19/062 - WO064 Marine Modelling Studies - Lot 4 Galway Bay

Supporting Information for Appropriate Assessment Screening Report

Uisce Éireann

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Quality Information

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1. Introduction

1.1 Background

AECOM was commissioned by Uisce Éireann to prepare supporting information for an Appropriate Assessment (AA) Screening (SISAA) Report, on their behalf. The report will support a Maritime Usage Licence under Schedule 7 Section 110 of the Marine Area Planning Act 2021 in relation to a Marine Modelling Study (MMS) being carried out in Galway Bay (Lot 4 Project). The licence is required to carry out marine surveys in Galway Bay within the Proposed Licence Areas shown in Appendix A, Maps A-D. The specific areas that will be subject to marine surveys (bathymetry surveys and Acoustic Doppler Current Profilers (ADCPs)) that are considered in this application are shown in Appendix B, Figures 1 and 2.

Uisce Éireann are responsible for many continuous or intermittent discharges into the marine environment. Within the Galway Bay area, there are over 50 wastewater discharge points into the marine environment. At present, there are no hydrodynamic marine water quality models developed to support water quality assessments in the Proposed Licence Areas and Uisce Éireann now require this model to be developed, which is the purpose of the Lot 4 Project. The model will support the assessment of water quality for all discharges against environmental legislation criteria.

This Lot 4 Project will include four phases: scoping, marine surveys, calibration and validation and scenario analysis. The marine surveys will collect the necessary hydrodynamic data. This data will then be used for the calibration of a hydrodynamic model to support a water quality assessment in Proposed Licence Areas. This SISAA report is prepared in relation to the scoping phase of the Lot 4 Project. The scoping phase includes three Work Packages (WPs) which will be carried out sequentially. This SISAA report specifically fulfils WP 3 – Maritime Usage Licence (see below). All work packages are due to be completed in 2024.

- Work Package 1- Phase 1 Environmental Scoping Report;
- Work Package 2- Data Manual; and
- Work Package 3- Maritime Usage Licence.

This SISAA report considers the potential for likely significant effects from the marine surveys of the Lot 4 Project on European sites, which include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). It serves to 'screen' for likely significant effects on European sites from the marine surveys, either alone or in-combination with other plans or projects, and in view of best scientific knowledge.

1.2 Project Description

The Lot 4 Project involves conducting marine surveys within certain areas of the Proposed Licence Areas (Appendix A). These marine surveys will include ADCP surveys, bathymetric surveys and other passive water quality surveys (e.g. water sample collection from shore or vessel via a handheld passive sonde and/or Niskin bottle, water level/tidal monitoring using tide gauges fixed to an existing structure and CTD measurements from vessel or fixed to a tide gauge or ADCP). The passive water quality surveys are undertaken by extremely minimally disturbing/non-intrusive methods which will not impact any protected marine species and are therefore not considered further in this assessment.

The other marine survey activities will involve deploying, operating, and recovering ADCPs and a tidal gauge and the bathymetric surveys will use vessel mounted single beam or multibeam echo sounders (SBES/MBES) within certain areas of the Proposed Licence Areas.

The surveys are scheduled to commence at some point within a 60-month period from 1st April 2025. The survey duration will be a minimum of 35-days and a maximum 60 days (survey period). Within that survey period there will be 13-hour surveys over a spring tide and a neap tide. The bathymetric surveys may be undertaken during that survey period or as separate surveys but not before 1st April 2025. The data collected will be used for calibrating a hydrodynamic model. The locations of the ADCP surveys and bathymetric surveys are shown on Appendix B, Figure 1 and 2.

1.2.1 ADCP Surveys

These surveys will be carried out in shallow waters, less than 100 m in depth, only. The ADCP surveys will contain no more than a single ADCP within each survey area (ADCP Area). The ADCP Areas total 10,452.12 ha.

Conservatively, the individual footprint of each ADCP is considered to be less than 1 m^2. The ADCPs are placed on the seabed in order to measure water current velocities over a depth range using the doppler effect of sound waves scattered back from particles within the water column. There will be up to 26 ADCPs deployed, with 23 ADCPs being deployed on the seabed for the survey period. Three ADCPs will be suspended in the water column, via a vessel mounted method or alternatively via a passive impeller due to unsuitable seabed habitats present (Table 1) for the two 13-hour surveys.

The exact make and model of the ADCP equipment is not known at the time of writing this report. However, the operating frequency of any ADCP deployed will be >200 kHz (typically around 500 kHz for many models). The instrument emits “pings” of sound at a sampling rate of 1-minute average every 10 minutes. The list of ADCPs and their areas are shown in Table 1.

For the purposes on this NIS report the construction phase is defined as the deployment of ADCPs on the seabed/vessel-mounted, the operational phase is the operation of the ADCPs, and the decommissioning phase is the recovery of the ADCPs from the seabed/vessel. These are described in further detail below.

1.2.1.1 Deployment of ADCP Instruments

ADCPs will be deployed from the vessel's deck onto the seabed at predetermined locations (one ADCP placed within each Area) in water depths less than 100 m only. However, the exact placement location within each site is not known at the time of writing this report. They will be positioned based on available charts and habitat maps to ensure it is placed on suitable flat sandy habitats only. Deployment onto the seabed is carried out by lifting the ADCP survey instruments from the vessel's deck using a deck crane or A-frame with a winch and then carefully placing them on the seabed. The single vessel based ADCP deployment is caried out by lowering from a vessel or bridge either manually or using a mechanical winch and will be vessel mounted (i.e. will not be placed on the seabed).

1.2.1.2 Operation of ADCP Instruments

During operation, the ADCPs will be left in place on the seabed/vessel for an approximate duration of the survey period to collect necessary data for calibrating the hydrodynamic model. To collect these data during operation, the ADCP survey instruments will emit periodic "pings" of sound into the water column. For the Lot 4 Project, the pings will have operating frequencies between 200 kHz to 500 kHz. The instrument is contained within a trawl resistant housing. A Conductivity Temperature Depth (CTD) sonde may be placed inside the housing.

1.2.1.3 Recovery of ADCP survey Instruments

To facilitate recovery, a hydrostatic release mechanism will be employed. When activated, it sends a ranging ping to the release mechanism. If successful, this mechanism releases a buoy connected to a recovery line. The vessel can then manoeuvre into position over the buoy and retrieve the ADCPs onto the boat using the crane. In cases where the hydrostatic release fails, the ADCPs are equipped with acoustic pingers that can be activated to assist in locating the ADCP instruments. Another attempt can then be made to activate the acoustic release. If this attempt also fails, the ADCP will be recovered using a grapple recovery method. If required, this involves dragging a line with a grapple attached across the seabed in the deployment area to catch the grapple line between the ADCPs and the grapple anchor.

Table 1 List of ADCP areas within the Proposed Licence Areas

Site Reference	Site Name	Area (ha)	Comments
AADCP01	Roundstone	55.23	
AADCP02	Greatman's Bay Approaches	20.70	Vessel based survey (i.e. the ADCP will not be placed on the seabed).
AADCP03	North Sound	816.25	Deeper water -40 mCD to -50 mCD, exposed location.
AADCP04	Rossavel Harbour Approaches	4.90	
AADCP05	Foul Sound	20.00	
AADCP06	Gregory Sound	82.74	
AADCP07	Carraroe	23.70	Likely to be a vessel-based survey if the seabed is mud and not suitable for placing an ADCP on the seabed.
AADCP08	Killeany Bay	38.76	
BADCP01	Galway Outfall	1.01	Location of the largest Uisce Éireann outfall in the Proposed Licence Areas
BADCP02	Galway Approaches	20.82	

Site Reference	Site Name	Area (ha)	Comments
BADCP03	South Bay	1,173.85	
BADCP04	Ballyvaughn Bay	40.58	
BADCP05	Black Head	2,948.81	
BADCP06	Inverine Bank	3,481.60	
BADCP07	South Sound	151.13	
BADCP08	Spiddal	211.41	
BADCP09	Kinvarra 1	42.96	Vessel based survey (i.e. the ADCP will not be placed on the seabed).
BADCP10	Kinvarra 2	5.70	
CADCP01	Liscannor Bay	356.34	
CADCP02	Mal Bay	778.54	
CADCP03	Kilmurray Ibrickane	21.13	
CADCP04	Doonbeg	20.92	
CADCP05	Lahinch & Ennistymon 1	69.82	
CADCP06	Lahinch & Ennistymon 2	58.88	Vessel based survey (i.e. the ADCP will not be placed on the seabed).
DADCP01	Kilkee Bay	3.96	
DADCP02	Kilkee (Intrinsic Bay)	2.39	

1.2.2 Bathymetric Surveys

The bathymetric surveys will include the use of SBES and/or MBES within the Proposed Licence Areas. These surveys will be carried out in shallow waters only, less than 100 m in depth. At the time of writing this report the exact number, make and models are not known but the operating characteristics for shallow water are well understood. It is therefore assumed that survey equipment will have an operating frequency of 200 kHz to 700 kHz for MBES and 200 kHz for SBES. The SBES/MBES will be vessel-mounted for a period of up to 28 days. The total area of bathymetric surveys is 19,481.02 ha. The list of bathymetric surveys and their areas are shown in Table 2.

Table 2. List of Bathymetric survey areas within the Proposed Licence Areas

Site Reference	Site Name	Area (ha)
ABS01	Roundstone	225.76
ABS02	Carraroe Inner	59.80
ABS03	Carraroe Outer	523.63
ABS04	Killeany Bay	604.36
BBS01	Ballyvaughn and Aughinish	4,483.04
BBS02	Kinvarra	600.69
BBS03	Mutton Island	87.27
CBS01	Mal and Liscannor Bays	12,888.58
DBS01	Kilkee	7.89

1.2.3 Tide Gauges

Of the eighteen tide gauges within the Lot 4 Proposed Licence Areas A-D, it is anticipated that all will be attached to existing fixed structures such as navigation marks or quaysides. The proposed tide gauge within the Inagh River Estuary SAC (CTG02) will ideally be fixed to the Falls Hotel quayside, or the thrust block of the wastewater

treatment plant outfall. However, if this is not possible then it may be necessary to install a thin metal pole (<100 mm diameter) into the bank / bed of the river close to the wastewater treatment plant and fix the tide gauge to that pole. The approximate location of this is shown in Table 3, which is located in the River Inagh but is beyond any saltmarsh habitat that is specifically protected as a qualifying feature of this SAC (NPWS, 2017). Installation of the tide gauge by this method will be avoided, but if it is necessary then care will be taken during removal to minimise any disturbance to the bank / bed of the river.

Table 3 River Inagh tide gauge location

Site Reference	Site Name	Easting	Northing
CTG02	River Inagh	112484	188598

1.2.4 Survey Vessels

Survey vessels will be selected by the survey contractor. The vessels will be selected based on suitability as a survey platform for the deployment and recovery of the different equipment. It is envisioned that two small vessels (up to 25 m in length) moving (i.e., survey speeds of 4 knots and 10 – 15 knots whilst in transit) will be used at any one time during the marine surveys. The vessels may maintain their position either using an anchor or dynamic positioning depending on the size and type of vessel. Note, that dynamic positioning will not be used in shallow areas or when a vessel is close to the shore except for berthing operations at suitable docking facilities.

