Proposed Installation of Meteorological Station, Deployment of Tide and Flow Gauges, Bed-mounted Current Meters and Utilisation of Drones and a Remotely Controlled Boat (ARCBoat) in Ballyness Bay, Falcarragh, Co. Donegal

Supporting Information for Screening for Appropriate Assessment

Produced by

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On behalf of

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December 2024

AQUAFACT- APEM Group,

[redacted]

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1. Introduction

1.1. Background

This report has been prepared by AQUAFACT – APEM Group to provide the relevant information to the competent authority to inform the Screening for Appropriate Assessment (AA) for a Maritime Usage Licence. The MUL is being submitted for the proposed installation of meteorological stations and pontoons, deployment of tide and flow gauges, current meters and utilisation of drones and a remotely controlled boat (ARCBoat) at Ballyness Bay, Falcarragh, Co. Donegal (the 'Project'). The objective of the Project is to obtain environmental data within Ballyness Bay to establish detailed modelling of the hydrodynamic conditions and water quality within the area, informing the outfall discharge location for the existing Falcarragh Wastewater Treatment Plant (WWTP) and ultimately will be incorporated into Uisce Éireann records. The locations of the meteorological (weather) station installation, current meter deployments and tide and flow gauge deployments are shown in **Figure 1-1**. The hydro and aerial drone survey extent for Light Detection and Ranging (LiDAR), Multi Beam Echo Sounder (MBES), microbial and dye tracing surveys will occur within the red line boundary shown in **Figure 1-1** , with sampling points for water quality surveys shown in **Figure 1-3**.

An MBES survey may be undertaken to complement the LiDAR dataset if not all required areas of seabed are prone to drying during low water on a spring tide. Regarding the collection of samples for water quality analysis, additional *Escherichia coli* and *Intestinal enterococci* sampling will occur upstream of the tidal limit of Glenna, Owenawillin and Tullaghobegley Rivers. Depending on access availability either an automatic sampler will be deployed to collect water samples or manual sampling may occur. In addition to deploying a drone for dye tracing, a hydro-drone will be deployed with a mounted GPS system to monitor the concentration of the dye plume *in situ* and its development and variation over time. Temperature and salinity sensors will be included in bed-mounted current meters. Fixed river flow gauges will be placed for 12 months, mounted from dry land and removed afterward. Spot gauging will be completed in the river and a cross-section will be taken of the river at the point of measurement. There will be no concrete or permanent removal of habitat in the scope of the works.

The marine surveys are not seasonally constrained, as spring and neap tides occur bi-monthly. The current gauge, tide meter, and CTDs (conductivity, temperature, depth profiler) will be deployed for a minimum period of 35 days (up to 12 weeks dependent upon weather conditions) to cover spring and neap tides. The marine survey equipment is either drone operated, or comprises floating instrumentation deployed from a boat. The programme for collecting data on meteorological conditions, river and tidal levels and water quality will take place for a period of 12 months. The licence

is sought for a period of two to three years to enable works to be scheduled and completed in favourable weather conditions. The commencement of the surveying will be dependent upon the issuing of the maritime usage licence

The aims of the Project can be summarised as follows:
The proposed marine surveying is required as part of data collection to provide quantitative inputs for a hydrodynamic model which is required to profile Ballyness Bay and North Atlantic Ocean to aid the selection of a new discharge outfall for a proposed wastewater treatment plant for the settlement of Falcarragh. The principal objective of the marine surveys is to help ensure robust assessments can be completed for the design of a new wastewater treatment plant which provides treated discharges in compliance with the Urban Waste Water Treatment Directive and with the conditions set in the extant Waste Water Discharge Authorisation licence.

The benefits resulting from the completion of the Project would include:

- In-depth understanding of the hydrodynamic conditions and water quality within Ballyness Bay providing the necessary dataset to conduct detailed modelling and highlight data gaps to be addressed

1.1.1. Proposed works

The proposed works include:

- Installation of 1no. weather station to aid in the validation of data
- Installation of 5no. tidal gauges
- Installation of 4no. current meters with vertical profiles and conductivity, temperature, and depth (CTD) device
- Installation of 3no. river flow and stage gauges
- Deployment of a drone to conduct a Light Detection and Ranging (LiDAR) survey to establish bathymetry of the licence area
- Deployment of Multi Beam Echo Sounder (MBES) to complement the LiDAR dataset
- Deployment of an ARCBoat or installation of pontoons mounted to Buoys which will be temporarily anchored to aid water sample collection
- Deployment of drone and hydro-drone to conduct dye and microbial tracing survey to understand dispersion pattern of effluent and to aid conceptual model calibration and verification processes under different conditions
- Water quality sampling within the bay and rivers
- Maintenance of the tidal and flow gauges, and 1no. weather station
- Decommissioning/removal of all surveying equipment at the end of the survey period.

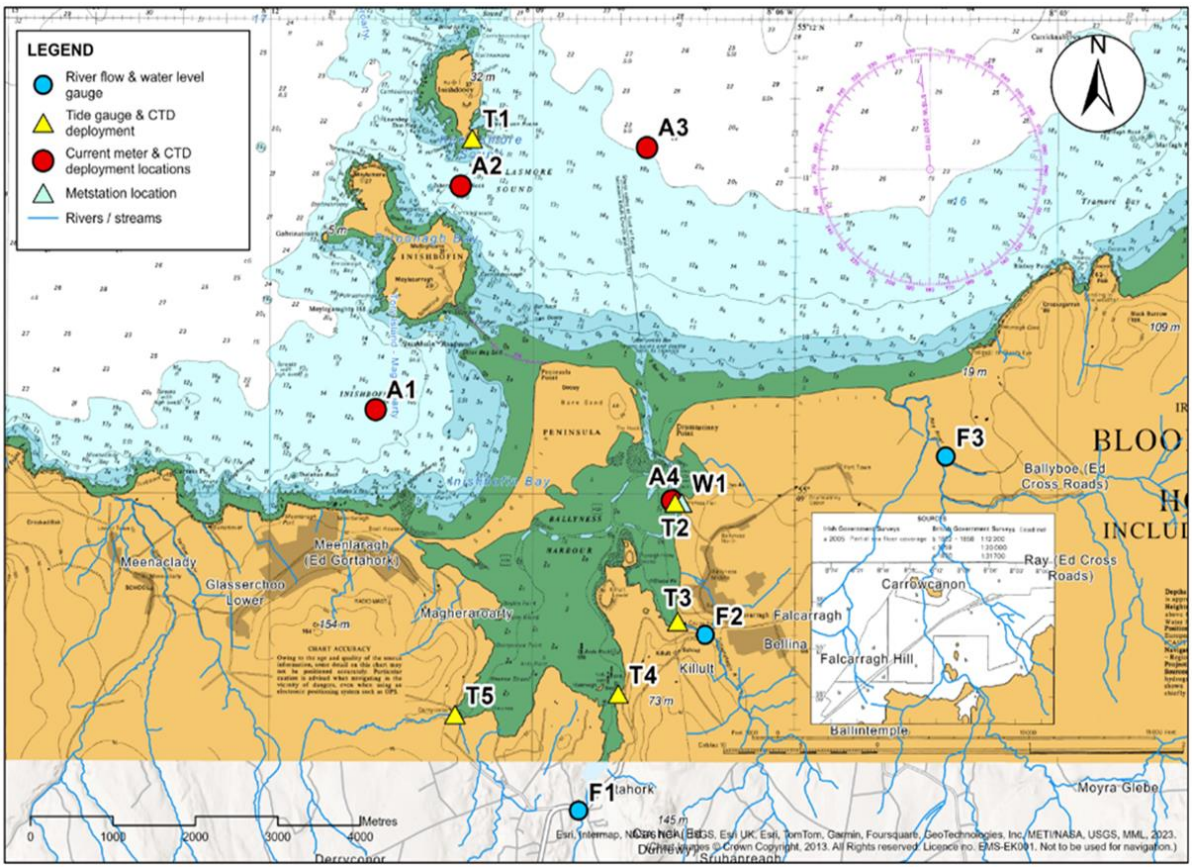

Figure 1-1: Proposed Survey Locations for Hydrodynamic Data in the Ballyness Bay area.

