

# Geological Survey Ireland Marine Survey Operations 2026

## Appropriate Assessment Screening and Natura Impact Statement



An Roinn Comhshaoil,  
Aeráide agus Cumarsáide  
Department of the Environment,  
Climate and Communications



**Geological Survey**  
Suirbhéireacht Gheolaíochta  
Ireland | Éireann

## GLOSSARY

DECC	Department of the Environment, Climate and Communications
GSI	Geological Survey Ireland
MI	Marine Institute
NPWS	National Parks and Wildlife Service
DEHLG	Department of Environment, Heritage and Local Government
AA	Appropriate Assessment
NIS	Natura Impact Statement
MMO	Marine Mammal Observer
SAC	Special Area of Conservation
SOLAS	The International Convention for the Safety of Life at Sea
DTM	Digital Terrain Model

## Document Information

**Lead Author**

Eoin Mac Craith

**Position**

Senior Geologist

**Approved By**

Sean Cullen

**Position**

Project Manager

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# 1. Introduction

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## 1.1 INFOMAR – Programme Background

Ireland has undertaken one of the largest marine mapping programmes in the world. The value of this work to ocean management is derived not just from ambitious mapping, but by having matched this with an investment in data management, an open access policy, and effective partnerships with research, public and private organisations.

Following from the very successful Irish National Seabed Survey, in 2006, a successor programme was approved, Integrated Mapping For the sustainable development of Ireland's Marine Resource (INFOMAR). It is managed jointly by Geological Survey Ireland (GSI) and the Marine Institute (MI), with the current priority being to map inshore and shelf areas, integrate and provide the data, and support the value added use of the data & products. This strategic capital project is funded through the Department of Climate, Energy and the Environment.

In 2008 the Department of Communications, Energy and Natural Resources commissioned PricewaterhouseCoopers (PWC) to conduct an appraisal of the INFOMAR programme and to make recommendations on the future implementation of the programme. The Benefit to Cost Ratio established for completion of the project was between 4 and 6, the higher return being related to reducing the 20 year total duration of the project.

The operational focus up to 2016 was on mapping 26 priority bays, 3 priority coastal areas, and undertaking mapping in the Biologically Sensitive Area. Between 2016 and 2026 the focus is now on mapping the remaining waters unmapped to date, including completion of some bays and inshore areas already visited. Data which are provided openly and freely are having a significant impact on marine research and development, safety, environment, energy and infrastructure, fisheries, flood risk management and heritage. The division of the remaining work between the project partners is such that Geological Survey Ireland is tasked with completing all seabed mapping from the shoreline out to 30 nautical miles, with the Marine Insitute surveying the remaining shelf areas beyond 30 nautical miles.

Natura 2000 sites will be discussed in more detail in the appropriate assessment section along with associated conservation objectives and potential sensitivities, recommended actions and mitigation procedures which will be put into place prior to undertaking survey operations.



## **Expected Benefits:**

The acquisition of high resolution hydrographic data within the designated Natura 2000 sites facilitates the development of Digital Terrain Models (DTMs) and qualitative derivatives such as slope, aspect and rugosity which act as useful habitat descriptors and environmental proxies as well as key baseline data for conservation and habitat monitoring and protection. The expected conservation benefits of undertaking the proposed plan of operations are outlined below.

Hydrographic data acquisition will enable improved modelling of oceanographic dynamics and benthic habitats. This will provide a better understanding of the local ecosystem and the monitoring requirements needed to ensure that the long term integrity of SAC sites within the intended area of operations are maintained.

Significant vessel activity takes place along the coast, with cargo, passenger, marine leisure and inshore fisheries vessels routinely transiting through the proposed survey area including Natura 2000 Sites. In many cases charted depths used for navigation have not been updated for over a century.

Hydrographic information is the essential baseline data required to ensure that the State can meet its obligations under the SOLAS Convention in providing safe passage for vessels, their crew and cargo. Failure to provide up to date information in a Natura 2000 site could result in vessel grounding, fuel spillage and long term detrimental impacts on the surrounding environment. Shallow, previously unmapped features are of risk to fisheries, tourism and commercial shipping and are regularly identified during routine INFOMAR surveys using modern mapping techniques. Salvage operations for accidents at sea require detailed hydrographic information to ensure units involved in recovery operations may do so safely.

The acquisition of INFOMAR's strategic baseline dataset for all of Ireland's coasts including Natura 2000 sites are profiled as part of the 2026 INFOMAR acquisition programme. This Appropriate Assessment and associated Natura Impact Statement aims to ensure adequate mitigation measures can be defined for the proposed acoustic survey activities and seabed sampling to be undertaken. It aims to address the requirements under the Habitats Directive (Article 6(3)), to ensure the proposed acoustic survey activity minimises impacts in relation to the site conservation objectives.



## 1.2 Appropriate Assessment - Background

The EU Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right.

Adopted in 1992, the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

National guidance for planning authorities on Appropriate Assessment of plans and projects in Ireland was published by the Department of Environment, Heritage and Local Government (DEHLG) in 2009 – entitled “Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities”. It states:

“The obligation to undertake appropriate assessment derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made. They also determine the decisions that ultimately may be made in relation to approval or refusal of a plan or project. AA [Appropriate Assessment] is not a prohibition on new development or activities but involves a case-by-case examination of the implications for the Natura 2000 site and its conservation objectives. In general terms, implicit in Article 6(3) is an obligation to put concern for potential effects on Natura 2000 sites at the forefront of every decision made in relation to plans and projects at all stages, including decisions to provide funding or other support.”

Article 6(3) of the Habitats Directive establishes the requirement for Appropriate Assessment:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the



assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

Article 6(4) allows for a derogation from this strict protection under certain circumstances.

“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

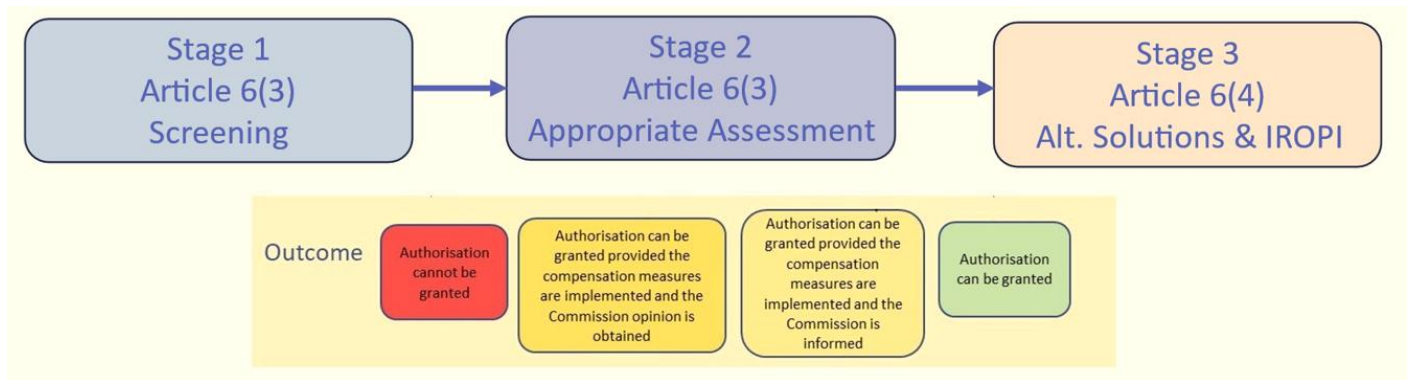
Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

It is the responsibility of the competent national authority, in this instance Geological Survey Ireland, to decide whether or not the proposed marine surveys should be permitted, taking into account any potential impact on the Natura 2000 sites whose extents the surveys overlap.

### **1.3 Stages of the Appropriate Assessment**

The Commission’s methodological guidance (EC, 2002) promotes a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required (DEHLG, 2009).





**Figure 1. Stages in the AA process (Source: EC Env DG “Assessment of plans and projects significantly affecting natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC” EC 2021.)**

### **(1) Appropriate Assessment Screening**

The screening stage examines and documents whether or not the proposed work is directly connected to or necessary for the management of a Natura 2000 site, or likely to have potential impacts on a Natura 2000 site with regard to its conservation objectives.

According to “Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities” (DEHLG, 2009):

“If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.”

In the case of GSI’s proposed INFOMAR survey work, the nature of the survey equipment used and its potential effect on relevant Natura 2000 qualifying interests is documented.

### **(2) Appropriate Assessment (Natura Impact Statement)**

At this stage the proponent of the work (Geological Survey Ireland in this instance) prepares a Natura Impact Statement, a scientific report that examines the following:

- Scope of proposed work and the potentially affected Natura sites with regard to their conservation objectives.



- Consultation with NPWS.
- Nature of potential impacts without mitigation.
- Proposed mitigation measures to offset any adverse effects.
- NIS Conclusions.

### **(3) Alternative Solutions**

As described in “Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities” (DEHLG, 2009):

“This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a Natura 2000 site. The process must return to Stage 2 as alternatives will require appropriate assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, is necessary to progress to Stage 4.”

### **(4) Imperative Reasons for Overriding Public Interest (IROPI)**

As described in “Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities” (DEHLG, 2009):

“Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities Section 3 - The AA Process 29 extra protection measures for Annex I priority habitats come into effect when making the IROPI case<sup>18</sup>. Compensatory measures must be proposed and assessed. The Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable, and they must be approved by the Minister.”



## 1.4 Geological Survey Ireland Procedure

The Process that Geological Survey Ireland will follow in relation to AA screening and NIS reporting is illustrated in the flow chart below.

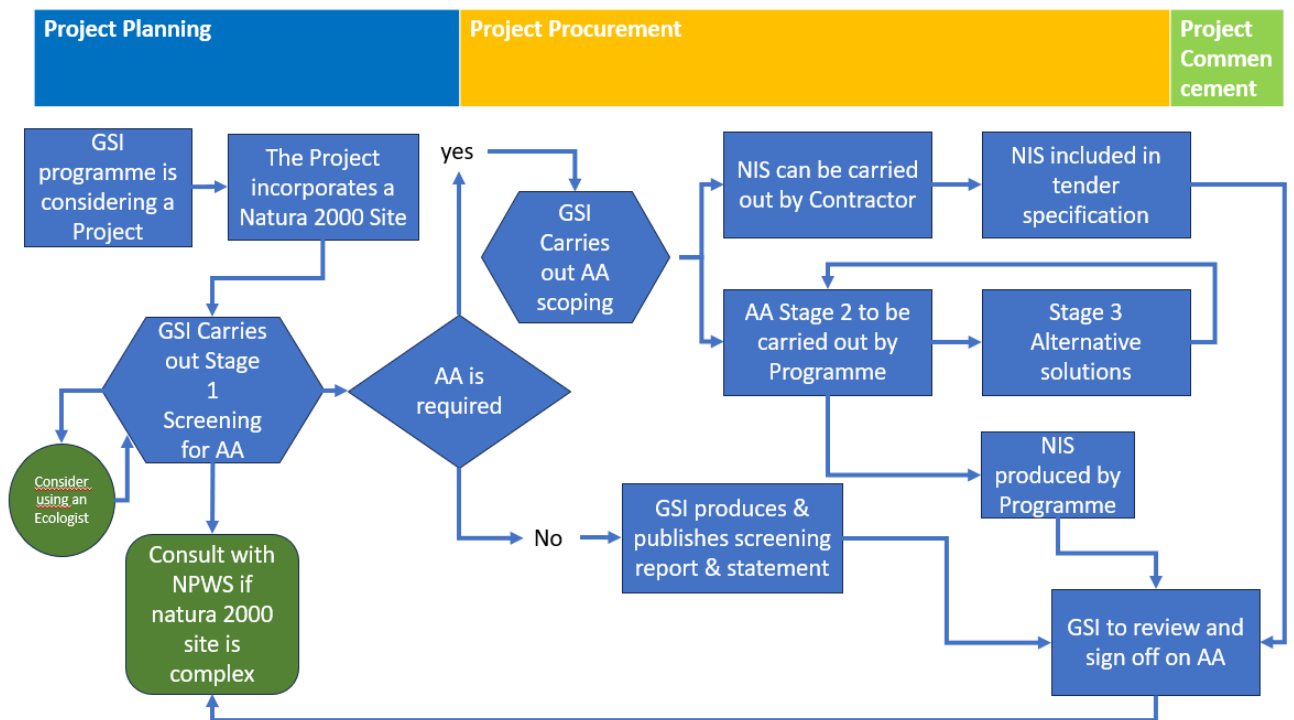


Figure 2. Geological Survey Ireland AA and NIS Procedure



## 2. Scope of Work

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### 2.1 INFOMAR Operations

From 1<sup>st</sup> March 2026 through to the end of December 2026 it is proposed to survey at multiple locations around the Irish coast, from the intertidal zone out to 30 nautical miles offshore. While GSI's inshore fleet has typically operated in discrete blocks from year to year, the INFOMAR programme is now engaged in filling in bathymetric coverage gaps on a national level as this second phase of the programme enters its final stages. In addition, although operational plans are developed on an annual basis, the deployment of survey vessels is inherently flexible and may be altered during the survey season to accommodate weather patterns, stakeholder engagement processes, and port and berthing availability. Consequently, survey activities may occur in different marine areas than those originally anticipated.