1.3 Legislative Context

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is more commonly known as the 'Habitats Directive', requires Member States of the European Union (EU) to take measures to maintain or restore, at favourable conservation status, natural habitats and wild species of fauna and flora of Community interest. The provisions of the Habitats Directive require that Member States designate SACs for habitats listed in Annex I and for species listed in Annex II. Similarly, Directive 2009/147/EC on the conservation of wild birds, which is more commonly known as the 'Birds Directive', provides a framework for the conservation and management of wild birds. It also requires Member States to identify and classify SPAs for rare or vulnerable species listed in Annex I of the Birds Directive, as well as for certain regularly occurring migratory species. Collectively, SACs and SPAs are known as 'European sites'.

In Ireland, the habitats and/or species which are the reason(s) for designation of an SAC are referred to as 'Qualifying Interests' (QI). In relation to SPAs, the bird species for which a particular site is designated are referred to as the 'Special Conservation Interests' (SCI).

Under Article 6(3) of the Habitats Directive, any plan or project which is not directly connected with or necessary to the management of a European site, but would be likely to have a significant effect on such a site, either individually or in-combination with other plans or projects, must be subject to an Appropriate Assessment (AA) of its implications for the SAC / SPA in view of the site's Conservation Objectives.

In the Republic of Ireland, the requirements of Article 6(3) are transposed into national law through Part 8 of the Maritime Area Planning Act 2021 (hereafter abbreviated to the 'MAP Act 2021') and Part XAB of the Planning and Development Act 2000 (as amended) (hereafter abbreviated to the 'PDA') for planning matters, and by the European Communities (Birds and Natural Habitats) Regulations 2011 in relation to other relevant approvals / consents. Part 8 of the MAP Act 2021 inserts a new Part XXI into PDA. This Part deals with maritime development. Commencement of Part 8 of the MAP Act 2021 is necessary at this juncture to enable the so-called "relevant projects" to commence the development consent process. These projects are either those who applied for or were granted a lease under the MAP Act 2021.

Under the MAP Act 2021, marine licencing for specified activities must be obtained from Maritime Area Regulatory Authority (MARA) before carrying out activities in the Nearshore Area or Maritime Area. As the competent authority, Uisce Éireann (see Section 1.6) must carry out a screening for an AA on any foreshore licence application which may have significant effects on the conservation objectives of a European site. Uisce Éireann is also required to apply the Precautionary Principle (as defined in European Commission (2000) and UNESCO (2005)) to European sites and can only grant consent once it has been ascertained that the Lot 4 Project will not adversely affect the integrity of any European site.

1.4 Purpose of this Report

Whilst the various steps involved in the AA process must be carried out by a competent authority, under Section 177U(3) of the PDA, project proponents or their consultants may undertake a form of screening to establish if an AA is required and provide advice or may submit the information necessary to allow the competent authority to conduct a screening of an application for consent. Specifically, Section 177U(3) states that:

> *"in carrying out a screening for appropriate assessment of a proposed development a competent authority may request such information from the applicant as it may consider necessary to enable it to carry out that screening, and may consult with such persons as it considers appropriate…".*

This SISAA report provides AECOM's opinion on the requirement for further AA in support of an application for a Marine Usage Licence.

For clarity, in the context of the Habitats Directive, the marine surveys represent a 'project' and no reference to 'plans' is made hereafter, except where required to consider the potential for in-combination effects to arise between the marine surveys and any relevant plans.

1.5 Quality Assurance and Statement of Authority

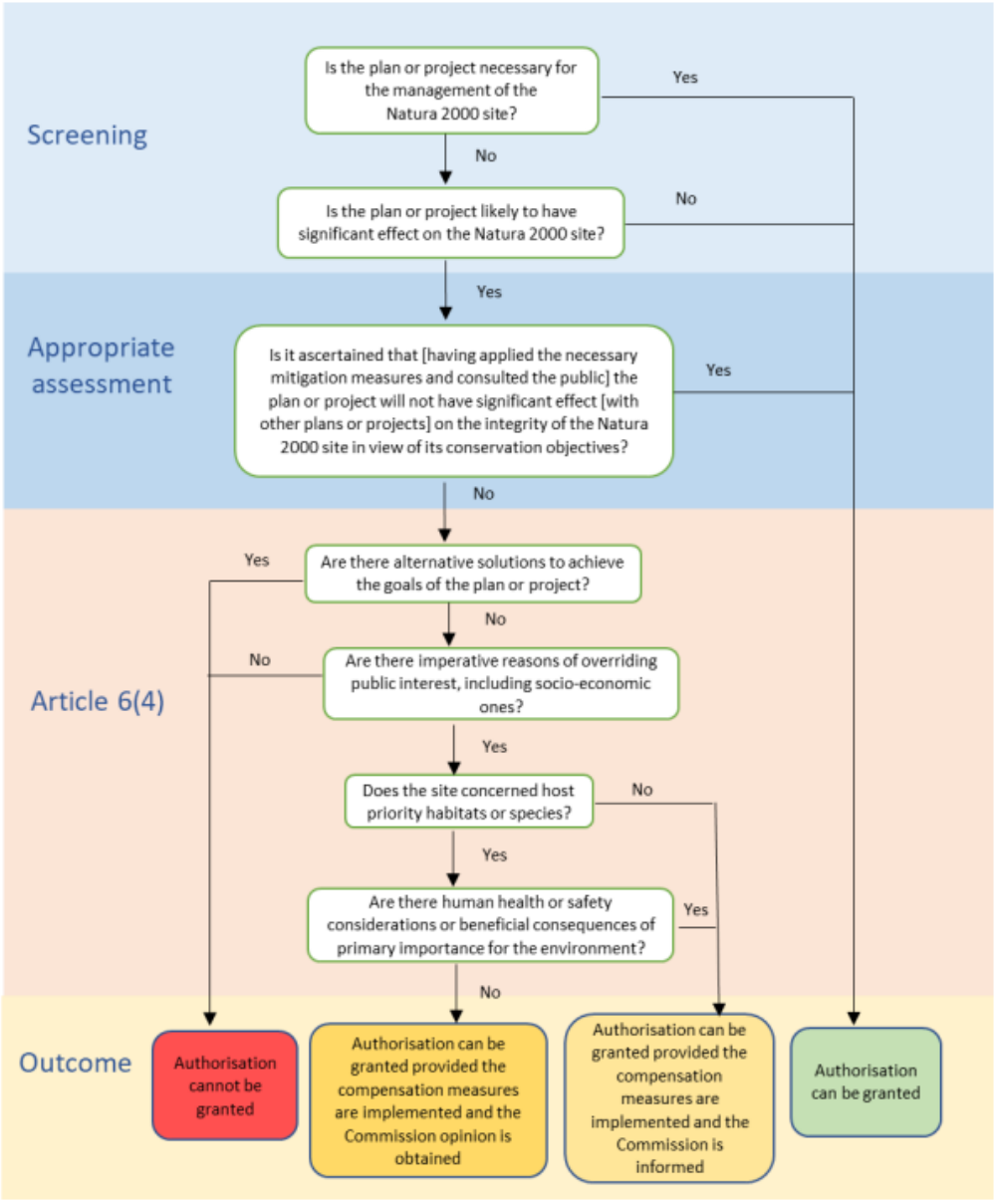
This Report and the assessment described within it has been completed in accordance with the AECOM Integrated Management System (IMS). AECOM's IMS places emphasis on professionalism, technical excellence, quality, as well as covering health, safety, environment and sustainability management. All AECOM staff members are committed to maintaining this accreditation to those parts of BS EN ISO 9001:2015 and 14001:2015, as well as BS OHSAS 18001:2007 that are relevant to a consultancy service.

2. Methodology

2.1 Overview of Appropriate Assessment Process

The process required by Articles 6(3) and 6(4) of the Habitats Directive is stepwise and must be followed in sequence. Image 1 below outlines the stages of AA according to current European Commission (EC) guidance (European Commission, 2021). The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the plan or project until no significant adverse effects remain.

Image 1. The stages of Appropriate Assessment (taken from European Commission (2021))



2.2 Sources of Guidance

This SISAA report has been prepared in accordance with the European Commission guidance document *Assessment of Plans and Projects in relation to Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (European Commission, 2021). In addition, the following sources of guidance were also considered when carrying out the Appropriate Assessment:

- *Appropriate Assessment Screening for Development Management* (OPR, 2021);

- *Appropriate Assessment of Plans and Projects in Ireland* (Department of the Environmental Heritage and Local Government (DoEHLG), 2010);
- *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular Letter National Parks and Wildlife Service (NPWS) 1/10 & PSSP 2/10* (NPWS, 2010); and,
- *Technical Guidance note: Obtaining a licence to carry out specified maritime usages in the Maritime Area under the Maritime Area Planning Act 2021. MARA, 2024 Ver 7.* (MARA, 2024).

2.3 Data Sources

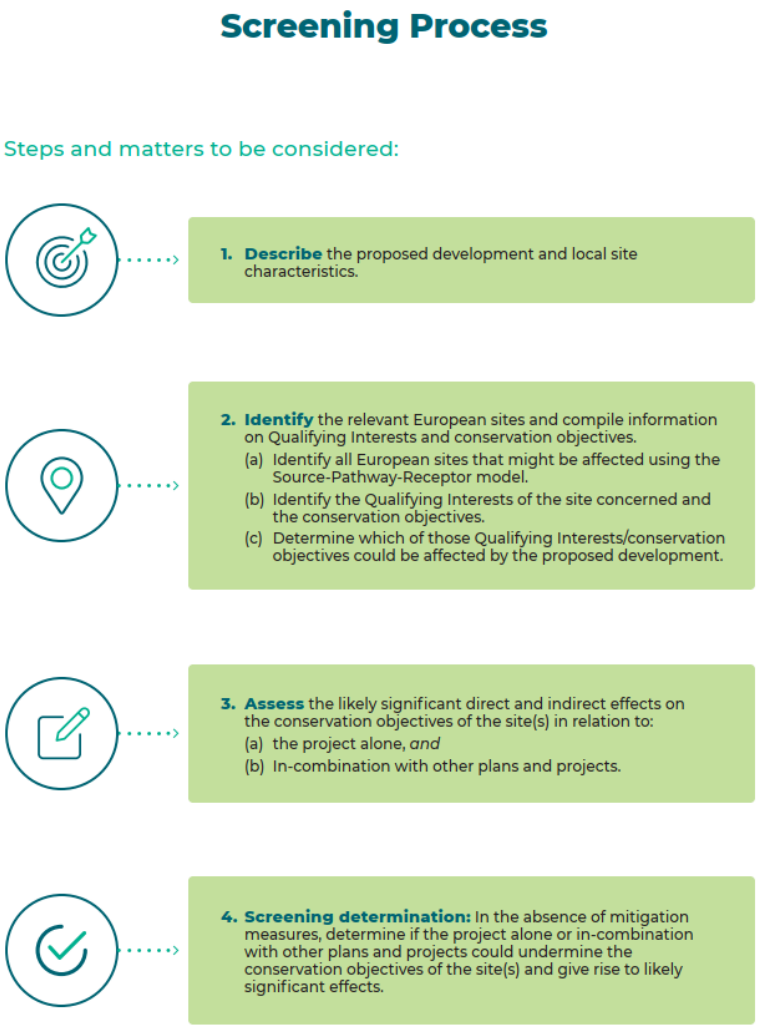
A desk-based study was carried out to help establish the baseline conditions relevant to the marine surveys. The following resources were analysed to inform the baseline description of the site of the marine surveys and for assessing sensitivities of European sites:

- Environmental Protection Agency (EPA) Appropriate Assessment maps website (https://gis.epa.ie/EPAMaps/AAGeoTool) (accessed March 2024);
- European Marine Observation and Data Network (EMODnet) maps website (https://emodnet.ec.europa.eu/geoviewer/) (accessed March 2024);
- Marine Plan Irelands Spatial Planning Portal (https://marineplan.ie/) (accessed March 2024);
- National Parks and Wildlife Service (NPWS) Protected Sites in Ireland website (https://www.npws.ie/protected-sites) (accessed March 2024);
- Google maps website (https://maps.google.com/) (accessed March 2024); and,
- The Status of European Union (EU) Protected Habitats and Species in Ireland (Article 17 Report) (https://www.npws.ie/publications/article-17-reports/article-17-reports-2019) (accessed March 2024).

