

Marine Ecological Consultancy Services for the Great Blasket Island

Assessment of Impacts of the Maritime Usage (AIMU) Report



COMMERCIAL IN CONFIDENCE

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APEM Ltd



Table of Contents

1.	Intro	oduction	6
1	.1.	Background	6
1	2.	Statement of Authority	6
1	3.	Intertidal surveys:	8
1	.4.	Drop down video (DDV) or camera surveying (digital video / stills):	8
1	.5.	Dive surveys:	8
1	.6.	Marine Mammal Visual Surveys:	8
	1.6.3	1. Grey Seal haulout & Human disturbance surveys	8
	1.6.2	2. Acoustic surveys	9
	1.6.3	3. Boat based surveys	9
2.	Nee	d & Alternatives	9
2	.1.	Environmental Surveys:	9
2	.2.	Intertidal and Benthic Environmental Sampling:	10
2	.3.	Cetacean Monitoring:	10
2	.4.	Compliance with the Habitats Directive (92/43/EEC):	10
2	.5.	Enhancing Previous Studies:	10
2	.6.	Alternatives:	10
3.	Plan	ning & Development (including statement of consistency with the National Marine Planning	
Fra	mewo	ork (NMPF):	11
4.	Land	d & Soils	11
5.	Wat	er	11
6.	Biod	liversity	11
7.	Fish	eries and Aquaculture	11
8.	Air (Quality	12
9.	Nois	se & Vibration	12
10.	Land	dscape/Seascape	12
11.	Traf	fic & Transport (including navigation)	13
12.	. Cultural Heritage (including underwater archaeology)13		
13.	. Population & Human Health		14
14.	. Major Accidents & Disasters		14
15.	Climate		
16.	Was	ste	14
17.	Mat	erial Assets	14
18.	. Interactions		
19.	Summary of Mitigations		



20.	Con	sideration and Reasoned Conclusions in relation to the EIA, WFD & MSFD:	15
2	0.1.	Environmental Impact Assessment (EIA) Directive:	15
2	0.2.	Water Framework Directive (WFD):	15
2	0.3.	Marine Strategy Framework Directive (MSFD):	17
21.	Con	clusion	19
22.	Refe	erences	20
Figu	ires a	nd maps	21
23.	Арр	endices	25
A	ppen	dix 1	25
	Che	lonia Ltd. F-POD Technical Specification	25

List of Figures

Figure 1. 12541 OPW Great Blasket Project Indicative Marine Ecology Survey Boundary	22
Figure 2. 12541 OPW Marine Mammal Indicative Visual Transect Survey and Acoustic Mooring Locations	23
Figure 3. 12541 OPW Great Blasket Project Indicative Transect Lines and Locations for Core Samples	24

List of Tables

Table 1: Identified shipwrecks.	13
Table 2: WFD supporting elements for coastal waters	16
Table 3: Descriptors under the MSFD	17



1. Introduction

1.1. Background

Office of Public Works (OPW) proposes to redevelop the landing zone on Great Blasket Island (**Figure 1**) in tandem with a revitalised Island management plan. Survey works (**Figure 2**) are to be carried out as part of the marine aspect of this project including deployment of static Passive Acoustic Monitoring (PAM) devices, boat-based transects, intertidal and subtidal surveys, grey seal counts, and human disturbance monitoring. As a result, a marine area usage licence is required from the Maritime Area Regulatory Authority (MARA) for the survey works.

APEM Ireland which includes AQUAFACT was commissioned, on behalf of the Office of Public Works (OPW), to prepare an Assessments of Impacts of the Maritime Usage (AIMU) report for the proposed survey work to be undertaken to gather baseline data which will be used to inform the design and location of a proposed landing facility for boats to the island and for the submission of several environmental reports.

As set out in the Mara technical guidance note – Version 1, the scale and complexity of this AIMU report reflects the scale and complexity of the project. Where a designated chapter(s) is not relevant to the project, it is still included with a short paragraph stating why the chapter is not considered relevant in this instance.

The proposed survey work described are nonintrusive, and we assess that the activities will have no intrinsic negative impacts on any of the factors listed in the AIMU requirements. The survey work described will have a positive effect by improving knowledge about the survey area, and the studies will be undertaken by scientifically trained staff and professional workers for maritime activities.

APEM Ireland was also commissioned by the Office of Public Works (OPW) to produce a Supporting Information for Screening for Appropriate Assessment (SISAA) and an Annex IV Species Risk Assessment. Refer to accompanying documents.