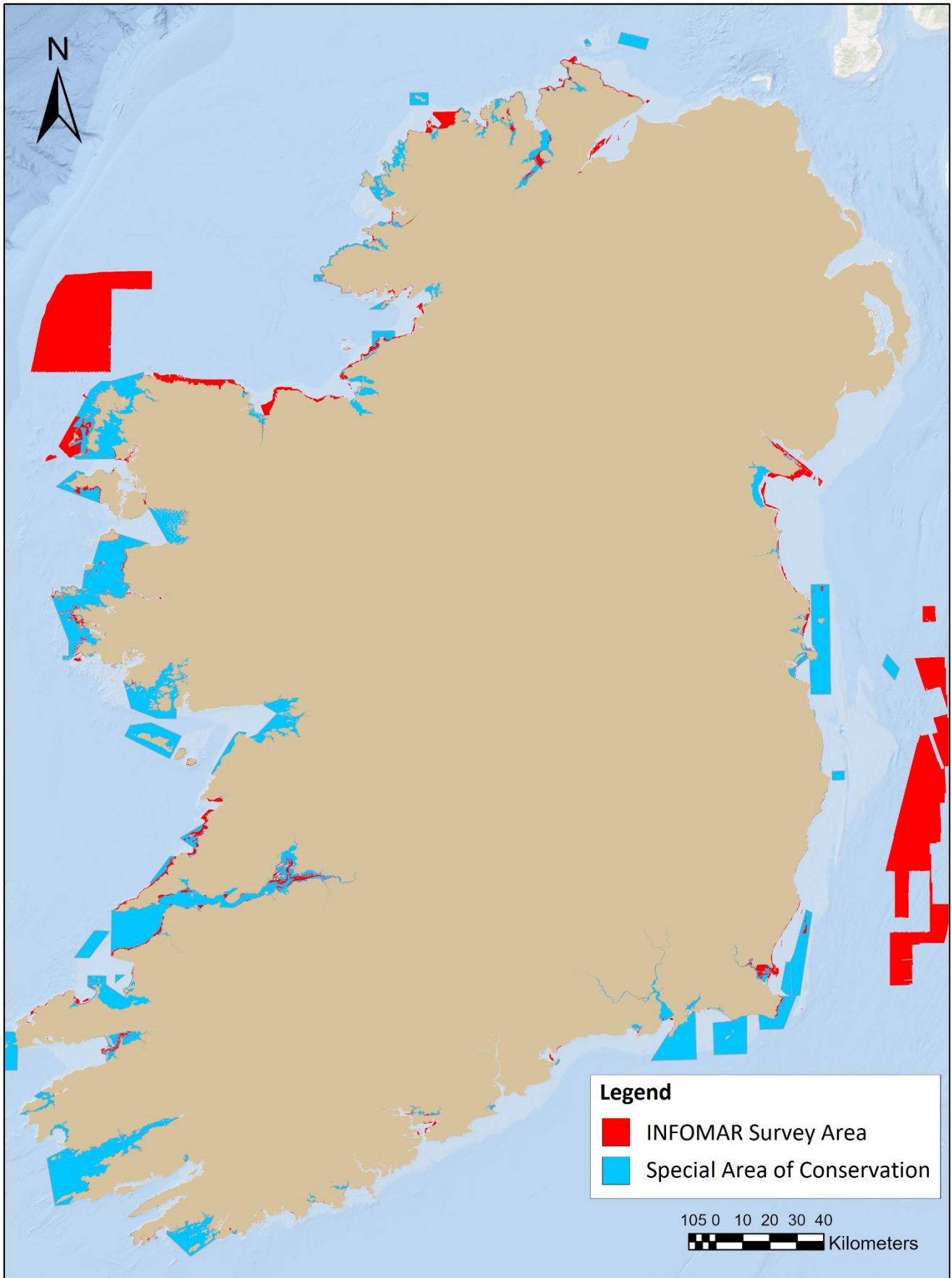
In light of this operational flexibility, and in accordance with the precautionary principle underpinning Article 6(3) of the Habitats Directive, the screening for Appropriate Assessment has been undertaken at a national scale. All marine SACs and SPAs within the inshore waters of the Irish Exclusive Economic Zone (EEZ) are therefore included in the screening assessment to determine whether likely significant effects, either alone or in combination, can be excluded.

All vessels will be collecting bathymetric data, with one vessel, the R.V. Keary, also collecting shallow seismic (sub bottom profiler) data in addition to bathymetry. Occasionally the GSI engages in seabed sampling in order to ground truth seabed classification maps. While this is not planned for 2026 operations, it can be arranged opportunistically when circumstances allow and so is accounted for in this document.

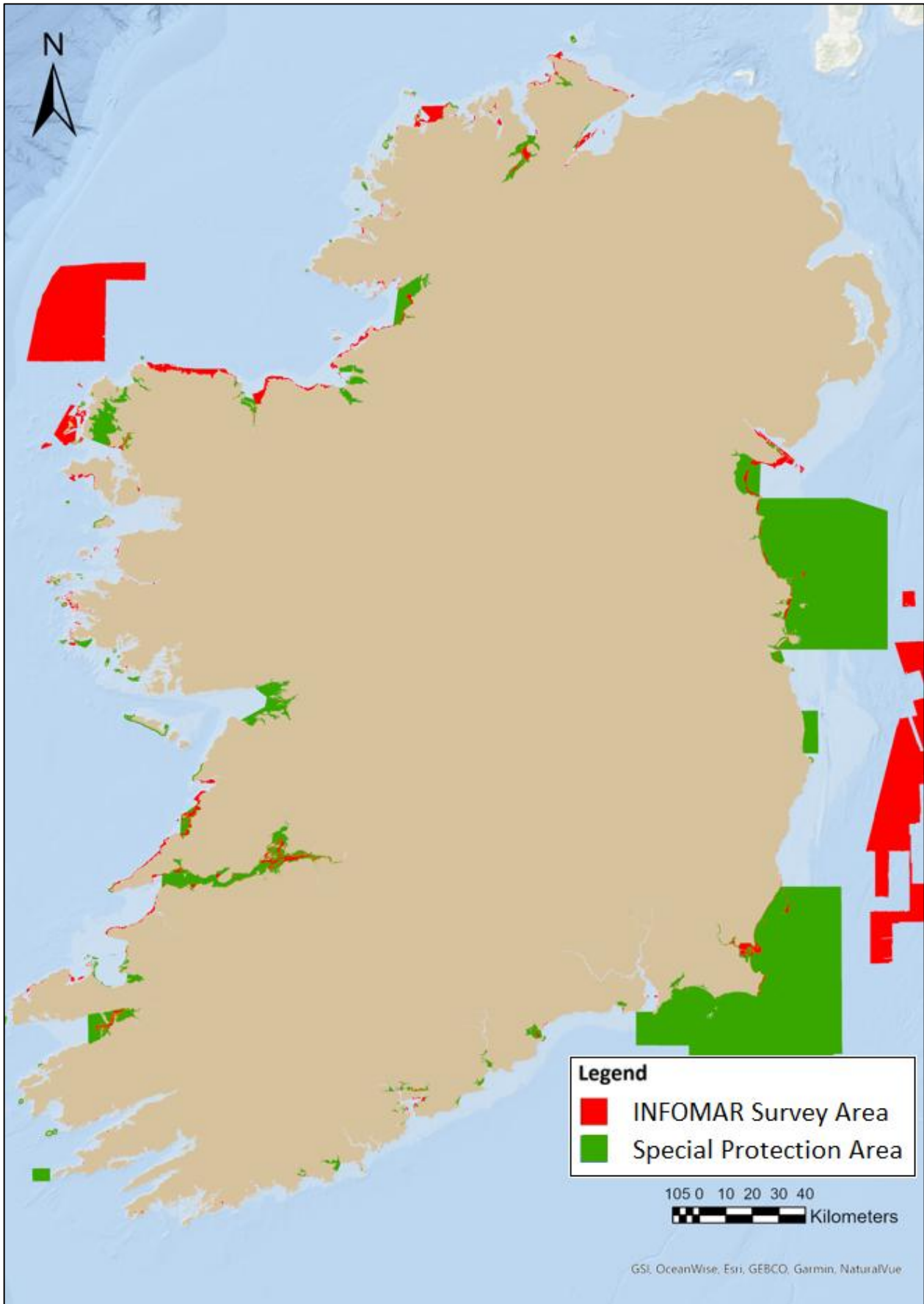
Areas of potential marine survey operations are shown in Figures 3 & 4 and all Special Areas of Conservation and Special Protected Areas sites listed on the NPWS website ( & <https://www.npws.ie/protected-sites/spa>) identified as potential concerns are also displayed.

The survey will be conducted to International Hydrographic Office "Order 1a" standard and the data will be used by the United Kingdom Hydrographic Office to update navigational charts for Irish waters. Once ratified, it will be available for free via the INFOMAR website ([www.infomar.ie](http://www.infomar.ie)).





**Figure 3: Potential Areas of INFOMAR Survey Operations 2026 & Natura 2000 SACs**



**Figure 4: Potential Areas of INFOMAR Survey Operations 2026 & Natura 2000 SPAs**

## 2.1 Hydrographic Survey Equipment

Acoustic Survey Equipment installed on INFOMAR survey platforms are documented in the tables below, which also provide specific information on sonar frequency for each installed system on a vessel by vessel basis. Specifications for INFOMAR inshore survey vessels are provided in the next section.

<b>Acoustic Survey Equipment – R.V. Keary</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	EM2040 (200, 300 & 400 kHz)	Retractable hull mount	<b>Kongsberg Maritime:</b> <a href="http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support">http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support</a>
Singlebeam Echo Sounder	EA400 (38 & 200 kHz)	Retractable hull mount	<b>Kongsberg Maritime:</b> <a href="http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/E4515C34D66E4673C1257583002F2524?OpenDocument&amp;Count=-1&amp;Cat=Support">http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/E4515C34D66E4673C1257583002F2524?OpenDocument&amp;Count=-1&amp;Cat=Support</a>
Sub-Bottom Profiler	Edgetech 3200XS CHIRP (1-12 kHz)	Retractable hull mount	<b>Edgetech:</b> <a href="https://www.edgetech.com/wp-content/uploads/2019/07/004840_REV_E.pdf">https://www.edgetech.com/wp-content/uploads/2019/07/004840_REV_E.pdf</a>
Ultra-Short Baseline	Sonardyne Scout USBL (35kHz to 55kHz)	Retractable hull mount	<b>Sonardyne:</b> <a href="https://www.sonardyne.com/wp-content/uploads/2025/01/Sonardyne_8024_scout_transceiver.pdf">https://www.sonardyne.com/wp-content/uploads/2025/01/Sonardyne_8024_scout_transceiver.pdf</a>

**Table 1: Acoustic Equipment Operated on board the R.V. Keary**



<b>Acoustic Survey Equipment – R.V. Mallet</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	EM2040P (200, 300 & 400 kHz)	Retractable hull mount	<b>Kongsberg Maritime:</b> <a href="http://www.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support">http://www.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support</a>

**Table 2: Acoustic Equipment Operated on board the R.V. Mallet**

<b>Acoustic Survey Equipment – R.V. Lir</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	Reson T20P dual-head (200-400 kHz)	Retractable bow mount	<b>Reson T20P:</b> <a href="http://www.teledyne-reson.com/products/echo-sounder-seabat/seabat-t20p/">http://www.teledyne-reson.com/products/echo-sounder-seabat/seabat-t20p/</a>

**Table 3: Acoustic Equipment Operated on board the R.V. Lir**

<b>Acoustic Survey Equipment – R.V. Galtee</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	EM2040P (200, 300 & 400 kHz)	Retractable bow mount	<b>Reson T20P:</b> <a href="http://www.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support">http://www.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&amp;Count=-1&amp;Cat=Support</a>

**Table 4: Acoustic Equipment Operated on board the R.V. Galtee**



<b>Acoustic Survey Equipment – R.V. Geo</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	Reson T20P (200-400 kHz)	Retractable bow mount	<b>Reson T20P:</b> <a href="http://www.teledyne-reson.com/products/echo-sounder-seabat/seabat-t20-p/">http://www.teledyne-reson.com/products/echo-sounder-seabat/seabat-t20-p/</a>

**Table 5: Acoustic Equipment Operated on board the R.V. Geo**

<b>Acoustic Survey Equipment – R.V. Tonn</b>			
<b>Equipment</b>	<b>Model</b>	<b>Deployment</b>	<b>Company</b>
Multibeam Echo Sounder	R2Sonic 2022 (200-450 kHz)	Retractable hull mount	<b>Reson T20P:</b> <a href="https://r2sonic.com/products/sonic-2022/">https://r2sonic.com/products/sonic-2022/</a>

**Table 6: Acoustic Equipment Operated on board the R.V. Tonn**

## 2.1 Sediment Sampling Equipment

### Day Grab

The Day Grab comprises two stainless steel bucket sections mounted within a stainless steel frame that ensures the grab is square and level to the seabed when it is deployed. Once lowered and the frame has made contact with the seabed, the latch plates on the buckets unlock and they are released. As the grab is retrieved the bridles connected to the buckets come under tension and the buckets close collecting the sediment sample before the grab is brought back to the surface. It samples a 0.1m<sup>2</sup> area of seabed and can potentially retrieve a volume of approximately 15 litres of sediment.





**Figure 5: Day Grab**

### **Van Veen Grab**

The Van Veen Grab is a clamshell bucket made of stainless steel. Up to 20 cm deep samples of roughly 0.1 m<sup>2</sup> can be extracted with this instrument. While letting the instrument down into the water, the two levers with buckets at their ends are spread like an open scissor. The levers are locked in this position, and unlocked on hitting the ground. When the rope is pulled upward again, the two buckets close and grab a sample from the sea floor.



**Figure 6: Van Veen Grab**

## 2.2 Survey Vessels

The INFOMAR programme envisions the utilisation of 6 vessel platforms equipped for inshore hydrographic survey operations during 2026.



**Vessel Name:** R.V. Keary  
**Flag State:** Ireland  
**Call Sign:** EI-G0-9  
**Length:** 15.5 m  
**Breadth:** 5 m  
**Draught:** 2.1 m (max)  
**Tonnage (GRT):** 25 Tonnes



**Vessel Name:** R.V. Mallet  
**Flag State:** Ireland  
**Call Sign:** EI-SN-9  
**Length:** 18 m  
**Breadth:** 5 m  
**Draught:** 2.6 m  
**Tonnage (GRT):** 30 Tonnes



**Vessel Name:** R.V. Geo  
**Flag State:** Ireland  
**Call Sign:** EI-DK-6  
**Length:** 7.4 m  
**Breadth:** 2.8 m  
**Draught:** 1.3 m (max)  
**Tonnage (GRT):** 2.5 Tonnes



**Vessel Name:** R.V. Galtee  
**Flag State:** Ireland  
**Call Sign:** TBA  
**Length:** 11 m  
**Breadth:** 3.31 m  
**Draught:** 1.8 m (max)  
**Tonnage (GRT):** 3.5 Tonnes



**Vessel Name:** R.V. Lir  
**Flag State:** Ireland  
**Call Sign:** EI-HI-2  
**Length:** 11 m  
**Breadth:** 3.31 m  
**Draught:** 1.8 m (max)  
**Tonnage (GRT):** 3.5 Tonnes



**Vessel Name:** R.V. Tonn  
**Flag State:** Ireland  
**Call Sign:** EI-PT-2  
**Length:** 7.9 m  
**Breadth:** 2.7 m  
**Draught:** 0.7 m (max)  
**Tonnage (GRT):** N/A

**Figure 7: INFOMAR Inshore Survey Platforms**

## 3. Potential Impacts

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### 3.1 Acoustic Impact on Marine Mammals

The waters of Ireland's Exclusive Economic Zone (EEZ) represent one of the most important cetacean (whales, dolphins and porpoise) habitats in Europe. All cetacean and 2 pinniped species (Common/Harbour and Grey seals) in Irish waters are protected by the 1976 to 2018 wildlife acts (and wildlife amendment act 2000) and Irish waters, including the EEZ, were declared a whale and dolphin sanctuary in 1991. All cetacean species are protected under the EU habitats directive and the harbour porpoise and bottlenose dolphin are listed under Annex II of the habitats directive, requiring the designation of special areas of conservation (SACs) for their protection.

In January 2014 National Parks and Wildlife Service issued the "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters". They apply to all seismic surveys, as well as multibeam, electromagnetic and side scan sonar surveys which take place in bays, inlets, or estuaries and within 1.5km of the entrance of enclosed bays/inlets/estuaries.

INFOMAR acknowledges the sensitivities associated with some priority bays and coastal areas being SACs for the protection of both resident and transient populations of Cetaceans and Pinnipeds, and commit to compliance with the relevant requirements under the Habitats Directive in relation to the site conservation objectives set by DAHG.

Geophysical survey activities involve the use of acoustic equipment that can generate sound across frequency ranges detectable by marine mammals. As sound is a primary sensory modality for marine mammals, underpinning navigation, communication and environmental perception, exposure to such noise has the potential to interact with these functions.