2.4 AA Screening Process

The first step in the sequence of tests (after evidence gathering) is to establish whether an AA is required. This is often referred to as 'AA Screening'. Image 2 below outlines the steps of the AA Screening according to Office of the Planning Regulation (OPR) (2021).

Image 2. The AA Screening process (taken from OPR (2021))



The purpose of AA Screening is to determine, in view of best available scientific knowledge, whether a plan or project, either alone or in-combination with other plans or projects, could have likely significant effects on a European site, in view of that site's Conservation Objectives.

Section 177U of the PDA specifies:

> *"A screening for appropriate assessment of … [an] application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that … proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.*
>
> *The competent authority shall determine that an appropriate assessment of … a proposed development, …, is required* ***if it cannot be excluded*** [emphasis added]*, on the basis of objective information, that … the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site".*

For this purpose and as a result of case law 'likely' in practice means 'possible'[1]. If the Competent Authority determines that there are no likely significant effects (including 'in combination' effects from other plans or projects), then no further assessment is necessary and the plan or project can, subject to any other consent processes, be taken forward.

If, however, the competent authority determines that there are likely significant effects or if there is reasonable scientific doubt, then the next stage in the process must be initiated and a detailed Natura Impact Statement (NIS) must be prepared. The purpose of a NIS is to further explore the potential impacts and effects and to determine whether a conclusion of no adverse effects on integrity can be drawn for any of the 'screened in' impacts/European

[1] Waddenzee (C-127/02).

sites. One of the key considerations during the NIS stage is whether there is available mitigation that would entirely address potential effects.

2.5 Establishing the Zone of Influence

Department of the Environment, Heritage and Local Government guidance (DoEHLG, 2010) states that European sites with the potential to be affected by a project should be identified taking into consideration the potential for direct, indirect and/or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the project area;
- All European sites within the likely 'zone of influence' of the project; and
- Adopting the Precautionary Principle, all European sites for which there is doubt as to whether or not such sites might be significantly affected.

The likely ZoI of a project is the geographic extent over which it could affect the receiving environment in a way that will result in LSEs on the QIs or SCIs of a European site (OPR, 2021). In the case of projects, the DoEHLG guidance acknowledges that the ZoI must be devised on a case-by-case basis with reference to the following criteria:

- the nature, size/scale and location of the project;
- sensitivity of ecological features under consideration; and,
- cumulative effects.

When seeking to identify the relevant European sites, consideration was given to identified impact pathways and the source-pathway-receptor approach (OPR, 2021), rather than adopting solely a distance-based approach. The source-pathway-receptor approach is a standard tool in environmental assessment. For an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no possibility of an effect occurring. If, for example, there is a sensitive European site in the vicinity of the Lot 4 Project but no mechanism by which the Lot 4 Project would impact that site then there is no potential for an ecological effect. Furthermore, even where an impact is predicted to occur, it may not result in likely significant effects.

2.6 Potential Sources of Impact

A number of impacts could arise from the marine surveys during the Lot 4 Project. These surveys will be carried out in the marine environment and therefore only impacts to relevant marine receptors have been assessed in this SISAA report. A general overview description of each impact source is given below.

2.6.1 Temporary Direct Loss of or Damage to QI Marine Habitat within a European Site

The deployment, operation, and recovery of marine survey instruments will be limited to shallow waters (less than 100 m) within marine habitats only. Consequently, the marine survey instruments may be placed anywhere within the marine habitats located within the ADCP Areas[2]. Furthermore, a single tidal gauge (Site reference: CTG02) may be installed within the Inagh River Estuary SAC. Therefore, there is a potential for the marine surveys or tidal gauge to cause temporary direct loss of or damage to QI marine habitats of any European sites which are located within marine habitats of the ADCP Areas.

2.6.2 Temporary Physical Disturbance or Injury to QI / SCI's in the Immediate Vicinity of the Deployment Vessel and Marine Survey Instruments

The deployment and recovery of marine survey instruments will include the use of a vessel. This vessel has the potential to cause disturbance or injury where they take place sufficiently close to QI marine species, for example vessel collision risk with marine mammals. Disturbance can also be caused visually (for example by the presence of vessel). This could impact QI marine species when inside the boundary of a European site, or outside of a European site when using functionally-linked habitat.

[2] It should be noted that additional SACs are located within the ADCP Areas; however, these are not designated for marine QI habitats and therefore no possible direct impacts on these habitats can occur.

The potential for disturbance to be caused will depend on the location and nature of activities, the distribution of the QI marine species, and the sensitivity of the species to visual disturbance from human activities. Where disturbance is caused, it can have multiple adverse effects on species including increased energy expenditure, reduced feeding time, behavioural changes, and displacement. The disturbance caused may vary depending on different marine receptors groups.

2.6.3 Disturbance to QI / SCIs from Underwater Sound Associated with Geophysical and Bathymetric instruments

Underwater sound and vibration will be generated during the deployment and recovery of instruments as well as sounds emitted by survey instruments during operation. Man-made sound sources, particularly if of high intensity or long duration have the potential to result in permanent and temporary injury and auditory effects and can result in masking and behavioural disturbance in QI fish and QI marine mammals. However, the operating frequency of these survey instruments is presumed to be 600 kHz to 1 mHz for ADCPs, 200 to 400 kHz for MBES and 200 kHz for SBES. For most fish species, sensitivity to sound occurs from below 100 Hz to several hundred hertz, or several thousand hertz in a few species (Mann et al. 1997, 2001). The hearing range of marine mammals is between 7 kHz to 160 kHz (see Table 4) which is outside the operating frequency of the geophysical and bathymetric equipment to be deployed during the surveys. There is therefore, no pathway to effect and underwater sound associated with these surveys are therefore not considered further in this SISAA report.

Table 4. Hearing frequency range of marine mammals

Functional Hearing Group	Auditory band width	Species found in Ireland
Low frequency cetaceans	7 Hz to 35 kHz	• Humpback whale *Megaptera novaeangliae;* • Minke whale *Balaenoptera acutorostrata;* • Blue whale *Balaenoptera musculus*; • Fin whale *Balaenoptera physalus*; and • Sei whale *Balaenoptera borealis*.
Mid-frequency cetaceans	150 Hz to 160 kHz	• Sperm whale *Physeter macrocephalus*; • Killer whale *Orcinus orca*; • Long-fine-pilot whale *Globicephala melas*; • Beaked whale species Hyperoodontidae spp., and • Dolphin species (including bottlenose dolphin *Tursiops truncatus* and common dolphin *Delphinus delphis*)
High frequency cetaceans	275 Hz to 160 kHz	• Harbour porpoise *Phocoena phocoena*; and • Pygmy sperm whale *Kogia breviceps.*
Pinnipeds in water	50 Hz to 86 kHz	• Grey seal *Halichoerus grypus; and* • Harbour seal *Phoca vitulina.*

Source: Southall et al. (2007); NMFS (2018); and Southall et al. (2019).

2.6.4 Disturbance to QI / SCIs from Underwater Sound Associated with Vessels' Engines during the Marine Surveys

Underwater sound from anthropogenic activities (including vessel engine noise) can negatively impact marine mammals. In cetaceans it can influence their ability to echolocate, communicate and in extreme cases, such as during underwater explosions or military sonar, it can cause physical harm (including through disorientation leading to beaching) and trauma to the auditory apparatus (Southall, *et al.,* 2007). Underwater sound can cause certain cetacean species to change their behaviour and may result in increased alertness, modification of vocalisations, interruption, or cessation of feeding or social interactions, alteration of movement or diving behaviour, and temporary or permanent habitat abandonment. Seals also produce a diversity of sounds, though generally over a lower and more restricted bandwidth (generally from 50 Hz to several tens of kHz (Table 4). Their sounds are used primarily in social and reproductive interaction, both in water and air (Southall, *et al.,* 2007).

2.6.5 Impacts on Water Quality Arising from a Pollution Event by Vessel

Accidental / unplanned release of pollutants such as vessel fuels from vessels, equipment and machinery during the deployment and recovery of marine survey instruments could have the potential to impact QI fish, marine mammals and SCI birds by altering local water quality.

Waterborne pollution can degrade habitats and can lead to the direct mortality of QI species such as fish and marine mammals. The distance over which such impacts could have effects would depend on the severity of the pollution. However, any European site which has a direct hydrological connection (i.e., located in the same waterbody) to the marine surveys, has the potential to be within the ZoI.

2.7 Determining the Potential Relevance of Impacts to QI Habitats and Species / SCI Species

2.7.1.1 Annex I Benthic Habitats

A number of Annex I marine habitats listed under the Habitats Directive are a QI of European sites. The marine survey areas are located within a number of SACs designated for Annex I benthic habitat and therefore the marine surveys have the potential to impact these QI habitats where works occur within or adjacent to a European site.

2.7.1.2 Annex II Migratory Fish

There are four migratory fish species listed under of the Habitats Directive, which are a QI of a European site which occurs in the vicinity of the marine survey areas and have therefore been considered in this SISAA report:

- Atlantic salmon (*Salmo salmar*);
- Sea lamprey (*Petromyzon marinus*);
- Brook lamprey (*Lampetra planeri); and*
- River lamprey (*Lampetra fluviatilis*).

A regional approach has been adopted to ensure any QI fish that may pass through the marine survey areas are considered. For the purposes of this SISAA report, disturbance is considered to occur where the marine survey areas fall in front of a migratory route for QI fish species into a river.

Freshwater pearl mussel (*Margaritifera margaritifera)* is not a mobile species. However, it relies upon salmonid fish for part of its lifecycle. Therefore, in cases where a direct hydrological connection exists between the marine surveys and an SAC designated for freshwater pearl mussel, the potential impacts on this species are considered.

2.7.1.3 Annex II Marine Mammals

To account for the highly mobile and transient nature of marine mammal species, and potential implications of local impacts on wider populations, all designated sites within the species-specific Marine Mammal Management Units (MMMUs), published by the Inter Agency Marine Mammal Working Group (IAMMWG) (IAMMWG, 2023), are considered. These MMMUs have been defined by the IAMMWG based on their understanding of the biological population structure of these species, and the ecological differentiation of these populations (considering political boundaries and the management of human activities). There are currently no IAMMWG agreed MMMUs for seals, therefore, as recommended in the MARA Technical Guidance Note (2024), all designated sites within their maximum foraging ranges are considered. In accordance with advice received from Natural Resources Wales (NRW) 2022[3], the use of an iterative/sequential process is adopted whereby the closest relevant European site is assessed and if a likely significant effect, cannot be ruled out the next relevant European Site is assessed and so on.