1.2. Statement of Authority

This report has been prepared by preparation of this report was overseen by preparation of this report was overseen by preparation of the preparat

joined AQUAFACT, a member of the APEM Group, in October 2023 as Head of Consultancy. The has a valuable background in aquatic biology and environmental science, specialising in marine research and fisheries management. He earned a PhD from the National University of Ireland Galway, an MSc from Bangor University, and a Diploma in Aquatic Biology from Galway Institute of Technology. His career is characterised by diverse roles in project management, environmental monitoring, and marine species research. From 2021 to 2023, managed an Ireland/Wales Interreg project called Sensor Technologies for Remote Environmental Aquatic Monitoring (STREAM). Between 2017 and 2021, as the BlueFish Officer for BIM (Irish Sea Fisheries Board), he investigated potential climate impacts on marine life. From 2011 to 2017, monitoring oversaw national projects for the Water Framework Directive monitoring on behalf of Complete Laboratory Solutions, coordinating with various institutions, and ensuring compliance with environmental standards.

BSc (Joint Hons) is a Principal Ecologist with Apem Ireland and has over 12 years' experience in ecological assessment and holds a BSc in Marine Biology/Oceanography from the University of Wales, Bangor and a HND in Coastal Conservation with Marine Biology from Blackpool and Fylde College.

April 2024

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range of experience in the preparation of Environmental Impact Assessment Reports, Appropriate Assessment Screening reports and Natura Impact Statements. was the lead ecologist on a range of projects in the UK, including large scale infrastructural schemes. Since moving to Ireland, he has been lead ecologist / author (EIAR, EcIA, AA Screening reports and NIS's) for a number of projects including historic landfill remediation works, urban planning applications, commercial regeneration sites and renewable energy projects.

(B.Sc. (Hons), M.Sc., Ph.D.) is an Associate Director and the head of our marine mammal consultancy; he has a wealth of expertise in the field of marine mammal ecology, conservation and management, and a practical understanding of the legislation and policy relating to marine mammals and the consenting of major marine infrastructure projects. The has gained this experience working across several sectors, including academia, government and consultancy. The has led research and desk-based studies on topics such as identifying and implementing suitable monitoring and mitigation plans for better understanding anthropogenic impacts, and designing scientific studies aimed at reducing knowledge gaps that are barriers to the consenting of major marine infrastructure projects. He has authored (in his consultancy role) and/or critically reviewed (in his former Government role) scoping reports, EIARs, HRAs, AAs, EPS licence applications and marine mammal mitigation plans.

is a Consultant Ecologist has a First Class Hons. BSc in Zoology from NUIG and a First Class Hons. MA in Ecological Design Strategy. She is experienced in a range of research and technical survey skills in terrestrial, marine, ornithology, mammals, habitats and phylogenetics. She has a good knowledge of environmental legislation with reference to Ireland as well as the EU and the Habitats Directive. She has also previously spent time at sea conducting UWTV and Deep-Sea Trawling fisheries surveys with the Marine Institute. As a consultant ecologist for APEM ltd., she contributors towards Ecological Impact Assessments (EcIA), Appropriate Assessments Screenings (AA Screenings) and Preliminary Ecological Appraisals (PEAs).

is the Divisional Director of AQUAFACT and has 25 years of experience in the field of marine science. He is a Chartered Scientist (CSci) and Fellow of the Royal Society of Biology (FRSB) and the Royal Geographical Society (FRGS) and holds a PhD in biological oceanography from the National University of Ireland, Galway. Prior to joining AQUAFACT, was manager of the Ecology Unit in the Irish Environmental Protection Agency. He has previously worked as a Research Fellow in the Marine Institute and as a seconded expert to the European Commission.



Project Description

1.3. Intertidal surveys:

The intertidal survey will cover a < 1km stretch of coastline. A Marine Nature Conservation Review (MNCR) Phase 1 intertidal survey will be completed within the intertidal areas during mean low water spring (MLWS) tidal conditions. The Common Standards Monitoring Guidance (JNCC, 2004) and 'Littoral Sediments Habitats' Procedural Guidance (Version 4, August 2004) will be followed as guidance throughout surveys. Additional guidance including the 'CCW Handbook for marine intertidal Phase 1 survey and mapping (Wyn *et al.*, 2000), the 'Guidelines for the Conduct of Benthic Studies at Marine Aggregate Extraction Sites (2nd edition)' (Ware and Kenny ,2011) will be applied.