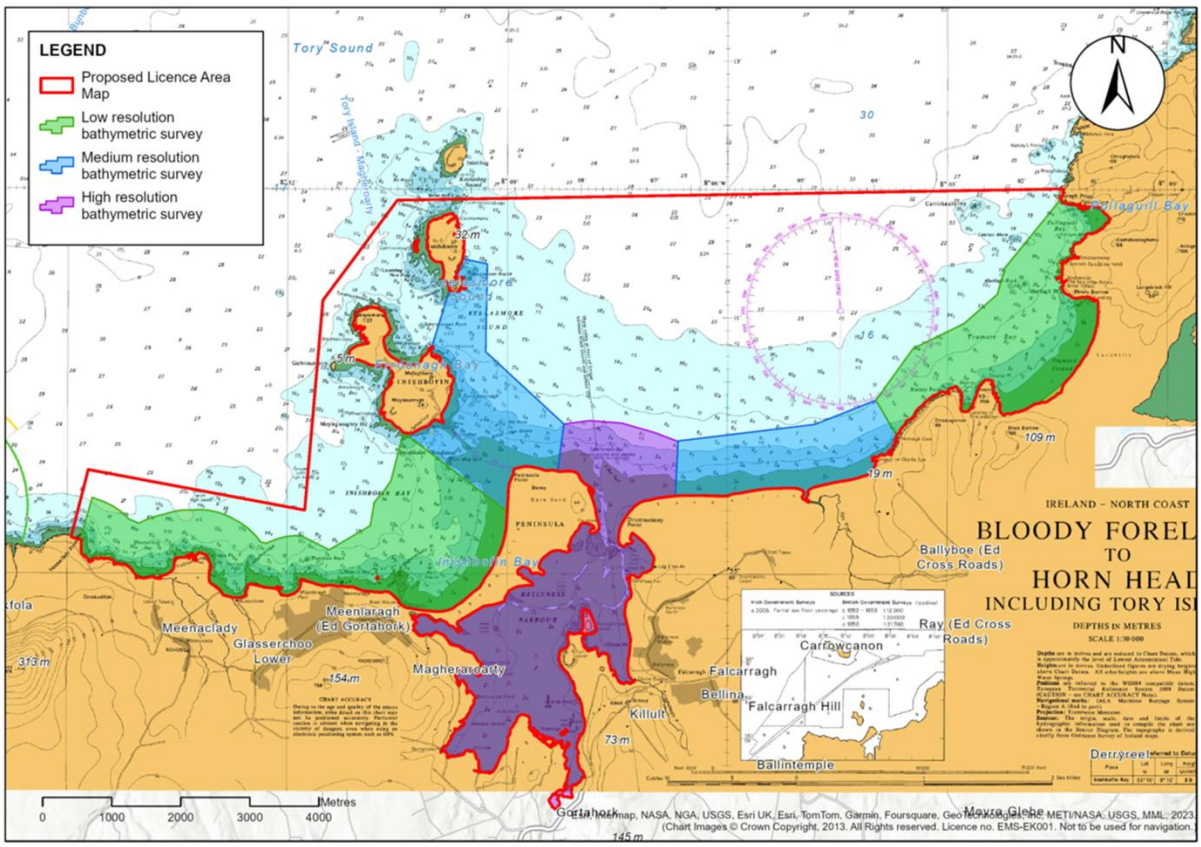

Figure 1-2: Proposed locations for bathymetric surveys in Ballyness Bay and surrounding areas.

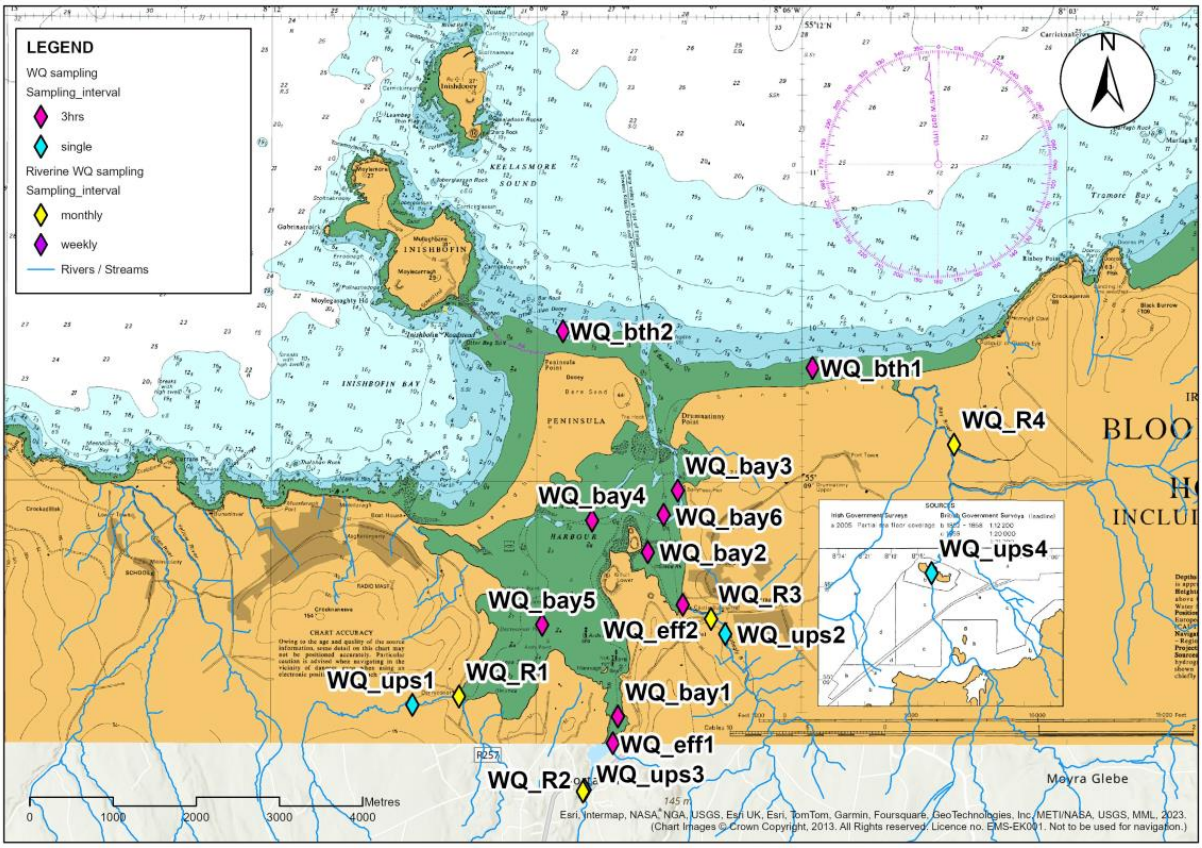

Figure 1-3: Sampling points for water quality around Ballyness Bay.

1.2. Purpose of this report

This report has been prepared to address Article 6(3) obligations under the European Community (EC) Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (commonly known as the Habitats Directive), which is transposed into Irish legislation under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

1.3. Guidance

This report has been prepared in accordance with the following guidance:

- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC Commission Notice (2018)
- OPR (2021). Practice Note PN01 Appropriate Assessment Screening for Development Management
- DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (Revised 2010)
- EC (2001) Managing Natura 2000 Sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC

- Department of Arts, Heritage and the Gaeltacht – National Parks and Wildlife Service DAHG - NPWS (2012) Marine Natura Impact Statements in Ireland Special Areas of Conservation, A Working Document

This assessment includes a desk-based review of available records of protected QIs and SCIs including the following sources:

- Conservation Status Assessment Reports, Backing Documents and Maps prepared to inform national reporting[1] required under Article 17 of the Habitats Directive
- Site Synopsis, Conservation Objective Reports and Natura 2000 Forms available from NPWS
- Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manual reports, Species Action Plans and Conservation Management Plans
- Existing relevant mapping and databases *e.g.* waterbody status, species and habitat distribution *etc*. (sourced from the Environmental Protection Agency - http://gis.epa.ie/, the National Biodiversity Data Centre - http://maps.biodiversityireland.ie and the NPWS - http://www.npws.ie/mapsanddata/)

1.4. Structure of this Report

The remainder of this report is structured as follows:

- **Section 2. Legislation**
- **Section 3. Assessment Methodology**
- **Section 4. Receiving Environment**
- **Section 5. Potential Environmental Impacts**
- **Section 6. Screening For Appropriate Assessment**
- **Section 7. Conclusion**

[1] The most recent Article 17 report (2019) is available at https://www.npws.ie/publications/article-17-reports/article-17-reports-2019

2. Legislation

2.1. Legislative Background

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (commonly known as the Habitats Directive) is European Community legislation regarding nature conservation established to ensure biodiversity is conserved through the conservation of natural habitats and wild fauna and flora in Europe.

The Habitats Directive was originally transposed into Irish law by the *European Communities (Natural Habitats) Regulations, 1997* (S.I. No. 94 of 1997). The 1997 Regulations were subsequently revoked and replaced by the *European Communities (Birds and Natural Habitats) Regulations 2011*, as amended (herein referred to as the 2011 Birds and Natural Habitats Regulations).

Under Regulation 42 of the 2011 Birds and Natural Habitats Regulations all competent authorities are required to conduct a screening for Appropriate Assessment (AA) and, if necessary, an AA on any plan or project on the foreshore for which it receives an application for consent, or which the authority itself wishes to undertake or adopt. This obligation derives from Articles 6(3) and 6(4) of the Habitats Directive.

The AA provision of the Habitats Directive is transposed in Ireland by the Planning and Development Act 2000 (as amended) in respect of land use plans and proposed developments requiring development consent. The Planning and Development Act, 2000 (as amended) is the basis for the Irish planning code, setting out the detail of regional planning guidelines, development plans and local area plans as well as the basic framework of the development management and consent system.

A network of sites of conservation importance hosting habitats and species as needing to be either maintained at or restored to favourable conservation status have been identified by each Member State. These sites are known as European sites within the Natura 2000 network.

European sites in Ireland that form part of the Natura 2000 network of protected sites comprise Special Areas of Conservation (SAC) sites designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive, and Special Protection Area (SPA) sites designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). The sites are formally designated by the relevant minister under a statutory instrument. Candidate SAC and candidate SPA

sites (*i.e.* cSAC or cSPA) have the same level of protection as fully designated sites under Irish Law[2]. The specific named habitats and/or (non-bird) species for which an SAC or SPA are selected are called the 'Qualifying Interests' (QIs) of the site. The specific named bird species for which an SPA is selected is called the 'Special Conservation Interest' (SCI) (OPR, 2021).

Following the requirements of Article 6(3) of the Habitats Directive, under Regulation 42 of the 2011 Birds and Natural Habitats Regulations, if a plan or project is not connected with, or necessary for the management of a European site and is likely to have a significant effect on the QIs or SCIs for which a site is designated either individually or in combination with other plans or projects, an AA is required to assess whether a plan or project will have any adverse effect on the integrity of a European site(s) in view of the Conservation Objectives set for the designated QIs or SCIs.

2.2. Appropriate Assessment (AA) Process

The **first stage of the AA process is Screening**; where the risk of a significant effect to a conservation feature (*i.e,* QI or SCI) from an impact mechanism can be **excluded** on the basis of objective evidence, the designated feature and impact mechanism combination is **screened out** of further assessment. The assessments undertaken as part of the first stage of the AA process are documented in a Screening Statement for AA.

Where the Screening for AA identifies that a significant effect to a conservation feature from an impact mechanism is likely to occur, the conservation feature and the impact mechanism combination is brought forward for a detailed consideration of the potential for adverse effects. This detailed assessment of the potential for adverse effects is the second stage of the AA process. The assessments undertaken as part of the **second stage of the AA process are documented in a Natura Impact Statement** (NIS).