The MMMUs and foraging ranges for the marine mammal species, which are listed under Annex II of the Habitats Directive and that may occur in the vicinity of the marine surveys, and have subsequently been used in this SISAA report are:

- Harbour porpoise (*Phocoena phocoena*) – Celtic and Irish Seas MMMU (IAMMWG, 2023);
- Bottlenose dolphin (*Tursiops tuncatus*) – West Coast of Ireland MMMU ((IAMMWG, 2023);
- Grey seal (Halichoerus grypus) – 448 km (Carter et al., 2022); and
- Harbour seal (Phoca vitulina)– 273 km (Carter et al., 2022).

The European otter (*Lutra lutra*) is also listed as an Annex II species under the Habitats Directive. However, due to the offshore nature of the marine surveys this terrestrial and coastal species is not considered to be relevant for the purposes of this AA screening and is therefore, not considered further.

[3] NRW (2022) NRW's position on the use of Marine Mammal Management Units for screening and assessment in Habitats Regulations Assessments for Special Areas of Conservation with marine mammal features
https://naturalresources.wales/media/695250/ps006-mmmus-in-hra-position-statement-may22.pdf

2.7.1.4 Marine Ornithology

Ireland harbours several nationally and internationally important bird species, which inhabit areas with coastal sea cliffs, estuaries, and offshore islands. Consequently, many of these areas have been designated as SPAs. The coastal ecosystems serve as crucial breeding grounds for numerous seabird species, many of which are legally protected under both national and European environmental regulations.

Recognising the highly mobile and wide-ranging nature of birds in the marine environment and the potential implications of local impacts on wider populations, the foraging ranges and migration routes (Woodward *et al.,* 2019) along with the specific seasons for the SCI species designated were considered in identifying potential SPAs for the AA screening. Taking the precautionary approach and following the OPR (2021) guidance on the source-pathway-receptor model and considering the sources, the ZoI for displacement and disturbance effects are understood to be spatially confined within 5 km of the marine survey areas. However, as carried out for marine mammals, an iterative/sequential process is adopted whereby the closest relevant European site is assessed and if a likely significant effect, cannot be ruled out the next relevant European Site is assessed and so on.

For SPAs that have not been included in this AA screening, it is considered that a likely significant effect will not occur either alone or in combination with other projects and plans, due to the scope and scale of the marine surveys (i.e., the source and pathway).

3. European Sites within Zone of Influence

Taking the approach described in Section 2.5 and with cognisance of the impact sources set out in Section 2.6 and Section 2.7, the ZoI for the marine surveys of the Lot 4 Project, and all of the European sites within it, was determined. This is set out in Table 5. The impacts of the deployment and recovery of marine instruments phase are likely to be very similar and are therefore considered together in Table 5.

The locations of all European sites within the ZoI are shown on Appendix b, Figure 2.

Not all impacts will have pathways for effects to the QI / SCI of all European sites within the ZoI. Consequently, some sites may be within the ZoI for certain impacts, but not for others.

Table 5. Identifying Relevant Designated Sites for Consideration based on Source-Pathway-Receptor framework and ZOI

Impact Source	Pathway to European Site(s)	European Sites within the Potential ZoI
Deployment and Recovery of Marine Instruments		
Temporary direct loss of or damage to QI marine habitat within a European site.	Seven ADCP Areas are located within eight European sites designated for QI marine habitats. The ADCP Area's are located within the following European sites are: • Black Head-Poulsallagh Complex SAC designated for reefs; • Carrowmore Dunes SAC designated for reefs; • Carrowmore Point to Spanish Point and Islands SAC designated for reefs and coastal lagoons; • Connemara Bog Complex SAC designated for reefs and coastal lagoons; • Galway Bay Complex SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal; • Inagh River Estuary SAC designated for salicornia and other annuals colonising mud and sand and Atlantic salt meadows; • Kilkee Reefs SAC designated for reefs, large shallow inlets and bays, submerged or partially submerged sea caves; and • Kilkieran Bay And Islands SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal. Six of these ADCP Areas will include a single ADCP being placed on the seabed. Therefore, there is potential for QI marine habitats of these sites to be directly lost or damaged as a result of the deployment and recovery of the ADCPS. The seventh ADCP Area (ADCP02), which is located within the will Kilkieran Bay and Islands SAC will involve a ADCP being placed in the water column via vessel mounted method therefore will not be placed on the seabed. Therefore, there is no potential for direct loss or damage to the seabed within the Kilkieran Bay and Islands SAC. One tidal gauge (site reference: CTG02) may also be installed upstream within the Inagh River Estuary SAC. However, the tidal gauge will not be placed on any qualifying habitats of this SAC. Therefore, there is no potential for direct loss or damage to any QI habitats within the Inagh River SAC.	• Black Head-Poulsallagh Complex SAC; • Carrowmore Dunes SAC; • Carrowmore Point to Spanish Point and Islands SAC; • Connemara Bog Complex SAC; • Galway Bay Complex SAC; • Inagh River Estuary SAC; • Kilkee Reefs SAC; and • Kilkieran Bay And Islands SAC.
Temporary physical disturbance (e.g., airborne sound or visual disturbance to QI / SCI's in the immediate vicinity of the deployment vessel and marine survey instruments	The deployment and recovery of marine survey instruments and presence of a vessel could potentially disturb or displace QI marine species in the vicinity. Therefore, the following European sites, designated for QI marine species are considered present within the potential ZoI: • Black Head-Poulsallagh Complex SAC designated for reefs; • Carrowmore Dunes SAC designated for reefs; • Carrowmore Point to Spanish Point and Islands SAC designated for reefs and coastal lagoons; • Connemara Bog Complex SAC designated for reefs and coastal lagoons; • Galway Bay Complex SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal ; • Inagh River Estuary SAC designated for salicornia and other annuals colonising mud and sand and Atlantic salt meadows; • Inisheer Island SAC designated for reefs and coastal lagoons; • Inishmaan Island SAC designated for reefs;	• Black Head-Poulsallagh; Complex SAC; • Carrowmore Dunes SAC; • Carrowmore Point to Spanish Point and Islands SAC; • Connemara Bog Complex SAC; • Galway Bay Complex SAC; • Inagh River Estuary SAC; • Inisheer Island SAC; • Inishmaan Island SAC; • Inishmore Island SAC; • Kerry Head Shoal SAC;

Impact Source	Pathway to European Site(s)	European Sites within the Potential ZoI
	• Inishmore Island SAC designated for reefs and coastal lagoons; • Kerry Head Shoal SAC designated for reefs; • Kilkee Reefs SAC designated for reefs, large shallow inlets and bays, submerged or partially submerged sea caves; • Kilkieran Bay And Islands SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal; • Kingstown Bay SAC designated for large shallow inlets and bays; • Lough Corrib SAC designated for Atlantic salmon, brook lamprey, sea lamprey; • Lower River Shannon SAC designated for Atlantic salmon, sea lamprey, brook lamprey and river lamprey; • Slyne Head Peninsula SAC designated for coastal lagoon, large shallow inlets and bays, reefs and annual vegetation of drift lines; • West Connacht Coast SAC designated for bottlenose dolphin; • Cliffs of Moher SPA designated for various waterbirds and seabirds; • Connemara Bog Complex SPA designated for various waterbirds and seabirds; • Cregganna Marsh SPA designated for various waterbirds and seabirds; • Dingle Peninsula SPA designated for various waterbirds and seabirds; • Illaunonearaun SPA designated for various waterbirds and seabirds; • Inishmore SPA designated for various waterbirds and seabirds; • Inner Galway Bay SPA designated for various waterbirds and seabirds; • Kerry Head SPA designated for various waterbirds and seabirds; • Loop Head SPA designated for various waterbirds and seabirds; • Magharee Islands SPA designated for various waterbirds and seabirds; • Mid-Clare Coast SPA designated for various waterbirds and seabirds; • River Shannon and River Fergus Estuaries SPA designated for various waterbirds and seabirds; and • Slyne Head To Ardmore Point Islands SPA designated for various waterbirds and seabirds.	• Kilkee Reefs SAC; • Kilkieran Bay And Islands SAC; • Kingstown Bay SAC; • Lough Corrib SAC; • Lower River Shannon SAC; • Slyne Head Peninsula SAC; • West Connacht Coast; • Cliffs of Moher SPA; • Connemara Bog Complex SPA; • Cregganna Marsh SPA; • Dingle Peninsula SPA; • Illaunonearaun SPA; • Inishmore SPA; • Inner Galway Bay SPA; • Kerry Head SPA; • Loop Head SPA; • Magharee Islands SPA; • Mid-Clare Coast SPA; • River Shannon and River; Fergus Estuaries SPA; and • Slyne Head To Ardmore Point Islands SPA.
Disturbance to QI / SCIs from Underwater Sound Associated with Vessels' Engines during the Marine Surveys	The underwater sound generated by the presence of a vessel during deployment and recovery of marine survey instruments could potentially disturb or displace QI marine species in the vicinity. Therefore, the following European sites, designated for QI marine species are considered present within the potential ZoI: • Galway Bay Complex SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal ; • Kilkee Reefs SAC designated for reefs, large shallow inlets and bays, submerged or partially submerged sea caves; • Kilkieran Bay And Islands SAC designated for reefs, coastal lagoons, large shallow inlets and bays, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows, Mediterranean salt meadows, harbour seal; • Lough Corrib SAC designated for Atlantic salmon, brook lamprey, sea lamprey; • Lower River Shannon SAC designated for Atlantic salmon, sea lamprey, brook lamprey and river lamprey; • West Connacht Coast SAC designated for bottlenose dolphin.	• Galway Bay Complex SAC; • Kilkee Reefs SAC; • Kilkieran Bay And Islands SAC; • Lough Corrib SAC; • Lower River Shannon SAC; • West Connacht Coast SAC.

Impact Source	Pathway to European Site(s)	European Sites within the Potential ZoI
Impacts on water quality arising from a pollution event by vessel	The marine surveys will include the temporary use of a single vessel which could theoretically increase the risk of pollution events from the vessel. In the event of a pollution incident, it may impact QI / SCI in the same waterbody due to contaminants and cause a reduction in diversity, abundance and / or biomass. However, due to the nature and size of the vessel, pollution events are likely to be rare and limited to the accidental release of fuel which is highly volatile and will evaporate rapidly when exposed to air and the associated impacts would be highly localised, small scale and any spillage is expected to be insignificant. In the unlikely event of an accidental spillage or pollution, any pollutants would quickly disperse and mix with the water column, aided by strong tidal currents, wind, and waves at the deployment locations.	None
Operation of Marine Instruments		
Temporary direct loss of or damage to QI benthic habitat within a European site	Same as above	Same as above
Temporary physical disturbance (e.g. physical obstacle or barrier to movement) to QI / SCI's in the immediate vicinity of the marine survey instruments.	There is no realistic pathway for this impact. The physical placement of the marine survey instruments on the seabed does not pose any significant disturbance risk to QI / SCI species, which are highly mobile and are well able to simply avoid the marine survey's instruments.	None.
Impacts on water quality arising from a pollution event	There is no mechanism by which the operation of the marine survey instruments could realistically lead to a pollution event which would impact any QI or SCI species of any European site.	None

4. Test of Likely Significant Effects

4.1 Overview

This section assesses the potential for the identified impacts, for which pathways exist to European sites, to have likely significant effects on those sites. 'Likely' in this context is taken to mean 'possible', while a 'significant' effect is one which could undermine the Conservation Objectives of a European site.

The purpose of AA Screening is to determine those elements of a project regarding which it can be stated, without detailed appraisal, that significant effects on a European site are unlikely. In line with case law[4], consideration cannot be given at this stage to specific mitigation measures designed to avoid significant effects on a European site. The test of likely significant effects in this section is therefore necessarily a high-level appraisal, with a precautionary approach adopted when reaching a conclusion.

