2022

Valentia Island Energy Ltd

VI Energy

# RISK ASSESSMENT FOR ANNEX IV SPECIES: VALENTIA ISLAND ENERGY

AQUALICENSE

## DISCLAIMER

This publication was prepared by Aqualicense Limited ("Aqualicense") to meet the particular requirements of Valentia Island Energy Ltd. ("the Client") and the terms and conditions set out in the contract between both parties. It is not intended for, and should not be relied upon by, any third party. Aqualicense is not responsible for any loss occasioned, or claimed to be occasioned, in part or in full, as a result of any legal entity's action or inaction based on a matter contained in this publication or inferred from it.

## COPYRIGHT NOTICE

This entire publication is subject to the laws of copyright. All rights are reserved by Aqualicense Limited having its registered office at 22 Church View, Arklow, County Wicklow, IRELAND.

This publication may not be reproduced or transmitted in any form or by any means, electronic or manual, including photocopying, to any third party without the prior written permission of Aqualicense Limited.

©Aqualicense Limited 2022.

| REV NO. / CREATED BY | REVIEWED BY | SIG OFF DATE |
|---|---|---|
| REV 0/GG | [redacted] | 31/05/2022 |
| REV 1/GG | | 10/06/2022 |
| FINAL/GG | | 15/06/2022 |
| REV 2/GG | | 09/12/2022 |

Map © Crown Copyright and/or database rights. Reproduced by permission of The Keeper of Public Records and the UK Hydrographic Office.*www.GOV.uk/UKHO* Licence 36065.

## TABLE OF CONTENTS


**1. INTRODUCTION ..... 1**

1.1. PURPOSE OF THE DOCUMENT ..... 1
1.2. STRUCTURE OF THIS REPORT ..... 1
1.3. PROPOSED SURVEYS DETAIL ..... 1
1.4. MARINE SURVEYS ..... 2

**2. ARTICLE 12 HABITATS DIRECTIVE (92/43/EEC) ..... 1**

**3. POTENTIAL IMPACTS ON ANNEX IV SPECIES ..... 3**

3.1. DISTURBANCE FROM VIBRATION AND UNDERWATER NOISE ASSOCIATED WITH SURVEYS ..... 3
3.2. INJURY DUE TO COLLISION ..... 6
3.3. POLLUTION EVENT ..... 6

**4. ANNEX IV SPECIES ASSESSMENT ..... 6**

4.1. ANNEX IV SPECIES WITH POTENTIAL TO BE IN THE SURVEY AREA ..... 6
4.2. BASELINE ASSESSMENT OF ANNEX IV SPECIES ..... 7

**5. ASSESSMENT AND MITIGATION OF POTENTIAL IMPACTS ..... 10**

5.1. DISTURBANCE FROM VIBRATION AND UNDERWATER NOISE ..... 10
5.2. INJURY DUE TO COLLISION SURVEY VESSELS ..... 10
5.3. POLLUTION EVENT ..... 11

**6. ARTICLE 12 ASSESSMENT CONCLUSIONS ..... 12**

**7. REFERENCES ..... 13**

APPENDIX 1. **A3 MAPS ..... 14**


## FIGURES


Figure 1.1: Valentia Island Energy – Foreshore Licence Application Area, located off the Southwest coast of Ireland. ..... 2


## TABLES


Table 1.1: Summary of proposed survey methodologies associated with Valentia Island Energy Investigatory Foreshore Licence Application Area - Investigatory Foreshore Licence Application Area. See separate Schedule of Works report for detail on the survey equipment. ..... 3
Table 3.1: Sound Pressure Level (SPL) injury criteria proposed by Southall et al. (2019), for Annex IV species exposed to discrete noise events. ..... 4
Table 3.2: Marine mammal auditory band width; Source: (DAHG, 2014). ..... 4
Table 3.3: Acoustic equipment frequency data. ..... 5
Table 3.4: Marine mammal auditory band width and relevant surveys, marine mammals whose range overlaps the survey area are listed. ..... 5
Table 5.1: Marine Mammal Auditory Band Width and relevant surveys and Annex IV with potential to be in the survey area. ..... 10

# 1. INTRODUCTION

Valentia Island Energy Ltd ("the Applicant") intend to undertake a project for an offshore wind energy production site off the Southwest coast of Ireland, off the coast of Valentia Island in county Kerry. In accordance with Article 6(3) of the Habitats Directive, an Appropriate Assessment which comprises of a "Natura Impact Statement" (NIS) and a "Supporting Information for Screening for Appropriate Assessment" (SISAA) has been completed in order to assess potential effects of this proposed plan on Natura 2000 sites. This document is additional and separate to the Appropriate Assessment reports (NIS and SISAA) (required under Article 6(3) of the Habitats Directive) and addresses the specific requirements under Article 12 of the Habitats Directive. It was requested by the Department to which the Foreshore License Application is made.