This report has been prepared to provide the relevant information to inform the assessments to be undertaken for the Screening Statement for AA for the Project and has been prepared to address Article 6(3) obligations under the Habitats Directive and to inform the AA determination of the competent authorities. Specifically, this report focuses on the potential effects of the proposed development to European sites.

[2] Candidate sites are those that have been submitted to the European Commission, but not yet formally adopted under Ministerial Statutory Instrument (S.I.). Legal protection, and therefore, the requirement for AA, arises from the date that the Minister gives notice of his/her intention to designate the site.

3. Assessment Methodology

3.1. Source-Pathway-Receptor and Impact Assessment

3.2. Overview

A key factor in the consideration as to whether a QI or an SCI (collectively referred to herein as conservation features) is likely to be affected by a proposed project is the existence of connectivity (or interaction, or impact pathway) between the feature and the impact mechanisms associated with the Project. National guidance (DEHLG, 2009) outlines that screening for AA should be carried out for any European Site within the likely Zone of Impact (ZoI) of a plan or project.

For projects, the guidance outlines that the ZoI must be evaluated on a case-by-case basis with reference to the nature, size and location of the Project, the sensitivities of the ecological receptors and the potential for in-combination effects. **Section 6.2** considers the potential effects due to the proposed Project, while **Section 6.3** considers potential in-combination effects with other plans and projects.

3.3. Methodology

This report has been prepared to assist authorities in addressing Article 6(3) obligations under the Habitats Directive and focuses on the potential effects of the projects to European sites.

In order to establish the ZoI of the proposed Project, the assessment of connectivity between project impact mechanisms (or source) and conservation features (*i.e.,* QIs and SCIs) considers the location of the Project relative to:

- habitats and non-mobile species
- species foraging distances and migration routes
- the proximity of the Project to foraging and breeding areas
- potential changes in species behaviour
- effects on prey species resulting in alteration in interactions and associated impacts

To inform the assessment, nationally available data on protected habitats and species was mapped using a Geographic Information System (GIS) and interrogated to identify for source-pathway-receptor connectivity. The source (potential project impact mechanisms), pathways (hydrological, physical or ecological connectivity) and receptors (conservation features) were identified using GIS software and through the examination of aerial photography and a review of ecological surveys undertaken in the area. Any conservation feature identified to have a viable source-pathway-receptor link to the proposed Project was then examined further to determine the potential for significant effects.

The assessment of project impact sources (or mechanisms) considers all relevant aspects of the proposed Project that have the potential to directly or indirectly effect conservation features.

The assessment of potential effects of the Project on conservation features of SACs and SPAs are presented in **Section 6.2** while the assessment of in-combination effects are outlined in **Section 6.3.**

4. Receiving Environment

4.1. Aquatic Benthic Area

The water depth is relatively shallow within Ballyness Bay. The flow gauges (code: F1-F3) will be anchored to the riverbed at locations outside of the boundary of the SAC. Flow gauge F1 will be installed at the mouth of the Gleanna River that empties into Ballyness Bay. Flow gauge F2 will be installed at the mouth of the Tullaghobegly River that empties into Ballyness Bay. Flow gauge F3 will be installed in the nearby Ray River. Current meter A4 will be anchored to the seabed, where the underlying substrate is comprised primarily of sands and muds at the proposed site. A review of benthic subtidal communities by NPWS (2014) indicates that this site overlaps the 'Mobile sand community complex'.

4.2. Marine Aerial Environment

The proposed aerial range for the LiDAR and dye tracing surveys extends throughout Horn Head to Fanad Head SPA, Falcarragh to Meenlaragh SPA and Inishbofin, Inishdooey and Inishbeg SPA. Deployment of a drone to conduct these surveys will overlap with the breeding, foraging and roosting sites of bird species listed under Annex I, II and III of the Birds Directive.

4.3. Coastal habitat

Meteorological Station (W1) is located on land near Ballyness Pier on the east side of the bay. It does not overlap with any sensitive habitat.

The tide gauges (code: T1-T5) will be attached to substrate along the coastline in order to be submerged in water for recording tidal data. The proposed sites for the gauge T1 overlaps with Inishbofin, Inishdooey and Inishbeg SPA, while gauges T2-T5 overlap with Ballyness Bay SAC.

4.4. Recreation/Tourism

Sea angling and sailing occur on a small scale in Ballyness Bay. The piers adjacent to the site at Magheraroarty and Ballyness, and a small pier within the site north of Gortahork, are used to facilitate such activities. There are currently two boats operating from Ballyness Pier for licensed fishing of salmon by draft net. Two lobster potting and crabbing boats also use the pier to land catches. Some motorboats also use Magheraroarty Pier. The proposed installation of pontoons and deployment of an ARCBoat, MBES and hydro-drone would occur throughout the area of Ballyness Bay used by sea angling and recreational activities. Similarly, the proposed dye dispersion survey will be conducted throughout the area used for recreational and touristic activities.

4.5. Natura 2000 Sites

4.5.1. Special Conservation Interests (SCI) Birds

The SPR model identified the European sites within the ZOI of the proposed Project which were considered in this screening for AA. There are 2 SPA sites within the ZOI of the Project (see **Figure 4-1**); the sites are:

- Falcarragh to Meenlaragh SPA (Site code: 004149)
- Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083)

Falcarragh to Meenlaragh SPA (Site code: 004149)

This site is located on the eastern and western sides of Ballyness Bay on the north-west coast of Co. Donegal. Extending along the coastline from Falcarragh to Meenlaragh this is a large site, covering three areas of mixed agricultural grassland. This site is designated for Corncrake (*Crex crex*) [A122]. The conservation objectives for this site's SCIs can be found in **Table 4.1**.

Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083)

This site consists of three small to medium-sized islands located between 1 km and 4 km off the north-west coast of Co. Donegal. The SPA includes marine waters between and around the islands, approximately 200 m. The site is designated for the following species: Barnacle Goose (*Branta leucopsis*) [A045], Corncrake (*Crex crex*) [A122], Common Gull (*Larus canus*) [A182], Lesser Black-backed Gull (*Larus fuscus*) [A183] and Arctic Tern (*Sterna paradisaea*) [A194]. The conservation objectives for this site's SCIs can be found in **Table 4.1**.

of the cliffs along the eastern and north-east side of the island, is included within the site. The site is designated for the following species: Fulmar (*Fulmarus glacialis*) [A009], Corncrake (*Crex crex*) [A122], Razorbill (*Alca torda*) [A200] and Puffin (*Fratercula arctica*) [A204]. The conservation objectives for this site's SCIs can be found in **Table 4.1**.

Table 4.1: Special Protection Areas and Special Conservation Interests and Qualifying Interests

Falcarragh to Meenlaragh SPA			
Qualifying Interest	**Ecological Group**	**Conservation Objective**	**Foraging Behaviour**
Corncrake (*Crex crex*) [A122]	Annex I bird species	To maintain or restore favourable conservation condition	Breed in tall vegetation (April-September). Nest and feed in annually harvested meadows. Winter in southern and eastern Africa.
Inishbofin, Inishdooey and Inishbeg SPA			
Common Gull (*Larus canus*) [A182]	Annex I bird species	To maintain or restore favourable conservation condition	Winters on the Islands.
Lesser Black-backed Gull (*Larus fuscus*) [A183]	Annex I bird species	To maintain or restore favourable conservation condition	Winters on the Islands.
Corncrake (*Crex crex*) [A122]	Annex I bird species	To maintain or restore favourable conservation condition	Breed in tall vegetation (April-September). Nest and feed in annually harvested meadows. Winter in southern and eastern Africa.
Arctic Tern (*Sterna paradisaea*) [A194]	Annex I bird species	To maintain or restore favourable conservation condition	Winters on the Islands. Traditional breeding site.
Barnacle Goose (*Branta leucopsis*) [A045]	Annex I bird species	To maintain or restore favourable conservation condition	Winters on the Islands. Forage and roost on islands and other nearby sites.

