INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Geological Survey Ireland

Marine Survey Operations 2025

Appropriate Assessment Screening and Natura Impact Statement

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
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Climate and Communications

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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

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Version History

Version	**Comments**
Draft	22/01/2025 – Flow charts and Appendices added.

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1. Introduction

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 the Environment, Climate and Communications.

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.

These SACs 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 SAC areas 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 SAC areas. 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 an SAC 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 NPWS designated SAC areas are profiled as part of the 2025 INFOMAR acquisition programme. This Appropriate Assessment aims to ensure adequate mitigation measures can be defined for the proposed acoustic survey activities to be undertaken. It aims to address the requirements under the Habitats Directive, 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 derrogation 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).

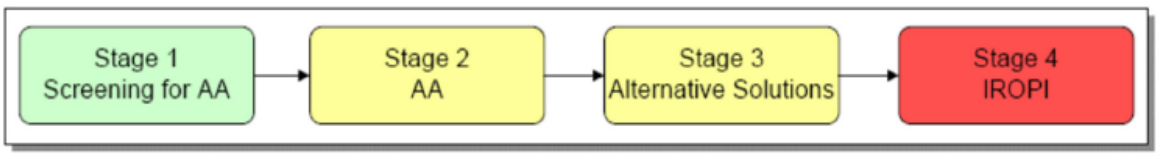


Figure 1. Stages in the AA process (Source: DEHLG, 2009)

(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 it 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 case18. 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.

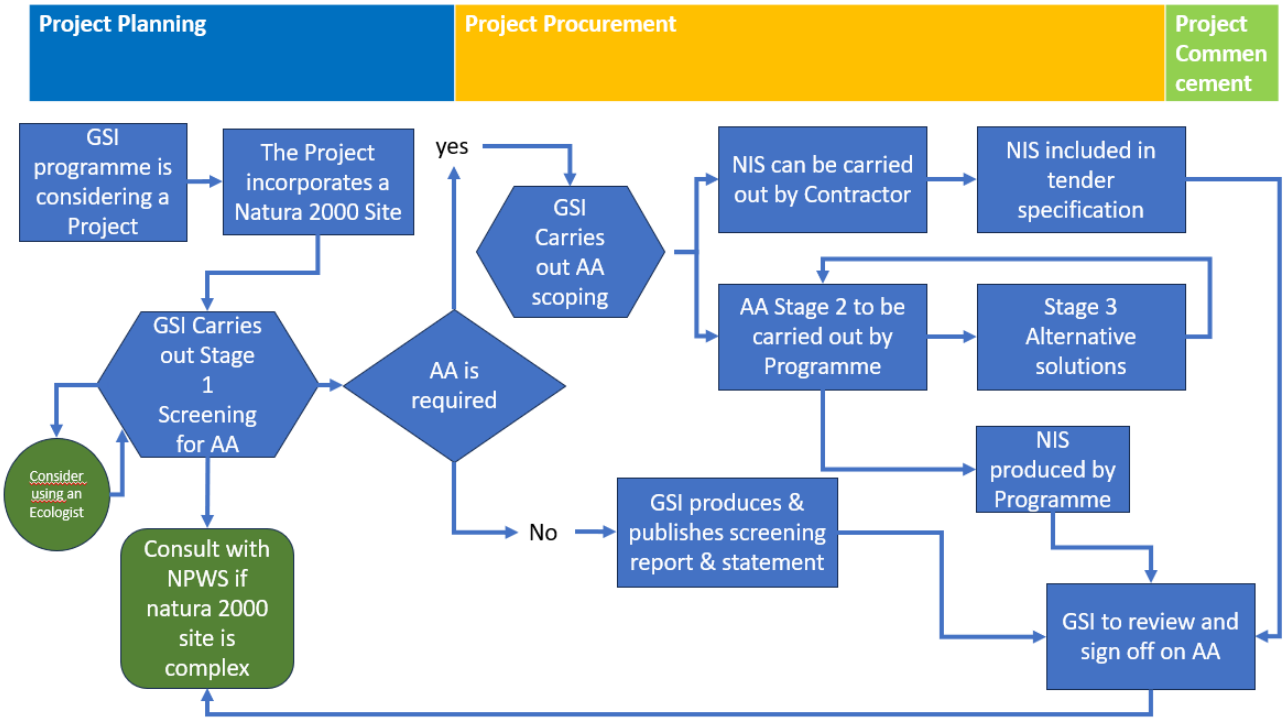


Figure 2. Geological Survey Ireland AA and NIS Procedure

2. Scope of Work

2.1 INFOMAR Operations

From 1st March 2025 through to end of December 2025 it is proposed to survey at key areas along the coast of Co. Donegal, with the focus on mapping as near to shore as safely possible (typically between 2m and 0m LAT). While survey work is not planned in other areas around the coast of Ireland in 2025, it is possible that the survey vessels can be relocated opportunistically to any location nationally due to changing weather conditions or berth availability in ports and harbours – therefore all marine SACs in Ireland's inshore waters potentially impacted by GSI marine survey operations are included in this Appropriate Assessment.

All areas of potential marine survey operations are outlined in Figure 2 and all SAC sites listed on the NPWS website (https://www.npws.ie/protected-sites/sac) identified as potential concerns are also displayed.

The survey will be conducted to IHO "Order 1a" standard and the data will be used to update the navigational charts and, once ratified, it will be available for free via the INFOMAR website (www.infomar.ie).