The intertidal to be surveyed will include areas of soft sediment habitat (beach) and rocky shore (**Figure 3**). A Phase II Quantitative Intertidal transect survey will be conducted within the survey area. The methodology will follow that set out within the Marine Monitoring Handbook Procedural Guidance No's 3-1 (Intertidal Biotope Recording) (Wyn and Brazier, 2001) and 3-6 (Intertidal Core Sampling) (Dalkin and Barnett, 2001). Rocky shore habitat will also be encountered, surveying may need to be adapted appropriately to use quadrats rather than core sampling. Three replicate samples will be taken using a hand operated coring device measuring 30 cm in depth and 15 cm in width. One additional fist-sized bag of sediment will be taken at suitable stations. Photographic records during surveying should be taken as appropriate for recording and reporting purposes.

1.4. Drop down video (DDV) or camera surveying (digital video / stills):

Subtidal still and video seabed photographic data will be acquired to determine the presence of subtidal reefs and calculate a 'reefiness' score (Irving, 2009) where applicable at specified locations using a high-resolution underwater camera. AQUAFACT follows the NMBAQC and JNCC guidelines for the best practice acquisition of video stills imaging of benthic substrata and epibenthic species, ensuring that the data collected is fit for purpose in relation to the needs and requirements of the proposed survey.

1.5. Dive surveys:

In areas that are not suitable for the use of DDV equipment, such as subtidal reefs or sea caves, a team of HSE Part 4 qualified commercial divers will be deployed to obtain video and still imagery. The team will use high-resolution underwater camera and lighting equipment to obtain imagery suitable for species / habitat type identification. The team will use non-intrusive method of works, ensuring to remain 0.5 - 1 m from the seabed or sea cave walls. The team of marine biologists will take note on seabed type and features, cave wall conditions and features, flora and fauna with emphasis on notable sensitive and protected species.

1.6. Marine Mammal Visual Surveys:

1.6.1. Grey Seal haulout & Human disturbance surveys

Haul-out surveys for grey seals will be carried out by an observer from a vantage point above An Trá Bán. The observer will carry out regular counts throughout the day, either side of low tide. Flexibility with weather conditions and access to Great Blasket Island will be a deciding factor in when each survey takes place. The aim will be to survey over six days, with one survey day per month between April and September.



In the event that conditions do not allow for a survey to be carried out in any given month, a survey can be delayed to the following month in which two surveys can take place, with a minimum period of two weeks between surveys. During each count, mapping and population profile data will be collected. Human disturbance surveys will take place simultaneously to the haul-out surveys. Throughout the survey day, the observer will monitor the beach for any signs of disturbance to any seals hauled out or in the water within the general area of An Trá Bán. Any disturbance that is observed will be recorded along with the cause of the disturbance and the time it takes for the seals to return to baseline (i.e. resting state prior to the disturbance event) following any disturbance.

1.6.2. Acoustic surveys

Four F-POD acoustic monitoring devices (used to detect clicks of cetaceans, including porpoise and dolphin species; refer to Appendix 1 for specifications) be deployed on fixed moorings to provide continuous monitoring of the area throughout the season. The devices will be deployed on either side of the Blasket Sound, one south west of Slea Head and one to the north of Beiginis pier see **Figure 2**. Servicing of the F-POD will be carried out every 2-3 months after deployment, to replace batteries and download data, for up to one year. The moorings would be a standard concrete construction (50 to 70 kg).

1.6.3. Boat based surveys

Boat based transect surveys will be carried out to further determine the species of marine mammals (and other marine megafauna, e.g. turtle species) and their occurrence and distribution within the survey area. The aim will be to undertake six surveys, each survey will coincide with deployment, recovery, and maintenance of the F-PODs to minimise vessel presence within the survey area. The transect surveys will cover the area surrounding the entirety of the Great Blasket Island and extending into the area of Dunquin Pier (**Figure 2**). The survey vessel will travel at a standard survey speed of approx. 12 km/hr (7 knots) while on transect (traveling between F-POD sites). All marine mammal sightings during this transect will be recorded along with number of animals, location of sighting and other relevant data (e.g. behaviour). Each survey will include a search area of approximately 200 m either side of the transect line.

2. Need & Alternatives

The Blasket Islands are designated as a Special Area of Conservation (SAC). Below is the need for each of the tasks set out in this application for an ecological assessment at the Blasket Islands:

The aims/benefits of the Project can be summarised as follows:

- Obtaining baseline data on the ecology of the study area.
- The baseline data that is collected will be able to inform future projects in the area, including the much-needed development of a scheme for improved landing facilities on the Island.

2.1. Environmental Surveys:

These surveys set out in the AIMU are foundational in establishing baseline environmental conditions. They will provide a comprehensive view of the current state of biodiversity, habitat conditions, and the presence



of sensitive species. Such data are crucial for informed decision-making and for measuring the impact of any proposed development.