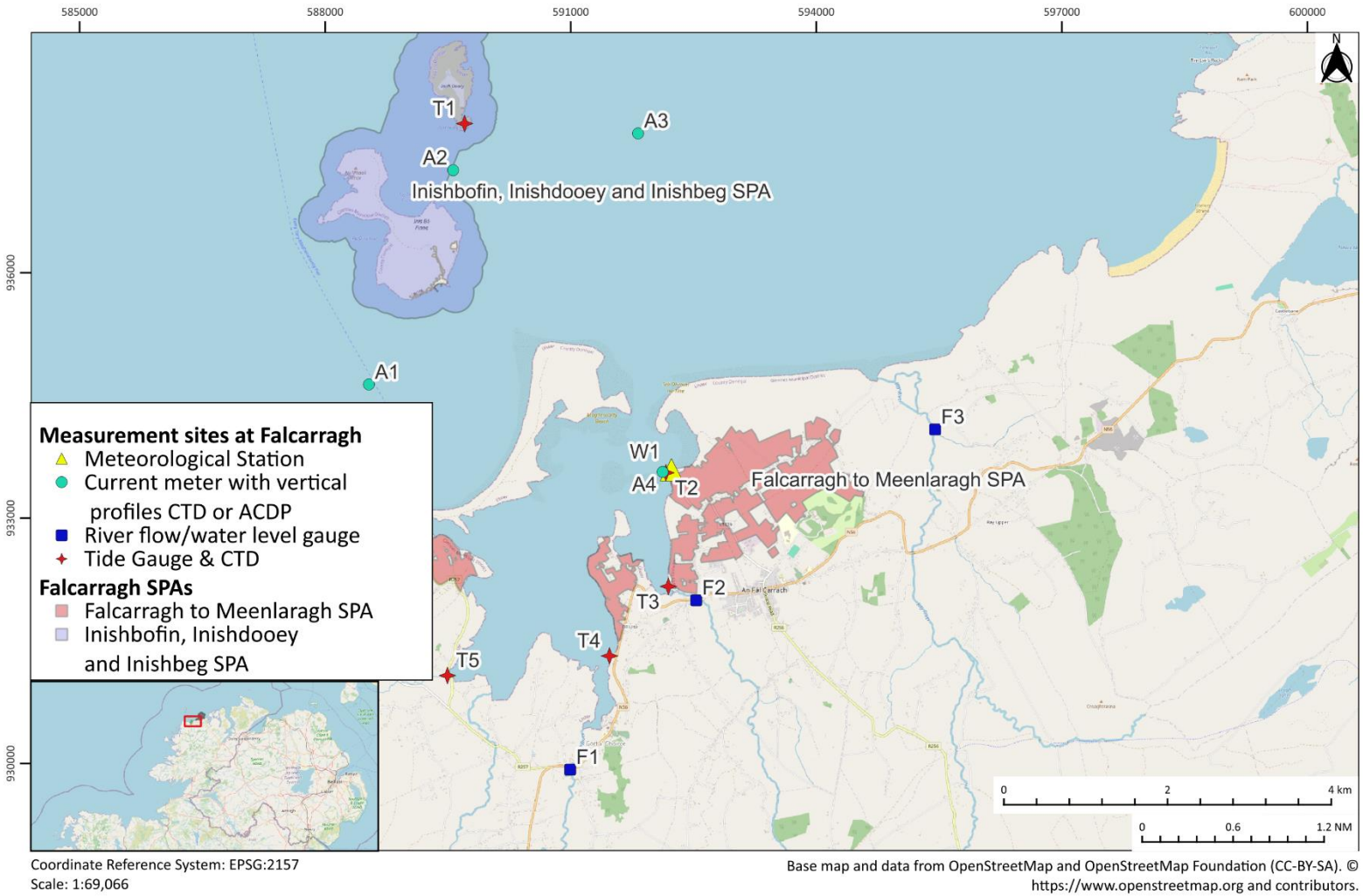

Figure 4-1 SPAs within ZoI of the Project.

4.5.2. Qualifying Interests (QIs) Annex I Habitats and Annex II Species

The SPR model identified the European sites within the ZOI of the proposed Project which were considered in this screening for AA. There are 2 SAC sites within the ZOI of the Project (see **Figure 4-2**); the sites are:

- Ballyness Bay SAC (Site code: 001090)
- Horn Head and Rinclevan SAC (Site code: 000147)

The conservation features (*i.e.* QIs) of the above SACs are listed in **Table 4.2** alongside conservation objectives set for the conservation features. Brief descriptions of the SACs are provided below.

Ballyness Bay SAC (Site code: 001090)

Ballyness Bay is situated in north-west Donegal adjacent to the towns of Gortahork and Falcarragh. The underlying geology is mostly pelites, with some smaller areas of limestone and quartzite. This is mostly covered by windblown sand and peat. Ballyness Bay is a large and very shallow estuarine complex, with extensive areas of sandflats which are exposed at low tide. This site has been selected as an SAC for the following Annex I/II habitats/species listed under the E.U. Habitats Directive: Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190] and Geyer's Whorl Snail (*Vertigo geyeri*) [1013].

Horn Head and Rinclevan SAC (Site code: 000147)

Horn Head extends northwards into the Atlantic Ocean from Dunfanaghy, Co. Donegal. This site also extends westwards, reaching just beyond Dooros Point. It is a diverse coastal site containing a wide range of habitats from high rocky quartzite cliffs in the north to mud flats, sand flats, dunes, and a brackish lake in the south. This site has been selected as an SAC for the following Annex I/II habitats/species listed under the E.U. Habitats Directive: Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170], Humid dune slacks [2190], Machairs (* in Ireland) [21A0], Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130], Geyer's Whorl Snail (*Vertigo geyeri*) [1013], Grey Seal (*Halichoerus grypus*) [1364], Petalwort (*Petalophyllum ralfsii*) [1395] and Slender Naiad (*Najas flexilis*) [1833].

Table 4.2: Special Areas of Conservation and Qualifying Interests

Ballyness Bay SAC		
Qualifying Habitat (*=Priority Habitat)	**Ecological Group**	**Conservation Objective**
Estuaries [1130]	Annex I coastal marine habitat	To maintain favourable conservation condition
Mudflats and sandflats not covered by seawater at low tide [1140]	Annex I coastal marine habitat	To maintain favourable conservation condition
Embryonic shifting dunes [2110]	Annex I coastal habitat	To maintain favourable conservation condition
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Annex I coastal habitat	To maintain favourable conservation condition
Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130]	Annex I coastal habitat	To restore favourable conservation condition
Humid dune slacks [2190]	Annex I coastal habitat	To maintain favourable conservation condition
Geyer's Whorl Snail (*Vertigo geyeri*) [1013]	Annex II terrestrial mollusc species	To maintain favourable conservation condition
Horn Head and Rinclevan SAC		
Embryonic shifting dunes [2110]	Annex I coastal habitat	To maintain favourable conservation condition
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Annex I coastal habitat	To maintain favourable conservation condition
Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130]	Annex I coastal habitat	To restore favourable conservation condition
Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170]	Annex I coastal habitat	To maintain favourable conservation condition
Humid dune slacks [2190]	Annex I coastal habitat	To maintain favourable conservation condition
Machairs (* in Ireland) [21A0]	Annex I coastal habitat	To restore favourable conservation condition
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]	Annex I coastal habitat	To maintain favourable conservation condition
Geyer's Whorl Snail (*Vertigo geyeri*) [1013]	Annex II terrestrial mollusc species	To maintain favourable conservation condition
Grey Seal (*Halichoerus grypus*) [1364]	Annex II marine mammal	To maintain favourable conservation condition
Petalwort (*Petalophyllum ralfsii*) [1395]	Annex II plant species	To maintain favourable conservation condition
Slender Naiad (*Najas flexilis*) [1833]	Annex II aquatic plant species	To maintain favourable conservation condition

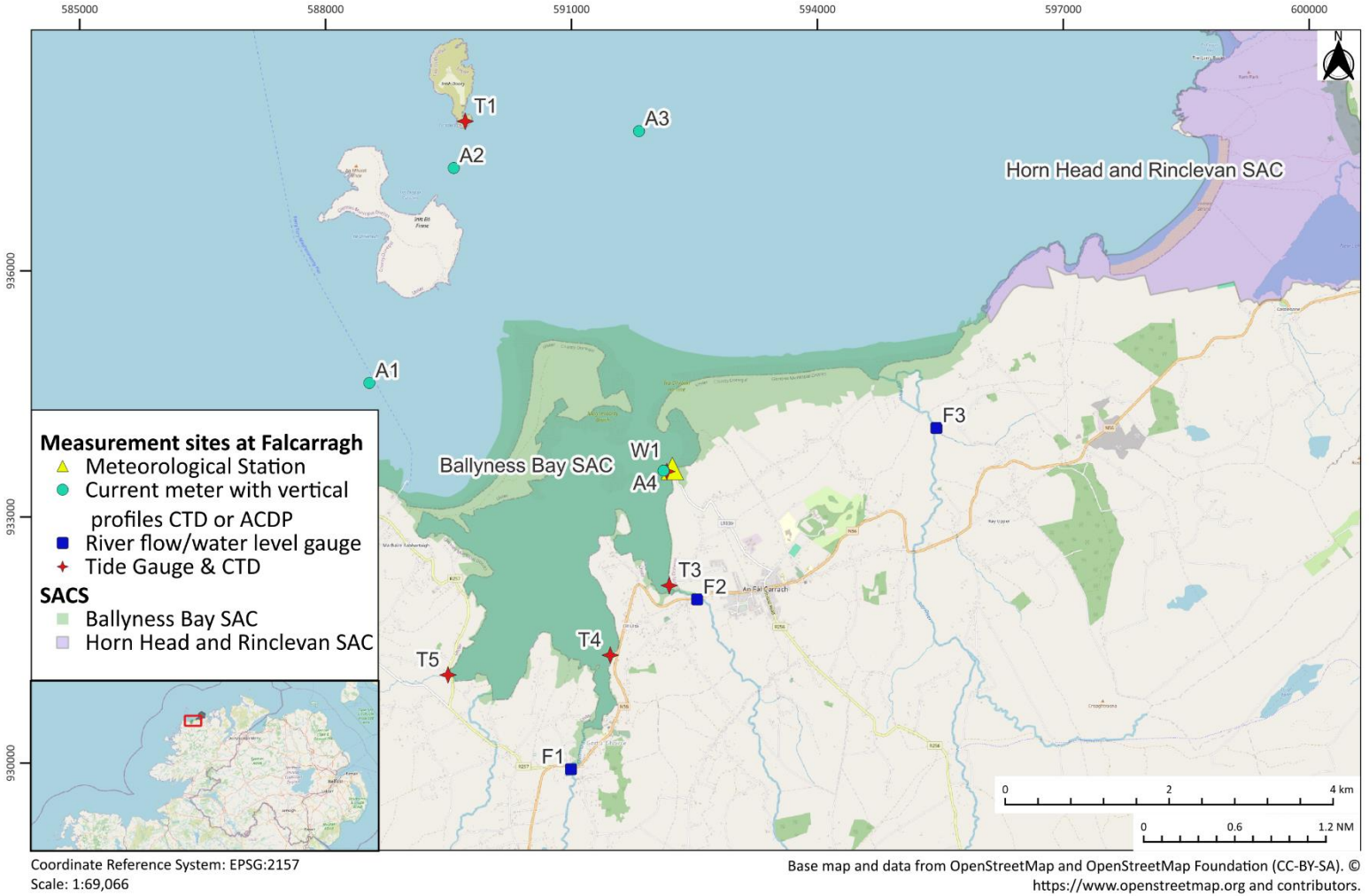

Figure 4-2 SACs within ZoI of the Project.