Potential impacts on marine mammals from multibeam echosounder, singlebeam echosounder and sub-bottom profiler operations are likely limited to short-term behavioural disturbance and temporary masking of biologically relevant sound.



## 3.2 Potential Disturbance to Seabirds

This section considers the potential for disturbance to diving seabird species arising from INFOMAR survey operations. Diving seabirds are the only bird guild for which a plausible interaction pathway exists in relation to vessel-based survey activities and underwater sound emissions. Other bird groups (e.g. surface-feeding seabirds, waders or terrestrial species) are not considered further in relation to underwater acoustic effects, as no credible pathway for interaction has been identified.

INFOMAR survey activities involve the operation of survey vessels and the use of hydrographic and geophysical equipment, including multibeam echosounders and sub-bottom profilers. These activities generate underwater sound and may result in short-term disturbance to marine fauna in the immediate vicinity of survey operations.

Diving seabirds forage within the water column and may therefore be exposed to underwater sound during foraging dives. Potential effects, where they occur, may include short-term behavioural responses such as avoidance of the immediate area of activity or temporary interruption of foraging behaviour.

The effects of underwater sound on diving seabirds are not well understood, and the available scientific evidence is limited when compared to that for marine mammals.

Recent reviews (e.g. Hartley Anderson Limited, 2020; Harding, 2022) note that there is limited evidence of harm to diving seabirds arising from exposure to underwater noise, although behavioural effects have been reported in some studies.

Available research (Yelverton et al., 1973; Cooper, 1982; Stemp, 1985; Danil & St Leger, 2011) suggests that any such effects are likely to be confined to very close proximity to sources of high-amplitude, low-frequency underwater noise, typically within tens of metres of the sound source.

It is noted that these studies relate primarily to the use of explosives, and that evidence relating to the effects of other acoustic sources remains limited, including for geophysical survey instrumentation such as multibeam echosounders and mini-airguns.

However, uncertainty remains, particularly in relation to the sensitivity of different species and life stages.

Given the mobile nature of diving seabirds, any potential disturbance would be expected to be spatially and temporally limited, reflecting the short duration and transitory nature of INFOMAR survey operations at any given location. The potential relevance of this pathway is therefore considered further at the screening stage of the Appropriate Assessment, including in relation to Special Protection Areas (SPAs) designated for diving seabird species.



In addition to diving seabirds, a number of seabird species that are qualifying interests of coastal and offshore Special Protection Areas (SPAs) forage predominantly at or near the sea surface, including surface-feeding species such as Northern Fulmar (*Fulmarus glacialis*), European Storm Petrel (*Hydrobates pelagicus*) and Black-legged Kittiwake (*Rissa tridactyla*). These species are not considered susceptible to underwater acoustic effects associated with geophysical survey equipment, due to the absence of a plausible underwater exposure pathway.

Potential interactions with surface-feeding seabirds are limited to temporary disturbance arising from vessel presence and associated above-water noise. INFOMAR survey vessels operate on a mobile and transient basis, without fixed infrastructure, and are present in any given area for a short duration only. Any behavioural responses, such as short-term avoidance of the immediate vicinity of the vessel, would therefore be localised, temporary and reversible, and are not considered likely to give rise to significant effects on SPA conservation objectives.

### **3.3 Sampling Impact on Seabed Habitats**

Seabed sampling associated with the INFOMAR programme is limited to the use of grab sampling equipment, including Day Grabs and Van Veen Grabs, which are designed for use on soft sediment substrates only.

#### **Reefs [1170]**

Reef habitats are, by definition, characterised by hard or rocky substrates. The sampling equipment described in Section 2.1 is not suitable for use on such substrates and, as a result, seabed sampling will not be undertaken over reef habitats. Sampling locations are informed by backscatter data to avoid rocky ground.

On this basis, no direct interaction between seabed sampling activities and reef habitats is anticipated, and no likely significant effects on reef habitats are predicted.

#### **All other Annex I habitats**

Mudflats and sandflats not covered by seawater at low tide [1140],

Large shallow inlets and bays [1160],



Submarine structures made by leaking gases [1180],

Sandbanks which are slightly covered by sea water all the time [1110],

Seabed sampling within these habitats, where it occurs, will be limited in spatial extent and frequency, with individual sampling events affecting only a very small area of seabed. Sampling disturbance is localised, short-term and reversible in nature.

Given the limited footprint of the sampling equipment, the sparse distribution of sampling locations, and the temporary nature of the disturbance, no likely significant effects on the conservation objectives or integrity of these habitats are anticipated.

Biological sampling will not be carried out within Natura 2000 sites.

### **3.4 Consultation**

Geological Survey Ireland has, since the early phases of the INFOMAR programme, engaged with the National Parks and Wildlife Service in relation to marine survey activities and their potential interactions with Natura 2000 sites. This engagement has informed the identification of relevant European sites, their qualifying interests and conservation objectives, and the development of assessment and mitigation approaches consistent with national guidance and best practice, including in relation to potential impacts arising from marine survey activities such as man-made underwater sound.

In addition, the assessment approach has been informed by programme-level engagement and technical exchanges with a range of organisations, including the Irish Whale and Dolphin Group, the Coastal and Marine Research Centre, and RPS Group, as well as through the review of relevant published scientific literature and technical reports.

Technical information relating to the operational characteristics of the acoustic survey equipment was obtained from equipment manufacturers and from published technical documentation. This information was used to inform the description of survey equipment and the assessment of potential impact pathways.

For example, equipment manufacturers such as Kongsberg Maritime and Reson, along with independent acoustic experts have been consulted with reference to the acoustic attenuation patterns and potential impacts of same.



Communications with Kongsberg Maritime (EM3002 & EM2040 Multi-beam manufacturers) referenced the standard paper on sound attenuation (1982 JASA 72 Sep and Dec Francois & Garrison part 1 and 2). For the EM3002 a decrease of 65 dB/Km is to be expected in open water. The design specifications for all shallow water MBES systems including the EM2040 and EM2040P are within the same range as the EM3002. Horizontally the sound level is at least 30 dB below the main lobe. In practice this means that outside the main lobe (directly beneath the vessel), sound intensity is significantly less than 180dB.

Kongsberg Maritime stated that no reports on cetacean damage affiliated to the use of EM3002 multibeam echo sounders have been received by them worldwide, and they would deem it unlikely that there is damage to cetaceans from such high frequency systems.

Information considered during the assessment also includes published NPWS conservation objectives, site synopses, and relevant national guidance documents. Any observations arising from consultation and engagement have been taken into account in the identification and assessment of potential impacts and, where relevant, in the consideration of mitigation measures set out in subsequent sections of this report. The conclusions of this Appropriate Assessment are those of the competent authority, informed by consultation and the available scientific evidence.

### **3.5 Literature Review**

A review was carried out in order to collate and assess existing best practice procedures for operating a hydrographic data acquisition programme in an SAC designated for dolphins/cetaceans. Rather than engaging in an exhaustive review on cetacean distribution, which has already been well documented, the objective of the study was to identify likely ecological impacts that might be associated with the proposed operations.

It is essential to clarify at this stage, that the proposed marine acoustic survey operation will engage technologies, which are directional in type, emitting focused directional sound waves. They should not be confused with seismic systems typically used in the oil and gas exploration industry, which emit sound energy in every direction from a point source. The significance of this is that for the proposed acoustic survey, for any given instrument, single beam, multibeam, or pinger, at any given instant in time, only



a very small water volume is ensonified (1.5 – 3 degrees window of exposure to acoustic energy). As a percentage of the area proposed to be surveyed within any given SAC, the area of ensonification at any point in time is negligible.

$$\text{Area of ensonification} = \pi [\text{depth} \times \text{Tan}(\text{beam angle})]^2$$

Typically in water depths of 30m, for a shallow water multibeam system with a swath of approximately 135 degrees, an area of 1.9 m<sup>2</sup> of the seabed is ensonified, with the area decreasing linearly through the water column towards the vessel.

In relation to the frequencies and amplitudes involved in the use of these acoustic systems, some of the more relevant references are included below:

**Reference A:**

**EM Technical Note, September 20, 2005**

Author: Erik Hammerstad

Subject: Sound Levels from Kongsberg Multibeams

The power output level of an echo sounder is normally specified by giving its source level in dB relative to 1 µPa at a distance of 1m from the transmit transducer. However this is really a measure of the pressure level of the output sound wave. The pressure level of a sound wave will fall off with the square of the distance from the source due to the spherical spreading of the wave, and the wave will be further attenuated due to absorption loss. In the nearfield the pressure level will be nominally constant as there is no spreading.

For the EM3002, pressure levels at a set of fixed distances are given and also the range at which the pressure level is 180 dB re 1 µPa. It is imperative to note that energy attenuation due to absorption has not been taken into account, so these figures represent maximum empirical values (worst case amplitudes).

<b>SYSTEM</b>	<b>Power Level @1m</b>	<b>Power Level @10m</b>	<b>Power Level @100m</b>	<b>Power Level @1000m</b>	<b>180 dB Dist. From Source</b>
EM3002	207	194	162	NA	35m

**Table 7: Empirical EM3002 Pressure Levels**



## Reference B:

### **US National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA)**

Source: Federal Register / Vol. 72, No. 68 / Tuesday, April 10, 2007 / Notices Subject: Small Takes of Marine Mammals Incidental to Specified Activities

This notice referenced the Kongsberg Maritime EM120 system which has an operating frequency of 11.25–12.6 kHz. Because of the shape of the sonar beam, NMFS believes it unlikely that marine mammals will be exposed to the bathymetric sonar at levels at or above those likely to cause harassment. Further, NMFS believes that the brief exposure of cetaceans or pinnipeds to one pulse, or small numbers of signals, from the multi-beam bathymetric sonar system are not likely to result in the harassment of marine mammals.

The EM3002 and EM2040 proposed for this survey have operating frequencies of 293 and 307 kHz and 300 kHz respectively. These are significantly beyond the audible range of the Bottlenose Dolphin, and due to the higher frequencies, they have a higher acoustic attenuation rate, with reduced sonar levels and reduced impact.

## Reference C:

### **RESON informal documentation. Extract from Reson pdf presentation**

Author: Reson

Subject: Marine Mammal Impact SeaBat 7112

A study was carried out between the AN/WQX-2 MBES (multibeam echosounder) and the Reson Seabat 7112 MBES. The AN/WQX-2 is the US Navy's diver detection sonar. It is used in conjunction with trained dolphins for defence purposes. As a result, the USN did extensive experiments evaluating the impact of this sonar on dolphins.

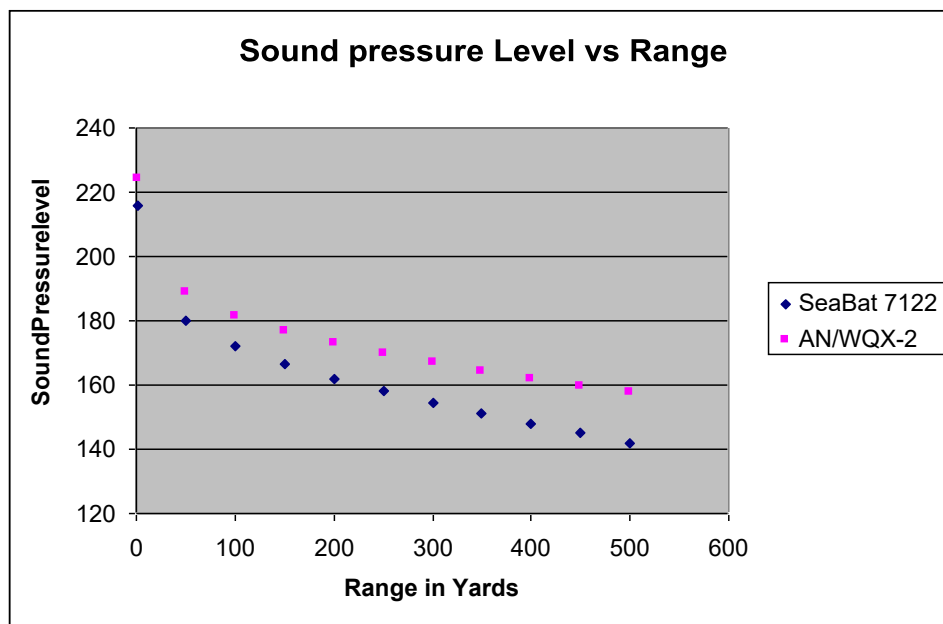
- AN/WQX-2 - 224 dB Source Level, 10 msec pulse @ 66 kHz  
Resulting USN Guideline – Keep Dolphins >50 yards away
- Reson SeaBat 7112 - 216 dB Source Level, 1 msec pulse @ 100 kHz  
Lower Source Level and Higher Frequency. Far Less Impact

At 25 yards (23m), Reson 7112 sound pressure is equal to 188 dB which is empirically



established dolphin/porpoise safety threshold. At all ranges greater than 25 yards, the signal level is less. Reson concluded that their system should not pose a safety risk to dolphins/porpoises.

Again, the EM3002 and EM2040 proposed for this survey have operating frequencies of 293 and 307 kHz and 300 kHz respectively, beyond the audible range of the Bottlenose Dolphin and Grey Seal, and have lower source levels and consequently are of less impact.



**Figure 8: Sound attenuation of mid frequency multibeam**

The Scientific Committee on Antarctic Research (Scientific Committee on Antarctic Research; SCAR, 2002) outlined a conceptual, risk-based framework for considering the potential effects of acoustic survey activities on marine mammals, based on the identification of key questions relevant to the scale, intensity and context of sound-producing activities. These questions, which are presented here for illustrative context, include consideration of:

- whether survey equipment has the potential to cause physical injury, and the spatial scale over which such effects might occur;
- whether sound emissions could result in temporary or permanent hearing effects, and over what range;



- whether survey activities may result in behavioural disturbance, and the spatial extent of any such effects;
- whether any behavioural disturbance could, in principle, pose a risk to populations if occurring at critical times or in sensitive areas;
- whether survey activities could affect large numbers of animals or smaller, ecologically important groups;
- whether the survey area is likely to be used by marine species during the period of operations;
- whether survey activities could indirectly affect predators through changes in prey availability; and
- the proportion of an area used by animals that may be influenced by survey activities.

In practice it can be very difficult to assess the risk of injury as there has been little research carried out to answer these questions directly and most literature available is based on effects on humans ('The impact of Multibeam on cetaceans: A review of best practice'. O'Brien, Berrow and Wall. March, 2005).