2.2. Intertidal and Benthic Environmental Sampling:

This component focuses on the health of subtidal, intertidal and benthic ecosystems, which are necessary for the overall assessment of the ecological balance. These habitats can be sensitive to environmental changes. Sampling (**Figure 3**) will help in understanding the distribution and health of species living in these habitats, ensuring that any development activities are planned in a manner that mitigates damage to these vital ecosystems.

2.3. Cetacean Monitoring:

Acoustic monitoring is a non-intrusive way to study cetaceans and can provide continuous data on their presence and behaviour. This is particularly important for species like the harbour porpoise, which are particularly sensitive to noise pollution. The data gathered will be vital for assessing the impact of human activities on these species and for designing strategies to mitigate negative impacts.

Complementing acoustic monitoring, visual surveys provide additional data points on cetacean populations, their health, and behaviour. Transects methods help in estimating population densities and spatial distribution, which are essential for assessing and ensuring that the SAC's conservation objectives regarding the harbour porpoise, which is a qualifying feature of the SAC, are met.

2.4. Compliance with the Habitats Directive (92/43/EEC):

The Habitats Directive mandates the conservation status of key marine habitats and species. The proposed surveys align with these obligations, ensuring that Ireland fulfils its legal duties and contributes to the EU-wide efforts for marine conservation.

As part of this submission to MARA a Supporting Information for Screening for Appropriate Assessment (SISAA) has been undertaken for the Great Blasket Island. "The assessment has determined, in light of best available scientific data, that there is no potential for significant effects on the conservation features of SACs and SPAs resulting from the Project."

2.5. Enhancing Previous Studies:

Building on previous studies (e.g., boat-based surveys from 2018 and 2014 and seal disturbance surveys from 2019), the proposed works set out in the AIMU aim to add to existing data.

In conclusion, the proposed works in this application are essential for understanding the ecological balance of the Blasket Islands SAC. To ensure reporting compliance with national and EU conservation obligations and delivering a strong data foundation for environmental assessments and developmental planning.

2.6. Alternatives:

Literature based reviews could be considered an alternative to the proposed survey works, but such a review would not provide all the required and relevant information needed for the composition of statutory applications and planning in relation to specific geographical locations.



3. Planning & Development (including statement of consistency with the National Marine Planning Framework (NMPF):

The proposed survey work is fully aligned with the principles and guidelines of the National Marine Planning Framework (NMPF). The NMPF represents a comprehensive strategy, amalgamating all marine-based human activities and sets out the objectives and policies for marine planning up to 2040. It aims to facilitate the sustainable use of marine resources amid growing spatial demands on ocean spaces, ensuring that various marine activities coexist harmoniously.

The NMPF, mirroring the terrestrial National Planning Framework, sets a definitive course for managing our seas, clarifying objectives and priorities, and guiding decision-makers, users, and stakeholders towards strategic, plan-led, and efficient utilisation of marine resources. The Framework adopts an ecosystem-based approach underpinned by the best available knowledge. It incorporates a Strategic Environmental Assessment (SEA) and an Appropriate Assessment (AA) to ensure that environmental considerations are central.

The proposed survey work will comply with and support the NMPF's objectives. The activities are designed to have no negative impacts on the Framework's goals for the sustainable and strategic use of marine resources. The activities will contribute positively to balanced and informed marine planning and management.

Statement of consistency: The proposed survey work is consistent with the NMPF objectives.

4. Land & Soils

The proposed survey work is maritime in nature, therefore there will be no impact on land & soils.

5. Water

Due to the duration of the proposed survey works being short-term and the PAM moorings have a small footprint the negligible sediment material in suspension that may be created will fall out of suspension or disperse into the water column quickly. Therefore, there will be no impact on water quality.

6. Biodiversity

Due to existing boating activity in the area, the short-term duration and low impact nature of the proposed survey work there will be no significant impact on biodiversity.

Refer to accompanying documents for assessments on Annex I habitats, Annex II and Annex IV species.

7. Fisheries and Aquaculture

We plan to deploy four passive acoustic monitoring devices (F-PODs; used to detect clicks of cetaceans, including porpoise and dolphin species) and provide maintenance for the duration of deployment (one year). The moorings used will be a standard tyre/concrete construction to make them practical (light enough) to deploy from a vessel without an A-frame winch and pully system.



We have inspected Ireland's Marine Atlas¹ (Marine Institute - Access to Ireland's marine data and related information for inshore fishing activities) and have identified that the proposed survey locations will not interfere with the following:

- Periwinkle Harvesting
- Dredge Fishing
- Line Fishing
- Midwater Trawl Fishing
- Nets Fishing
- Bottom Trawl Fishing
- Pot Fishing (there is pot fishing activity shown but the proposed activities will not interfere with this).