## 1.1. PURPOSE OF THE DOCUMENT

This document is a requirement under Article 12, of the Habitats Directive, and considers the potential effects of the proposed plan on species listed under Annex IV of this Directive. Under Article 12, Annex IV species are afforded strict protection wherever they occur.

This report aims to support the application process and provide the necessary information to the competent authorities to assist them in making an informed decision on the any potential impacts of the proposed project on Annex IV species.

## 1.2. STRUCTURE OF THIS REPORT

The following chapters include information relating to the Annex IV species and potential impacts of the proposed project throughout their range, both inside and outside of designated protected areas.

- Chapter 1: Introduction
- Chapter 2: Article 12 Habitats Directive (92/43/EEC)
- Chapter 3: Potential Impacts on Annex IV species
- Chapter 4: Annex IV Species Assessment
- Chapter 5: Assessment and Mitigation of Potential Impacts
- Chapter 6: Article 12 Assessment Conclusions
- Chapter 7: References

## 1.3. PROPOSED SURVEYS DETAIL

This application (Valentia Island Energy project) seeks consent to conduct surveys to establish the potential for an offshore windfarm located off the Southwest coast of Ireland, specifically off Valentia Island in county Kerry. The Investigation Area illustrated in *Figure 1.1* reflects the area being applied for under the Foreshore Licence Application.

A detailed description of the proposed surveys is given in the document – Valentia Island Energy: Foreshore Licence Application for Site Investigation Works – Schedule of Works - accompanying the licence application.