4.5.3. Qualifying Interests (QIs) Annex II Marine Mammals

This section looks specifically at Annex II marine mammals listed as QIs due to their ability to forage over a large range and potentially into the project area. There are no SACs in the immediate vicinity of the Project area within which marine mammal species are listed as QIs, though the following occur within 7 km of the Project area:

- Gweedore Bay and Islands SAC (Site code: 001141) – Otter (*Lutra lutra*) [1355] and Harbour porpoise (*Phocoena phocena*) [1351]
- Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) - Otter (*Lutra lutra*) [1355]
- Horn Head and Rinclevan SAC (Site code: 000147) - Grey Seal (*Halichoerus grypus*) [1364]

The following species listed as QIs in SACs in Ireland have been assessed in terms of their potential to occur in the Project area:

- ***Phoca vitulina*** **(Harbour seal):** The furthest foraging trip for harbour seal reported by Sharples *et al.* (2012) was 220 km. A total of 9 SACs in Irish waters designated for harbour seal are located within 220 km of the Project; these SACs are assessed in the Screening assessment.
- ***Halichoerus grypus*** **(Grey seal):** Cronin *et al.* (2011) investigated grey seal movement on Irelands' continental shelf. A total of 529 foraging trips recorded with the furthest trip measuring 511 km; given this wide range all SACs designated for the species are included in the Screening assessment.

The following cetacean species were considered:

- ***Phocoena phocena*** **(Harbour porpoise):** The SACs in Irish waters designated for the wide-ranging species are included in the Screening for AA.
- ***Tursiops truncatus*** **(Common Bottlenose Dolphin):** The SACs in Irish waters designated for the species are are included in the Screening for AA.

The relevant SACs designated for Annex II marine mammal species are detailed in **Table 4.3**.

Table 4.3: SACs designated for marine mammal species found in Irish waters.

SAC (Site code)	Qualifying Interest			
	Harbour seal (*Phoca vitulina*) (1365)	**Grey seal (*Halichoerus grypus*) (1364)**	**Harbour porpoise (*Phocoena phocoena*) (1351)**	**Bottlenose dolphin (*Tursiops truncatus*) (1349)**
Slyne Head Peninsula SAC [002074]				✓
West Connacht Coast SAC [002998]		✓	✓	✓
Slyne Head Islands SAC [000328]		✓		✓
Inishbofin and Inishshark SAC [000278]		✓		
Kilkieran Bay and Islands SAC [002111]	✓			
Clew Bay Complex SAC [001482]	✓			
Duvillaun Islands SAC [000495]		✓		✓
Galway Bay Complex SAC [000268]	✓			
Inishkea Islands SAC [000507]		✓		
Killala Bay/Moy Estuary SAC [000458]	✓			
Lower River Shannon SAC [002165]				✓
Ballysadare Bay SAC [000622]	✓			
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627]	✓			
Blasket Islands SAC [002172]		✓	✓	
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC [000190]		✓		
Donegal Bay (Murvagh) SAC [000133]	✓			

SAC (Site code)	Qualifying Interest			
	Harbour seal (*Phoca vitulina*) (1365)	**Grey seal (*Halichoerus grypus*) (1364)**	**Harbour porpoise (*Phocoena phocoena*) (1351)**	**Bottlenose dolphin (*Tursiops truncatus*) (1349)**
West of Ardara/Maas Road SAC [000197]	✓			
Kenmare River SAC [002158]	✓		✓	
Rutland Island and Sound SA [002283]	✓			
Glengarriff Harbour and Woodland SAC [000090]	✓			
Roaringwater Bay and Islands SAC [000101]		✓	✓	
Horn Head and Rinclevan SAC [000147]		✓		
Slaney River Valley SAC [000781]	✓			
Rockabill to Dalkey Island SAC [003000]			✓	
Lambay Island SAC [000204]	✓	✓	✓	
Saltee Islands SAC [000707]		✓		
St. John's Point SAC [000191]				✓
Inishmore Island SAC [000213]			✓	
Porcupine Bank Canyon SAC [003001]				✓
North-west Porcupine Bank SAC [002330]				✓
South-west Porcupine Bank SAC [002329]				✓
Kilkieran Bay and Islands SAC [002111]			✓	
Belgica Mound Province SAC [002327]			✓	✓
Southern Canyons SAC [002278]				✓

SAC (Site code)	Qualifying Interest			
	Harbour seal (*Phoca vitulina*) (1365)	**Grey seal (*Halichoerus grypus*) (1364)**	**Harbour porpoise (*Phocoena phocoena*) (1351)**	**Bottlenose dolphin (*Tursiops truncatus*) (1349)**
Hook Head SAC [000764]			✓	✓
Carnsore Point SAC [002269]			✓	
Blackwater Bank SAC [002953]			✓	
Bunduff Lough and Machair Trawalua/Mullaghmore SAC [000625]			✓	
Codling Fault Zone SAC [003015]			✓	
Lough Swilly SAC [002287]			✓	
Gweedore Bay and Islands SAC [001141]			✓	

5. Potential Environmental Impacts

5.1. Potential Impact Mechanisms

A detailed description of the Project is provided above; given the nature of the proposed activities associated with the Project, the potential impact mechanisms (or sources of impact) are:

Physical disturbance associated with current meter and pontoon anchorage to the benthos. There is a risk of effects on sensitive benthic subtidal communities if site of deployment and community area overlap.

Physical disturbance associated with weather station installations on sand dune systems. There is a risk of effects on the three Annex I habitats, one of which is a priority habitat, which comprise the sand dune system on the Dooey Peninsula.

Physical disturbance associated with pontoon installation throughout Ballyness Bay SAC. There is a risk of effects on marine mammal species listed under Annex II of the Habitats Directive and on bird species protected under of the Birds Directive if installation sites and foraging areas overlap, posing a collision risk.

Physical disturbance associated with tidal gauge deployment along the coastline overlaps with Ballyness Bay SAC.

Physical disturbance associated with deployment and operation of hydro-drone, ARCBoat and MBES. There is a risk of effects on marine mammal species listed under Annex II of the Habitats Directive if the remotely controlled devices and foraging areas overlap, posing a collision risk.

Physical disturbance associated with deployment of two separate drones for LiDAR survey and dye for dye tracing survey throughout Horn Head to Fanad Head SPA, Falcarragh to Meenlaragh SPA and Inishbofin, Inishdooey and Inishbeg SPA. There is a risk of effects on bird species listed under Annex I of the Birds Directive as the drones pose a collision risk.

Noise disturbance associated with MBES operation. There is a risk of species interacting with the echosounder causing disturbance.

Noise disturbance associated with current meter operation. There is a risk of species interacting with the meters causing disturbance.

The proposed deployment will temporarily increase the number of vessels in the area by one during deployment and during collection of the tidal gauges and pontoons. The vessel used will be fully certified and compliant with the aims of the MARPOL Convention. The MARPOL

Convention is a key international treaty designed to minimize pollution from ships and protect the marine environment. It is not considered likely that the proposed deployment of tidal gauges and pontoons, or the manual collection of water samples will give rise to a pollution event and is **therefore not considered further** in this report.

5.2. Physical Disturbance to Habitats Directive Annex I Marine Benthic Communities

Due to the current meters, pontoons and flow gauges being anchored to the seabed there is a risk of disturbance to the benthic habitats under the footprint of their deployment locations. One of the four current meter deployments (code: A4) occurs within the Ballyness Bay SAC area (see **Figure 1-1**). The proposed moorings at A4 coincides with the following marine habitats:

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

These habitats support the following benthic communities:

- Coarse sediment to sandy mud with oligochaetes and polychaetes community complex
- Mobile sand community complex

5.3. Physical Disturbance to Habitats Directive Annex I Coastal Habitats

Due to the positioning of the tidal gauges along the coastline there is a risk of disturbance to Annex I coastal habitats. Tidal gauges T2 to T5 are located within Ballyness Bay SAC (see **Figure 1-1**).

5.4. Physical Disturbance to Habitats Directive Annex II Species

Pontoons

Depending on the spatial extent of the proposed pontoons, they have the potential to pose a collision risk for marine mammals as they must transit the water column to breathe at the surface (AECOM Ltd., 2010). That said, marine mammals are highly mobile and have the ability to both avoid and evade these devices if they detect the object, perceive it as a threat and take appropriate action at long or short range. There are a number of factors that can interfere with this including detection failure, diving constraints, group effects, attraction, confusion, distraction, illogical behaviour, disease and life stage, size and season. Seals have the potential to use horizontal surface structures as haul out sites. This may be beneficial by increasing the area upon which seals can haul out on; however, it may put seals at risk of injury getting on and off the structures. Similarly, the pontoons have the potential to provide roosting, nesting and/or breeding sites for bird species protected under the Birds Directive.

Hydro-drone, deployment vessel, ARCBoat and MBES

Due to the movement of the hydro-drone, instrument deployment vessel, ARCBoat and MBES throughout Ballyness Bay SAC these remotely operated devices have the potential to pose a collision risk for marine mammals as the equipment traverses the bay area.

Aerial drones

Due to the movement of two separate drones throughout Horn Head to Fanad Head SPA, Falcarragh to Meenlaragh SPA and Inishbofin, Inishdooey and Inishbeg SPA these remotely operated devices have the potential to pose a collision risk for bird species listed under Annex I of the Birds Directive as the drones are flown through the bay area.

Microbial dye tracing

Dye will be released from the baseline discharge locations and will be undertaken during the ebb of spring and neap tides on at least three occasions. Rhodamine B and Rhodamine WT are fluorescent dyes commonly used as tracers in hydrological investigations. Rhodamine B and Rhodamine WT are considered toxic at certain levels and therefore have to be investigated further in this report. Dyes have the potential to negatively impact aquatic life.

5.5. Noise Disturbance to Habitats Directive Annex II Species

Marine mammals rely on sound to navigate, communicate, and sense and interpret their surroundings. If the frequency of anthropogenic noise overlaps with the frequencies used by marine mammals, this may reduce the animal's ability to detect important sounds for navigation, communication and prey detection (Weilgart, 2007). This is termed acoustic masking, which may occur anywhere within an organism's auditory range (Wright *et al.* 2007; Richardson *et al.* 1995). Masking of important vocalisations will result in increasing information ambiguity and, in extreme circumstances, may result in cetaceans being unable to orientate themselves or hunt/evade predation in the marine environment (Wright *et al.* 2007).