For the other survey work proposed – boat transects, dive surveys and intertidal surveys, surveyors will adhere to best practices, therefore avoid interfering with or have any impact on fishing activities.

There are no aquaculture activities in the proposed survey area. Therefore, there will be no impact on fishing or aquaculture activities.

8. Air Quality

Due to existing boating activity in the area, the short-term duration and low impact nature of the proposed survey work there will be no significant impact on air quality.

9. Noise & Vibration

Noise emissions created due to survey work are limited to the operational noise of the boat. Moorings for the static PAM stations will be gravity secured/anchored with no drilling or piling required. The PAM devices do not produce noise either actively or passively (see Appendix 1). No other elements of the survey work are predicted to result in noise emissions to water.

Noise emissions can have the potential to affect species, especially marine mammals. However, due to existing boating activity in the area, species are most likely already habituated to noise disturbance from marine traffic, such as shipping vessels and boats for tourism purposes. Consequently, the introduction of an additional slow-moving vessel during infrequent surveys (every two to three months for PAM and boatbased surveys) is not likely to cause significant disturbance. Therefore, there will be no impact due to noise and vibration.

10.Landscape/Seascape

Due to existing boating activity in the area, the short-term duration and low impact nature of the proposed survey work there will be no significant impact on the landscape/seascape.

¹ <u>https://atlas.marine.ie/#?c=51.5989:-10.2018:13</u> Accessed March 2024



11. Traffic & Transport (including navigation)

Shipping activity within and near the proposed survey area was frequent between 2017 and 2022, with less than one hour of total shipping operations per km² per month throughout the inshore and coastal waters (EMODnet, 2021). Fishing vessels were the most common vessel type in the region of the Blasket Sound during this period. It is likely that marine species using this area would be familiar with slower moving vessels (refer to accompanying documents). Furthermore, due to existing boating activity in the area, the short-term duration and low impact nature of the proposed survey work (temporary moorings and the depth of subsurface deployment), along with the persons undertaking the surveys being experienced mariners and scientifically trained crew, there will be no significant impact on the traffic and transport (including navigation).

12. Cultural Heritage (including underwater archaeology)

There are five recorded shipwrecks (Table 1:) shown on Ireland's Marine Atlas within the proposed survey area². There are an additional two wrecks marked on the Great Blasket Island but no information is provided. Although located close to the shore, no surveys are proposed in the area of the additional two wrecks.

Classification	DD Lat	DD Lon	Date of Loss
945-ton merchant vessel, carrying 64 mariners, 225 soldiers and 26 carriage mounted cannon. Fallon, N. 1978, 211; Flanagan, L., 1988; Wignall, S. 1982; Martin, C. 1975; Martin, C. & amp; & Parker, G. 1988; Mattingly, G. 1959; Spotswood Green, W. 1906; UKHO Wreck	52.1015	-10.49525	21/09/1588
Unknown	52.09909	-10.49716	No details
Unknown	52.09729	-10.50751	No details

Table 1: Identified shipwrecks.

Consultation has been started with the Antiquities Duty Officer <u>antiquitiesdo@museum.ie</u> and National Monuments <u>nationalmonuments@housing.gov.ie</u> to advise them of the proposed surveys and the potential for a future application.

Due to the moorings for the static PAM stations being gravity secured/anchored (no drilling or piling required), existing boating activity in the area, the short-term duration and low impact nature of the proposed survey work (temporary moorings and the depth of sub-surface deployment), along with the persons undertaking the surveys being experienced mariners and scientifically trained crew, there will be no significant impact on cultural heritage (including underwater archaeology).

² <u>https://atlas.marine.ie/#?c=51.5989:-10.2018:13</u> Accessed March 2024



April 2024

13.Population & Human Health

Due to existing boating activity in the area, the short-term duration and low impact maritime nature of the proposed survey work there will be no impact on population and human health.

14. Major Accidents & Disasters

Shipping activity within and near the proposed survey area was frequent between 2017 and 2022, with less than one hour of total shipping operations per km² per month throughout the inshore and coastal waters (EMODnet, 2021). Fishing vessels were the most common vessel type in the region of the Blasket Sound during this period. While there is potential for collision, it is likely that marine species using this area would be familiar with slower moving vessels (refer to accompanying documents), therefore, there will be no impact from collision contributing towards major accidents and disasters.