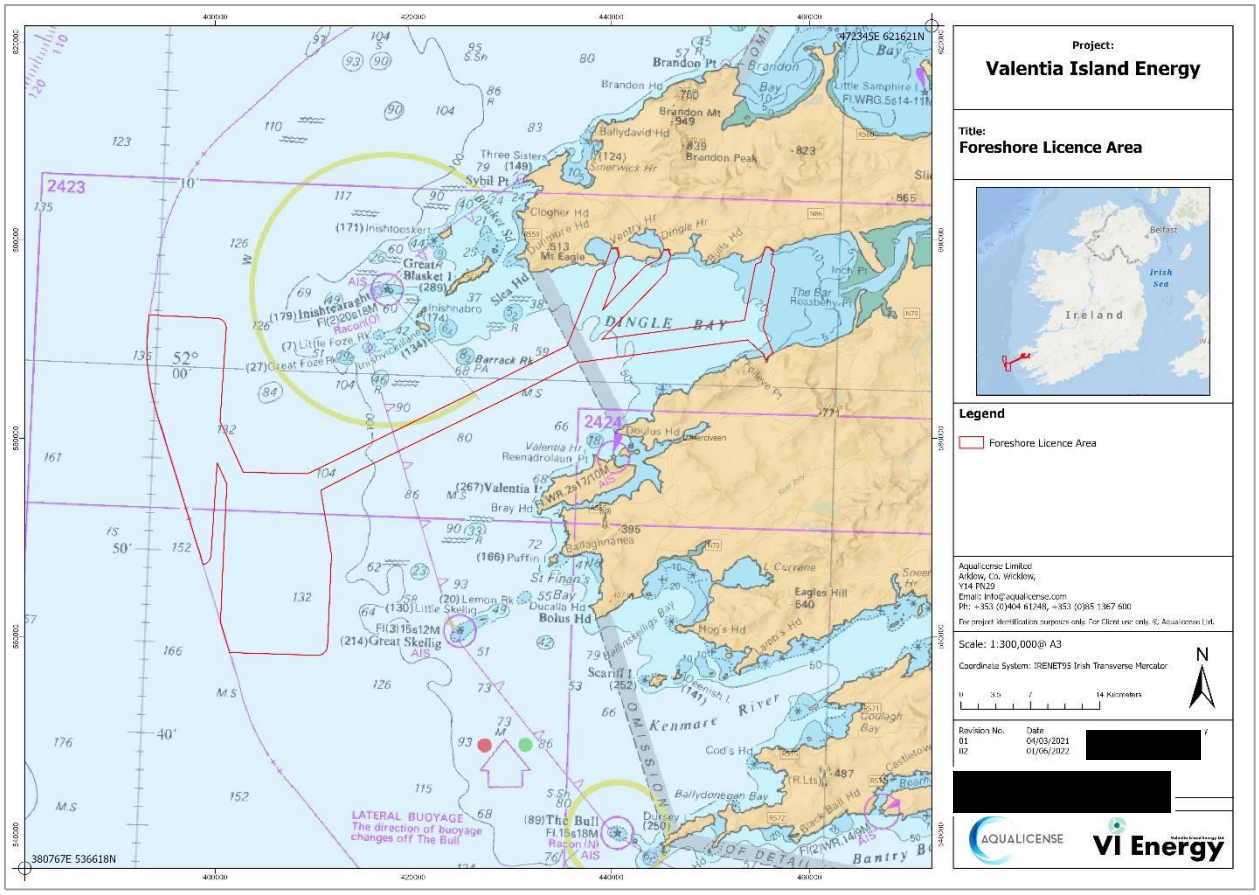



*Figure 1.1: Valentia Island Energy – Foreshore Licence Application Area, located off the Southwest coast of Ireland.*

## 1.4. Marine Surveys

The objective of the site investigation work is to understand site conditions including benthic characteristics, bathymetry, underlying geology, existing tidal conditions, and environmental characteristics. The proposed programme of surveys is summarised in *Table 1.1* below; for a more detailed description of all survey activities please refer to Valentia Island Energy: Foreshore Licence Application for Site Investigation Works – Schedule of Works - which accompanies the application.

*Table 1.1: Summary of proposed survey methodologies associated with Valentia Island Energy Investigatory Foreshore Licence Application Area - Investigatory Foreshore Licence Application Area. See separate Schedule of Works report for detail on the survey equipment.*

| | SURVEY | PURPOSE |
|---|---|---|
| GEOPHYSICAL | **Multibeam Echosounder (MBES)** | Water depth and seabed topography. |
| | **Side Scan Sonar (SSS)** | Map seabed features and / or obstructions. |
| | **Magnetometer** | Map any metallic obstacles or hazards, including UXO. |
| | **Sub-Bottom Profiling (SBP)** | Identify character of the shallow geology. |
| GEOTECHNICAL | **Boreholes** | Deep subsurface sampling – required at the centre of each floating mooring system. |
| | **Cone Penetrometer Tests (CPTs)** | Strength profiles of seabed substrate. |
| | **Vibrocore / Gravity Sampler** | Subsurface sampling typically to 6 - 12m depth. |
| | **Grab Samples** | Description of uppermost seabed, ground truthing of geophysical interpretation. |
| ENVIRONMENTAL | **Benthic Survey – Grab Samples, Possible Video Deployment** | Habitat characterisation. |
| | **Echolocation Click Detectors (POD's)** | Marine mammal surveying. |
| METOCEAN | **Floating Lidar** | Wind speed characteristics (plus range of metocean measurements). |
| | **Wave Buoys** | Wave height and spread. |
| | **Acoustic Doppler Current Profilers (ADCP's)** | Subsurface wave and current measurements. |

## 2. ARTICLE 12 HABITATS DIRECTIVE (92/43/EEC)

Article 12 of the Habitats Directive lists animal species on Annex IV, which are particularly threatened, and are therefore afforded strict protection throughout their range, both *inside* and *outside* of designated protected areas. It requires Member States to take the requisite measures to establish a system of strict protection for the animal species listed in their natural range, both inside and outside of designated protected areas. These provisions are complementary to those governing Natura 2000 sites, which focus on protecting natural habitats of protected species listed in Annex II of the Directive. Some Annex IV species are also listed under Annex II and therefore also benefit from measures aimed at the conservation of their habitats within special areas of conservation (Articles 3 to 10). Others, however, are only listed in Annex IV, which means that for them Article 12 (for animal species) and Article 13 (for plant species) provide the principal provisions for achieving the conservation aim of the Directive as stated in Article 2. Article 12, of the Habitats Directive is transposed into Irish law by Regulation 51 of the Birds and Habitats Regulations of 2011.

**Article 12 of the Habitats Directive requires Member States to:**

1) take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV in their natural range, prohibiting:

    a) all forms of deliberate capture or killing of specimens of these species in the wild.
    b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation, and migration.
    c) deliberate destruction or taking of eggs from the wild.
    d) deterioration or destruction of breeding sites or resting places.