Southall *et al*. (2008) has categorised seals and cetaceans into five functional groups based on several laboratory studies, audiometric data and through comparisons of anatomy. The functional group's cetaceans in relation to their known auditory ability and functional frequencies, whilst all pinniped species were assessed based on their auditory ability in air as well as their auditory ability in water. Otters (*Lutra lutra*) spend 75% of their lives on land. They can be relatively tolerant of disturbance and adjust to circumstances. They are often present in urban areas with considerable human activity nearby. There are no criteria to assess the significance of underwater noise on the Eurasian otter

however it is thought they are similar to those of pinnipeds (Ghoul & Reichmuth, 2014) and are assessed as such moving forward. Details of the frequency abilities of cetaceans and pinnipeds are included in the table below.

Table 5.1: Functional frequencies of various cetaceans and pinnipeds found in Irish waters (adapted from Southall *et al.* (2007)). Qualifying Interest species of Irish SAC highlighted in bold.

Cetaceans			Pinnipeds (in water)	Pinnipeds (in air)
Low Frequency (7 Hz-22 kHz)	**Mid-frequency (150 Hz-160 kHz)**	**High Frequency (200 Hz-180 kHz)**	**All species (50Hz - 86 kHz)**	**All species (75 Hz – 30 kHz)**
Baleen whales	Most toothed whales, dolphins	Certain toothed whales, porpoises	All species	All species
Species Recorded in Irish Waters				
Humpback whale Blue whale Fin whale Sei whale Minke whale	Sperm whale Killer whale Long-finned pilot whale Beaked whale species **Dolphin species**	Pygmy sperm whale **Harbour porpoise**	**Grey seal** **Harbour seal**	**Grey seal** **Harbour seal**

5.6. Noise Disturbance to Bird species

Given that the MBES emits sound into the water column, there is a potential pathway for interaction with diving birds. However, due to the shallow depth of the Ballyness Bay estuarine complex it can be concluded that deep diving birds will not occur in high numbers, and if at all, near the deployed equipment, and so potential significant interactions will not occur; consequently, SCI species are **not considered** further in this report.

6. Screening for Appropriate Assessment

The obligation to undertake AA under the 2011 Birds and Natural Habitats Regulations derives from the Habitats Directive. Regulation 42(1) of the 2011 Regulations requires that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which* ***is not directly connected with or necessary to the management of the site as a European Site****, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site*.

The proposed Project is not associated with the 'management' of European sites within the Natura 2000 Network having regard to Article 6 of the Habitats Directive, and as such it is appropriate that the proposed Project is subject to a screening for AA. This screening assessment investigates, in view of best scientific knowledge, whether the proposed Project, individually or in combination with other plans and projects, would be likely to have a significant effect on European sites.

As outlined in **Section 1**, this report, which has been prepared to assist competent authorities address Article 6(3) obligations of the Habitats Directive and associated national regulations, focuses on the potential effects to European sites associated with the proposed Project. A description of the Project is outlined in **Section 1.1**, while **Section 6.1** considers the likelihood of significant effects of the Project on European sites both in isolation and in combination with other projects.

6.1. Characteristics of European Site(s)

6.2. Assessment of Potential Significant Effects to QIs of SACs

Marine Benthic Communities

The deployment of a current meter at site A4 in Ballyness Bay overlaps with the following marine habitat:

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

These habitats support the following benthic communities:

- Coarse sediment to sandy mud with oligochaetes and polychaetes community complex
- Mobile sand community complex

Based on the interpolation provided by NPWS, the QI 'Estuaries' comprises part of the Ballyness Bay Complex SAC, encompassing an area of 15.9 ha. The QI 'Mudflats and sandflats not covered by

seawater at low tide' extends throughout much of the Ballyness Bay SAC site and encompasses an area of 691.8 ha. The extent of the area dominated by the 'Coarse sediment to sandy mud with oligochaetes and polychaetes community complex' and 'Mobile sand community complex' in the estuarine habitat has been identified by NPWS (2014) at 12 ha and 3ha, respectively. The extent of the area dominated by these same communities in the tidal mudflats and sandflats habitat has been identified by NPWS (2014) at 120 ha and 570 ha, respectively. An individual current meter will occupy a minimal area.

The meters and flow gauges are to be deployed at fixed stations for the duration of the survey (minimum 35 days). The effect to the seabed will be temporary occupation of the seabed, and as the area occupied by the flow gauge does not represent a sensitive intertidal macro-invertebrate faunal community **no effect is likely to occur** as a result of the equipment being deployed. Therefore, the physical impact mechanism is **screened out** of further assessment.

Coastal Habitats

The installation of tidal gauges (T2-T4) along the coastline overlaps with the following SACs:

- Ballyness Bay SAC
- Hornhead and Rinclevan SAC

The QIs supported by these two SACs are listed in **Table 4.2**. Considering the small spatial extent occupied by the proposed tidal gauges they pose no significant effect to the coastal habitat.

The tidal gauges are to be deployed at fixed stations for the duration of the survey period. The effect to the coastline will be temporary occupation of a minimal area of the coastline, and as the areas occupied by the tidal gauges do not disrupt a sensitive habitat **no effect is likely to occur** as a result of the equipment being deployed. Therefore, the physical impact mechanism is **screened out** of further assessment.

Marine Mammals and Birds

Pontoons

The likelihood of the pontoons acting as haul-out sites is unlikely as the surface area of the pontoons are expected to be relatively small and seals would require the devices to be no higher than 0.5 m above the sea surface to be able to mount them. Similarly, the collision risk the pontoons pose is not significant due to their relatively small size. The likelihood of the pontoons providing roosting, nesting and/or breeding sites for bird species protected under the Birds Directive is also unlikely due to the small spatial extent of the proposed pontoons.

The pontoons will be installed at fixed stations for the duration of the survey period. The effect to the bay area will be temporary occupation of surface waters, and as the areas occupied by the pontoons do not disrupt a sensitive community or habitat **no effect is likely to occur** as a result of the installation. Therefore, the physical impact mechanism is **screened out** of further assessment.

Hydro-drone, deployment vessel, ARCBoat, MBES (Physical disturbance)

The collision risks the hydro-drone, instrument deployment vessel, ARCBoat and MBES individually pose is not significant due to their relatively small size, slow speed and infrequent deployment throughout the survey period.

The hydro-drone will be deployed on three separate occasions during the survey period. The ARCBoat will be deployed on three separate occasions, each lasting *c*. one day during the survey period. The MBES survey will cover a relatively small nearshore area (see bathymetric extent, **Figure 1-2**). Considering the highly mobile nature of marine mammals and large spatial extent of suitable habitat available, excluding the bathymetric survey extent, an overlap is unlikely. All three pieces of equipment will subsequently be recovered after each sample collection is completed.

The effect to the bay area will be temporary navigation of surface waters, and as the areas occupied by the hydro-drone, deployment vessel, ARCBoat and MBES do not disrupt a sensitive community or habitat **no effect is likely to occur** as a result of the installation. Therefore, the physical impact mechanism is **screened out** of further assessment.

Aerial Drones

The likelihood of the drones posing a collision risk to foraging birds and those listed as SCIs in **Table 4.1**, is not significant due to the temporary operation of the drones. A drone will be in operation on three separate occasions to conduct dye tracing surveys, and only during low water on a spring tide to perform LiDAR surveys, during the survey period and will subsequently be retrieved after each sample collection is completed. As the areas occupied by the drones do not disrupt a sensitive community or habitat **no effect is likely to occur** as a result of the installation. Therefore, the physical impact mechanism is **screened out** of further assessment.

Microbial dye tracing

Dye will be released from the baseline discharge locations and will be undertaken during the ebb of spring tides and neap tides on at least three occasions. Rhodamine B and Rhodamine WT are fluorescent dyes commonly used as tracers in hydrological investigations. These dyes are frequently used due to their strong fluorescence even at low concentrations.

Rhodamine WT will be used in this study because of its low environmental impact. Field, 2005 studied the ecotoxicity of fluorescent dyes, including Rhodamine WT, and found low levels of concern for concentrations under 22mg/L, and Skjolding *et al*., 2021 found no statistically significant effects were observed (p<0.05) at tested concentrations (up to 91, 100 and 200 mg/L for algae, crustaceans and fish embryos, respectively). Earlier work by Parker, 1973 tested the toxicity of Rhodamine WT dye on the larval development of oysters and on juvenile salmon and trout; with concentrations up to 10mg/L over 48 hours for oysters and 375mg/L over 17.5 for fish, no mortalities or abnormalities were observed. The fish remained healthy in dye-free water when last checked a month after the test.

Dye tracing will be carried out with Rhodamine WT below the maximum allowable concentration quality standard set out in Skjolding *et al*., 2021 of >910 µg/L. The effects of the microbial dye tracing are considered to **not be significant** and are therefore **screened out** for further assessment.

MBES (Noise disturbance)

Different models of multi beam echo sounders are used depending on the depth of the site of interest. The "leading manufacturer" of multi beam echo sounders states that an MBES used for a depth range of 0.2-50 m would typically emit sound at a frequency of 500 kHz[3]. This frequency is outside the hearing threshold ranges of those described in **Table 5.1** where the highest functional frequency is 180 kHz in high frequency cetaceans. Therefore, the sound emitted by the MBES will not be heard, if the frequency emitted by the MBES falls into the 500 kHz selection, which is highly likely. The effects of underwater noise emitted by the MBES on marine mammals are considered not to be significant. As the area occupied by the MBES does not disrupt a sensitive community or habitat **no effect is likely to occur** as a result of the installation. Therefore, the physical impact mechanism is **screened out** of further assessment.

The summaries of the assessment are presented in **Table 6.1** and **Table 6.2** according to the ecological group identified.

Current Meters (*Noise disturbance*)

Commonly used current meters available on the market emit sound at frequencies typically between 300–1200 kHz[4,5] and some at 5 Hz or below[6]. These frequencies are outside the hearing threshold ranges of those described in **Table 5.1** and therefore the sound emitted by the current meters will not

[3] kongsberg_application_note_discovering-the-redefined-em-series.pdf (accessed: 07/05/2024)
[4] https://www.nortekgroup.com/products (accessed: 07/05/2024)
[5] https://www.rowetechinc.com/adcp/ (accessed: 07/05/2024)
[6] InterOcean Spherical Solid State Sensor Current Meter S4 series — BODC Document 40555 (accessed: 07/05/2024)

be heard if the frequencies emitted by the particular current meters used in the Project fall into the 300 – 1200 kHz ranges. The current meters that will be used for this project fall within that category. The effects of underwater noise emitted by the current meters on marine mammals are considered to not be significant and are therefore screened out of further assessment.