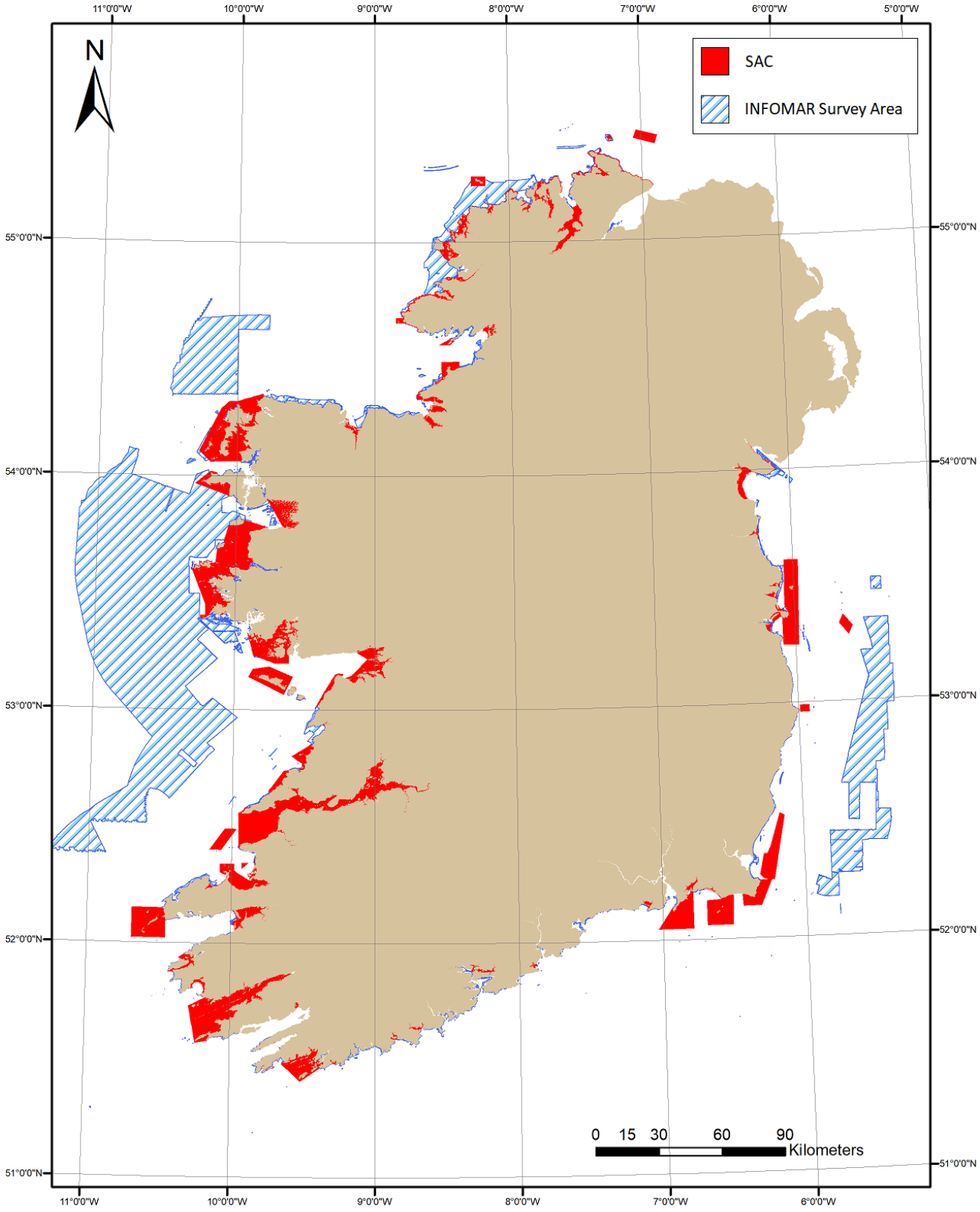


Figure 3: Potential Areas of INFOMAR Survey Operations 2025

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.

Acoustic Survey Equipment – R.V. Keary			
Equipment	**Model**	**Deployment**	**Company**
Multibeam Echo Sounder	EM2040 (200, 300 & 400 kHz)	Retractable hull mount	**Kongsberg Maritime:** http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/B7D372808AE6002DC1257583002F1122?OpenDocument&Count=-1&Cat=Support
Singlebeam Echo Sounder	EA400 (38 & 200 kHz)	Retractable hull mount	**Kongsberg Maritime:** http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/E4515C34D66E4673C1257583002F2524?OpenDocument&Count=-1&Cat=Support
Sub-Bottom Profiler	Edgetech 3200XS CHIRP (1-12 kHz)	Retractable hull mount	**Edgetech:** https://www.edgetech.com/wp-content/uploads/2019/07/0004840_REV_E.pdf

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

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

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

Acoustic Survey Equipment – R.V. Lir			
Equipment	**Model**	**Deployment**	**Company**
Multibeam Echo Sounder	Reson T20P dual-head (200-400 kHz)	Retractable bow mount	**Reson T20P**: http://www.teledyne-reson.com/products/echo-sounder-seabat/seabat-t20-p/

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

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

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

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

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

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

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^2 area of seabed and can potentially retrieve a volume of approximately 15 litres of sediment.

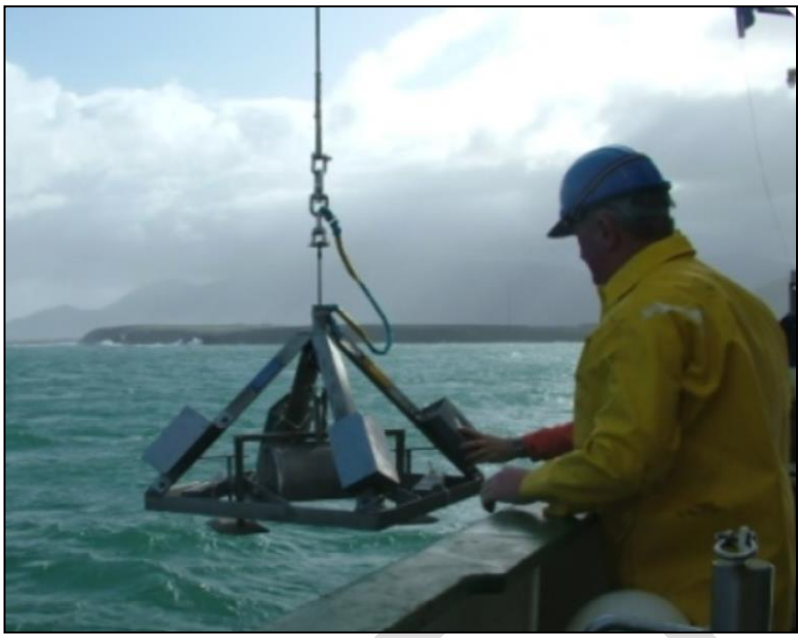


Figure 4: Day Grab

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^2 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.