2) For these species, Member States shall prohibit the keeping, transport and sale or exchange, and offering for sale or exchange, of specimens taken from the wild, except for those taken legally before this Directive is implemented.

3) The prohibition referred to in paragraph 1(a) and (b) and paragraph 2 shall apply to all stages of life of the animals to which this Article applies.

4) Establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV. In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned

Annex IV faunal species vary from large, wide-ranging vertebrates to small invertebrates with very small home ranges. All cetaceans are European Protected Species (EPS) protected under Annex IV of the Habitats Directive (92/43/EEC); however, Pinnipeds are not listed on this Annex.

The animal species listed in Annex IV, which occur in Ireland, are:

- Otter
- all Bat species
- all Cetaceans (whales and dolphins)
- Natterjack toad

- Leatherback Turtle
- Kemp's Ridley turtle
- Loggerhead turtle
- Hawksbill turtle
- Kerry slug

Under Article 12, each of these species is strictly protected in Ireland and a person who deliberately captures, kills, or disturbs a specimen in the wild, or who damages or destroys a breeding site or resting place of such an animal, is guilty of an offence. As stated above, protection of these species is not restricted in geographical terms and is not necessarily associated with areas subject to a specific nature designation but instead covers the natural range of the species in question.

# 3. Potential Impacts on Annex IV Species

This section provides an assessment of the potential impacts of the proposed survey on relevant Annex IV species i.e., marine mammals and reptiles whose range overlaps the survey area.

- Disturbance from vibration and underwater noise associated with surveys
- Injury due to collision (survey vessels/sampling equipment)
- Pollution event

## 3.1. Disturbance from vibration and underwater noise associated with surveys

Geophysical surveys in the marine environment are a potential source of anthropogenic sound and therefore may have an impact on the marine environment. The level of environmental impact associated with this acoustic activity is variable depending on several factors including the type of equipment being used, its sound signal and propagation characteristics, and the depth in which it is operating (DAHG, 2014).

Both cetaceans and pinnipeds have evolved to use sound as an important aid in navigation, communication, and hunting (Richardson, et al., 1995). It is widely accepted that the main environmental concern relating to marine mammals is the potential effects of anthropogenic underwater noise/sound. Such exposure can induce a range of effects on marine mammals. Physical effects may produce a reduction in hearing sensitivity temporarily (Temporary Threshold Shift-TTS) which is reversible or following intense noise exposure, and permanent (Permanent Threshold Shift-PTS). Other impacts include masking of biologically important noises by anthropogenic noise (perceptual impacts), behavioural changes such as displacement from feeding, resting, or breeding grounds; and stress (DAHG, 2014). Masking effects can interfere with communication in marine mammals which can be crucial in social learning (particularly for odontocete cetaceans), and it can disrupt return echoes which are used to locate mobile prey and discern environmental structure (Erbe, 2002).

Acoustic instruments and equipment used in targeted marine geophysical investigations have been reported to produce sound at frequencies within the range of marine mammals. To evaluate the potential of the proposed survey equipment to cause harm to marine mammals, an assessment has been conducted using the (Southall, et al., 2019) approach. In Southall *et al.* (2019) marine mammals are separated into groups based on their functional hearing, namely low-frequency cetaceans, high frequency cetaceans, very high frequency cetaceans, pinnipeds in water and pinnipeds in air. For each of these groups the proposed noise levels that would result in injury (PTS or TTS of hearing ability) for individuals exposed to single, multiple and non-pulsed sources are detailed in *Table 3.1* below.

*Table 3.1: Sound Pressure Level (SPL) injury criteria proposed by Southall et al. (2019), for Annex IV species exposed to discrete noise events.*

| Cetacean Group | Injury Criteria | |
|---|---|---|
| | TTS | PTS |
| Low-Frequency Cetaceans (Baleen whales) | 213dB re: 1µPa (peak) | 219dB re: 1µPa (peak) |
| High-Frequency Cetaceans (including Bottlenose dolphins) | 224dB re: 1µPa (peak) | 230dB re: 1µPa (peak) |
| Very high Frequency Cetaceans (including harbour porpoise) | 196dB re: 1µPa (peak) | 202dB re: 1µPa (peak) |

The (DAHG, 2014) report 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' is based on the noise exposure criteria and frequency categorisation presented in the Southall *et al.* (2019) publication. This data addresses several key potential sources of anthropogenic sound that may impact detrimentally upon marine mammals in Irish waters. It incorporates a re-examination of the Code of Practice for acoustic surveys and thereby provides replacement guidance and protective measures in this respect.