All survey vessels will be compliant with the International Convention for the Prevention of Pollution from Ships (MARPOL) and the Marine Pollution Contingency Plan (MPCP), which contain the necessary steps to initiate an external response for any oil-related discharges, or in the case of a maritime accident/collision that results in an oil spill. Published guidelines and best working practices will be adhered to, to ensure that the likelihood of accidental spills is extremely low. Furthermore, as detailed above the other vessels within the area are slow moving fishing vessels, therefore, there will be no impact from accidental spillages or collisions contributing towards major accidents and disasters.

15.Climate

APEM Ltd have a policy of offsetting unavoidable carbon emissions generated during the course of any work. <u>https://www.apemltd.com/taking-responsibility-for-our-carbon-emissions-and-tackling-climate-change/?cn-reloaded=1</u>

There will be no significant impact on climate due to the proposed survey work.

16. Waste

All materials and waste will be brought back to APEM's facilities for appropriate disposal. Therefore, there will be no impact from waste.

17. Material Assets

There is no requirement for material assets beyond that identified for the core sampling as part of the intertidal surveys. As the surveys will be conducted in a professional and considerate manner, there will be no impact from the proposed survey works on material assets.

18.Interactions

As the proposed survey work will be undertaken by professional and competent surveyors with relevant experience, there will be no interactions that will produce impacts beyond those assessed above. Therefore, there will be no impact from interactions within the proposed survey works.



OPW

The equipment used for passive acoustic monitoring of cetaceans is designed to be discreet, temporary, and non-invasive. Positioned below the surface, these devices operate silently and have minimal, if any, impact on the environment, local inhabitants, or wildlife, both in the immediate vicinity and in a broader context. Consequently, the proposed work does not necessitate any mitigation measures.

The characteristics of the visual survey, dive and intertidal surveys are undertaken over a short duration and the core samples are limited in number and material required, therefore, the proposed work does not necessitate mitigation measures.

It is therefore concluded that no specific mitigation is required in relation to the proposed survey works.

20. Consideration and Reasoned Conclusions in relation to the EIA, WFD & MSFD:

Below are considerations of EU directives (EIA, WFD, MSFD) and an overall assessment that the proposed surveys will not have a negative impact on their objectives.

20.1. Environmental Impact Assessment (EIA) Directive:

According to the EU's Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU), major building or development projects within the EU must undergo an assessment for their potential impact on the environment.

The Directive outlines in Article 4 (1) 21 Annex 1 projects that require mandatory EIA. Article 4 (2) outlines Annex 2 projects that require consideration for EIA further to a case-by-case examination or through thresholds and criteria established by Member States. Projects requiring mandatory EIA are listed in Schedule 5 of the Planning and Development Regulations 2001, as amended. Where developments are under the relevant EIA threshold, planning authorities are required under Article 103 of the 2001 Regulations, as amended, to request an EIS where it considers the proposed development is likely to have a significant effect on the environment.

Given the scale and nature of the proposed surveys and taking account of all available information, the overall probability of impacts on the receiving environment arising from the surveys is considered to be low. No significant environmental impacts will occur (as outlined in Sections 4- 19) with regards to the EIA Directive.

20.2. Water Framework Directive (WFD):

The Water Framework Directive (WFD) primarily focuses on ensuring the qualitative and quantitative health of water resources. It emphasises reducing and eliminating pollution and ensuring an adequate water supply to support wildlife and human requirements. The WFD serves as a fundamental regulation for water protection in Europe, encompassing inland, transitional, and coastal surface waters and groundwaters. The proposed survey area is located in the South Western Atlantic Seaboard WFD coastal water body.

We have assessed both the Hydromorphological and Physico-chemical quality designated elements of the WFD in respect to the planned activities (Table 2).



Table 2: WFD supporting elements for coastal waters.

Hydromorphological Quality Elements	Physico-chemical Quality Elements
Depth variation	Transparency
Structure and substrate of the coastal bed	Thermal conditions
Structure of the intertidal zone	Oxygenation Conditions
Direction of dominant currents	Salinity
Wave exposure	Nutrient condition
	Specific Pollutants

WFD assessment of proposed survey work and deployment of marine acoustic monitoring stations

WFD Hydro morphological Quality Elements:

1. Depth Variation: The proposed surveys including acoustic monitoring deployment and operations will not disturb the depth variation in the marine ecosystem.

2. Structure and Substrate of the Coastal Bed: The proposed surveys will not alter the physical structure and substrate of the coastal bed.

3. Structure of the Intertidal Zone: The integrity of the intertidal zone's structure will be unaffected by the proposed surveys.

4. Direction of Dominant Currents: Current flow patterns and the direction of dominant currents will not be affected by the proposed surveys or by the placement of the moorings.