Below is a table of marine mammal functional hearing groups and estimated functional hearing ranges proposed by Southall *et al.* (2007)

Functional Hearing Group	Estimated Auditory Bandwidth	Genera Represented (Number Species/Subspecies)	Frequency-Weighting Network
Low-frequency cetaceans	7 Hz to 22 kHz	<i>Balaena, Caperea, Eschrichtius, Megaptera, Balaenoptera</i> (13 species/subspecies)	M <sub>lf</sub> (lf: low-frequency cetaceans)
Mid-frequency cetaceans	150 Hz to 160 kHz	<i>Steno, Sousa, Sotalia, Tursiops, Stenella, Delphinus, Lagenodelphis, Lagenorhynchus, Lissodelphis, Grampus, Peponocephala, Feresa, Pseudorca, Orcinus, Globicephala, Orcacella, Physeter, Delphinapterus, Monodon, Ziphius, Berardius, Tasmacetus, Hyperoodon, Mesoplodon</i> (57 species/subspecies)	M <sub>mf</sub> (mf: mid-frequency cetaceans)
High-frequency cetaceans	200 Hz to 180 kHz	<i>Phocoena, Neophocaena, Phocoenoides, Platanista, Inia, Kogia, Lipotes, Pontoporia, Cephalorhynchus</i> (19 species/subspecies)	M <sub>hf</sub> (hf: high-frequency cetaceans)
Pinnipeds in water	75 Hz to 75 kHz	<i>Arctocephalus, Callorhinus, Zalophus, Eumetopias, Neophoca, Phocarctos, Otaria, Erignathus, Phoca, Pusa, Halichoerus, Histriophoca, Pagophilus, Cystophora, Monachus, Mirounga, Leptonychotes, Ommatophoca, Lobodon, Hydrurga, Odobenus</i> (41 species/subspecies)	M <sub>pw</sub> (pw: pinnipeds in water)
Pinnipeds in air	75 Hz to 30 kHz	Same species as pinnipeds in water (41 species/subspecies)	M <sub>pa</sub> (pa: pinnipeds in air)

**Table 8: Marine Mammal Functional Hearing Groups & Estimated Hearing Ranges**

There have been various frequency ranges cited which the Bottlenose Dolphin can detect. They respond to tones within the frequency range of 1 to 150 kHz (Ridgeway,



1990), are sensitive to frequencies from 5 kHz to 110 kHz (O'Brien, Berrow and Wall, 2005), have a hearing band of 15 kHz to 110 kHz with greatest sensitivity at 50 kHz, and taking a conservative approach are noted as having a mid-frequency range of 0.15 kHz to 160 kHz (Southall et al., 2007).

Common seals are sensitive to tones within the frequency range 4 kHz to 45 kHz (peak sensitivity at 32 kHz) and grey seals 8 - 40 kHz (O'Brien, Berrow and Wall, 2005; Southall et al., 2007).

While INFOMAR multibeam echo sounders are significantly beyond these frequency ranges, the single beam echo sounder and sub bottom profiler systems transmit lower frequencies that may be detected by porpoises and seals. Similar frequency transmissions are emitted continuously by all vessels navigating within the Lower Shannon Estuary SAC (home to a resident population of bottlenose dolphin) for example, with no negative impact identified or reported to date. This is supported by extensive ongoing research of the resident bottlenose dolphin populations in the Shannon, where significant dolphin tourism related vessel activity is ongoing. Each vessel hosts similar single beam mounted echo sounders with no exclusion zone practice in place, and no negative impact has been reported, despite the proximity of the dolphins to the echo sounders.

### **Sidelobe Effects**

Recent literature (Deng et al, 2014) reporting the generation of low-frequency harmonics from high-frequency echosounder transmissions, primarily associated with side-lobe emissions, has been reviewed as part of this Appropriate Assessment. While the underlying generation mechanism is not discussed in that literature, it is noted that any such harmonics occur at substantially reduced energy levels relative to the primary transmission. The multibeam echosounders used for the proposed surveys operate predominantly at high frequencies (typically ~400 kHz), for which any potential first- or higher-order harmonics would be expected to occur at progressively lower energy levels. Based on published observations and operational practice, any low-frequency harmonic components, if present, would be of low intensity and are not expected to result in significant acoustic effects on qualifying interests. In addition, non-essential acoustic systems are routinely disabled during survey operations where safe to do so, further limiting the overall acoustic energy output.



## **Literature Review Conclusion**

The published literature reviewed above provides the scientific context for understanding potential interactions between marine mammals and the acoustic survey instruments proposed for use as part of the INFOMAR programme, and informs the assessment of potential impact pathways considered in subsequent stages of this Appropriate Assessment.



## 4. Screening for Appropriate Assessment

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### 4.1 Introduction

This section presents the screening stage of the Appropriate Assessment for the proposed INFOMAR inshore marine survey operations. The purpose of screening is to determine, in accordance with Article 6(3) of the Habitats Directive, whether the proposed works, either alone or in combination with other plans or projects, are likely to have significant effects on any Natura 2000 site, having regard to the site's conservation objectives.

The proposed INFOMAR survey operations comprise vessel-based acoustic mapping and limited seabed sampling activities that may be undertaken at multiple locations within Irish territorial waters and the Exclusive Economic Zone during the survey season. Survey locations are not fixed in advance and may be subject to change in response to weather conditions, operational requirements, vessel availability, berthing constraints, and stakeholder engagement. As a result, the assessment adopts a precautionary approach that considers the potential for interaction with Natura 2000 sites at a national scale.

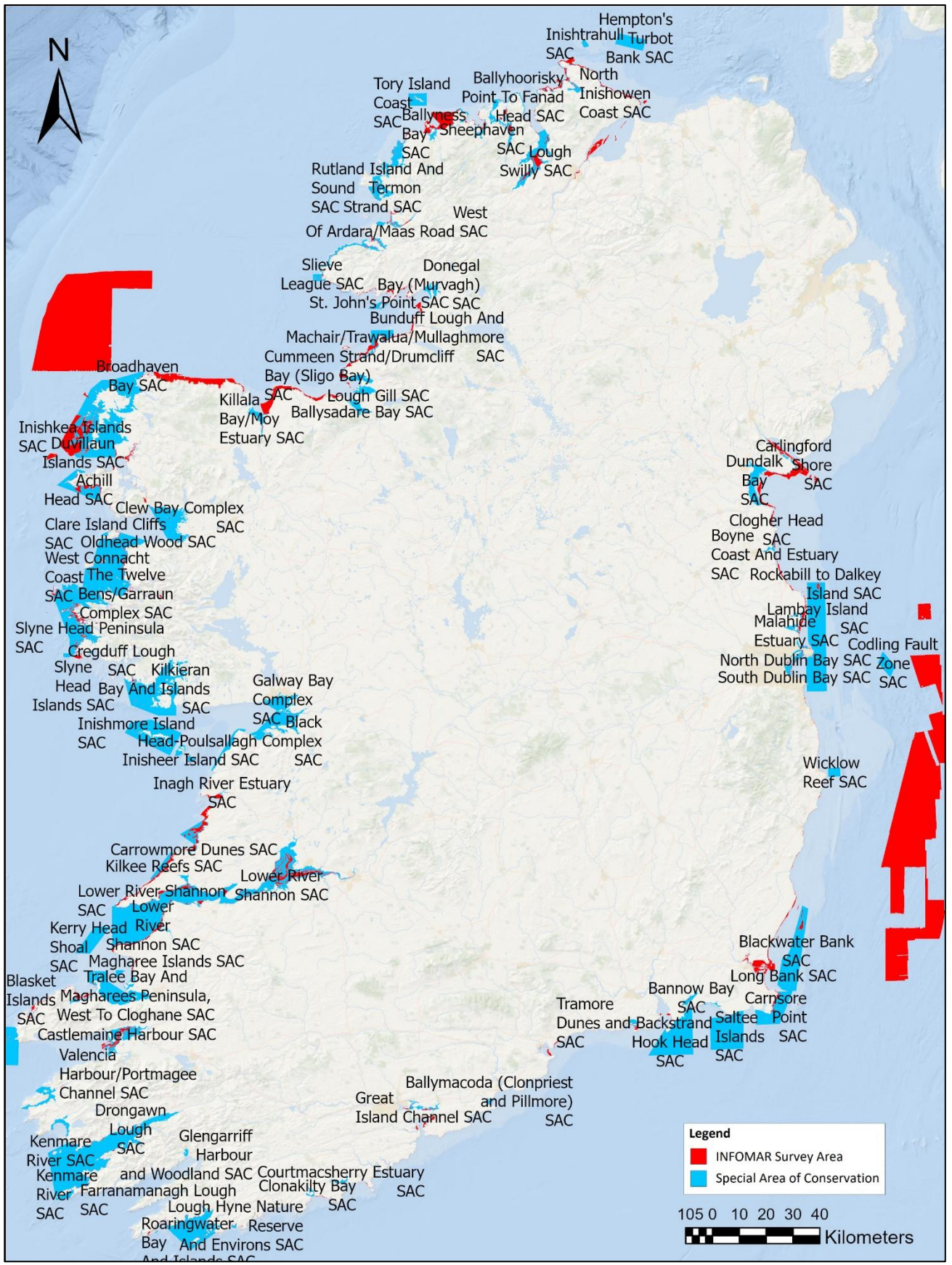
Screening has been undertaken separately for Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), reflecting differences in their designation under the Habitats and Birds Directives, the nature of their qualifying interests, and the potential impact pathways relevant to the proposed survey activities. SACs are screened on a site-by-site basis with reference to their specific qualifying interests, while SPAs are addressed separately, having regard to the mobile and transient nature of both the survey activities and the relevant avian qualifying interests.

The screening process identifies those Natura 2000 sites and qualifying interests for which likely significant effects cannot be excluded at this stage, and which therefore require further assessment in Stage 2 of the Appropriate Assessment through the preparation of a Natura Impact Statement.

### 4.2 Identification of Special Areas of Conservation

Figure 9 displays the potential seabed survey extents as described in Section 2.1. All Special Areas of Conservation that contain a marine component are displayed. All of these sites are listed in Table 9.



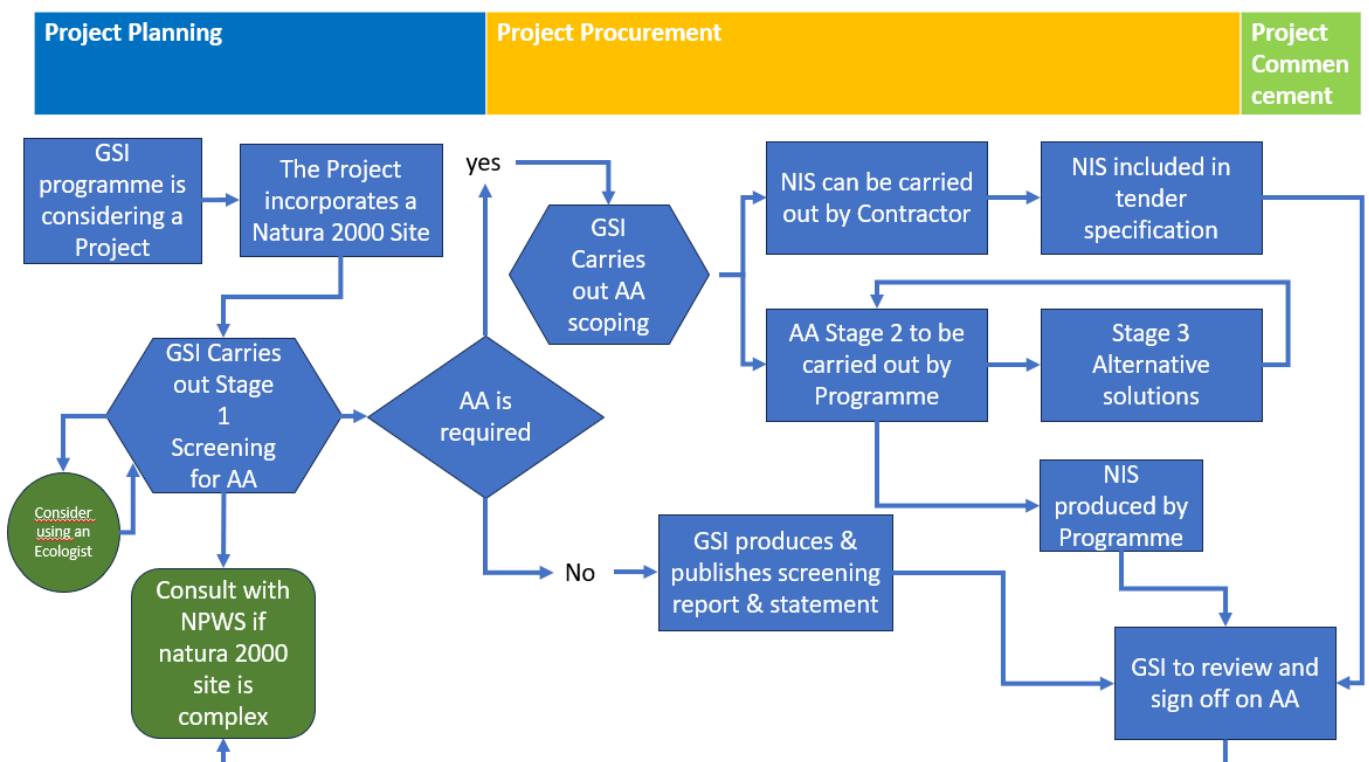


**Figure 9: All Potential Inshore Survey Extents & Marine SACs**



From this list, the Natura 2000 sites considered relevant and screened in for Appropriate Assessment are those which have Conservation Objectives or Qualifying Interests (QIs)/Special Conservation Interests (SCIs) which may be impacted by the proposed works. The potential impacts are discussed in detail in Section 3 of this report. The following table lists each potentially impacted Special Area of Conservation, along with the screening in or out of its qualifying interests.

We are now at the point shown in the figure below. The INFOMAR programme incorporates multiple Natura 2000 sites and has consulted with the NPWS – an AA is required and the individual sites must be screened for potential impact. See Geological Survey Ireland flow chart below.