For those impacts for which likely significant effects cannot be 'screened out' (i.e. excluded), further appraisal at the Appropriate Assessment stage will be required.

4.2 Impacts with Pathways to European Sites

4.2.1 Impacts Screened Out from Further Assessment

– On the basis of the initial assessment described in Section 2 of this document, the following possible impacts during deployment and recovery of marine survey instruments have been screened out of further appraisal because there is no potential pathway for them to affect the QI's of any European site:

- Impacts on water quality arising from a pollution event by vessel.

Additionally, the following impacts during the operation of the marine survey have been screened out of further appraisal because there is clearly no potential for them to occur on the QI's of any European site:

- Disturbance to QI / SCIs from underwater sound associated with marine survey instruments;
- Temporary physical disturbance (e.g. physical obstacle or barrier to movement) to QI / SCI's in the immediate vicinity of the marine survey instruments; and
- Impacts on water quality arising from a pollution event.

4.2.2 Impacts Tested for Likely Significant Effects

Based on the initial assessment described in Section 2 of this document, the following possible impacts will be considered further as potential pathways which could affect QI's of a European site:

- During the deployment and recovery of marine survey instruments:
  - Temporary direct loss of or damage to QI benthic habitat within a European site; and
  - Temporary physical disturbance (e.g., airborne sound or visual disturbance to QI / SCI's in the immediate vicinity of the deployment vessel and marine survey instruments
  - Disturbance to QI / SCIs from underwater sound associated with vessels' engines during the Marine Surveys
- During the operation of marine survey instruments
  - Temporary direct loss of or damage to QI benthic habitat within a European site.

4.3 Screening Assessment

For each European site within the ZoI of the marine surveys, the deployment, recovery, and operational impacts are examined in Table 6 to determine their potential to result in likely significant effects on the QI's.

[4] People Over Wind and Sweetman v Coillte Teoranta (C-323/17).

Information on each European site relevant to the test of likely significant effects, including the list of QI/ SCI, Conservation Objectives, and known existing threats or pressures, was obtained from the National Parks and Wildlife Service (NPWS) website (https://www.npws.ie/).

Table 6 AA screening assessment for potential for effects on QI and SCI receptors

Impact Source	European Sites within the Potential ZoI	Potential Effects	Likely Significant Effects?
Deployment and Recovery of Marine survey instruments			
Temporary direct loss of or damage to QI benthic habitat within a European site	• Black Head-Poulsallagh Complex SAC; • Carrowmore Dunes SAC; • Carrowmore Point to Spanish Point and Islands SAC; • Connemara Bog Complex SAC; • Galway Bay Complex SAC; • Inagh River Estuary SAC; • Kilkee Reefs SAC; and • Kilkieran Bay And Islands SAC.	A single ADCP will be deployed within each ADCP Area. Each ADCP will be placed on the seabed within sandy flat habitats only and recovered from the same type of habitat, even if the device is non-responsive. Recovery methods, including the grapple method, will exclusively target sandy flat habitats. Furthermore, while current mapping indicates the presence of geogenic and/or biogenic reef within some of the ADCP Areas, deployment of ADCPs on such habitats will not occur as ADCPs will only be deployed and recovered on sediment habitats. Site investigations at the time of deployment will ensure such habitats are avoided by reference to vessel soundings at the time of deployment	**No**
Temporary physical disturbance or injury (e.g., airborne sound or visual disturbance or collision risk to QI / SCI's in the immediate vicinity of the deployment vessel and marine survey instruments	• Black Head-Poulsallagh; Complex SAC; • Carrowmore Dunes SAC; • Carrowmore Point to Spanish Point and Islands SAC; • Connemara Bog Complex SAC; • Galway Bay Complex SAC; • Inagh River Estuary SAC; • Inisheer Island SAC; • Inishmaan Island SAC; • Inishmore Island SAC; • Kerry Head Shoal SAC; • Kilkee Reefs SAC; • Kilkieran Bay And Islands SAC; • Kingstown Bay SAC; • Lough Corrib SAC; • Lower River Shannon SAC; • Slyne Head Peninsula SAC; • West Connacht Coast; • Cliffs of Moher SPA; • Connemara Bog Complex SPA; • Cregganna Marsh SPA; • Dingle Peninsula SPA; • Illaunonearaun SPA; • Inishmore SPA; • Inner Galway Bay SPA;	The physical presence of the vessel and marine survey instruments during the deployment and recovery phase may result in temporary displacement or injury of SCI birds, QI marine mammals, and QI fish from the vicinity. <u>QI fish</u> The collision risk from a vessel to a QI fish is considered to be extremely unlikely given the highly mobile nature of QI fish and small temporary nature of works and so the presence of vessels and/or deployment of survey equipment are therefore not expected to have any potential for any likely significant effects on these species. <u>QI marine mammals</u> Vessel movements during the marine surveys have the potential for collisions with QI marine mammals. This could result in physical injury, such as propeller injuries, and as a worst-case, mortality (Schoeman, et al., 2020). The exact size and number of vessels deployed is subject to the appointment of the survey contractor, however, it is assumed that two vessels will be required; one to deploy and recover the ADCPs and one to vessel-mount and tow the SBES and/or MBES in the Lot 4 Proposed Licence. The ADCP and bathymetric marine surveys are expected to be completed using vessels which are considered to be small (<25 m). Marine mammals, particularly cetaceans, are fast swimming, agile species, with rapid reflexes and good sensory capabilities (Hoelzel, 2002). The most lethal and serious injuries to cetaceans are believed to be caused by large ships, typically 80 m and longer, as well as vessels travelling faster than 14 knots (Laist, et al., 2001). It is anticipated that the vessels required for the marine surveys will be less than 25 m in length and slow moving (i.e., survey speeds of 4 knots and 10 – 15 knots whilst in transit), meaning that individual marine mammals can easily avoid the vessel, greatly reducing the risk of collision. Furthermore, marine mammals possess a thick subdermal layer of blubber or fat	**Yes –** there is potential for airborne sound and visual disturbance effects to QI seals of Galway Bay Complex SAC and Kilkieran Bay And Islands SAC

Impact Source	European Sites within the Potential ZoI	Potential Effects	Likely Significant Effects?
	• Kerry Head SPA; • Loop Head SPA; • Magharee Islands SPA; • Mid-Clare Coast SPA; • River Shannon and River; Fergus Estuaries SPA; and • Slyne Head To Ardmore Point Islands SPA.	deposits which provides a level of protection to their vital organs meaning they are reasonably resilient to minor strikes and collisions. Seals regularly spend time at the sea surface or on land at 'haul-out' sites where they rest, breed, and moult, making them more susceptible to airborne sound and visual stimuli. Therefore, vessels could cause airborne or visual disturbance to seals at their haul out sites if operating close to them. Where sites are designated for the protection of seals, the associated haul out sites can support hundreds to thousands of individuals (Morris et al., 2021). Whilst hauling out can occur at any time of the year where seals choose to rest, the greatest aggregations occur during the breeding and moulting seasons. In Ireland, the moulting season for harbour seal is predominantly between August and September and the breeding season for harbour seal is approximately May to July (NPWS, 2013). Grey seal general breed from September to December in Ireland[5]. Disturbed seals can exhibit a range of behaviours, from increased alertness to 'flushing', in which disturbed and panicked seals flee their haul-out site and return to the water (Wilson, 2014). Studies indicate that seals typically flush when disturbances occur within roughly 100 meters, though the exact distance varies by location and disturbance type and the level of exposure already experienced (Seal Conservation Society, 2014, Henry & Hammill, 2001 and Calambokidis et al., 1991). For example, in some locations seals have been observed to react to disturbances up to 1,000 meters away (Wilson, 2014; Jansen et al., 2015). However, factors such as vessel type and seal habituation significantly influence these responses and in areas where there is regular vessel traffic seals can become highly habituated to this kind of disturbance. The closest seal-haul out site is located within the marine survey areas. **Therefore, there is considered to be potential for likely significant effects to occur to QI seals haul-out sites within Galway Bay Complex SAC and Kilkieran Bay and Islands SAC.** <u>SCI birds</u> The operation of the vessels used for each of the surveys is expected to be of extremely limited duration and infrequent occurrence. Given that seabirds are highly mobile species with access to a wide range of alternative suitable habitats, it is anticipated that they may temporarily relocate to these areas and return once the disturbance has ceased. Therefore, airborne and visual disturbance caused to any QI bird in the marine environment will be very short lived and temporary and is not expected to result in any likely significant effects.	

[5] https://www.npws.ie/marine/marine-species/grey-seal#:~:text=The%20Grey%20Seal%20generally%20breed,usually%20after%20about%20six%20weeks.

Impact Source	European Sites within the Potential ZoI	Potential Effects	Likely Significant Effects?
Disturbance to QI / SCIs from Underwater Sound Associated with Vessels' Engines during the Marine Surveys	• Galway Bay Complex SAC; • Kilkee Reefs SAC; • Kilkieran Bay And Islands SAC; • Lough Corrib SAC; • Lower River Shannon SAC; • West Connacht Coast SAC	The underwater sound generated by the presence of a vessel during deployment and recovery of marine survey instruments can cause physical or auditory injury however, due to the relatively low level intensity of the sound source, and the fact the sound is continuous in nature (rather than high intensity impulsive sounds) it is very unlikely that underwater sound emitted by the vessels engine during the marine surveys will cause any physical or auditory injury to any QI marine species.. This is also because both the survey vessels and QI marine species will be mobile and are unlikely to remain close to the sound source for very long. Underwater sound from vessels can result in a range of behavioural responses in QI marine mammals, QI fish, as well as avoidance, to chronic levels of underwater sound (Erbe *et al*., 2019). However, the QI marine mammals and QI fish present in the vicinity are highly mobile and, these species are likely to quickly relocate to nearby areas and resume their normal activities once the disturbance subsides. In addition, these QI species are likely to be habituated, to some extent, to vessel noise and movement in a busy sea area such as the waters off the west coast of Ireland (MMO, 2015). Therefore, the potential temporary physical disturbance to QI marine mammals and QI fish caused by the deployment vessel and marine survey instruments is not expected to have significant effects on these species due to the temporary, small-scale, and localised nature of the marine surveys.	**No**

5. In-Combination Assessment

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018). Effects which arise in-combination with other projects or plans must be considered as part of the AA Screening process. In accordance with OPR (2021), the assessment of in-combination effects must examine:

- completed projects;
- projects which are approved but not completed;
- proposed projects (i.e. for which an application for approval or consent has been made, including refusals subject to appeal and not yet determined);
- proposals in adopted plans; and
- proposals in finalised draft plans formally published or submitted for consultation or adoption.

A review of the Marine Plan Database (https://www.marineplan.ie/) was carried out to identify any planning applications from the last five years for projects within close proximity (i.e., 1 km) of the Proposed Licence Areas. Planning applications that have been identified as having the potential to act in-combination with the marine surveys of the Lot 4 Project are detailed in Appendix C, Table 7 with their Foreshore Licence status. No plans have been identified which could give rise to in-combination effects with the possible impacts from the marine surveys of the Lot 4 Project.

The projects identified as having potential in-combination effects are all offshore wind or wave farm developments which will likely result in similar disturbance effects, and therefore have the potential to act in-combination with the Lot 4 project. These will be therefore, be further assessed at the next stage, the Appropriate Assessment stage. The Appropriate Assessment can be found in the Natura Impact Statement (AECOM, 2024).