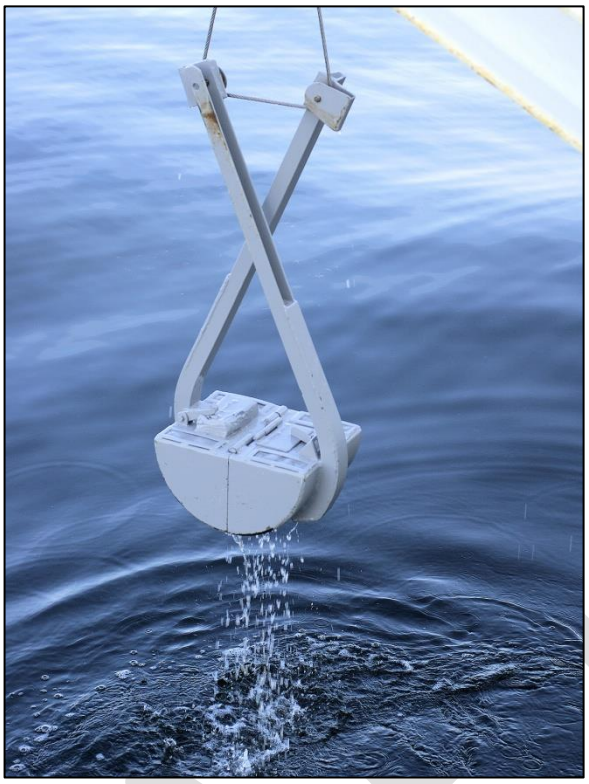


Figure 5: Van Veen Grab

2.2 Survey Vessels

The INFOMAR programme envisions the utilisation of five vessel platforms equipped for inshore hydrographic survey operations during 2024.

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 6: INFOMAR Inshore Survey Platforms

3. Potential Impacts

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.

Potential impacts relate to the possibility of disturbance associated with acoustic transmissions from survey echo sounder equipment.

3.2 Sampling Impact on Seabed Habitats

GSI survey vessels, particularly the R.V. Keary, occasionally carry out sediment sampling for the purposes of ground truthing seabed classification maps, a key source of data for the production of habitat maps. Typically, the equipment used in Section 2.1 is used.

Due to the relatively small footprint of this sampling equipment and the well spaced-out nature of the sampling sites, the impact on any seabed habitat is considered to be negligible.

3.3 Consultation

The INFOMAR programme has engaged in discussions with IWDG, CMRC, and RPS relating to implications and risks associated with routine INFOMAR survey activities, and also engaged expert acoustic advice in relation to impacts associated with the acoustic equipment.

Equipment manufacturers (Kongsberg Maritime, Reson) and 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.

3.4 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.

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

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^2 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).

SYSTEM	Power Level @1m	Power Level @10m	Power Level @100m	Power Level @1000m	180 dB Dist. From Source
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.

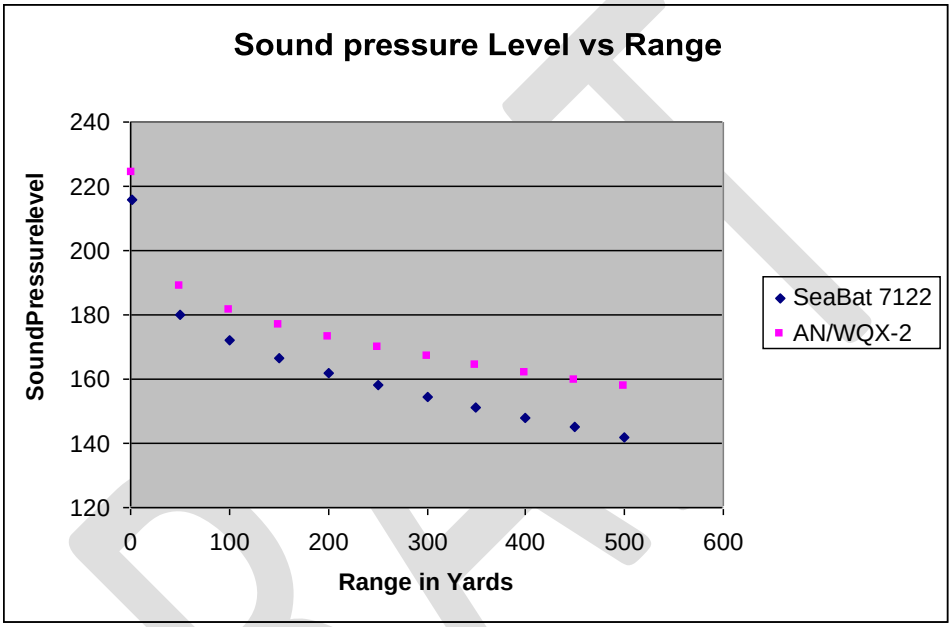


Figure 7: Sound attenuation of mid frequency multibeam

SCAR (2002)[1] recommended a method of assessing the potential risk of acoustic surveys to marine mammals by asking questions and constructing a risk matrix.

Questions that should be addressed include:

- Can the equipment physically kill or injure an animal and if so at what range?
- Can the equipment damage an animal's hearing and if so over what range?
- Does the use of the equipment affect animal behaviour and over what area?

- Does the behavioural disturbance constitute a threat to populations by changing behaviour at critical times and in critical areas?
- Will a survey affect large numbers of animals, a small important group of animals or
  Will the area be free of most species during the survey?
- Will a survey affect prey species in a way that will increase or decrease their availability to predators?
- What proportion of an area used by animals is affected by the survey?

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	*Balaena, Caperea, Eschrichtius, Megaptera, Balaenoptera* (13 species/subspecies)	M_{lf} (lf: low-frequency cetaceans)
Mid-frequency cetaceans	150 Hz to 160 kHz	*Steno, Sousa, Sotalia, Tursiops, Stenella, Delphinus, Lagenodelphis, Lagenorhynchus, Lissodelphis, Grampus, Peponocephala, Feresa, Pseudorca, Orcinus, Globicephala, Orcacella, Physeter, Delphinapterus, Monodon, Ziphius, Berardius, Tasmacetus, Hyperoodon, Mesoplodon* (57 species/subspecies)	M_{mf} (mf: mid-frequency cetaceans)
High-frequency cetaceans	200 Hz to 180 kHz	*Phocoena, Neophocaena, Phocoenoides, Platanista, Inia, Kogia, Lipotes, Pontoporia, Cephalorhynchus* (19 species/subspecies)	M_{hf} (hf: high-frequency cetaceans)
Pinnipeds in water	75 Hz to 75 kHz	*Arctocephalus, Callorhinus, Zalophus, Eumetopias, Neophoca, Phocarctos, Otaria, Erignathus, Phoca, Pusa, Halichoerus, Histriophoca, Pagophilus, Cystophora, Monachus, Mirounga, Leptonychotes, Ommatophoca, Lobodon, Hydrurga, Odobenus* (41 species/subspecies)	M_{pw} (pw: pinnipeds in water)
Pinnipeds in air	75 Hz to 30 kHz	Same species as pinnipeds in water (41 species/subspecies)	M_{pa} (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.

While the impact of the instruments discussed above on marine mammals is considered to be low risk, a series of measures to mitigate against any potential impact are nonetheless proposed in the next chapter.