**Figure 10: Geological Survey Ireland AA Procedure Flow Chart – AA Required**

### 4.3 Screening of Marine Special Areas of Conservation

Natura 2000 Site	Site Code	Qualifying Interest	Interaction with Survey Area	Potential Impacts	Screened In/Out
Achill Head SAC	IE002268	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Achill Head SAC	IE002268	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Achill Head SAC	IE002268	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Akeragh, Banna and Barrow Harbour SAC	IE000332	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Humid dune slacks [2190]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	European dry heaths [4030]	No overlap	None	Screened out

Baldoyle Bay SAC	IE000199	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Baldoyle Bay SAC	IE000199	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Baldoyle Bay SAC	IE000199	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Baldoyle Bay SAC	IE000199	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out

Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballyness Bay SAC	IE001090	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	Humid dune slacks [2190]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballyness Bay SAC	IE001090	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	<i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballysadare Bay SAC	IE000622	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	Humid dune slacks [2190]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballysadare Bay SAC	IE000622	<i>Phoca vitulina</i> (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Ballysadare Bay SAC	IE000622	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Annual vegetation of drift lines [1210]	No overlap	None	Screened out

Ballyteige Burrow SAC	IE000696	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Coastal lagoons [1150]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballyteige Burrow SAC	IE000696	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Ballyteige Burrow SAC	IE000696	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> ) [1420]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) [2150]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Humid dune slacks [2190]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Bannow Bay SAC	IE000697	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out

Bannow Bay SAC	IE000697	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Bannow Bay SAC	IE000697	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> ) [1420]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	European dry heaths [4030]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Barley Cove to Ballyrisode Point SAC	IE001040	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Bellacragher Saltmarsh SAC	IE002005	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in

Black Head-Poulsallagh Complex SAC	IE000020	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Water courses of plain to montane levels with the Ranunculon fluitantis and Callitricho-Batrachion vegetation [3260]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Petrifying springs with tufa formation (Cratoneurion) [7220]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Limestone pavements [8240]	No overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Black Head-Poulsallagh Complex SAC	IE000020	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Blackwater Bank SAC	IE002953	Sandbanks which are slightly covered by sea water all the time [1110]	Overlap	Potential disturbance from seabed sampling	Screened in
Blasket Islands SAC	IE002172	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Blasket Islands SAC	IE002172	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Blasket Islands SAC	IE002172	European dry heaths [4030]	No overlap	None	Screened out
Blasket Islands SAC	IE002172	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out

Blasket Islands SAC	IE002172	Phocoena phocoena (Harbour Porpoise) [1351]	Overlap	Potential disturbance from sonar	Screened in
Blasket Islands SAC	IE002172	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Boyne Coast and Estuary SAC	IE001957	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Boyne Coast and Estuary SAC	IE001957	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Boyne Coast and Estuary SAC	IE001957	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Boyne Coast and Estuary SAC	IE001957	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Boyne Coast and Estuary SAC	IE001957	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Boyne Coast and Estuary SAC	IE001957	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Boyne Coast and Estuary SAC	IE001957	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Boyne Coast and Estuary SAC	IE001957	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Broadhaven Bay SAC	IE000472	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Broadhaven Bay SAC	IE000472	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Broadhaven Bay SAC	IE000472	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Broadhaven Bay SAC	IE000472	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Broadhaven Bay SAC	IE000472	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Alkaline fens [7230]	No overlap	None	Screened out

Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Humid dune slacks [2190]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	IE000625	Euphydryas aurinia (Marsh Fritillary) [1065]	No overlap	None	Screened out
Carlingford Shore SAC	IE002306	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Carlingford Shore SAC	IE002306	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out

Carnsore Point SAC	IE002269	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Carrowmore Dunes SAC	IE002250	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Carrowmore Dunes SAC	IE002250	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Carrowmore Dunes SAC	IE002250	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Carrowmore Dunes SAC	IE002250	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Carrowmore Dunes SAC	IE002250	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Carrowmore Point to Spanish Point and Islands SAC	IE001021	Coastal lagoons [1150]	No overlap	None	Screened out
Carrowmore Point to Spanish Point and Islands SAC	IE001021	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Carrowmore Point to Spanish Point and Islands SAC	IE001021	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Carrowmore Point to Spanish Point and Islands SAC	IE001021	Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Castlemaine Harbour SAC	IE000343	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Castlemaine Harbour SAC	IE000343	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	<i>Salicornia</i> and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out

Castlemaine Harbour SAC	IE000343	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Humid dune slacks [2190]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	<i>Salmo salar</i> (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Clare Island Cliffs SAC	IE002243	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Clare Island Cliffs SAC	IE002243	Calcareous rocky slopes with chasmophytic vegetation [8210]	No overlap	None	Screened out
Clare Island Cliffs SAC	IE002243	Siliceous rocky slopes with chasmophytic vegetation [8220]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Clew Bay Complex SAC	IE001482	Coastal lagoons [1150]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Clew Bay Complex SAC	IE001482	Annual vegetation of drift lines [1210]	No overlap	None	Screened out

Clew Bay Complex SAC	IE001482	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Vertigo geyeri (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
Clew Bay Complex SAC	IE001482	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Clew Bay Complex SAC	IE001482	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Clogher Head SAC	IE001459	European dry heaths [4030]	No overlap	None	Screened out
Clogher Head SAC	IE001459	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Clonakilty Bay SAC	IE000091	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Clonakilty Bay SAC	IE000091	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Clonakilty Bay SAC	IE000091	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Clonakilty Bay SAC	IE000091	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Clonakilty Bay SAC	IE000091	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Clonakilty Bay SAC	IE000091	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Codling Fault Zone SAC	IE003015	Submarine structures made by leaking gases [1180]	Overlap	Potential disturbance from seabed sampling	Screened in
Courtmacsherry Estuary SAC	IE001230	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in

Courtmacsherry Estuary SAC	IE001230	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Courtmacsherry Estuary SAC	IE001230	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230				
Courtmacsherry Estuary SAC	IE001230	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Cregduff Lough SAC	IE001251	Transition mires and quaking bogs [7140]	No overlap	None	Screened out
Cregduff Lough SAC	IE001251	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]	No overlap	None	Screened out

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Petromyzon marinus (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Dog's Bay SAC	IE001257	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Dog's Bay SAC	IE001257	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Dog's Bay SAC	IE001257	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Dog's Bay SAC	IE001257	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Dog's Bay SAC	IE001257	European dry heaths [4030]	No overlap	None	Screened out
Donegal Bay (Murvagh) SAC	IE000133	Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No overlap	None	Screened out
Donegal Bay (Murvagh) SAC	IE000133	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Donegal Bay (Murvagh) SAC	IE000133	Humid dune slacks [2190]	No overlap	None	Screened out
Donegal Bay (Murvagh) SAC	IE000133	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Donegal Bay (Murvagh) SAC	IE000133	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Drongawn Lough SAC	IE002187	Coastal lagoons [1150]	No overlap	None	Screened out
Dundalk Bay SAC	IE000455	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Dundalk Bay SAC	IE000455	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in

Dundalk Bay SAC	IE000455	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Dundalk Bay SAC	IE000455	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Dundalk Bay SAC	IE000455	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Dundalk Bay SAC	IE000455	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Duvillaun Islands SAC	IE000495	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from sonar	Screened in
Duvillaun Islands SAC	IE000495	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Farranamanagh Lough SAC	IE002189	Coastal lagoons [1150]	No overlap	None	Screened out
Farranamanagh Lough SAC	IE002189	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Galway Bay Complex SAC	IE000268	Coastal lagoons [1150]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Galway Bay Complex SAC	IE000268	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Galway Bay Complex SAC	IE000268	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Turloughs [3180]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out

Galway Bay Complex SAC	IE000268	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Alkaline fens [7230]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Limestone pavements [8240]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Galway Bay Complex SAC	IE000268	<i>Phoca vitulina</i> (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Glengarriff Harbour and Woodland SAC	IE000090	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	<i>Geomalacus maculosus</i> (Kerry Slug) [1024]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Glengarriff Harbour and Woodland SAC	IE000090	<i>Phoca vitulina</i> (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Great Island Channel SAC	IE001058	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Great Island Channel SAC	IE001058	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) [2150]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Coastal lagoons [1150]	No overlap	None	Screened out

Gweedore Bay and Islands SAC	IE001141	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	European dry heaths [4030]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Humid dune slacks [2190]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Gweedore Bay and Islands SAC	IE001141	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Gweedore Bay and Islands SAC	IE001141	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Hempton's Turbot Bank SAC	IE002999	Sandbanks which are slightly covered by sea water all the time [1110]	Overlap	Potential disturbance from seabed sampling	Screened in
Hook Head SAC	IE000764	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in

Hook Head SAC	IE000764	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Hook Head SAC	IE000764	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Horn Head and Rinclevan SAC	IE000147	Humid dune slacks [2190]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	<i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
Howth Head SAC	IE000202	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Howth Head SAC	IE000202	European dry heaths [4030]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	<i>Salicornia</i> and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out

Inishbofin and Inishark SAC	IE000278	Coastal lagoons [1150]	No overlap	None	Screened out
Inishbofin and Inishark SAC	IE000278	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110]	No overlap	None	Screened out
Inishbofin and Inishark SAC	IE000278	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	No overlap	None	Screened out
Inishbofin and Inishark SAC	IE000278	European dry heaths [4030]	No overlap	None	Screened out
Inishbofin and Inishark SAC	IE000278	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Inisheer Island SAC [001275]	IE001275	Coastal lagoons [1150]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Inisheer Island SAC [001275]	IE001275	European dry heaths [4030]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Limestone pavements [8240]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Inishkea Islands SAC	IE000507	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Inishkea Islands SAC	IE000507	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Inishkea Islands SAC	IE000507	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Inishmaan Island SAC	IE000212	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out

Inishmaan Island SAC	IE000212	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	European dry heaths [4030]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Limestone pavements [8240]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Coastal lagoons [1150]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Inishmore Island SAC	IE000213	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Humid dune slacks [2190]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	European dry heaths [4030]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Limestone pavements [8240]	No overlap	None	Screened out

Inishmore Island SAC	IE000213	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Inishmore Island SAC	IE000213	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Inishtrahull SAC	IE000154	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Ireland's Eye SAC	IE002193	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Ireland's Eye SAC	IE002193	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Kenmare River SAC	IE002158	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Kenmare River SAC	IE002158	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Kenmare River SAC	IE002158	European dry heaths [4030]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Calaminarian grasslands of the Violetalia calaminariae [6130]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Kenmare River SAC	IE002158	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out

Kenmare River SAC	IE002158	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	No overlap	None	Screened out
Kenmare River SAC	IE002158	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Kenmare River SAC	IE002158	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Kerry Head Shoal SAC	IE002263	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkee Reefs SAC	IE002264	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkee Reefs SAC	IE002264	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkee Reefs SAC	IE002264	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkieran Bay and Islands SAC	IE002111	Coastal lagoons [1150]	No overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkieran Bay and Islands SAC	IE002111	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Kilkieran Bay and Islands SAC	IE002111	Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330]	No overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No overlap	None	Screened out
Kilkieran Bay and Islands SAC	IE002111	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]	No overlap	None	Screened out

Kilkieran Bay and Islands SAC	IE002111	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Kilkieran Bay and Islands SAC	IE002111	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Kilkieran Bay and Islands SAC	IE002111	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Killala Bay/Moy Estuary SAC	IE000458	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Humid dune slacks [2190]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Killala Bay/Moy Estuary SAC	IE000458	Petromyzon marinus (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Killala Bay/Moy Estuary SAC	IE000458	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Killala Bay/Moy Estuary SAC	IE000458	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Killala Bay/Moy Estuary SAC	IE000458	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Kingstown Bay SAC	IE002265	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Lambay Island SAC	IE000204	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in

Lambay Island SAC	IE000204	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Lambay Island SAC	IE000204	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Lambay Island SAC	IE000204	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Long Bank SAC	IE002161	Sandbanks which are slightly covered by sea water all the time [1110]	Overlap	Potential disturbance from seabed sampling	Screened in
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Coastal lagoons [1150]	No overlap	None	Screened out
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Lough Cahasy, Lough Baun And Roonah Lough SAC	IE001529	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Lough Hyne Nature Reserve And Environs SAC	IE000097	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Lough Hyne Nature Reserve And Environs SAC	IE000097	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Lough Hyne Nature Reserve And Environs SAC	IE000097	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Lough Swilly SAC	IE002287	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Lough Swilly SAC	IE002287	Coastal lagoons [1150]	No overlap	None	Screened out
Lough Swilly SAC	IE002287	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in

Lough Swilly SAC	IE002287	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Lough Swilly SAC	IE002287	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No overlap	None	Screened out
Lough Swilly SAC	IE002287	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Sandbanks which are slightly covered by sea water all the time [1110]	Overlap	Potential disturbance from seabed sampling	Screened in
Lower River Shannon SAC	IE002165	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Lower River Shannon SAC	IE002165	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Lower River Shannon SAC	IE002165	Coastal lagoons [1150]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Lower River Shannon SAC	IE002165	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Lower River Shannon SAC	IE002165	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]	No overlap	None	Screened out

Lower River Shannon SAC	IE002165	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	<i>Lampetra planeri</i> (Brook Lamprey) [1096]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	<i>Salmo salar</i> (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Magharee Islands SAC	IE002261	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Malahide Estuary SAC	IE000205	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Malahide Estuary SAC	IE000205	<i>Salicornia</i> and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out

Mullet/Blacksod Bay Complex SAC	IE000470	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Mullet/Blacksod Bay Complex SAC	IE000470	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Mullet/Blacksod Bay Complex SAC	IE000470	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Mullet/Blacksod Bay Complex SAC	IE000470	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Alkaline fens [7230]	No overlap	None	Screened out
Mullet/Blacksod Bay Complex SAC	IE000470	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Mullet/Blacksod Bay Complex SAC	IE000470	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Mulroy Bay SAC	IE002159	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Mulroy Bay SAC	IE002159	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Mulroy Bay SAC	IE002159	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in

Mulroy Bay SAC	IE002159	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Coastal lagoons [1150]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) [2150]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Natural dystrophic lakes and ponds [3160]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	No overlap	None	Screened out

Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	European dry heaths [4030]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Transition mires and quaking bogs [7140]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Depressions on peat substrates of the Rhynchosporion [7150]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Petrifying springs with tufa formation (Cratoneurion) [7220]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Alkaline fens [7230]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Calcareous rocky slopes with chasmophytic vegetation [8210]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Siliceous rocky slopes with chasmophytic vegetation [8220]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Vertigo geyeri (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Salmo salar (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in

Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
North Dublin Bay SAC	IE000206	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Embryonic shifting dunes [2110]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Humid dune slacks [2190]	No overlap	None	Screened out
North Dublin Bay SAC	IE000206	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
North Inishowen Coast SAC	IE002012	European dry heaths [4030]	No overlap	None	Screened out
North Inishowen Coast SAC	IE002012	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
North Inishowen Coast SAC	IE002012	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
North Inishowen Coast SAC	IE002012	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
North Inishowen Coast SAC	IE002012	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
North Inishowen Coast SAC	IE002012	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
North Inishowen Coast SAC	IE002012	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out

North Inishowen Coast SAC	IE002012	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Rathlin O'Birne Island SAC	IE000181	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Roaringwater Bay And Islands SAC	IE000101	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Roaringwater Bay And Islands SAC	IE000101	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Roaringwater Bay And Islands SAC	IE000101	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Roaringwater Bay And Islands SAC	IE000101	European dry heaths [4030]	No overlap	None	Screened out
Roaringwater Bay And Islands SAC	IE000101	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Roaringwater Bay And Islands SAC	IE000101	Phocoena phocoena (Harbour Porpoise) [1351]	Overlap	Potential disturbance from sonar	Screened in
Roaringwater Bay And Islands SAC	IE000101	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Roaringwater Bay And Islands SAC	IE000101	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Rockabill to Dalkey Island SAC	IE003000	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Rockabill to Dalkey Island SAC	IE003000	Phocoena phocoena (Harbour Porpoise) [1351]	Overlap	Potential disturbance from sonar	Screened in
Rogerstown Estuary SAC	IE000208	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Rogerstown Estuary SAC	IE000208	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Rogerstown Estuary SAC	IE000208	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out

Rogerstown Estuary SAC	IE000208	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out
Rogerstown Estuary SAC	IE000208	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Rogerstown Estuary SAC	IE000208	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Rogerstown Estuary SAC	IE000208	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Coastal lagoons [1150]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Humid dune slacks [2190]	No overlap	None	Screened out
Rutland Island and Sound SAC	IE002283	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Rutland Island and Sound SAC	IE002283	<i>Phoca vitulina</i> (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Rutland Island and Sound SAC	IE002283	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Rutland Island and Sound SAC	IE002283	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Saltee Islands SAC	IE000707	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Saltee Islands SAC	IE000707	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Saltee Islands SAC	IE000707	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Saltee Islands SAC	IE000707	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Saltee Islands SAC	IE000707	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out