6. Appropriate Assessment Screening Statement

With cognisance of all of the potential impact sources which could arise from the deployment, recovery and operational phases of the proposed Lot 4 marine survey works, and the possible pathways by which they could reach the QI or SCI of European sites, the ZoI of the proposed works was established. This was determined to encompass the following two European sites:

- Galway Bay Complex SAC
- Kilkieran Bay And Islands SAC

As set out in **Table 6**, disturbance to the QI seal haul-out sites cannot be ruled out at this stage. It is therefore necessary to proceed to the next stage of Appropriate Assessment, and for a Natura Impact Statement to be prepared. At this stage, avoidance / mitigation measures can be considered In view of best available scientific knowledge and on the basis of objective information, likely significant effects from the marine surveys of the Lot 4 Project on European sites, either alone or in-combination with other plans or projects, cannot be excluded.

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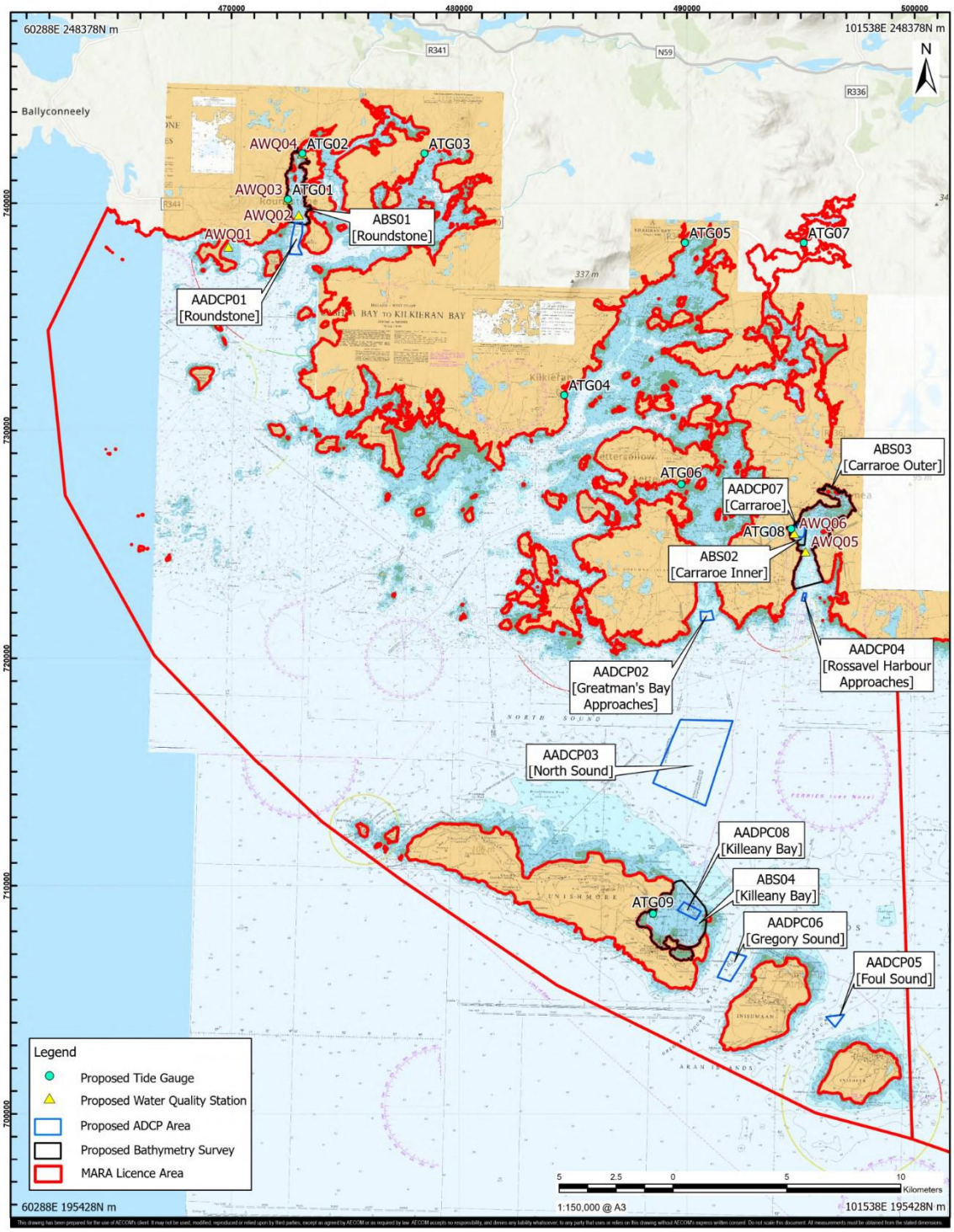
Appendix A Site Layout Plans



CLIENT
Uisce Éireann
Irish Water

TITLE
Site Layout Map A

DRAWING NUMBER
MUL240033-201

REVISION
Revision No 1

Date
20/01/2025

PROJECTION
Irish Transverse Mercator (ITM)

MARA FILE REFERENCE
MUL240033

DATA SOURCES
Where the licence area adjoins or abuts the land the High Water Mark as defined by the Chief Boundary Surveyor is the boundary of the licence area.

Service Layer Credits: Esri, Intermap, NASA, NGA, USGS, TomTom, Garmin, Foursquare, , METI/NASA, GeoTechnologies, Inc.

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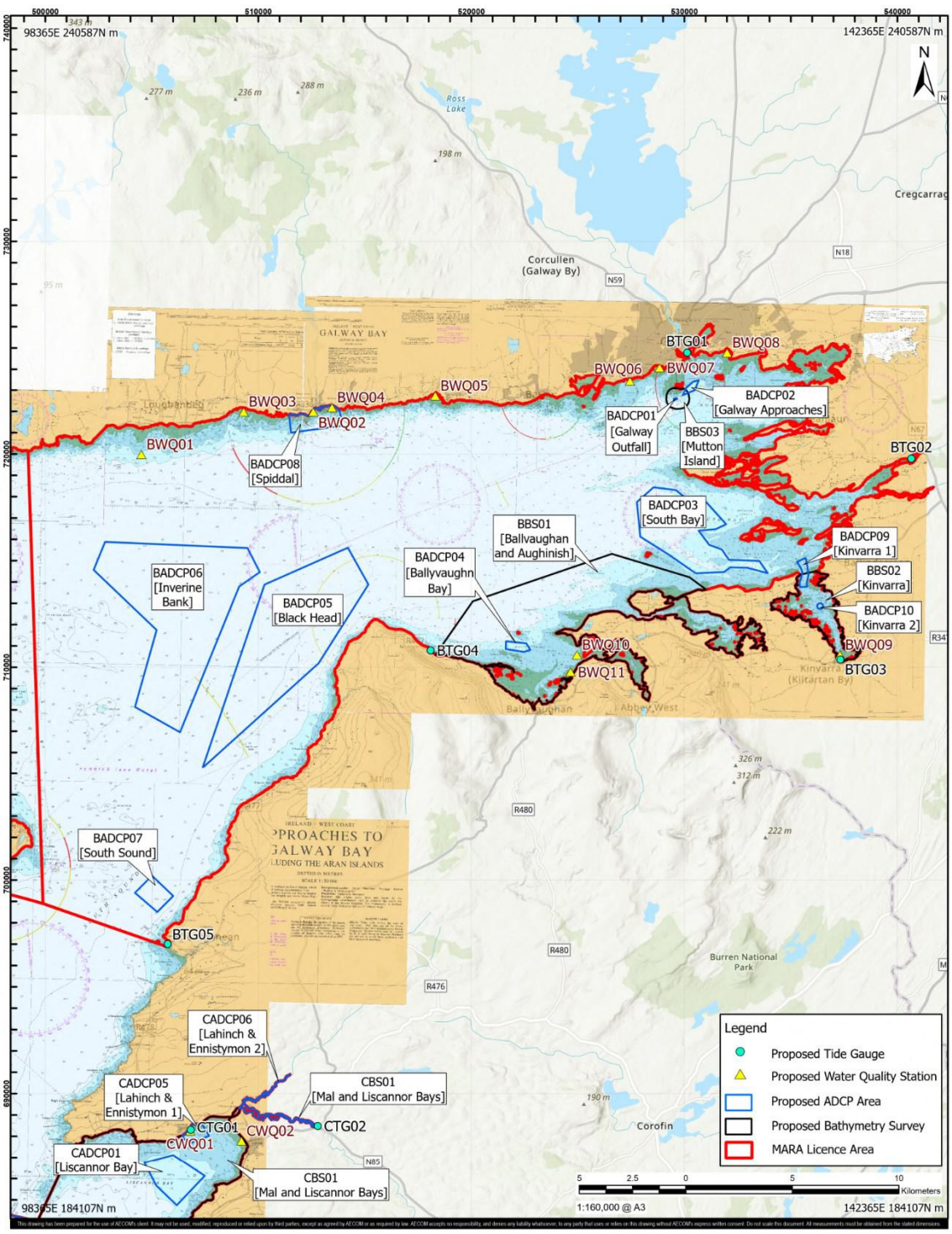
Map A Site Layout Plan



CLIENT

Uisce Éireann Irish Water

TITLE

Site Layout Map B

DRAWING NUMBER

MUL240033-202

REVISION

Revision No 1

Date

20/01/2025

PROJECTION

Irish Transverse Mercator (ITM)

MARA FILE REFERENCE

MUL240033

DATA SOURCES

Where the licence area adjoins or abuts the land the High Water Mark as defined by the Chief Boundary Surveyor is the boundary of the licence area.

Service Layer Credits: Esri, Intermap, NASA, NGA, USGS, TomTom, Garmin, Foursquare, , METI/NASA, GeoTechnologies, Inc.