4. Screening for Appropriate Assessment

5.1 Identification of Relevant Natura 2000 Sites

Figures 5 and 6 below display the potential seabed survey extents as described in Section 2.1. Natura 2000 sites whose extents overlap the survey areas, including an outer buffer zone of 15km, are also displayed. Because of the underwater nature of the survey work, only Natura 2000 sites with some marine element are included in this screening. All of these sites are listed in Table 9.

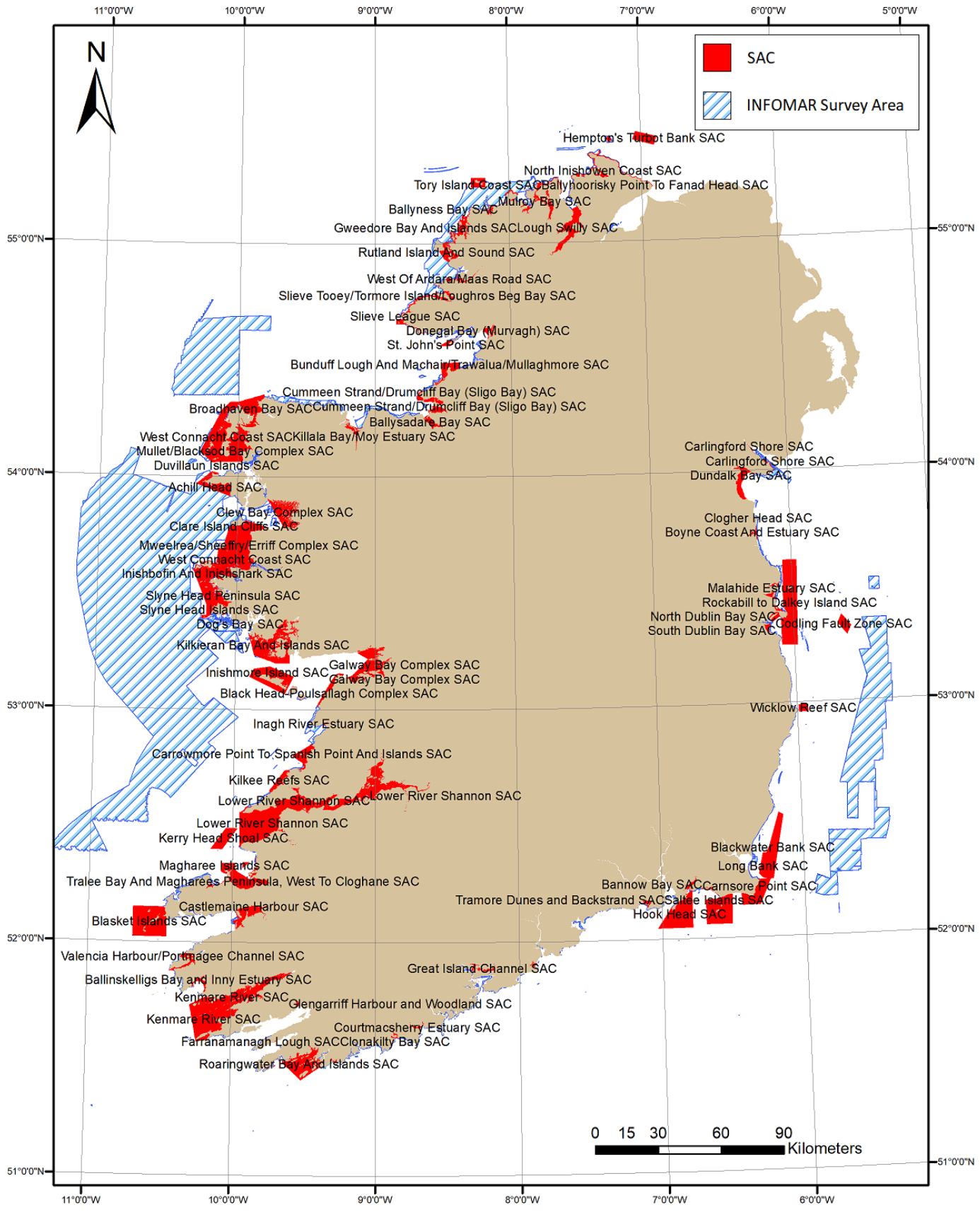


Figure 8: All Potential Inshore Survey Extents & Relevant Natura 2000 Sites

From this list, the Natura 2000 sites considered relevant and screened in for Appropriate Assessment are those which have Conservations 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 Natura 2000 site, 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.