Summary

Given the nature, duration and spatial extent of the proposed works associated with the Project, and the location of the QIs of SACs and SPAs, it can be concluded that there is **no pathway for significant effects**. Given that there is no potential pathway for significant effects, the QI and impact mechanism combinations are **screened out** of further assessment.

Table 6.1: Impact Mechanism – Physical disturbance

Site	Qualifying Interest		Source-Pathway-Receptor Assessment
Horn Head and Rinclevan SAC (Site code: 000147)	**Annex I habitat**	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130] Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]	The Project is predominantly marine and temporary in nature, with some presence in coastal and freshwater habitats. In relation to terrestrial habitats and species, there is no potential pathway for interaction between the impact mechanism and QI and are therefore excluded at the Screening for AA stage. Consequently, it can be concluded that there will be no significant effects from the impact mechanism to the QIs. There is no potential pathway for interaction between the impact mechanism and the QIs consequently, it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out.
	Annex II species	Geyer's Whorl Snail (*Vertigo geyeri*) [1013] Grey Seal (*Halichoerus grypus*) [1364] Petalwort (*Petalophyllum ralfsii*) [1395] Slender Naiad (*Najas flexilis*) [1833]	The Grey seal has the potential to travel into Ballyness Bay where the instruments are located however as the assessments in **Section 6.2** the risk of collision along with other forms of physical disturbance to marine mammals have been considered **not significant.**

Ballyness Bay SAC (Site code: 001090)	**Annex I habitat**	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130] Humid dune slacks [2190]	The deployment and installation of tidal gauges (T2-T5), flow gauges (F1-F2), current meter (A4), weather station (W1) **see Figure 1-1** pontoons, ARCBoat drones, hydro-drones, MBES and microbial dye (see **Figure 1-2**) throughout the Ballyness Bay area were assessed in relation to impacts to Annex I habitats and Annex II species. While the survey equipment was found to overlap with SACs and associated QIs, the overlap was minimal and is considered not to cause significant disturbance to community or habitat. Furthermore, the presence of the survey equipment will be temporary and will be removed from the area upon the conclusion of the survey period. Consequently, it can be concluded that there will be no significant effects from the impact mechanism to the QIs. It is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out.
	Annex II species	Geyer's Whorl Snail (*Vertigo geyeri*) [1013]	The Project is predominantly marine and temporary in nature, with some presence in coastal and freshwater habitats. In relation to terrestrial habitats and species, there is no potential pathway for interaction between the impact mechanism and QI and are therefore excluded at the Screening for AA stage. Consequently, it can be concluded that there will be no significant effects from the impact mechanism to the QIs. There is no potential pathway for interaction between the impact mechanism and the QIs. The QIs and impact mechanism combinations are screened out.

Falcarragh to Meenlaragh SPA (Site code: 004149)	**Annex I bird species**	Corncrake (*Crex crex*) [A122]	The deployment and installation of tidal gauges (T1-T5), current meters (A1-A4), flow gauges (F1-F3), weather station (W1), the drone for LiDAR survey throughout the Ballyness Bay area were assessed in relation to impacts to Annex I bird species. While some of the survey equipment was found to overlap with SPAs and associated SCIs, the overlap was minimal and is considered not to cause significant disturbance to conservation features. Furthermore, the presence of the survey equipment will be temporary and will be removed from the area upon the conclusion of the survey period. Consequently, it can be concluded that there will be no significant effects from the impact mechanism to the SCIs. It is possible to exclude the potential for significant effects at the Screening for AA stage. The SCIs and impact mechanism combinations are screened out.
Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083)	**Annex I bird species**	Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Corncrake (*Crex crex*) [A122] Arctic Tern (*Sterna paradisaea*) [A194] Barnacle Goose (*Branta leucopsis*) [A045]	

Table 6.2: Impact Mechanism 2 – Noise

Site	Qualifying Interest		Source-Pathway-Receptor Assessment
Horn Head and Rinclevan SAC (Site code: 000147)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364]	Though the current meters and MBES produces a frequency at regular intervals, the sound frequency emitted is beyond the limit of audible functional frequency for relevant cetaceans and pinnipeds as discussed in **Section 5.5**. Any noise emission will be inaudible to them, therefore there is no potential pathway for interaction between the impact mechanism and the QIs. The QIs are unable to perceive the Project impact mechanism and therefore it is possible to exclude the potential for significant effect at the Screening for AA stage. The QIs and impact mechanism combinations are screened out.
Rutland Island and Sound SAC (Site code: 002283)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
West of Ardara/Maas Road SAC (Site code: 000197)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC (Site code: 000190)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364]	
Donegal Bay (Murvagh) SAC (Site code: 000133)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site code: 000627)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Ballysadare Bay SAC (Site code: 000622)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Killala Bay/Moy Estuary SAC (Site code: 000458)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
West Connacht Coast SAC (site code: 002998)	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	

Clew Bay Complex SAC (Site code:	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Inishkea Islands SAC (Site code: 000507)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364]	
Duvillaun Islands SAC (Site code: 000495)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364] Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Inishbofin and Inishshark SAC (Site code: 000278)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364]	
Galway Bay Complex SAC (Site code: 000268)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Kilkieran Bay and Islands SAC (Site code: 002111)	**Annex II Species**	Harbour seal (*Phoca vitulina*) [1365]	
Rockabill to Dalkey Island SAC (Site code: 003000)	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Slyne Head Islands SAC (Site code: 000328)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364] Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Slyne Head Peninsula SAC (Site code: 002074)	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Lower River Shannon SAC (Site code: 002165)	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Saltee Islands SAC (Site code: 000707)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364]	
Blasket Islands SAC (Site code: 002172)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364] Harbour porpoise (*Phocoena phocoena*) [1351]	
Roaringwater Bay and Islands SAC (Site code: 000101)	**Annex II Species**	Grey seal (*Halichoerus grypus*) [1364] Harbour porpoise (*Phocoena phocoena*) [1351]	
St. John's Point SAC [000191]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	

Inishmore Island SAC [000213]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Porcupine Bank Canyon SAC [003001]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
North-west Porcupine Bank SAC [002330]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
South-west Porcupine Bank SAC [002329]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Kilkieran Bay and Islands SAC [002111]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Belgica Mound Province SAC [002327]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349] Harbour porpoise (*Phocoena phocoena*) [1351]	
Southern Canyons SAC [002278]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349]	
Hook Head SAC [000764]	**Annex II Species**	Bottlenose dolphin (*Tursiops truncatus*) [1349] Harbour porpoise (*Phocoena phocoena*) [1351]	
Carnsore Point SAC [002269]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Blackwater Bank SAC [002953]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Bunduff Lough and Machair Trawalua/Mullaghmore SAC [000625]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Codling Fault Zone SAC [003015]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Lough Swilly SAC [002287]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	
Gweedore Bay and Islands SAC [001141]	**Annex II Species**	Harbour porpoise (*Phocoena phocoena*) [1351]	

6.3. Plans or Projects That Might Act In Combination

As outlined in above the obligation to undertake AA under the 2011 Birds and Natural Habitats Regulations derives from the Habitats Directive. Regulation 42(1) of the 2011 Regulations requires that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or* ***in combination with other plans or projects*** *is likely to have a significant effect on the European site*.

It is therefore required that the potential impacts of the proposed Project be considered in combination with other relevant plans or projects. Given the nature of the proposed activities associated with the Project, the potential project impact mechanisms (or sources of impact) are:

1. Physical presence of flow gauges in environment
2. Physical presence of weather stations in environment
3. Physical presence of pontoons in environment
4. Physical presence of tidal gauges in environment
5. Physical presence of current meters in environment
6. Physical presence associated with deployment and operation of hydro-drone, ARCBoat and MBES
7. Noise emissions associated with current meter and MBES operations

The assessment of potential in-combination effects considers other plans and projects that may result in cumulative significant effects to QIs and SCIs of SACs and SPAs.

To inform the assessment of potential in-combination effects a review of consent applications for projects in the vicinity of the proposed Project included on the following websites was completed in April 2024:

- Maritime Area Regulatory Authority
    - https://www.maritimeregulator.ie/our-work/maritime-usage-licences/applications/

- DHPLG - EIA Portal
    - https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal

- Donegal County Council - Planning System
    - https://www.eplanning.ie/DonegalCC/searchresults
    - https://donegal.maps.arcgis.com/apps/webappviewer/index.html?id=8be91e332a8f47bfbbe83add1550c666

The assessment of potential in-combination effects also considered *negative impacting threats and pressures* and *positive impacting activities/management* affecting the sites as identified in Natura 2000 forms published for the SPA and SAC sites available through the NPWS website (https://www.npws.ie/protected-sites).

Screening assessments of potential cumulative or in-combination effects from current and proposed projects listed on above websites are summarised in **Table 6.3**.

In summary, the assessments presented in **Table 6.3** conclude that there is no potential likelihood for significant effects caused by cumulative or in-combination effects.

It was concluded that there is **no potential likelihood for significant effects from the proposed Project in combination with other plans or projects**.

Table 6.3: Assessment of potential in-combination effects.