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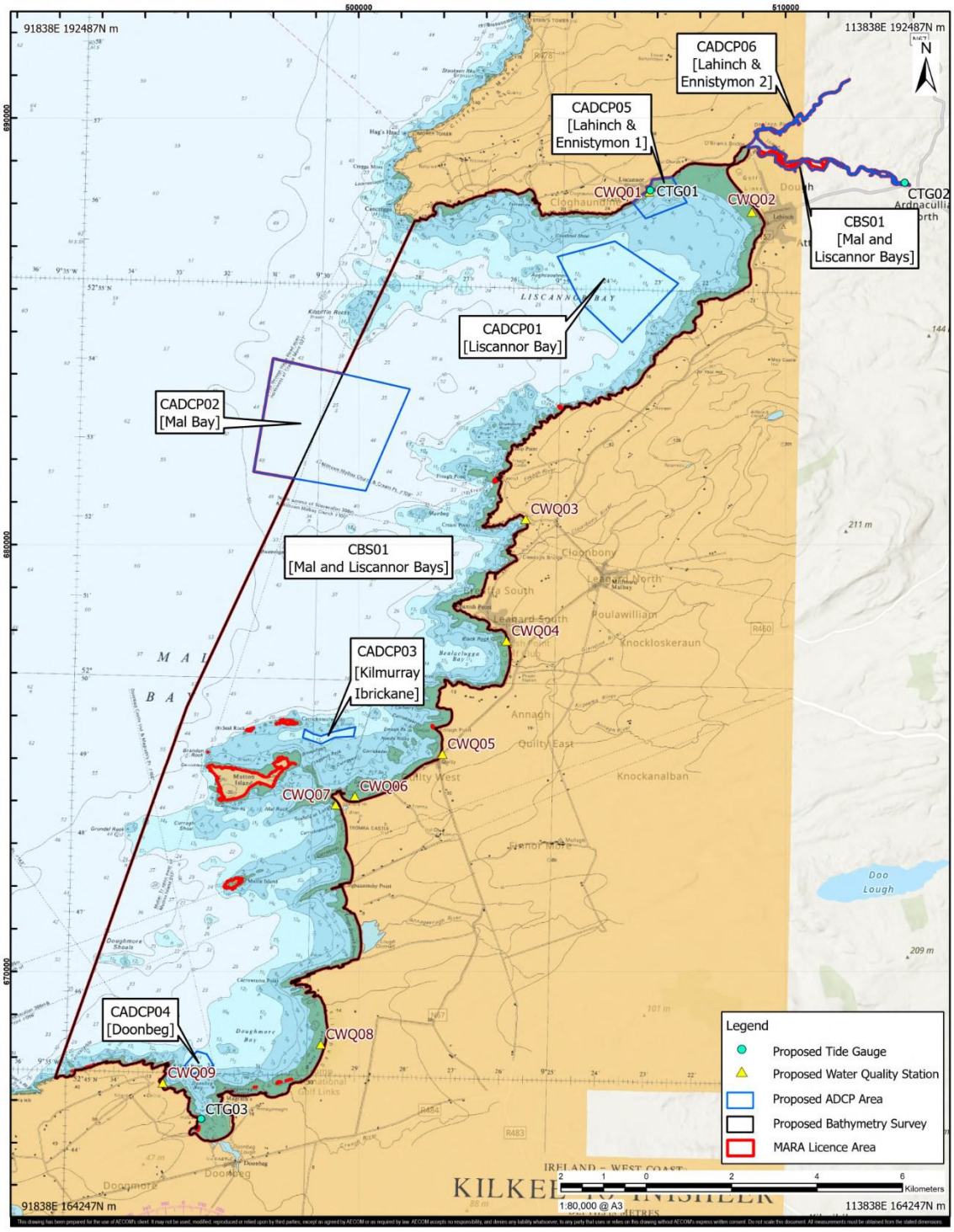
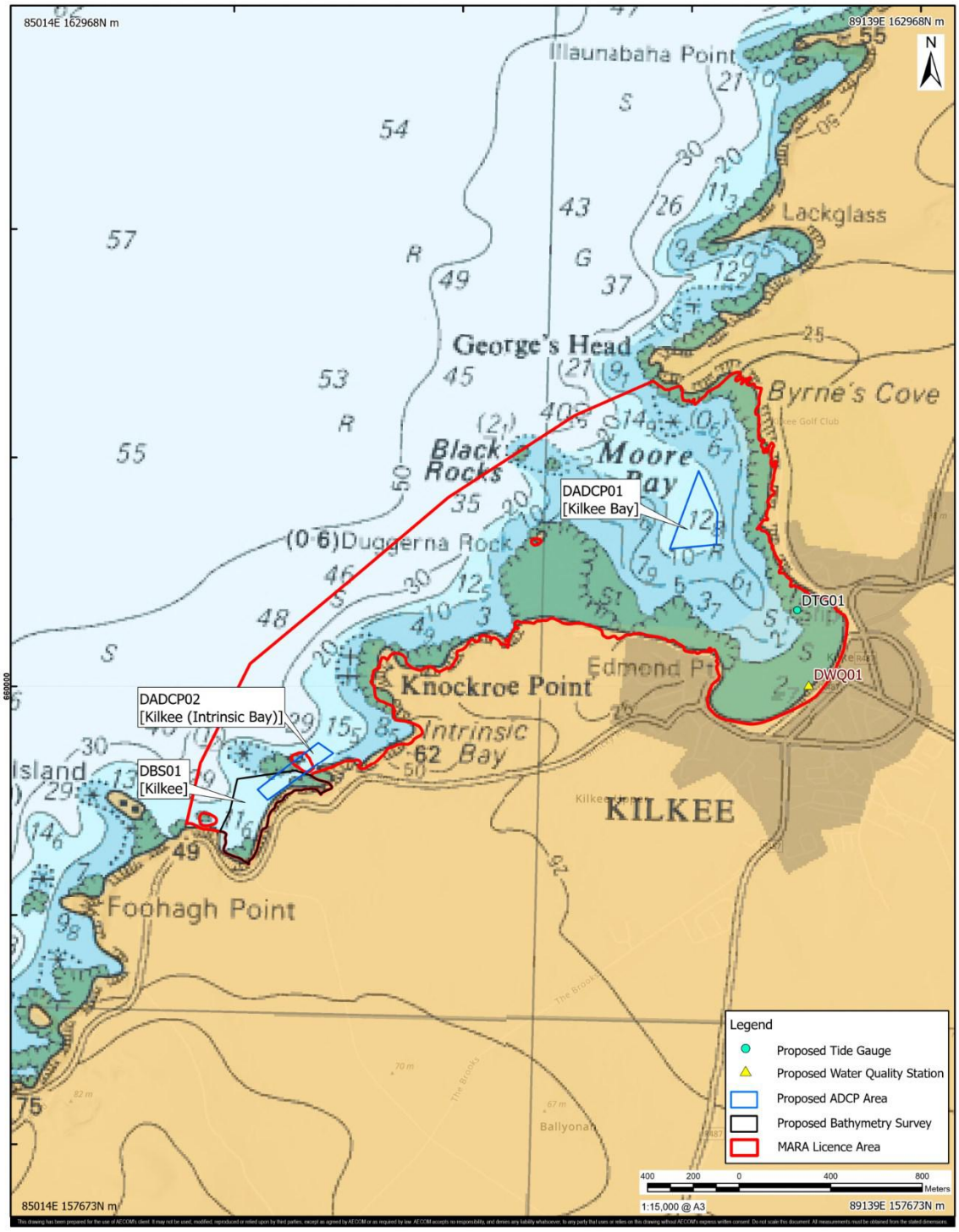
Map B Site Layout Plan



Map C Site Layout Plan



CLIENT
Uisce Éireann
Irish Water

TITLE
Site Layout Map D

DRAWING NUMBER
MUL240033-204

REVISION
Revision No 1

Date
20/01/2025

PROJECTION
Irish Transverse Mercator (ITM)

MARA FILE REFERENCE
MUL240033

DATA SOURCES
Where the licence area adjoins or abuts the land the High Water Mark as defined by the Chief Boundary Surveyor is the boundary of the licence area.

Service Layer Credits: Esri, Intermap, NASA, NGA, USGS, TomTom, Garmin, Foursquare, , METI/NASA, GeoTechnologies, Inc.

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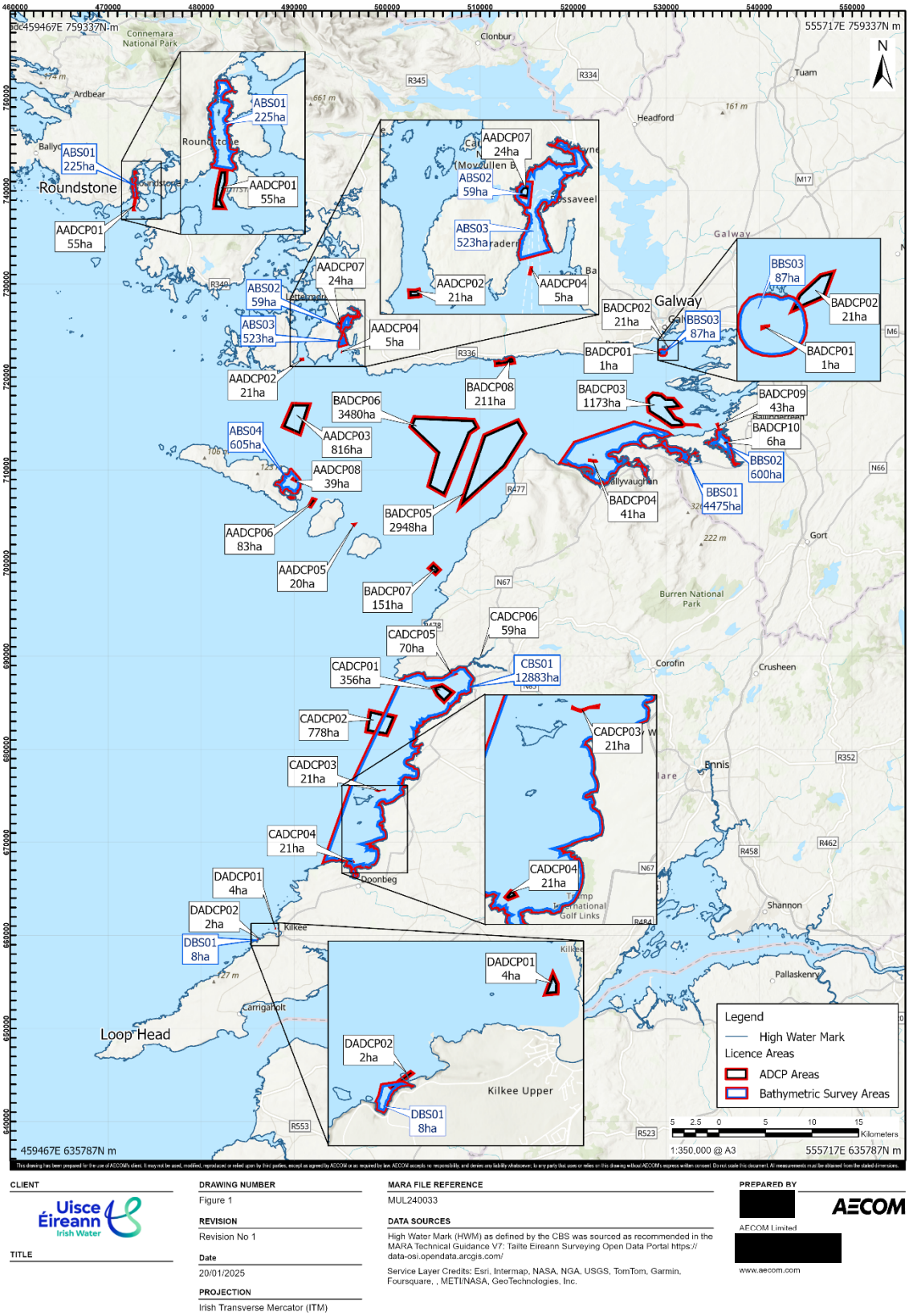
Map D Site Layout Plan

Appendix B Figures



CLIENT

Uisce Éireann Irish Water

TITLE

DRAWING NUMBER

Figure 1

REVISION

Revision No 1

Date

20/01/2025

PROJECTION

Irish Transverse Mercator (ITM)

MARA FILE REFERENCE

MUL240033

DATA SOURCES

High Water Mark (HWM) as defined by the CBS was sourced as recommended in the MARA Technical Guidance V7: Tailte Eireann Surveying Open Data Portal https://data-osi.opendata.arcgis.com/

Service Layer Credits: Esri, Intermap, NASA, NGA, USGS, TomTom, Garmin, Foursquare, , METI/NASA, GeoTechnologies, Inc.