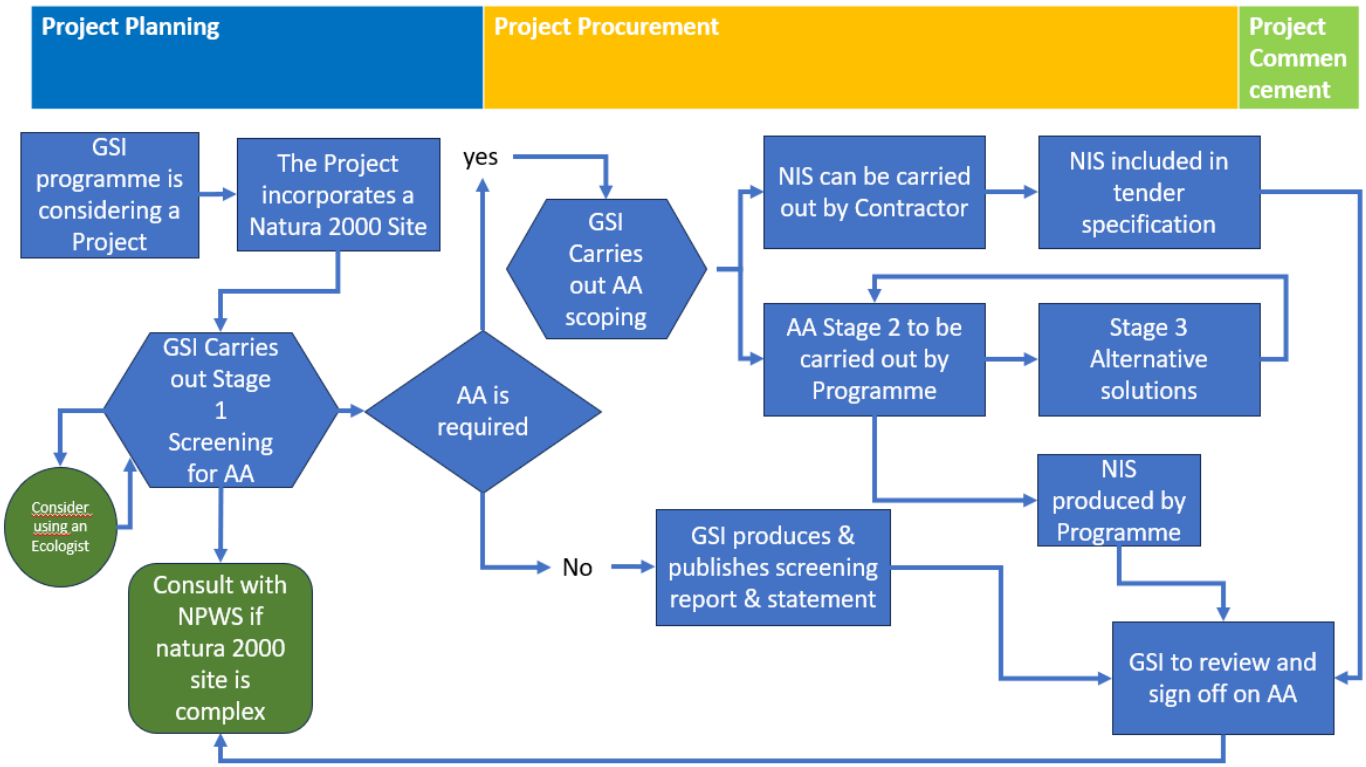


Figure 9: Geological Survey Ireland AA Procedure Flow Chart – AA Required

5.2 Screening of Relevant Natura 2000 Sites

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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Akeragh, Banna and Barrow Harbour SAC	IE000332	Mediterranean salt meadows (Juncetalia maritimi) [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 Ammophila arenaria (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Baldoyle Bay SAC	IE000199	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Ballinskelligs Bay and Inny Estuary SAC	IE000335	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
Ballyhoorisky Point to Fanad Head SAC	IE001975	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [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	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Ballymacoda (Clonpriest and Pillmore) SAC	IE000077	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [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 (Juncetalia maritimi) [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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Ballyness Bay SAC	IE001090	Vertigo geyeri (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	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Ballysadare Bay SAC	IE000622	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Ballysadare Bay SAC	IE000622	Vertigo angustior (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 (Glauco-Puccinellietalia maritimae) [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 (Juncetalia maritimi) [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 (Sarcocornetea fruticosi) [1420]	No overlap	None	Screened out
Ballyteige Burrow SAC	IE000696	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [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 Ammophila arenaria (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 (Glauco-Puccinellietalia maritimae) [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 (Juncetalia maritimi) [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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Bannow Bay SAC	IE000697	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi) [1420]	No overlap	None	Screened out
Barley Cove to Ballyrisode Point SAC	IE001040	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [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 (Juncetalia maritimi) [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	Petalophyllum ralfsii (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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Bellacragher Saltmarsh SAC	IE002005	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [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 Ranunculion 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 Ammophila arenaria (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	Vertigo angustior (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 (Cratoneurion) [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	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out

Castlemaine Harbour SAC	IE000343	Mediterranean salt meadows (Juncetalia maritimi) [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 Ammophila arenaria (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 Salix repens ssp. argentea (Salicion arenariae) [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 Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Castlemaine Harbour SAC	IE000343	Petromyzon marinus (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	Lampetra fluviatilis (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	Salmo salar (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Castlemaine Harbour SAC	IE000343	Petalophyllum ralfsii (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Courtmacsherry Estuary SAC	IE001230	Mediterranean salt meadows (Juncetalia maritimi) [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 Ammophila arenaria (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	Najas flexilis (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	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	IE000627	Lampetra fluviatilis (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 (Cratoneurion) [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 (Juncetalia maritimi) [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	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from sonar	Screened in
Duvillaun Islands SAC	IE000495	Halichoerus grypus (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Turloughs [3180]	No overlap	None	Screened out
Galway Bay Complex SAC	IE000268	Juniperus communis 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 Cladium mariscus and species of the Caricion davallianae [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	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Galway Bay Complex SAC	IE000268	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
Glengarriff Harbour and Woodland SAC	IE000090	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	Geomalacus maculosus (Kerry Slug) [1024]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	No overlap	None	Screened out
Glengarriff Harbour and Woodland SAC	IE000090	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Glengarriff Harbour and Woodland SAC	IE000090	Phoca vitulina (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 (Glauco-Puccinellietalia maritimae) [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 (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [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 Salix repens ssp. argentea (Salicion arenariae) [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	Euphydryas aurinia (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	Juniperus communis formations on heaths or calcareous grasslands [5130]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Lutra lutra (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 (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Decalcified fixed dunes with Empetrum nigrum [2140]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
Gweedore Bay and Islands SAC	IE001141	Petalophyllum ralfsii (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 Salix repens ssp. argentea (Salicion arenariae) [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	Halichoerus grypus (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	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Horn Head and Rinclevan SAC	IE000147	Vertigo geyeri (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	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Inagh River Estuary SAC	IE000036	Shifting dunes along the shoreline with Ammophila arenaria (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 (Littorelletalia uniflorae) [3110]	No overlap	None	Screened out
Inishbofin and Inishark SAC	IE000278	Northern Atlantic wet heaths with Erica tetralix [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	Halichoerus grypus (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 (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]	No overlap	None	Screened out
Inisheer Island SAC [001275]	IE001275	Petrifying springs with tufa formation (Cratoneurion) [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	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Inishkea Islands SAC	IE000507	Machairs (* in Ireland) [21A0]	No overlap	None	Screened out
Inishkea Islands SAC	IE000507	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Inishkea Islands SAC	IE000507	Petalophyllum ralfsii (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 Ammophila arenaria (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 (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Inishmaan Island SAC	IE000212	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [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 Ammophila arenaria (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 Salix repens ssp. argentea (Salicion arenariae) [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 (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Inishmore Island SAC	IE000213	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [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 maritimae) [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 Callitricho-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 Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Petromyzon marinus (Sea Lamprey) [1095]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	Lampetra fluviatilis (River Lamprey) [1099]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	Lampetra planeri (Brook Lamprey) [1096]	No overlap	None	Screened out
Lower River Shannon SAC	IE002165	Salmo salar (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from sonar	Screened in
Lower River Shannon SAC	IE002165	Lutra lutra (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	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Malahide Estuary SAC	IE000205	Shifting dunes along the shoreline with Ammophila arenaria (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Mediterranean salt meadows (Juncetalia maritimi) [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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Dunes with Salix repens ssp. argentea (Salicion arenariae) [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 (Littorelletalia uniflorae) [3110]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [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 Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	No overlap	None	Screened out
Mweelrea/Sheeffry/Erriff Complex SAC	IE001932	Northern Atlantic wet heaths with Erica tetralix [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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Rogerstown Estuary SAC	IE000208	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No overlap	None	Screened out
Rogerstown Estuary SAC	IE000208	Shifting dunes along the shoreline with Ammophila arenaria (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	Phoca vitulina (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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Saltee Islands SAC	IE000707	Halichoerus grypus (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Euphydryas aurinia (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 (Juncetalia maritimi) [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 Ilex and Blechnum in the British Isles [91A0]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Salicornia and other annuals colonising mud and sand [1310]	No overlap	None	Screened out
Sheephaven SAC	IE001190	Shifting dunes along the shoreline with Ammophila arenaria (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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Slaney River Valley SAC	IE000781	Mediterranean salt meadows (Juncetalia maritimi) [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 Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Alpine and Boreal heaths [4060]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Blanket bogs (* if active bog) [7130]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Embryonic shifting dunes [2110]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Halichoerus grypus (Grey Seal) [1364]	Overlap	Potential disturbance from sonar	Screened in
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No overlap	None	Screened out
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	IE000190	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No overlap	None	Screened out
Slieve Tooey/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 (Glauco-Puccinellietalia maritimae) [1330]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Mediterranean salt meadows (Juncetalia maritimi) [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 Ammophila arenaria (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 (Littorelletalia uniflorae) [3110]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Hard oligo-mesotrophic waters with benthic vegetation of Chara 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	Juniperus communis 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 (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No overlap	None	Screened out