Website	Project Details	File Reference	Date Application Received	Assessment of Potential Cumulative or In-combination Effects	Conclusion
DHPLG - EIA Portal	A search of the DHPLG EIA Portal was undertaken to examine projects with potential for in-combination effects.	2021034	19/2/2021	Though a 25-year permission for extraction and blasting of rock and screening plant occurs near the vicinity of Falcarragh, due to the distance and mitigation in place for the rock works it was determined that there was no potential for significant cumulative or in combination effects to occur with the proposed Project.	No potential significant cumulative or in-combination effects
Donegal County Council - Planning System	A search of the Donegal planning databases was undertaken to examine projects with potential for in-combination effects.	-	-	Applications made typically to Donegal County Council and published on the planning database consisted of extensions and renovations to existing houses, and retention of existing developments. These are small-scale terrestrial developments which do not have the potential to result in cumulative effects in combination with the proposed Project.	No potential significant cumulative or in-combination effects
DHLGH – Foreshore Applications and Aquaculture Licences Appeals Board ALAB	A search of the DHLGH Foreshore applications and ALAB website was conducted to examine any projects in the appeals system with potential for in combination effects.			No foreshore applications were noted within a ZoI for the Ballyness Bay project sites. An original application for shellfish aquaculture in Ballyness Bay was for 20 sites with only 18 subsequently sent forward for planning. The Minister for Agriculture, Food and the Marine granted licencing for 14 of these sites and refused licencing for the remaining four. Given the non-invasive nature of the marine surveys outlined above their potential for cumulative effects with the proposed aquaculture sites is not significant.	No potential significant cumulative or in-combination effects

6.4. Screening Outcome

The current assessment investigates the potential for the proposed Project to have significant effects on European Sites within the Natura 2000 network.

The assessment has determined, in light of best available scientific data, that there is no potential for significant effects on the SACs and any SPAs from the proposed Project *i.e.* the likelihood of significant effects on all European sites has been ruled out.

The assessment also determined that there is no potential likelihood for significant effects from the proposed Project in combination with other plans or projects. The findings of the assessment are summarised in **Table 6.4**.

Table 6.4: Screening matrix of the proposed Project

Screening Matrix	
Brief description of the Project or plan	The objective of the Project is to deploy, install and operate numerous pieces of equipment for marine surveys for Uisce Éireann records in Ballyness Bay, Falcarragh, Co. Donegal (**Figure 1-1, Figure 1-2, Figure 1-3**). The Project comprises the deployment, installation and operation of the survey equipment throughout the bay area for a minimum period of 35 days with the aim to collect meteorological, tidal, current, river flow, bathymetric, water quality and dye tracing data of the area.
European Site(s)	
Brief description of the European site(s)	Adopting a precautionary principle, the following European sites were considered in this screening for AA; the sites are: • Ballyness Bay SAC • Horn Head and Rinclevan SAC • Falcarragh to Meenlaragh SPA • Inishbofin, Inishdooey and Inishbeg SPA The QIs of the above SACs and SPAs are listed in **Table 4.1** and **Table 4.2** alongside conservation objectives set for the conservation features.
Assessment Criteria	
Describe the individual elements of the Project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.	Given the nature of the proposed activities associated with the Project as detailed in **Section 1.1**, the potential project impact mechanisms (or sources of impact) are: **1.** Physical disturbance (numerous sources) **2.** MBES and current meter noise emission disturbance It is concluded that there is no pathway between the project impact mechanisms and the QIs and SCIs of SACs and SPAs. The assessments are presented in full in **Section 6.2**.

Describe any likely direct, indirect or secondary impacts of the Project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of Size and scale, Land-take.	The assessment of potential in-combination effects considers other plans and projects, which may result in cumulative significant effects on QIs and SCIs of SACs and SPAs. In summary, the assessments presented **Table 6.3** conclude that there is no potential likelihood for significant effects caused by cumulative or in-combination effects.
Distance from the Natura 2000 site or key interests of the site;	The majority of the proposed deployment sites lie inside Ballyness Bay SAC, with some being located within the Inishbofin, Inishdooey and Inishbeg SPA.
Resource requirements (water abstraction *etc.*);	Deployment of the marine survey equipment requires little service maintenance, and the deployment period is relatively short-term (minimum of 35 days). No resources will be required for the Project.
Emissions (disposal to land, water or air);	Noise emissions from operation of current meters and an MBES. Rhodamine WT microbial dye
Excavation requirements, Transportation requirements;	***Excavation requirements*** No excavation will be required ***Transportation requirements*** All survey equipment, except for the weather stations, will require boating transport for deployment at the sites throughout the bay. A work vehicle will be required to transport the weather stations.
Duration of construction, operation, Decommissioning, Other;	The proposed Project will operate for a minimum of 35 days after which the marine survey equipment will be retrieved wherein all equipment will leave the Project area. It is anticipated that deployment operations will commence in 2024.
Describe any likely changes to the site arising as a result of: Reduction in habitat area; Disturbance to key species; Habitat or species fragmentation; Reduction in species density; Changes in key indicators of conservation value (water quality *etc*.). Climate change	It is concluded that there is no potential likelihood for significant effects caused by the Project in isolation or in combination with other plans and projects regarding the following aspects of SACs and SPAs: • Reduction in habitat area • Disturbance to key species • Habitat or species fragmentation • Reduction in species density • Water quality With regard effect to climate change, the main source of atmospheric emissions from the proposed Project will result from engine exhaust gases from engines associated with the vessel. Given the limited vessel activity proposed, significant effects on climate from atmospheric emissions can be discounted.
Describe any likely impacts on the Natura 2000 site in terms of: Interference with the key relationships that define the structure of the site; Interference with key relationships that define the function of the site.	It is concluded that there is no potential likelihood for significant effects caused by the Project in isolation or in combination with other plans and projects.

Provide indicators of significance as a result of the identification of effects set out above in terms of: Loss; Fragmentation; Disruption; Disturbance; Change to key elements of the site.	Indicators of significance are loss of SCI and QI species and habitats. Indicators of significance are behavioural changes in SCI and QI species. It is concluded that there is no potential likelihood for significant effects caused by the Project in isolation or in combination with other plans and projects.
Describe from the above those elements of the Project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	It is concluded that there is no potential likelihood for significant effects caused by the Project in isolation or in combination with other plans and projects.

Outcome: The screening matrix above concluded that there is no potential likelihood for significant effects to Natura 2000 sites caused by the Project in isolation or in combination with other plans and projects.

7. Conclusion

The screening for Appropriate Assessment using the SPR model revealed no pathway for potential impacts caused by the Project to act on any of the QIs or SCIs or their conservation objectives assessed within the ZoI.

It has been objectively concluded by AQUAFACT, following an examination, analysis and evaluation of the relevant information, including the nature of the proposed Project, that the proposed Project does not pose a risk of significantly affecting (either directly or indirectly) the conservation features of any European site within the Zone of Influence, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.

8. References

AECOM Ltd. (2010). Strategic Environmental Assessment (SEA) of the Offshore Renewable Energy Development Plan (OREPD) in the Republic of Ireland.

Cronin, M.A., Jessop, M.J. and Del Villar, D. (2011). Tracking grey seals on Irelands' continental shelf Report to National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht November 2011 Coastal and Marine Research Centre University College Cork Ireland.

DAHG NPWS. (2012). Marine Natura Impact Statements in Ireland Special Areas of Conservation, A Working Document. https://www.npws.ie/sites/default/files/general/Marine%20Assessment%20Working%20Document.pdf

DEHLG. (2009). Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (Revised 2010). https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf

Delaney, A., Devaney, F.M, Martin, J.M. and Barron, S.J. (2013). Monitoring survey of Annex I sand dune habitats in Ireland. Irish Wildlife Manuals, No. 75. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

EC. (2018). Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC Commission Notice (2018). https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/EN_art_6_guide_jun_2019.pdf

EC. (2001). Managing Natura 2000 Sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC. https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf

Field, M. S. (2005). Assessing aquatic ecotoxicological risks associated with fluorescent dyes used for water-tracing studies. *Environmental & Engineering Geoscience*, *11*(4), 295-308.

Ghoul, A., & Reichmuth, C. (2014). Hearing in the sea otter (*Enhydra lutris*): auditory profiles for an amphibious marine carnivore. *Journal of Comparative Physiology A*, *200*, 967-981.

NPWS (2005). Ballyness Bay cSAC (Site Code 1090) Conservation plan for 2005-2010.

https://www.npws.ie/sites/default/files/publications/pdf/CP001090.pdf

NPWS (2014). Ballyness Bay SAC (Site code: 001090) Conservation Objectives supporting document – marine habitats and species. Version 14 May 2014.

NPWS. (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report. https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol1_Summary_Article17.pdf

NPWS. (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill. https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol2_Habitats_Article17.pdf

NPWS. (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill. https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

OPR (2021). Practice Note PN01 Appropriate Assessment Screening for Development Management. https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

Parker, G. G. (1973). Tests of Rhodamine WT dye for toxicity to oysters and fish. *Journal of Research US Geological Survey*, *1*(4), 499.

Richardson, W. J., Greene, C. R., Malme, C. I., and Thomson, D. H. (1995). Marine Mammals and Noise. San Diego, CA: Academic Press, Inc. 576pp.

Sharples, R.J., Moss, S.E., Patterson, T.A. and Hammond, P.S., (2012). Spatial variation in foraging behaviour of a marine top predator (*Phoca vitulina*) determined by a large-scale satellite tagging program. PLoS one, 7(5).

Skjolding, L. M., Dyhr, K. S., Köppl, C. J., McKnight, U. S., Bauer-Gottwein, P., Mayer, P., Bjerg, L. & Baun, A. (2021). Assessing the aquatic toxicity and environmental safety of tracer compounds Rhodamine B and Rhodamine WT. *Water Research*, *197*, 117109.

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

Weilgart, L. S. (2007). The impacts of anthropogenic ocean noise on cetaceans and implications for management. Canadian Journal of Zoology 85: 1091-1116.

Wright, A. J., Soto, N. A., Baldwin, A. L., Bateson, M., Beale, C. M., Clark, C., Deak, T., Edwards, E. F., Fernández, A., Godinho, A., Hatch, L. T., Kakuschke, A., Lusseau, D., Martineau, D., Romero, L. M., Weilgart, L. S., Wintle, B. A., Notarbartolo-di-Sciara, G., Martín, V. (2007). Anthropogenic Noise as a Stressor in Animals: A Multidisciplinary Perspective. Journal of Comparative Psychology. 20: 250-273.