] Wetland and Waterbirds [A999]
Inishbofin, Omey Island and Turbot Island SPA (004231)	Corncrake (Crex crex) [A122]
Ballintemple and Ballygilgan SPA (004234)	Barnacle Goose (Branta leucopsis) [A045]
Seas off Wexford SPA (004237)	Red-throated Diver (Gavia stellata) [A001] Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Gannet (Morus bassanus) [A016] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Common Scoter (Melanitta nigra) [A065] Mediterranean Gull (Larus melanocephalus) [A176] Black-headed Gull (Chroicocephalus ridibundus) [A179] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184] Kittiwake (Rissa tridactyla) [A188] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204] Sandwich Tern (Thalasseus sandvicensis) [A863] Little Tern (Sternula albifrons) [A885]
North-west Irish Sea SPA (004236)	Red-throated Diver (Gavia stellata) [A001] Great Northern Diver (Gavia immer) [A003] Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018]

European site	QIs Screened
SACs -SPAs	
	Common Scoter (Melanitta nigra) [A065] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184] Great Black-backed Gull (Larus marinus) [A187] Kittiwake (Rissa tridactyla) [A188] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204] Little Gull (Hydrocoloeus minutus) [A862] Little Tern (Sternula albifrons) [A885]