Slyne Head Peninsula SAC	IE002074	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Alkaline fens [7230]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Overlap	Potential disturbance from seabed sampling	Screened in
Slyne Head Peninsula SAC	IE002074	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
Slyne Head Peninsula SAC	IE002074	Najas flexilis (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	Salicornia 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	Euphydryas aurinia (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	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [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 (Festuco-Brometalia) (* 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 (Glauco-Puccinellietalia maritimae) [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 (Juncetalia maritimi) [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 Ammophila arenaria (white dunes) [2120]	No overlap	None	Screened out
Streedagh Point Dunes SAC	IE001680	Vertigo angustior (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 (Littorelletalia uniflorae) [3110]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [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 Rhynchosporion [7150]	No overlap	None	Screened out
The Twelve Bens/Garraun Complex SAC	IE002031	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [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 Ilex and Blechnum 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 (Glauco-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 (Alopecurus pratensis, Sanguisorba officinalis) [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 (Molinion caeruleae) [6410]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Northern Atlantic wet heaths with Erica tetralix [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 (Littorelletalia uniflorae) [3110]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Vertigo geyeri (Geyer's Whorl Snail) [1013]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Euphydryas aurinia (Marsh Fritillary) [1065]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Lutra lutra (Otter) [1355]	Overlap	Potential disturbance from sonar	Screened in
West of Ardara/Maas Road SAC	IE000197	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Najas flexilis (Slender Naiad) [1833]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Petalophyllum ralfsii (Petalwort) [1395]	No overlap	None	Screened out
West of Ardara/Maas Road SAC	IE000197	Phoca vitulina (Harbour Seal) [1365]	Overlap	Potential disturbance from sonar	Screened in
West of Ardara/Maas Road SAC	IE000197	Salmo salar (Salmon) [1106]	Overlap	Potential disturbance from sonar	Screened in

Wicklow Reef SAC	IE002274	Reefs [1170]	Overlap	Potential disturbance from seabed sampling	Screened in

Table 9: Screening of Individual Natura 2000 Sites

5.3 Screening Conclusions

Following the initial screening of all potentially impacted Natura 2000 sites 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). 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.

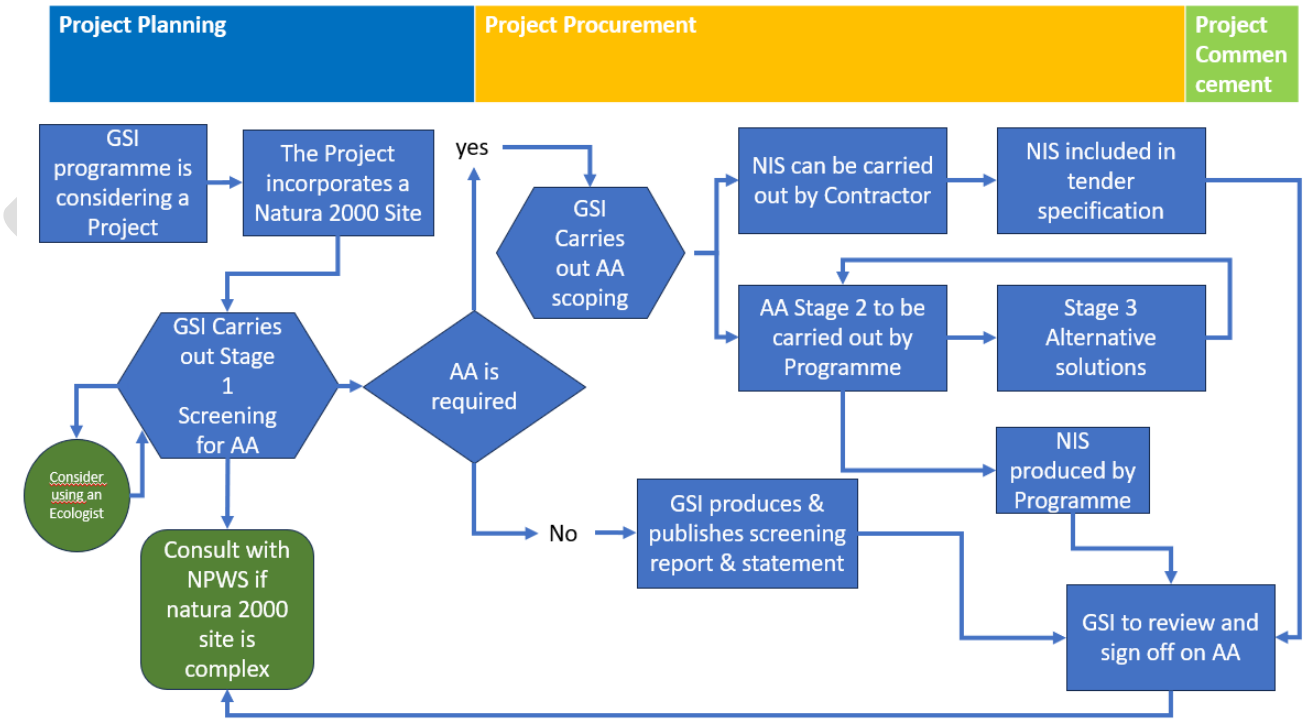
Natura 2000 sites screened in for Appropriate Assessment:

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
Blasket 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 Tooey/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 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]

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



5. Mitigation

4.1 Basis

The mitigation requirements put in place by DAHG in granting permission to survey lower Shannon Estuary SAC in 2011 and West Connacht SAC in 2014 are the basis for those outlined in this appropriate assessment.