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Figure 1. Proposed Surveys

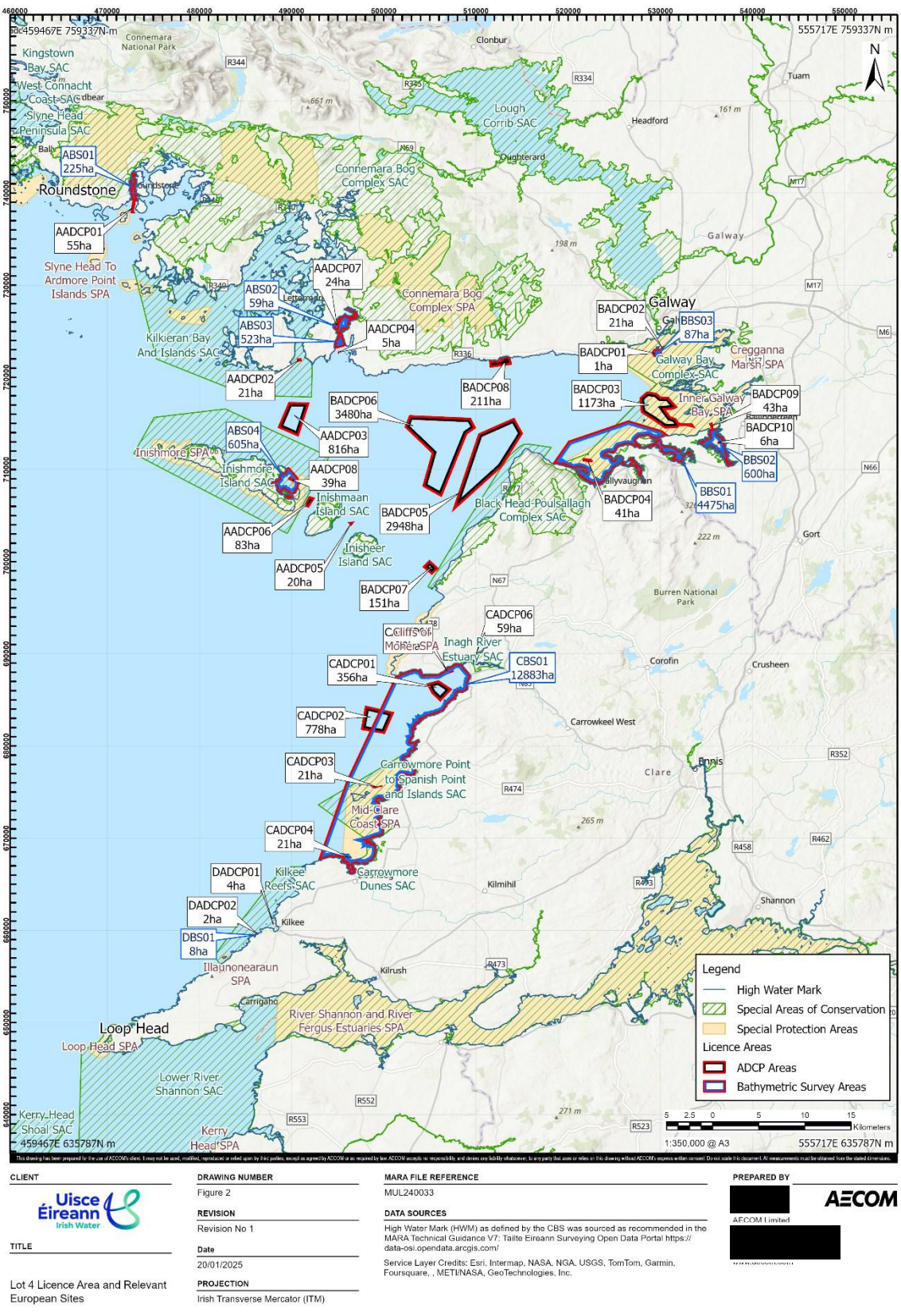

Figure 2. Proposed Surveys and Relevant European Sites

Appendix C Relevant Planning Applications

Table 7. Planning search for relevant developments

Applicant	Application Reference Number	Reference Title	Summary of development	Foreshore Licence Status	Date Received
Fuinneamh Sceirde Teoranta	FS007543	Site Investigations for the proposed Sceirde Rocks Offshore Wind Farm (Export Cable Corridor)	Sceirde Rocks Offshore Wind Farm is a fixed bottom offshore wind farm off the West Coast of Ireland and under the Transitional Protocol is recognised as a Relevant or Phase One project. As such, Sceirde Rocks Offshore Wind Farm is a high priority project and it is anticipated that this project will be prioritised through the Foreshore License process, the MAC award process and subsequently will be one of the first projects eligible for the first ORESS-1 auction. Sceirde Rocks Offshore Wind Farm will be targeting an accelerated delivery programme for this offshore project to meet government renewable energy targets pre-2030. This application specifically relates to a foreshore license for site investigation activities along the project's proposed offshore export cable corridors.	Granted	16/05/2022
Marine Institute - Spiddal	FS006566	Foreshore Lease application for the testing of prototype wind, wave and tidal energy devices	Foreshore Lease application for the testing of prototype wind, wave and tidal energy devices	Granted	07/05/2024
Saoirse Wave Energy Limited	FS007372	Saoirse Wave Energy Limited Site Investigations for proposed Wave Energy Conversion (WEC) project, off County Clare	Saoirse Wave Energy Limited, a group company of Simply Blue Holdings Limited (SBE), is currently investigating the feasibility of a wave energy conversion (WEC) project located off the coast of County Clare. The applicant intends to undertake marine surveys at the proposed wave energy development zone and surrounding area to accommodate cable routing analysis. An additional site area is included to allow for flexibility in the proposed technology should further studies identify a more viable wave energy concept.	Applied	30/11/2022
Fuinneamh Sceirde Teoranta	FS007161	Site Investigations for the proposed Sceirde Rocks Offshore Wind Farm	Sceirde Rocks Offshore Wind Farm is a fixed bottom offshore wind farm off the West Coast of Ireland and under the Transitional Protocol is recognised as a Relevant or Phase One project. As such, Sceirde Rocks Offshore Wind Farm is a high priority project and it is anticipated that this project will be prioritised through the Foreshore License process, the MAC award process and subsequently will be one of the first projects eligible for the first ORESS-1 auction. Sceirde Rocks Offshore Wind Farm will be targeting an accelerated delivery programme for this offshore project to meet government renewable energy targets pre-2030. This application specifically relates to a foreshore license for site investigation activities in the wind farm array area only.	Granted	16/02/2022
Munster Sea Wind Limited	FS007366	Site Investigations for proposed Offshore Wind	The Foreshore Licence application is to undertake the surveys and site investigations to inform development and project design for the proposed site of Munster Sea Wind Limited's proposed fixed foundation offshore wind project. Proposed surveys include Geophysical, Archaeological, Subtidal, Seabird and marine mammal boat based and aerial, Geotechnical and Deployment of wind and current resource measurement devices.	Applied	16/03/2022

Applicant	Application Reference Number	Reference Title	Summary of development	Foreshore Licence Status	Date Received
		Farm, off County Clare			
Western Star Wind Limited	FS007149	Site Investigations for proposed Offshore Wind Farm, off County Clare	This foreshore licence application relates to proposed Site Investigations. The proposed project, known as 'Western Star', is proposed to consist of a floating offshore wind site with up to 1.35 GW capacity. Western Star Wind Ltd. currently intends to undertake marine surveys at the proposed development zone and surrounding area to accommodate cable routing analysis for the floating wind project. The reason for the site investigations is to inform the location and design of the proposed development. In this regard the proposed surveys comprise of geophysical, ecological, geotechnical and metocean surveys.	Applied	17/12/2020
ESB Wind Development Limited, a wholly owned subsidiary of ESB	FS007137	Site Investigations off Clare and Kerry Coasts	The 'Moneypoint Offshore Wind' project is comprised of two projects, namely Moneypoint Offshore One Wind and Moneypoint Offshore Two which are both proposed as floating offshore wind projects. Moneypoint Offshore One is located to the west of County Clare and County Kerry at approximately 15.5km from shore. The main export cable corridor area of search for the Moneypoint Offshore Wind projects is located within the 12 nautical mile (nm) limit with part of the wind turbine generator (WTG) array area of search for Moneypoint Offshore One also within this 12nm limit. This Foreshore licence application relates to proposed Site Investigation (SI) works only. These works are temporary and short term in nature.	Consultation	22/12/2021
Clarus Offshore Wind Farm Limited	FS006886	Site Investigations off Counties Kerry and Clare	Clarus Offshore Wind Farm Ltd. is applying for an Investigative Foreshore Licence to undertake a full suite of site investigations at a Cable Investigation Area associated with the potential Clarus Offshore Wind Farm. The duration of the Investigative Foreshore License sought is requested to extend over a minimum of 5 years. The proposed site investigations have been designed to help assess potential export cable corridors and cable landfall areas associated with the potential Clarus Offshore Wind Farm, under Investigative Foreshore Licence application FS006886. The results of these site investigations will be used to select optimal export cable route(s), cable landfall option(s) and to provide baseline data for environmental appraisal.	Consultation	19/11/2021
Kerry Offshore Wind Limited	FS007363	Site Investigations off Counties Kerry and Clare	The Foreshore Licence application is to undertake the surveys and site investigations to inform development and project design for the proposed site of Kerry Offshore Wind Limited's proposed fixed foundation offshore wind project. Proposed surveys include Geophysical, Archaeological, Subtidal, Seabird and marine mammal boat based and aerial, Geotechnical and Deployment of wind and current resource measurement devices.	Applied	16/033/2022
Aigean Renewables Limited	FS007063	Site Investigations for the proposed Moneypoint Offshore Wind Array, off County Kerry	Aigean Renewables Ltd have applied for a Foreshore Licence for the purpose of undertaking Site Investigations to inform the engineering and design of the potential Moneypoint Offshore Wind Array, off County Kerry. The objectives of the proposed works are to: acquire comprehensive understanding of metocean conditions; minimize uncertainty in ground conditions to inform detailed design for future developments; determine detailed environmental data of the site; enable preparation of an EIAR. In order to meet the above objectives, various Site Investigation works and monitoring device deployments are required, for which a Foreshore Licence is required.	Consultation	25/11/2019
Illen Array Ltd.	FS007244	Site Investigations for proposed Offshore Wind	Illen Array Ltd. is seeking to undertake a variety of marine surveys at the proposed site in order to inform the specific location, design and layout of the proposed Ilen Array Offshore Wind Farm in the Atlantic Ocean off the coasts of county	Applied	24/05/2022

Applicant	Application Reference Number	Reference Title	Summary of development	Foreshore Licence Status	Date Received
		Farm, off Counties Kerry and Clare	Kerry and Clare and export cable route to shore. The surveys will include geophysical, geotechnical, environmental and metocean campaigns and are detailed in the foreshore licence application form.		
Rian Offshore Array Limited	FS007435	Site Investigations for proposed Offshore Wind Farm, off Counties Kerry and Clare	The Foreshore Licence application is to undertake the surveys and site investigations to inform development and project design for the proposed site of Rian Offshore Array Limited's proposed Rian Offshore Array offshore wind project. The overall Rian Offshore Array Project relates to an offshore floating wind farm located which will be located off the west coast of Ireland, predominantly off the coast of north Kerry and county Clare. Proposed surveys include Geophysical, Geotechnical, and Environmental. A phased approach to development will be taken.	Applied	27/01/2022
Valentia Island Energy Ltd	FS007365	Site Investigations for proposed Offshore Floating Wind Farm, off County Kerry	The overall Valentia Island Energy Ltd Project relates to an offshore floating wind farm at a proposed location off the coast of Valentia Island, county Kerry off the southwest coast of Ireland. This Foreshore Licence application is to undertake the surveys and site investigations to inform development and project design for the project. Proposed surveys include Geophysical, Geotechnical, Environmental and Metocean.	Applied	20/06/2022