5. Wave Exposure: The proposed surveys will not change the characteristic wave exposure of the area.

WFD Physico-chemical Quality Elements:

1. Transparency: There will be no impact on the water transparency levels in the operational areas due to the proposed surveys.

2. Thermal Conditions: The deployment and operational activities of the monitoring stations will not alter the thermal dynamics of the water bodies.

- 3. Oxygenation Conditions: The proposed surveys will not adversely affect oxygenation conditions.
- 4. Salinity: The proposed surveys will not cause fluctuations in the salinity levels of the water.
- 5. Nutrient Condition: Nutrient levels and dynamics will not be impacted by the proposed surveys.
- 6. Specific Pollutants: Specific pollutants will not be introduced into the marine environment.

Given the scale and nature of the proposed surveys and taking account of all available information, the overall probability of impacts on the receiving waters arising from the surveys is considered to be low. No



significant environmental impacts will occur (as outlined in Sections 4- 19) with regards to the Water Framework Directive.

AQUAFACT (APEM) is committed to adhering to environmental standards and regulations, ensuring that the surveys and operation of the marine acoustic monitoring stations are undertaken in consideration of the marine ecosystem's health and stability.

20.3. Marine Strategy Framework Directive (MSFD):

The EU's Marine Strategy Framework Directive (MSFD) was established to safeguard the marine ecosystem and biodiversity, which are crucial for human health and marine-related economic and social activities. The directive underscores the importance of preserving and, when possible, restoring the marine environment to maintain biodiversity and ensure clean, healthy, and productive oceans and seas. The objectives are specifically aimed at better understanding the distribution of protected cetaceans and the ecology of the sub and intertidal environment. The research objectives align with those outlined in the MSFD directive.

The MSFD identifies negative impacts such as pollution, biodiversity loss, seabed damage, overexploitation, the spread of non-indigenous species, marine litter, underwater noise, ocean warming, and acidification. The design of the acoustic mooring systems, survey plans and the technical equipment we employ are characterised by their non-invasiveness, silence, and small scale. Overall, due to the non-invasive nature of the surveys, the anticipated negative environmental impact of the maritime activities is negligible. Consequently, the survey work will not adversely affect the objectives outlined in the MSFD. The MSFD descriptors are shown in Table 3.

Descriptor	Description
D1 Biodiversity	Biological diversity is maintained. The quality and occurrence of habitats and
	the distribution and abundance of species are in line with prevailing
	physiographic, geographic and climatic conditions
D2 Non-indigenous species	Non-indigenous species introduced by human activities are at levels that do not
	adversely alter the ecosystems
D3 Commercial Fish and	Populations of all commercially exploited fish and shellfish are within safe
Shellfish	biological limits, exhibiting a population age and size distribution that is
	indicative of a healthy stock
D4 Food Webs	All elements of the marine food webs, to the extent that they are known, occur
	at normal abundance and diversity and levels capable of ensuring the long-term
	abundance of the species and the retention of their full reproductive capacity
D5 Eutrophication	Human-induced eutrophication is minimised, especially adverse effects thereof,
	such as losses in biodiversity, ecosystem degradation, harmful algae blooms and
	oxygen deficiency in bottom waters
D6 Seabed Integrity	Sea-floor integrity is at a level that ensures that the structure and functions of
	the ecosystems are safeguarded and benthic ecosystems, in particular, are not
	adversely affected
D7 Hydrographical Conditions	Permanent alteration of hydrographical conditions does not adversely affect

Table 3: Descriptors under the MSFD.



marine ecosystems	
Concentrations of contaminants are at levels not giving rise to pollution effects	
Contaminants in fish and other seafood for human consumption do not exceed	
levels established by Union legislation or other relevant standards	
Properties and quantities of marine litter do not cause harm to the coastal and	
marine environment	
Introduction of energy, including underwater noise, is at levels that do not	
adversely affect the marine environment	

MSFD assessment of the proposed survey work:

D1 Biodiversity: No anticipated impacts on species, habitats, or ecosystem functionality.

D2 Non-indigenous Species: No anticipated introduction or spread of invasive species.

D3 Commercial Fish and Shellfish: No anticipated impacts on the population and health of commercial species.

D4 Food Webs: No anticipated disruption to trophic relationships or food chain dynamics.

D5 Eutrophication: No anticipated contribution to nutrient enrichment.

D6 Seabed Integrity: No anticipated detrimental effects on the physical and biological structure of the seabed.

D7 Hydrographical Conditions: No anticipated alteration of hydrological characteristics, including water flow, temperature, and salinity.

D8 Contaminants: No anticipated release or increase in levels of harmful substances.

D9 Contaminants in Seafood: No anticipated accumulation of hazardous substances in the marine food chain.