4.2 Marine Mammal Observations

- 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.
- Fully qualified MMO's will be engaged to ensure full time watch-keeping is provided during all daylight operational hours, including breaks, for the entire duration of operations within the SAC and associated 1.5km buffer area.

4.3 Additional Mitigation

- Operations will be restricted to daylight hours only.
- A 15m exclusion zone will be put in place which if breeched by marine mammals, will result in the immediate shutdown of the multibeam, singlebeam and sub bottom profiler systems.
- INFOMAR will fully comply with the NPWS Guidance for underwater sound sources (2014).
- Strict adherence will be maintained to the Wildlife Act Section 23 pertaining to the protection of certain species and their habitats as listed in Annex IV & II of the Habitats Directive.

- All personnel onboard (ship and scientific) will be fully briefed in advance of commencement of operations on the sensitivities associated with the proposed survey and survey area, and asked to communicate any sightings of cetaceans and seals to the MMO's accordingly.
- The pre-start scan and soft start will be controlled by the MMO on watch, who will liaise with the Chief Scientist, bridge crew, and online survey personnel to ensure compliance.
- MMO's employed will attend a pre-survey briefing to review and discuss the mitigation requirements.
- The survey Chief Scientist will be advised in advance of commencement of operations that the MMO's will determine survey visibility limitations. Operations within the SAC and associated 1.5km buffer zone will commence and terminate on the decision of the MMO.
- Sidescan sonar and sparker will not be used inside the SAC or 1.5 km buffer zone.
- Daily MMO report forms (Operations and Effort) will be maintained as standard for all INFOMAR inshore vessels and records compiled at the end of the field season and forwarded to NPWS, along with cetacean sighting forms, as part of an annual MMO report that covers all GSI survey legs for that season.

4.4 Impact / Mitigation Matrix

The following impact mitigation matrix (Table 5) attempts to summarise the marine survey equipment which could theoretically have an impact on marine mammals and the mitigation proposed to minimize the level of such an impact during the proposed survey.

For the purpose of the impact / mitigation matrix, the potential impacts have been classified into the following categories in order of increasing severity:

None / Disturbance / Avoidance / Physical** / Stranding

**Note: While a potential impact could become "physical" through sustained exposure at short distances to the ensonified area of a system's transducer, in practice this would be very difficult and unlikely for a cetacean to sustain due to the narrow directional acoustic transmissions, which a cetacean is more likely to be intermittently exposed to if / when it passes through this area of ensonification.

System	Model	Frequencies KHz	Potential Impact	Mitigation
Multibeam Echo Sounder	EM3002 EM2040 T20P R2Sonic	293 307 300 420 450	• Disturbance*	• Adhere to NPWS Code ofPractice • Soft start with intermittent power up before beginningsurvey •15 exclusion zone around vessel during survey operations • Care taken with line plans to avoid restricting cetaceans' ability to avoid the source.
Sub Bottom Profiler	**Probe 5000**	3.5 10 12	• Disturbance	Adhere to NPWS Code of Practice • Soft start with intermittent power up before beginningsurvey •15 exclusion zone around vessel during survey operations • Care taken with line plans to avoid restricting cetaceans' ability to avoid the source.
Singlebeam Echo Sounder	**EA400**	38	• Disturbance • Avoidance • Physical*	• Vessel based observers to monitor marine mammals in thevicinity
		200	• Disturbance	• Vessel based observers to monitor marine mammals in thevicinity

Table 10: Equipment Impact / Mitigation Matrix

Mitigation procedures have been proposed based on a review of best survey practice at international level, which are considered to remove and/or minimize any potential likely impacts on local marine mammal populations, should they be encountered within one of the referenced SAC sites during the survey season.

6. Natura Impact Statement

6.1 Acoustic Mapping - Species Impact Assessments

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

There is potential for disturbance of harbour porpoises, a high frequency cetacean species, if they pass through an ensonified area during survey operations (see section 3.1 for further discussion). In order to mitigate fully against any potential impact, the measures described in Section 4 will be undertaken.

The useage of a pre-start scan, "soft start" procedure and access to onsite MMO expertise and guidance will ensure that the conservation objectives are unaffected.

***Tursiops truncatus* (Common Bottlenose Dolphin) [1349]**

There is potential for disturbance of common bottlenose dolphins, a mid frequency cetacean species, if they pass through an ensonified area during survey operations (see section 3.1 for further discussion). In order to mitigate fully against any potential impact, the measures described in Section 4 will be undertaken.

The useage of a pre-start scan, "soft start" procedure and access to onsite MMO expertise and guidance will ensure that the conservation objectives are unaffected.

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

Grey seals are sensitive to tones within the 8 - 40 kHz frequency range (Southall et al., 2007). There is potential for disturbance of grey seals if they pass through an ensonifed area during survey operations (see section 3.1 for further discussion). In order to mitigate fully against any potential impact, the measures described in Section 4 will be undertaken.

The useage of a pre-start scan, "soft start" procedure and access to onsite MMO expertise and guidance will ensure that the conservation objectives are unaffected.

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

Common or Harbour seals are sensitive to tones within the frequency range 4 kHz to 45 kHz (peak sensitivity at 32 kHz) (O'Brien, Berrow and Wall, 2005). There is potential for disturbance of grey seals if they pass through an ensonifed area during survey operations (see section 3.1 for further discussion). In order to mitigate fully against any potential impact, the measures described in Section 4 will be undertaken.

The useage of a pre-start scan, "soft start" procedure and access to onsite MMO expertise and guidance will ensure that the conservation objectives are unaffected.

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

At the time of writing this document, no research has been conducted on the hearing thresholds of *Lutra Lutra* (Eurasian Otter). However, an examination has been carried out on the auditory capabilities of the Sea Otter (*Enhydra lutris*) by Ghoul & Reichmuth (2014). According to this study:

"Under water, hearing sensitivity was significantly reduced when compared to sea lions and other pinniped species, demonstrating that sea otter hearing is primarily adapted to receive airborne sounds."