Saltee Islands SAC	IE000707	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Sheephaven SAC	IE001190	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Humid dune slacks [2190]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Sheephaven SAC	IE001190	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No overlap	None	Screened out
Sheephaven SAC	IE001190	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Sheephaven SAC	IE001190	<i>Salicornia</i> and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Slaney River Valley SAC	IE000781	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Slaney River Valley SAC	IE000781	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out

Slaney River Valley SAC	IE000781	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Petromyzon marinus (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Slaney River Valley SAC	IE000781	Lampetra planeri (Brook Lamprey) [1096]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Lampetra fluviatilis (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Slaney River Valley SAC	IE000781	Alosa fallax fallax (Twaite Shad) [1103]			
Slaney River Valley SAC	IE000781	Salmo salar (Salmon) [1106]			
Slaney River Valley SAC	IE000781	Lutra lutra (Otter) [1355]			
Slaney River Valley SAC	IE000781	Phoca vitulina (Harbour Seal) [1365]			
Slieve League SAC	IE000189	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Slieve League SAC	IE000189	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
Slieve League SAC	IE000189	Calcareous rocky slopes with chasmophytic vegetation [8210]	No overlap	None	Screened out
Slieve League SAC	IE000189	European dry heaths [4030]	No overlap	None	Screened out
Slieve League SAC	IE000189	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No overlap	None	Screened out
Slieve League SAC	IE000189	Northern Atlantic wet heaths with Erica tetralix [4010]	No overlap	None	Screened out
Slieve League SAC	IE000189	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Slieve League SAC	IE000189	Siliceous rocky slopes with chasmophytic vegetation [8220]	No overlap	None	Screened out

Slieve League SAC	IE000189	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]	No overlap	None	Screened out
Slieve League SAC	IE000189	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC	IE000190	Decalcified fixed dunes with Empetrum nigrum [2140]	No overlap	None	Screened out
Slyne Head Islands SAC	IE000328	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Islands SAC	IE000328	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Islands SAC	IE000328	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from seabed sampling	Screened in

Slyne Head Peninsula SAC	IE002074	Coastal lagoons [1150]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Peninsula SAC	IE002074	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Peninsula SAC	IE002074	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	European dry heaths [4030]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410]	No overlap	None	Screened out

Slyne Head Peninsula SAC	IE002074	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Alkaline fens [7230]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Peninsula SAC	IE002074	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
South Dublin Bay SAC	IE000210	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
South Dublin Bay SAC	IE000210	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
South Dublin Bay SAC	IE000210	<i>Salicornia</i> and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
South Dublin Bay SAC	IE000210	Embryonic shifting dunes [2110]	No overlap	None	Screened out
St. John's Point SAC	IE000191	Alkaline fens [7230]	No overlap	None	Screened out
St. John's Point SAC	IE000191	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No overlap	None	Screened out
St. John's Point SAC	IE000191	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
St. John's Point SAC	IE000191	Limestone pavements [8240]	No overlap	None	Screened out
St. John's Point SAC	IE000191	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410]	No overlap	None	Screened out
St. John's Point SAC	IE000191	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
St. John's Point SAC	IE000191	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
St. John's Point SAC	IE000191	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
St. John's Point SAC	IE000191	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	No overlap	None	Screened out

Streedagh Point Dunes SAC	IE001680	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Streedagh Point Dunes SAC	IE001680	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Termon Strand SAC	IE001195	Coastal lagoons [1150]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Calcareous rocky slopes with chasmophytic vegetation [8210]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Siliceous rocky slopes with chasmophytic vegetation [8220]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No overlap	None	Screened out

The Twelve Bens/Garraun Complex SAC	IE002031	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Salmo salar (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in
The Twelve Bens/Garraun Complex SAC	IE002031	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
The Twelve Bens/Garraun Complex SAC	IE002031	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
Tory Island Coast SAC	IE002259	Coastal lagoons [1150]	No overlap	None	Screened out
Tory Island Coast SAC	IE002259	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Tory Island Coast SAC	IE002259	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Tory Island Coast SAC	IE002259	Submerged or partially submerged sea caves [8330]	Overlap	None	Screened out
Tory Island Coast SAC	IE002259	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Coastal lagoons [1150]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Annual vegetation of drift lines [1210]	No overlap	None	Screened out

Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Humid dune slacks [2190]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in

Tralee Bay and Magharees Peninsula, West to Cloghane SAC	IE002070	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Tramore Dunes and Backstrand SAC	IE000671	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Tramore Dunes and Backstrand SAC	IE000671	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	European dry heaths [4030]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out

Tranarossan and Melmore Lough SAC	IE000194	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Humid dune slacks [2190]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Tranarossan and Melmore Lough SAC	IE000194	Perennial vegetation of stony banks [1220]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Tranarossan and Melmore Lough SAC	IE000194	Decalcified fixed dunes with Empetrum nigrum [2140]	No overlap	None	Screened out
Valentia Harbour/Portmagee Channel SAC	IE002262	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
Valentia Harbour/Portmagee Channel SAC	IE002262	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
Valentia Harbour/Portmagee Channel SAC	IE002262	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
West Connacht Coast SAC	IE002998	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from sonar	Screened in
West of Ardara/Maas Road SAC	IE000197	Annual vegetation of drift lines [1210]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Estuaries [1130]	Overlap	Potential disturbance from seabed sampling	Screened in

West of Ardara/Maas Road SAC	IE000197	Large shallow inlets and bays [1160]	Overlap	Potential disturbance from seabed sampling	Screened in
West of Ardara/Maas Road SAC	IE000197	Mudflats and sandflats not covered by seawater at low tide [1140]	Overlap	Potential disturbance from seabed sampling	Screened in
West of Ardara/Maas Road SAC	IE000197	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Atlantic salt meadows (Glauc-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Embryonic shifting dunes [2110]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Decalcified fixed dunes with Empetrum nigrum [2140]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Alkaline fens [7230]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Depressions on peat substrates of the Rhynchosporion [7150]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	European dry heaths [4030]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Humid dune slacks [2190]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out

West of Ardara/Maas Road SAC	IE000197	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Lutra lutra</i> (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
West of Ardara/Maas Road SAC	IE000197	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Najas flexilis</i> (Slender Naiad) [1833]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	<i>Phoca vitulina</i> (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
West of Ardara/Maas Road SAC	IE000197	<i>Salmo salar</i> (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in

Wicklow Reef SAC	IE002274	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in
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**Table 9: Screening of Individual Natura 2000 Sites**

## 4.4 Screening Conclusions for SACs

Following the initial screening of all potentially impacted Special Areas of Conservation by the proposed survey operations, the following sites have been screened out as there is considered to be no interaction between the survey activity (acoustic mapping and seabed sampling) and their qualifying interests:

### **Natura 2000 Site**

Akeragh, Banna and Barrow  
Harbour SAC

Ballinskelligs Bay and Inny  
Estuary SAC

Ballyhoorisky Point to Fanad  
Head SAC

Bellacragher Saltmarsh SAC

Carlingford Shore SAC

Clare Island Cliffs SAC

Clogher Head SAC

Cregduff Lough SAC

Dog's Bay SAC

Drongawn Lough SAC

Farranamanagh Lough SAC

Howth Head SAC

Inagh River Estuary SAC

Inishtrahull SAC

Ireland's Eye SAC

Lough Cahasy, Lough Baun  
And Roonah Lough SAC

Termon Strand SAC

The following sites have been screened in for further assessment due to potential impacts by survey operations on one or more of their qualifying interests (see Table 9). Likely significant effects arising from possible disturbance from underwater noise and possible disturbance and displacement from underwater noise cannot be excluded for the proposed operations, individually or in combination with each other or with other plans or projects, for the European sites listed below. At this point these sites' qualifying interests (species and habitats) must be further discussed in the second stage of the Appropriate Assessment – Natura Impact Statement.



## Special Areas of Conservation screened in for Appropriate Assessment:

Achill Head SAC  
Baldoyle Bay SAC  
Ballymacoda (Clonpriest and Pillmore) SAC  
Ballyness Bay SAC  
Ballysadare Bay SAC  
Ballyteige Burrow SAC  
Bannow Bay SAC  
Barley Cove to Ballyrisode Point SAC  
Black Head-Poulsallagh Complex SAC  
Blackwater Bank SAC  
Basket Islands SAC  
Boyne Coast and Estuary SAC  
Broadhaven Bay SAC  
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC  
Carnsore Point SAC  
Carrowmore Dunes SAC  
Carrowmore Point to Spanish Point and Islands SAC  
Castlemaine Harbour SAC  
Clew Bay Complex SAC  
Clonakilty Bay SAC  
Codling Fault Zone SAC  
Courtmacsherry Estuary SAC  
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC  
Donegal Bay (Murvagh) SAC  
Dundalk Bay SAC  
Duvillaun Islands SAC  
Galway Bay Complex SAC  
Glengarriff Harbour and Woodland SAC  
Great Island Channel SAC  
Gweedore Bay and Islands SAC  
Hempton's Turbot Bank SAC  
Hook Head SAC  
Horn Head and Rinclevan SAC  
Inishbofin and Inishark SAC  
Inisheer Island SAC  
Inishkea Islands SAC  
Inishmaan Island SAC  
Inishmore Island SAC  
Kenmare River SAC  
Kerry Head Shoal SAC  
Kilkee Reefs SAC  
Kilkieran Bay and Islands SAC  
Killala Bay/Moy Estuary SAC  
Kingstown Bay SAC  
Lambay Island SAC  
Long Bank SAC  
Lough Hyne Nature Reserve And Environs SAC  
Lough Swilly SAC  
Lower River Shannon SAC  
Magharee Islands SAC  
Malahide Estuary SAC  
Mullet/Blacksod Bay Complex SAC  
Mulroy Bay SAC  
Mweelrea/Sheeffry/Erriff Complex SAC  
North Dublin Bay SAC  
North Inishowen Coast SAC  
Rathlin O'Birne Island SAC  
Roaringwater Bay And Islands SAC  
Rockabill to Dalkey Island SAC  
Rogerstown Estuary SAC  
Rutland Island and Sound SAC  
Saltee Islands SAC  
Sheephaven SAC  
Slaney River Valley SAC  
Slieve League SAC  
Slieve Tooye/Tormore Island/Loughros Beg Bay SAC  
Slyne Head Islands SAC  
Slyne Head Peninsula SAC  
South Dublin Bay SAC  
St. John's Point SAC  
Streedagh Point Dunes SAC  
The Twelve Bens/Garraun Complex SAC  
Tory Island Coast SAC  
Tralee Bay and Magharees Peninsula, West to Cloghane SAC  
Tramore Dunes and Backstrand SAC  
Tranarossan and Melmore Lough SAC  
Valentia Harbour/Portmagee Channel SAC  
West Connacht Coast SAC  
West of Ardara/Maas Road SAC  
Wicklow Reef SAC



### Qualifying interests to be assessed in the Natura Impact Statement:

- Reefs [1170]
- *Phocoena phocoena* (Harbour Porpoise) [1351]
- *Halichoerus grypus* (Grey Seal) [1364]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Large shallow inlets and bays [1160]
- *Lutra lutra* (Otter) [1355]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Phoca vitulina* (Harbour Seal) [1365]
- Submarine structures made by leaking gases [1180]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- Sandbanks which are slightly covered by sea water all the time [1110]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

## 5.5 Identification and Screening of Special Protected Areas

Special Protection Areas (SPAs) in Irish waters are designated under the Birds Directive for a range of seabird species, with marine SPAs typically supporting assemblages that include both diving seabirds and surface-feeding seabirds as Special Qualifying Interests. In light of the national-scale and operationally flexible nature of the proposed INFOMAR survey activities, and in accordance with the precautionary principle underpinning Article 6(3) of the Habitats Directive, all marine SPAs within the inshore waters of the Irish Exclusive Economic Zone (EEZ) are screened in for Appropriate Assessment.

The screening of SPAs is undertaken having regard to the mobile and transient nature of both the proposed survey activities and the seabird qualifying interests for which SPAs are designated. Potential interaction pathways between INFOMAR survey operations and seabird qualifying interests have been identified in Section 3 of this report and differ according to seabird foraging ecology and behaviour.

Within SPAs, diving seabird species, such as Common Guillemot (*Uria aalge*), Razorbill (*Alca torda*), Atlantic Puffin (*Fratercula arctica*), European Shag (*Phalacrocorax aristotelis*) and Great Cormorant (*Phalacrocorax carbo*), forage within the water column and may therefore be exposed to underwater sound generated by vessel-based acoustic survey equipment during foraging dives. On this basis, potential effects on diving seabird qualifying interests are considered further within the Appropriate Assessment, including in relation to the application of mitigation measures, as set out in the Natura Impact Statement.



SPAs may also include surface-feeding seabird species as qualifying interests, such as Northern Fulmar (*Fulmarus glacialis*), European Storm Petrel (*Hydrobates pelagicus*) and Black-legged Kittiwake (*Rissa tridactyla*). These species forage predominantly at or near the sea surface and are not considered susceptible to underwater acoustic effects, due to the absence of a plausible underwater exposure pathway. For these species, potential interactions with INFOMAR survey activities are limited to temporary disturbance arising from vessel presence and associated above-water noise.

Given the transitory nature of survey vessel activity, the short duration of operations in any given area, and the wide-ranging behaviour of seabird qualifying interests, any such disturbance would be localised, short-term and reversible. While all SPAs are screened in at this stage on a precautionary basis, specific mitigation measures are only required in relation to diving seabird qualifying interests, for which a plausible underwater acoustic pathway exists.

#### **4.5 Screening Conclusions for SPAs**

On the basis of the information presented above, and having regard to the national-scale, mobile and transient nature of the proposed INFOMAR survey activities, all marine Special Protection Areas (SPAs) within the Irish inshore waters of the Exclusive Economic Zone (EEZ) are screened in for Appropriate Assessment.

While potential interaction pathways between survey activities and SPA qualifying interests are limited and differ according to seabird foraging ecology, likely significant effects on SPAs cannot be excluded at screening stage in the absence of mitigation, particularly in relation to SPAs designated for diving seabird species that may be exposed to underwater sound. Accordingly, a Stage 2 Appropriate Assessment (Natura Impact Statement) has been undertaken to assess the potential for adverse effects on the integrity of SPAs, alone or in combination with other plans or projects.

#### **4.6 Assessment of Likely Significant “In Combination” Effects**

In accordance with Article 6(3) of the Habitats Directive, the screening assessment has also considered whether the proposed INFOMAR survey operations could give rise to likely significant effects on Natura 2000 sites, either alone or in combination with other plans or projects.