D10 Marine Litter: No anticipated contribution to marine debris or pollution.

D11 Energy, including underwater noise: No anticipated significant increase in energy inputs or underwater noise levels.

The findings indicate that the proposed surveys are anticipated to have negligible or no significant impacts on the various MSFD hydromorphological and physico-chemical quality elements within the marine environment.



21. Conclusion

For the reasons set out in detail in this AIMU report, in the light of the best scientific knowledge, all aspects of the proposed survey work which, by itself, or in combination with other plans or projects, may affect the environment have been considered. Furthermore, the proposed survey work has been considered with regard to EU directives EIA, WFD and MSFD.

Based on the information set out in this report as well as the accompanying documents, we submit that the competent authority has sufficient information to allow them to determine, with reasonable scientific certainty, that the proposed survey work, individually or in combination with other plans or projects, will have no adverse effect the environment, Annex IV species, Annex II species or the integrity of any Natura 2000 site.



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Figures and maps





APEM Group

12541 OPW Great Blasket Island Boundary for Marine Ecology Surveys.

Assessment of Impacts of the Maritime Usage (AIMU) Report

Initial Marine Ecology Survey Boundary Townlands____Ungen_2019_Clip

Scale

Notes World Imagery: Maxar, Microsoft OpenStreetMap: Map data © OpenStreetMap contributors,

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Coordinate Reference System IRENET95 / Irish Transverse Mercator



Figure Reference: 12541_OPW_GreatBlasketIsland_SISAA

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23. Appendices

Appendix 1

Chelonia Ltd. F-POD Technical Specification

Housing:	F-POD: Polypropylene. DeepF-POD: Aluminium.
Dimensions:	F-POD: Length: 710 mm. Diameter: 90 mm. DeepF-POD: Length: 710 mm. Diameter: 100 mm
Weight:	F-POD: 2.35 kg without batteries. DeepF-POD: 7.15 kg without batteries.
Buoyancy:	F-POD: Approximately +0.7 kg with alkaline batteries and +1.2 kg with lithium batteries. This makes F-PODs self- orientating and increases the chance of recovery if the mooring fails. A web link engraved on the outside has enabled over 150 PODs to be returned to their owners by people who have found them on sea shores, sometimes more than 2,500 km from home. DeepF-POD: -3.1 kg, not buoyant.
Mooring:	F-POD: 3 \times 10 mm holes in the lid. DeepF-POD: 1 \times 12 mm hole in the lid.
Hydrophone:	Improved hydrophone with less Z-plane variation. 20 kHz to 160 kHz omni-directional in a large-diameter housing to reduce surface noise. The transducer mounting and housing design gives high resistance to impact damage.
Memory:	Removable 32 GB micro SD card. Two SD cards are supplied with each F-POD. Any blank micro SD card up to 32 GB can be used.
Batteries:	Battery packs hold 10 D-cells. The battery housing is sprung to reduce battery damage from end impacts.
Detection range:	Maximum detection range for porpoises is approximately 400 metres. Dolphins may be detected at >1 km.
Standardisation:	See standardisation and calibration.
Click selection:	Digital time domain waveform analysis, using duration (5µs resolution), frequency, amplitude, number of cycles, bandwidth, amplitude profile, frequency profile and Narrow Band High Frequency Index, to select possible cetacean clicks in the range 20-160 kHz. On-board train detection selects clicks in trains so that some representative full waveforms can be saved.
Cetacean detection:	Coherent click trains are extracted and classified by the KERNOF classifier. This classifier is a fixed component of the process to give long term uniformity of performance.
Species classification:	Porpoises and other narrow-band high frequency (NBHF) species can be distinguished from broadband species. Some discrimination of groups of species within the broadband species may become possible when enough data is available. Every species tested has given good detection performance – see <u>Species detection</u> .
Sonars:	Runs two independent sonar detectors that detect and filter out boat sonars. A record is kept of sonar detections.
Settings:	The default settings cover all species and most environments. In locations with high levels of ambient noise, which are usually due to substrate transport by currents, standard low sensitivity settings may be required.
Angle sensing:	The angle-from-vertical is recorded each minute, enabling the user to check after deployment that the F-POD was deployed in a vertical position, and giving information on currents. A range of angles at which the POD will log can be set. This allows the F-PODs to be set up well in advance and transported in a horizontal attitude saving power and memory.
Temperature sensing:	Temperature is recorded each minute.
Maintenance:	The external surfaces of the F-POD are simple and tough allowing robust methods of removing biofouling. The lids use a dual O-ring design with grease-free lubricants and these have proved highly reliable.