Given this observation, along with the fact that otters spend less time in the water than cetaceans and pinnipeds, suggests that the impact on them could be very low. This is further mitigated by the fact that the same MMO-led procedures being followed for cetaceans and pinnipeds will also allow otters to leave the survey vessel's area before any disturbance can take place.

Petrom*yzon marinus* (Sea Lamprey) [1095]

Mickle et al (2018) conducted a study on the auditory responses of sea lampreys and concluded that they cannot detect sounds above 300Hz. This rules them out of being impacted by any of the acoustic instruments in used by the survey vessels, all of which use sound in the kHz range.

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

According to Popper, A.N. (2005):

"… their ear is relatively simple and there is nothing within the structure of the ear or associated structures to suggest any specializations that would make them into anything but a hearing generalist, with maximum hearing to no more than several hundred Hz."

Though the study by Mickle et al (2018) was focused on sea lampreys, that information, in addition to the work by Popper, A.N. (2005) indicates that the proposed survey works will have no impact on any river lampreys that enter the area.

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

Hawkins et al (2006) demonstrated that salmon only respond to frequencies below 380 Hz and conclude that their hearing is quite poor. This rules them out of being impacted by any of the acoustic instruments in used by the survey vessels, all of which use sound in the kHz range.

6.2 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 Ranunculion fluitantis and Callitricho-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.

6.3 Conclusions

Marine mammals are considered to be the only qualifying interests in the relevant Natura 2000 sites that are potentially susceptible to disturbance by GSI's marine mapping activities. By following the mitigation measures outlined in Section 4, this potential impact will be avoided. At this point, Stage 3 (Alternative Solutions) and Stage 4 (Imperative Reasons for Overriding Public Interests) of the Appropriate Assessment are considered unecessary.

7. Conclusion

This Appropriate Assessment is considered to incorporate all of the relevant requirements of the EC 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".

In a partnership programme between the Marine Institute and Geological Survey Ireland, INFOMAR seeks DAHG / NPWS approval to proceed with the proposed plan to carry out acoustic surveys in the intended area of operations.

Mitigation procedures have been proposed based on a review of best survey practice at international level, which are considered to remove and/or minimize any potential likely impacts on local marine mammal populations, should they be encountered within one of the referenced SAC sites during the survey season.

INFOMAR has been undertaking routine seabed mapping activities in SACs annually in support of and cooperation with NPWS, and in line with NPWS / DAHG guidelines, licensing and mitigation requirements, and with no adverse incidents reported or incurred.

With increased confidence in INFOMAR survey approaches, blanket seasonal restrictions on survey operations are no longer implemented by DAHG, and in recent years mitigation has included implementation of a 15m exclusion zone and daylight hours restrictions in the Shannon Estuary, and compliance with the NPWS Code of Practice.

The protection and management of Natura 2000 sites within the intended area of operations will benefit significantly from the addition of INFOMAR baseline survey data. INFOMAR will endeavour to proceed with the acquisition and distribution of marine mapping information, while ensuring appropriate protection of the marine environment is provided in the process. An annual report on protection efforts applied by survey crews will be rendered to NPWS on completion of annual operations.

Following the receipt of the comments of those consulted, and mitigations, it is objectively concluded that no adverse impacts on the integrity of the identified Natura 2000 sites remain.

8. Referenced Documents

DEHLG (2009) Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities

NPWS (2013) Conservation Objectives: Rockabil to Dalkey Island SAC 003000. Version 1 National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

NPWS (2013) Conservation Objectives: Lambay Island SAC 000204. Version 1 National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

NPWS (2013) Conservation Objectives: Rogerstown Estuary SAC 000208. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Malahide Estuary SAC 000205. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Baldoyle Bay SAC 000199. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Conservation Objectives: Ireland's Eye SAC 002193. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2016) Conservation Objectives: Howth Head SAC 000202. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2013) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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NPWS (2013) Conservation Objectives: Wicklow Reef SAC 002274. Version 1. National

Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Great Island Channel SAC 001058. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Courtmacsherry Estuary SAC 001230. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Clonakilty Bay SAC 000091. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Lough Hyne Nature Reserve and Environs SAC 000097. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2011) Conservation Objectives: Roaringwater Bay and Islands SAC 000101. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: Glengarriff Harbour and Woodland SAC 000090. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Ballinskelligs Bay and Inny Estuary SAC 000335. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Valencia Harbour/Portmagee Channel SAC 002262. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2011) Conservation Objectives: Castlemaine Harbour SAC 000343 and Castlemaine Harbour SPA 004029. Version 2.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Blasket Islands SAC 002172. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Conservation Objectives: Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Conservation Objectives: Akeragh, Banna and Barrow Harbour SAC 000332. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

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'

O'Brien, Berrow and Wall (2005). The impact of Multibeam on cetaceans: A review of best practice.

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2007 / Notices Subject: Small Takes of Marine Mammals Incidental to Specified Activities, US National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA). Source: Federal Register / Vol. 72, No. 68 / Tuesday, April 10.

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Southall BL, Bowles AE, Ellison WT, Finneran J and others (2007). Marine mammal noise exposure criteria. Aquat Mamm 33: 411–521

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Mickle, Megan & Miehls, Scott & Johnson, Nicholas & Higgs, Dennis. (2018). Hearing capabilities and behavioural response of sea lamprey (Petromyzon marinus) to low frequency sounds. Canadian Journal of Fisheries and Aquatic Sciences. 76. 10.1139/cjfas-2018-0359.

Popper, A.N. (2005). A review of hearing by sturgeon and lamprey. Prepared for U.S. Army Corps of Engineers by Environmental Bioacoustics LLC.

Hawkins, Anthony & Johnstone, A.. (2006). The hearing of the Atlantic Salmon, Salmo salar. Journal of Fish Biology. 13. 655 - 673. 10.1111/j.1095-8649.1978.tb03

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	2025 GSI Inshore Survey
Project Manager	Sean Cullen
Date Check list completed	01/01/2025
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.

Information about the Project or Plan	Y✓	N ×	If No, then provide a short reason or refer to report section
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		N	GSI work/presence in the area is temporary
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		
Information about the Natura 2000 site	Y✓	N ×	If No, then provide a short reason or refer to report section
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.

Conservation objectives: does the project or plan have the potential to:	Y✓	N ×	If Yes, then provide a short reason or refer to report section
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
Other objectives: does the project or plan have the potential to:	Y✓	N ×	If Yes, then provide a short reason or refer to report section
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?	Y		Acoustic disturbance, mitigation required – see AA and NIS reports
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	