The marine environment within Irish territorial waters and the Exclusive Economic Zone is subject to a range of existing and planned activities that may occur contemporaneously with the proposed survey operations. Such activities include, but are not limited to, commercial shipping and port-related operations, fishing activity, other marine survey and monitoring programmes, offshore renewable energy development, subsea cable and pipeline

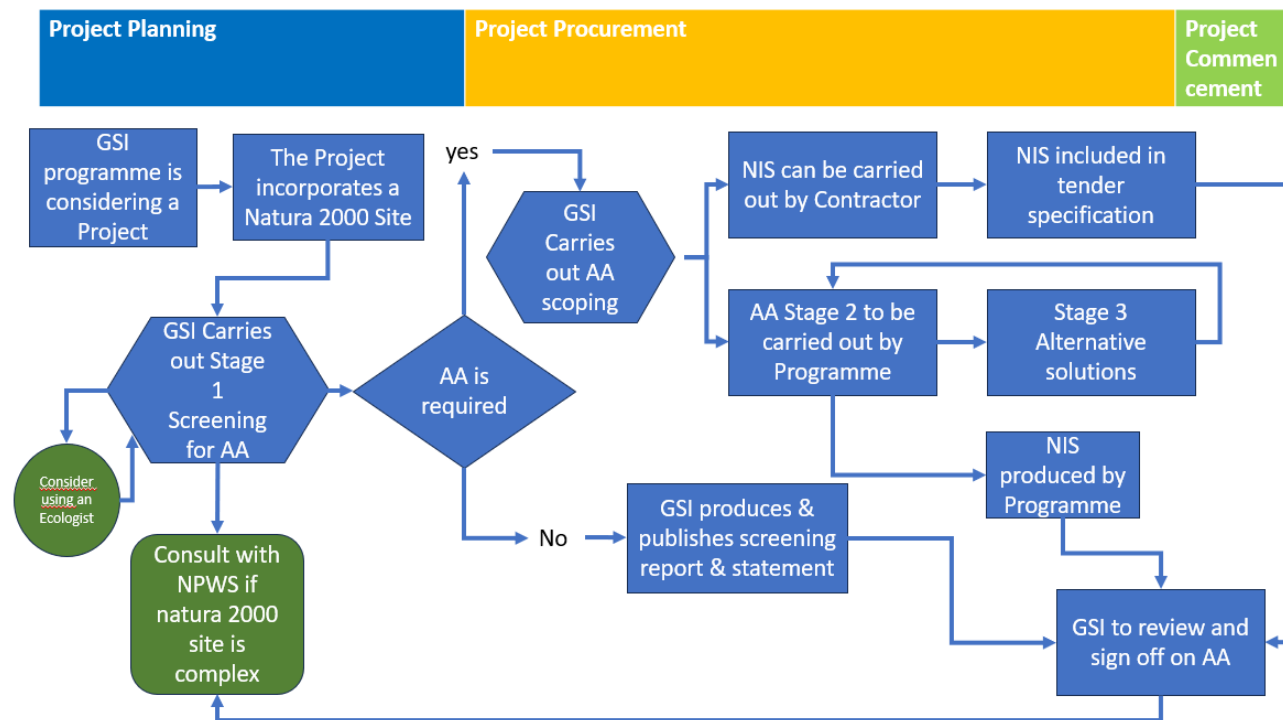


installation and maintenance, dredging and disposal activities, and marine construction and maintenance works.

Given the mobile and non-fixed nature of the proposed INFOMAR survey activities, and the potential for temporal and spatial overlap with other marine uses, it cannot be excluded at screening stage that in-combination effects may arise. Accordingly, the potential for in-combination effects is carried forward for further consideration in Stage 2 of the Appropriate Assessment through the preparation of a Natura Impact Statement.

Note that due to the national scope and non-fixed nature of the INFOMAR programme, the in-combination assessment is undertaken at the level of activity types and pressure pathways rather than by reference to individual plans or projects.

The AA scoping has been carried out, and a Natura Impact Statement is required – see GSI AA procedures flow chart below.



# 5. Natura Impact Statement

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## 5.1 Introduction

This Natura Impact Statement (NIS) has been prepared to support the Appropriate Assessment of the proposed INFOMAR survey operations, following the screening determination that likely significant effects on European sites cannot be excluded in the absence of mitigation.

The NIS assesses the potential for the proposed survey activities to result in adverse effects on the integrity of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), alone or in combination with other plans or projects, having regard to the conservation objectives of those sites.

The assessment focuses on the specific impact pathways identified at screening stage, and considers the effectiveness of proposed mitigation measures in avoiding or reducing potential effects to a level where adverse effects on site integrity can be excluded with reasonable scientific certainty.

## 5.2 Acoustic Mapping - SAC Species Impact Assessments

This section assesses the potential effects of acoustic mapping activities associated with the proposed INFOMAR survey operations on Special Areas of Conservation (SACs) designated for Annex II species. The assessment is informed by the Stage 1 Appropriate Assessment screening, which concluded that marine SACs could not be excluded and are therefore carried forward for further consideration.

Annex II species that are qualifying interests of SACs in Irish waters and are relevant to this assessment include cetaceans, namely Bottlenose Dolphin (*Tursiops truncatus*) and Harbour Porpoise (*Phocoena phocoena*); pinnipeds, namely Grey Seal (*Halichoerus grypus*) and Harbour Seal (*Phoca vitulina*); and other Annex II species, including Otter (*Lutra lutra*), Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Atlantic Salmon (*Salmo salar*).

Acoustic mapping undertaken as part of INFOMAR survey operations involves vessel-mounted acoustic equipment that generates underwater sound across a range of frequencies. The relevance of this pathway varies between Annex II species according to their auditory capabilities, ecology and behaviour.

### Cetaceans

*Tursiops truncatus* (Bottlenose Dolphin) [1349]



Bottlenose dolphins are odontocete cetaceans and are classified as mid-frequency cetaceans, with functional hearing sensitivity broadly within the range of approximately 150 Hz to 160 kHz, and greatest sensitivity in the mid- to high-frequency bands (Southall et al., 2007). As a species that relies heavily on sound for navigation, communication and echolocation, bottlenose dolphins may be sensitive to underwater sound generated during acoustic survey operations. There is potential for temporary behavioural disturbance, such as short-term avoidance of the immediate vicinity of an ensonified area, should bottlenose dolphins pass through the survey area during acoustic mapping activities (see Section 3.1).

#### *Phocoena phocoena* (Harbour Porpoise) [1351]

Harbour porpoises are classified as high-frequency cetaceans, with hearing sensitivity extending from approximately 250 Hz to above 180 kHz, and peak sensitivity at frequencies above 10 kHz (Southall et al., 2007). This species is considered particularly acoustically sensitive due to its reliance on high-frequency echolocation signals for foraging and navigation. As a result, there is potential for temporary behavioural disturbance, including short-term avoidance behaviour, if harbour porpoises pass through an ensonified area during acoustic mapping operations (see Section 3.1).

### **Pinnipeds**

#### *Halichoerus grypus* (Grey Seal) [1364]

Grey seals are sensitive to tonal sounds within the 8–40 kHz frequency range (Southall et al., 2007). There is potential for temporary behavioural disturbance if grey seals pass through an ensonified area during acoustic survey operations (see Section 3.1).

#### *Phoca vitulina* (Harbour Seal) [1365]

Harbour seals are sensitive to tones within the frequency range 4–45 kHz, with peak sensitivity at approximately 32 kHz (O'Brien, Berrow and Wall, 2005). As with grey seals, there is potential for temporary behavioural disturbance if individuals pass through an ensonified area during survey operations (see Section 3.1).

### **Semi-aquatic mammals**

#### *Lutra lutra* (Otter) [1355]

At the time of writing, no published, species-specific research is available on the hearing thresholds of the Eurasian Otter (*Lutra lutra*). However, Ghoul & Reichmuth (2014) examined the auditory capabilities of the Sea Otter (*Enhydra lutris*) and found that underwater hearing sensitivity was significantly reduced when compared to sea lions and other pinniped species, indicating that sea otter hearing is primarily adapted to receive airborne sounds. Given this evidence, together with the fact that otters spend comparatively limited time submerged relative to cetaceans and pinnipeds, the potential for interaction



with underwater sound generated during offshore acoustic mapping activities is considered to be very low.

### **Migratory fish species**

#### **Petromyzon marinus (Sea Lamprey) [1095]**

Mickle et al. (2018) investigated the auditory responses of sea lampreys and concluded that they are unable to detect sounds above approximately 300 Hz. This frequency range is well below that produced by the acoustic instruments used during INFOMAR survey operations, which operate in the kilohertz (kHz) range. On this basis, sea lamprey are not considered susceptible to underwater sound generated by the proposed works.

#### **Lampetra fluviatilis (River Lamprey) [1099]**

According to Popper (2005), the auditory system of lampreys is relatively simple, with no structural features suggesting specialisation beyond a generalist hearing capability, with maximum sensitivity not exceeding several hundred hertz. Although the study by Mickle et al. (2018) focused on sea lamprey, that information, together with the findings of Popper (2005), indicates that river lamprey are likewise not sensitive to sound in the kHz range and are therefore not expected to be affected by acoustic survey equipment.

#### **Salmo salar (Atlantic Salmon) [1106]**

Hawkins et al. (2006) demonstrated that Atlantic salmon respond only to sound frequencies below approximately 380 Hz, concluding that their hearing sensitivity is relatively poor. As the acoustic instruments used during INFOMAR survey operations emit sound in the kHz range, Atlantic salmon are not considered susceptible to disturbance arising from underwater sound generated during acoustic mapping activities.

### **Summary**

Potential effects associated with acoustic mapping activities are therefore limited to temporary behavioural disturbance, principally in relation to cetacean and pinniped SAC qualifying interests, for which a plausible underwater sound exposure pathway exists. For otter and Annex II migratory fish species, available evidence indicates limited or no sensitivity to the sound frequencies produced by the proposed survey equipment. The requirement for mitigation measures, and their role in avoiding adverse effects on the integrity of SACs having regard to their conservation objectives, is addressed separately in Section 5.6.



### 5.3 Acoustic Mapping - SPA Species Impact Assessments

This section assesses the potential effects of acoustic mapping activities associated with the proposed INFOMAR survey operations on Special Protection Areas (SPAs) designated for seabird species, following the Stage 1 screening determination that SPAs could not be excluded from Appropriate Assessment.

As established in Section 3.2, a plausible interaction pathway exists only for diving seabird species, which may be subject to temporary disturbance during foraging dives in the vicinity of survey operations. Any potential effects on diving seabirds arising from acoustic mapping activities are limited to short-term behavioural disturbance, such as temporary avoidance of the immediate survey area. INFOMAR survey operations are mobile, intermittent and of short duration at any given location, and do not involve fixed infrastructure. On this basis, any disturbance would be localised, temporary and reversible and is not expected, in itself, to affect SPA conservation objectives.

Potential interactions with surface-feeding seabirds are limited to temporary disturbance arising from vessel presence and above-water noise. As with diving seabirds, any such disturbance would be short-term, localised and reversible, reflecting the mobile nature of INFOMAR survey operations, and is not considered likely to result in significant effects on SPA conservation objectives.

Notwithstanding the above, and applying the precautionary principle, mitigation measures specific to diving seabirds are proposed and are set out in Section 5.10. With the implementation of these measures, acoustic mapping activities associated with the proposed INFOMAR survey operations will not result in adverse effects on the integrity of SPAs, either alone or in combination with other plans or projects, having regard to their conservation objectives.

### 5.4 Seabed Sampling - Habitats Impact Assessments

#### Reefs [1170]

Seabed sampling will not be carried out over reefs (which by definition are rocky ground), as the Day Grab and Van Veen Grabs described in Section 2.1 are exclusively soft sediment samplers. Sampling locations are targeted using backscatter maps and so rocky ground is avoided. There will therefore be no impact by any seabed sampling campaigns on reef habitats.

**All other habitats** (Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Submarine structures made by leaking gases [1180], Sandbanks which are slightly covered by sea water all the time [1110], Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation [3260])



Due to the relatively small footprint of this sampling equipment and the sparse distribution of the sampling sites, the impact on any seabed habitat is considered to be negligible. Biological sampling will not be carried out in Natura 2000 sites.

## 5.5 Impact Conclusions

The assessment presented in Sections 5.2 to 5.4 has examined the potential effects of the proposed INFOMAR survey operations on the qualifying interests of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), having regard to the conservation objectives of those sites.

In the absence of mitigation, the only impact pathway identified as potentially relevant is temporary disturbance arising from underwater sound associated with acoustic survey activities. Vessel presence associated with INFOMAR survey operations is temporary, mobile and comparable to routine vessel traffic occurring within Irish inshore waters and Natura 2000 sites and, on this basis, is not considered to give rise to likely significant effects.

Accordingly, marine mammals (cetaceans and pinnipeds) designated as Annex II species within SACs, and diving seabirds designated as qualifying interests of SPAs, are the only receptors for which likely significant effects cannot be excluded at this stage.

For other Annex II species, including otter and migratory fish species, available evidence indicates limited or no sensitivity to the sound frequencies produced by the proposed survey equipment, and no likely significant effects have been identified. Similarly, surface-feeding seabirds are not considered susceptible to underwater acoustic effects, with any potential interaction limited to temporary disturbance from routine vessel presence, which is not considered likely to result in significant effects on SPA conservation objectives.

Seabed sampling activities associated with the INFOMAR programme are limited in extent and duration and are not expected to result in significant effects on Annex I habitats. Seabed sampling will not be undertaken over reef habitats, and biological sampling will not occur within Natura 2000 sites.

Accordingly, and in the absence of mitigation, the assessment concludes that likely significant effects cannot be excluded in respect of temporary acoustic disturbance to marine mammals and diving seabirds within relevant Natura 2000 sites. The need for mitigation measures to avoid adverse effects on the integrity of these sites, having regard to their conservation objectives, is therefore addressed in the following sections.

## 5.6 Mitigation for Marine Mammals

This section assesses whether the application of mitigation measures can avoid or reduce the potential effects identified in Section 5.2 to a level where adverse effects on the integrity of Special Areas of Conservation (SACs), designated for Annex II species, can be excluded, having regard to their conservation objectives.



## **Basis for mitigation**

The mitigation measures proposed for INFOMAR survey operations are informed by those previously required by the Department of Arts, Heritage and the Gaeltacht (DAHG) in granting permission to undertake acoustic survey activities within the Lower River Shannon SAC in 2011 and West Connacht Coast SAC in 2014. These measures represent established national practice for the protection of marine mammals during acoustic survey operations in Irish waters and form the basis for the mitigation framework applied in this Appropriate Assessment.

As set out in Section 5.2, potential effects associated with acoustic mapping activities are limited to temporary behavioural disturbance, principally in relation to cetacean and pinniped SAC qualifying interests, for which a plausible underwater sound exposure pathway exists. For otter and Annex II migratory fish species (sea lamprey, river lamprey and Atlantic salmon), available evidence indicates limited or no sensitivity to the sound frequencies produced by the proposed survey equipment, and no specific mitigation measures are therefore required for these species.

## **Marine mammal observation and monitoring**

During all proposed INFOMAR survey operations, the Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters will be fully adhered to. Suitably qualified Marine Mammal Observers (MMOs) will be engaged to undertake visual monitoring during daylight survey operations, with monitoring focused on the survey vessel and surrounding waters, recognising the mobility of marine mammals and diving seabirds and the potential for such species to occur both within and beyond designated site boundaries.

Prior to commencing survey operations, the MMO will carry out 30 minutes of monitoring. Survey sonar systems will not be switched on until 30 minutes have elapsed with no relevant marine mammals detected in the monitoring zone.

Following this, a “soft start” activity will commence. Depending on the nature of the sonar system, it will either be gradually brought up to full power over the course of 20 minutes, or switched on and off intermittently over 20 minutes in a consistent sequential manner.

MMOs will be responsible for maintaining a dedicated watch for cetaceans and seals and for implementing mitigation procedures in accordance with the Code of Practice and NPWS guidance. MMO duties will include the coordination of pre-activation monitoring and soft-start procedures, and liaison with the survey Chief Scientist, bridge crew and survey personnel to ensure compliance with mitigation requirements.

## **Additional mitigation measures**

In addition to MMO-led monitoring, the following mitigation measures will be implemented during INFOMAR survey operations:



- Survey operations will be restricted to daylight hours to maximise the effectiveness of visual monitoring;
- INFOMAR will comply fully with the NPWS Guidance on Underwater Sound Sources (2014);
- All personnel onboard, including ship's crew and scientific staff, will be briefed in advance of survey commencement on marine mammal sensitivities and mitigation requirements, and instructed to report sightings of cetaceans or seals to the MMO on watch;
- MMOs will attend a pre-survey briefing to review and confirm mitigation procedures and lines of communication;
- The MMO on watch will assess prevailing visibility conditions and provide advice to survey personnel in relation to the timing and conduct of acoustic survey activities, in accordance with standard MMO practice; and
- Daily MMO operations and effort logs will be maintained, with records compiled at the end of each field season and submitted to NPWS as part of an annual MMO report, together with cetacean sighting data covering all relevant GSI survey legs.
- All survey activities will be conducted in strict compliance with Section 23 of the Wildlife Acts (as amended), which provides for the strict protection of species listed under Annex IV (and relevant Annex II species) of the Habitats Directive, including the prohibition of deliberate disturbance, injury, or damage to breeding or resting places.

These measures also support compliance with the Wildlife Acts, including provisions relating to the protection of species listed under Annex II and Annex IV of the Habitats Directive, through standard marine mammal protection protocols.

### **Assessment of site integrity**

With the application of the mitigation measures outlined above, any potential disturbance to cetacean and pinniped SAC qualifying interests is expected to be localised, short-term and reversible, and restricted to the immediate vicinity of the survey vessel. Given the mobile and transient nature of INFOMAR survey operations, the absence of fixed infrastructure, and the short duration of activity in any given area, there is no mechanism by which such disturbance would result in long-term displacement, habitat exclusion, or changes to the structure or function of SACs.

In light of the above, and having regard to the conservation objectives of the relevant SACs, and taking account of the mitigation measures described, it is concluded that the proposed survey activities, either alone or in combination with other plans or projects, will not adversely affect the integrity of any SAC.



## 5.7 Impact / Mitigation Matrix – Marine Mammals

The following impact mitigation matrix (Table 5) provides a structured summary of the potential impacts and mitigation measures considered in relation to marine mammals

System	Model	Frequencies KHz	Potential Impact	Mitigation
<b>Multibeam Echo Sounder</b>	EM3002	293	<ul style="list-style-type: none"> <li>• Disturbance (including short-term behavioural responses such as avoidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Soft start, where applicable to system design, with gradual or intermittent power up before beginning survey</li> <li>• MMO to monitor marine mammals in the vicinity</li> </ul>
		307		
	EM2040	300		
	T20P	420		
	R2Sonic	450		
<b>Sub Bottom Profiler</b>	3200XS CHIRP	3.5	<ul style="list-style-type: none"> <li>• Disturbance (including short-term behavioural responses such as avoidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Soft start, where applicable to system design, with gradual or intermittent power up before beginning survey</li> <li>• MMO to monitor marine mammals in the vicinity</li> </ul>
		10		
		12		
<b>Ultra-Short Baseline</b>	Scout USBL	35 to 55	<ul style="list-style-type: none"> <li>• Disturbance (including short-term behavioural responses such as avoidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Soft start, where applicable to system design, with gradual or intermittent power up before beginning survey</li> <li>• MMO to monitor marine mammals in the vicinity</li> </ul>
<b>Singlebeam Echo Sounder</b>	EA400	38	<ul style="list-style-type: none"> <li>• Disturbance (including short-term behavioural responses such as avoidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Soft start, where applicable to system design, with gradual or intermittent power up before beginning survey</li> <li>• MMO to monitor marine mammals in the vicinity</li> </ul>
		200	<ul style="list-style-type: none"> <li>• Disturbance (including short-term behavioural responses such as avoidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Soft start, where applicable to system design, with gradual or intermittent power up before beginning survey</li> <li>• MMO to monitor marine mammals in the vicinity</li> </ul>

**Table 11: Equipment Impact / Mitigation Matrix**



## 5.8 Mitigation – Diving Seabirds

This section sets out the mitigation measures proposed to address the potential for temporary disturbance to diving seabirds arising from acoustic mapping activities associated with the proposed INFOMAR survey operations.

As identified in Sections 3.2 and 5.3, a plausible interaction pathway exists only for diving seabird species, which may be exposed to underwater sound during foraging dives in the vicinity of survey operations. Potential effects are limited to short-term behavioural disturbance and temporary displacement. The mitigation measures described below are intended to ensure that such disturbance does not give rise to adverse effects on the integrity of Special Protection Areas (SPAs), having regard to their conservation objectives.

### Basis for mitigation

The mitigation approach adopted for diving seabirds is informed by the mitigation framework applied in DCEE Appropriate Assessments and Natura Impact Statements for offshore marine activities, including offshore renewable energy surveys, where potential disturbance pathways are similarly limited, temporary and localised. Consistent with this approach, mitigation focuses on controlling the duration, intensity and spatial extent of acoustic activity and ensuring effective implementation of existing marine fauna protection measures.

### Mitigation measures

The following mitigation measures will be implemented during INFOMAR acoustic survey operations and are relied upon to address potential disturbance to diving seabirds:

Acoustic survey operations will be undertaken on a mobile and intermittent basis, with vessels present in any given area for a short duration only, thereby limiting the spatial and temporal extent of any potential disturbance.

Soft-start (ramp-up) procedures, implemented in accordance with the Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters, will also serve to reduce the likelihood of sudden exposure of diving seabirds to underwater sound by allowing mobile fauna to move away from the immediate vicinity of survey operations.

Survey operations will be restricted to daylight hours, which supports effective visual



monitoring by Marine Mammal Observers (MMOs) and contributes to the overall management of disturbance to marine fauna.

The presence of suitably qualified MMOs onboard survey vessels, while primarily focused on marine mammals, provides an additional layer of awareness of seabird activity in the vicinity of survey operations and supports adaptive operational decision-making where elevated seabird activity is observed.

Where the MMO observes a significant cluster of actively fishing, diving birds in the survey pathway, within 500 m of the vessel and within a 500m buffer zone of an SPA, the survey route will be modified to aim to maintain a 500m buffer distance from the diving birds.

INFOMAR will fully comply with relevant DCEE and NPWS guidance on the management of underwater sound, ensuring that acoustic survey activities are conducted in accordance with established national best practice.

### **Mitigation outcome**

With the implementation of the mitigation measures described above, any disturbance to diving seabirds arising from INFOMAR acoustic mapping activities will be short-term, localised and reversible. On this basis, and having regard to the conservation objectives of relevant SPAs, the proposed mitigation is sufficient to ensure that acoustic survey operations will not result in adverse effects on the integrity of SPAs, either alone or in combination with other plans or projects.

## **5.9 Mitigation of In-Combination Effects**

Potential in-combination effects have been considered in the context of other plans and projects that may result in similar, temporary underwater noise or disturbance within the wider marine environment. The survey activities proposed are of low intensity, short duration, and spatially limited, and are comparable in nature to other routine marine survey operations. The implementation of the mitigation measures outlined in this Appropriate Assessment, including adherence to relevant wildlife legislation and standard marine mammal observation procedures, serves to reduce the likelihood of cumulative disturbance to qualifying interests of European sites. In light of the characteristics of the proposed activities and the application of these measures, no significant in-combination effects are anticipated, and no additional mitigation specific to in-combination effects is considered necessary.



## 6. Conclusion

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This Appropriate Assessment has been informed by the European Commission DG Environment guidance document, *“Assessment of plans and projects significantly affecting Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC”*.

Mitigation procedures have been proposed based on a review of best survey practice at international level and are considered sufficient to reduce the likelihood of significant adverse effects on marine mammals and diving seabirds, should such species be encountered within the referenced SACs or SPAs during survey operations.

INFOMAR has undertaken routine seabed mapping activities within SACs on an annual basis in cooperation with National Parks and Wildlife Service and in accordance with applicable guidelines, licensing and mitigation requirements of the Department of Housing, Local Government and Heritage, with no adverse incidents reported to date.

The protection and management of Natura 2000 sites within the intended area of operations are expected to benefit from the addition of INFOMAR baseline survey data. INFOMAR will proceed with the acquisition and dissemination of marine mapping information while ensuring that appropriate measures are applied to protect the marine environment. An annual report on protection measures implemented by survey crews will be provided to NPWS following completion of annual operations.

On the basis of the assessment undertaken, and taking account of the mitigation measures described, it is concluded that the proposed survey activities will not adversely affect the integrity of any of the identified Natura 2000 sites.



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# Appendix A

## Checklist A: Stages of GSI AA Process Completed

This Checklist can be used to ensure that the steps in the GSI AA process have been followed and completed.

This table can be used as an appendix to your AA demonstrating that you are following the process.

Programme	INFOMAR
Project Name	2026 GSI Inshore Survey
Project Manager	Sean Cullen
Date Check list completed	08/01/2026
Checklist Approved Date & Approver	N/A

Project Planning		Y ✓	N ✗
Does the project incorporate a Natura 2000 site or have the potential to impact one?	If No AA is not required If Yes continue to Stage 1 Screening	Y	
Is the project or plan directly connected to or necessary for the management of the Natura site and is unlikely to have significant effects on the Natura 2000 site?	If No continue with Stage 1 Screening If Yes move directly to the relevant authorisation procedures		N

Stage 1 Screening	Task	Y ✓	N ✗
	Is an Ecologist required?		N
	Was NPWS EGAU consulted?	Y	
	Detailed description of plan/project, area characteristics.	Y	
	Natura 2000 sites listed, including a compilation of 'qualifying interests & conservation objectives'.	Y	
	Assessment of likely effects & significance of impact matrix.	Y	
	Screening statement & conclusion	Y	
Project Procurement			
Stage 2 AA (NIS)		Y ✓	N ✗
	Scope of proposed work and the potentially affected Natura sites with regard to their conservation objectives.	Y	
	Consultation with NPWS.	Y	
	Nature of potential impacts without mitigation.	Y	
	Proposed mitigation measures to offset any adverse effects.	Y	
	NIS Conclusions.	Y	
Stage 3 Alternative Solutions		Y ✓	N ✗



	Identify alternative solutions		N/A
	Demonstrate that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected.		N/A
	Assess the effects on the integrity of Natura 2000 sites (returning to Stage 2 as alternatives will require appropriate assessment in order to proceed).		N/A
	If No Alternative Solutions exist IROPI is required.		N/A



# Appendix B

## Checklist B: Information to be included in the AA (after Box 6, EC (2002))

This Checklist can be used to ensure that all data required by legislation is included in your AA, this table is based on the “*Appropriate Assessment of Projects and Plans in Ireland – Guidance for Planning Authorities; Department of Environment, Heritage and Local Government (NPWS), amended 2011*” referring to “*Box 6, Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC; EC (2002)*”.

This table can be used as an appendix to your AA demonstrating that you are following the methodology.

<b>Information about the Project or Plan</b>	<b>Y✓</b>	<b>N ✘</b>	<b>If No, then provide a short reason or refer to report section</b>
Full characteristics of the project or plan which may affect the site	Y		
The total range or area the plan will cover	Y		
Size and other specifications of the project	Y		
The characteristics of existing, proposed or other approved projects or plans which may cause interactive or cumulative impacts with the project being assessed and which may affect the site	Y		
Planned or contemplated nature conservation initiatives likely to affect the status of the site in the future		N	GSI work/presence in the area is temporary
The relationship (e.g. key distances etc.) between the project or plan and the Natura 2000 site	Y		
<b>Information about the Natura 2000 site</b>	<b>Y✓</b>	<b>N ✘</b>	<b>If No, then provide a short reason or refer to report section</b>
The reasons for the designation of the Natura 2000 site.	Y		See boundary data and SAC reports on npws.ie
The conservation objectives/qualifying interests of the site and the factors that contributes to the conservation value of the site.	Y		See boundary data and SAC reports on npws.ie See boundary data and SAC reports on npws.ie
The conservation status of the site (favourable or otherwise)	Y		See boundary data and SAC reports on npws.ie
The existing baseline condition of the site	Y		See boundary data and SAC reports on npws.ie
The key attributes of any Annex I habitats or Annex II species on the site	Y		See boundary data and SAC reports on npws.ie
The physical and chemical composition of the site	Y		See boundary data and SAC reports on npws.ie

The dynamics of the habitats, species and their ecology	Y		See boundary data and SAC reports on npws.ie
Those aspects of the site that is sensitive to change	Y		See boundary data and SAC reports on npws.ie
The key structural and functional relationships that create and maintain the site's integrity	Y		See boundary data and SAC reports on npws.ie
The seasonal influences on the key Annex I habitats or Annex II species on the site	Y		See boundary data and SAC reports on npws.ie
Other conservation issues relevant to the site, including likely future natural changes taking place	Y		See boundary data and SAC reports on npws.ie

# Appendix C

## Checklist C: Integrity of Site Checklist AA (after Box 10, EC (2002))

This Checklist can be used to demonstrate that from the information gathered and the predictions made about the changes that are likely to result from the construction, operation or decommissioning stages of the project or plan that adverse effects on the integrity of the natura 2000 site have been considered. This table is based on the “*Appropriate Assessment of Projects and Plans in Ireland – Guidance for Planning Authorities; Department of Environment, Heritage and Local Government (NPWS), amended 2011*” referring to “*Box 10, Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC; EC (2002)*”.

This table can be used as an appendix to your AA demonstrating that you are following the methodology.

<b>Conservation objectives: does the project or plan have the potential to:</b>	<b>Y✓</b>	<b>N ✘</b>	<b>If Yes, then provide a short reason or refer to report section</b>
Cause delays in progress towards achieving the conservation objectives of the site?		N	
Interrupt progress towards achieving the conservation objectives of the site?		N	
Disrupt those factors that help to maintain the favourable conditions of the site?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
<b>Other objectives: does the project or plan have the potential to:</b>	<b>Y✓</b>	<b>N ✘</b>	<b>If Yes, then provide a short reason or refer to report section</b>
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?		N	
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?		N	
Reduce the area of key habitats?		N	
Reduce the population of key species?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
Change the balance between key species?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
Reduce diversity of the site?	Y		Acoustic disturbance, mitigation required – see

			AA and NIS reports
Result in disturbance that could affect population size or density or the balance between key species?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
Result in fragmentation?		N	
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?		N	