The following auditory band widths for Annex IV species which may be present in the vicinity of the proposed investigation area are extracted from the DAHG (2014) guidelines and are shown in *Table 3.2.*

*Table 3.2: Marine mammal auditory band width; Source: (DAHG, 2014).*

| Frequency | Annex IV Cetacean Species | Estimated Auditory Band Width (Hz) |
|---|---|---|
| Low Frequency Cetaceans | Baleen whales<br>(Including Humpback, Minke and Fin whales) | 7-22 000 |
| Mid Frequency Cetaceans | Most toothed whales and dolphins<br>(Including Common and Risso's Dolphin and Pilot whale) | 150-160 000 |
| High Frequency Cetaceans | Certain toothed whales and porpoises<br>(Including Harbour porpoise) | 200-180 000 |

Noise characteristics of the various surveys are detailed in *Table 3.3* below; for more detailed information please refer to the document - Valentia Island Energy: Foreshore Licence Application for Site Investigation Works – Schedule of Works - accompanying the licence application.

*Table 3.3: Acoustic equipment frequency data.*

| Noise Source | Frequency (Hz) | Sound Pressure Level (dB re 1mPa @ 1m) |
|---|---|---|
| Shipping Noise | 50 - 300 | 160-175 |
| Multibeam echosounder (MBES) | 400,000-700,000 | 200-228 |
| Side scan sonar (SSS) | 300,000-900,000 | 228 |
| Pinger or Chirp/Sparker system (SBP) | 2,000 – 16,000 | 200 |
| Boomer system (SBP) | 2,500 | 208 - 211 |
| Ultra-High-Resolution Sound source seismic (UHRS) | 300 – 1,200 | 226 |
| Geotechnical drilling (Rotary Boreholes) | 2 – 50,000 | 190 |

Comparing the data on marine mammal auditory band width (*see Table 3.2*) and the noise characteristics of the surveys (*see Table 3.3*) it is deemed that the following will be audible to marine mammals listed in Annex IV:

- Shipping noise
- Sub-Bottom Profiler (SBP)
- Ultra-high resolution seismic (UHRS)
- Drilling

Cone penetration testing (CPT), Magnetometer (MM) and Vibrocore are deemed not audible to marine mammals. Multibeam and side scan sonar surveys are typically at such high frequency and low power that they are deemed outside the audible threshold of marine mammals. The relevant surveys which are within the audible band width for marine mammals are presented in *Table 3.4.*

*Table 3.4: Marine mammal auditory band width and relevant surveys, marine mammals whose range overlaps the survey area are listed.*

| Frequency | Annex IV CETACEAN SPECIES | Estimated Auditory Band Width (Hz) | Potential Impact |
|---|---|---|---|
| Low Frequency Cetaceans | Humpback, Fin and Minke whale | 7-22 000 | Shipping, SBP, UHRS, Drilling |
| Mid Frequency Cetaceans | Pilot whale, Risso's and Common dolphin | 150-160 000 | Shipping, SBP, UHRS, Drilling |
| High Frequency Cetaceans | Harbour porpoise | 200-180 000 | Shipping, SBP, UHRS, Drilling |

## 3.2. Injury due to collision

There is a risk of collision between Annex IV species and survey vessels. It is largely recognised worldwide that the key factor contributing such collisions is speed with ships travelling at 14 knots or faster being most likely to cause lethal or serious injuries.

## 3.3. Pollution Event

The proposed site investigations will result in a temporary increase in vessels using the area which would therefore theoretically increase the risk of accidents and resultant fuel spills. Given the nature and size of the vessels it is unlikely that any spillage would be significant. However, in the event of an accidental spillage/pollution event, any pollutant would immediately be diluted and mixed within the water column due to tidal currents, wind, and wave action.

All vessels used shall, as required by law, be MARPOL compliant and fully certified by the Maritime Safety Office. Therefore, it is considered not likely that there would be any occurrence of a pollution event that could directly or indirectly affect Annex IV species.

# 4. Annex IV Species Assessment

This section assesses the Annex IV species that have the potential to be in the survey area. The AA (Valentia Island Energy: Appropriate Assessment Reports – Chapter 4 – Potential Environmental Impacts) document assesses impacts to harbour and grey seals, however, as these species are not listed on Annex IV they are not considered here. While otter is listed on Annex IV, it is not considered that there is any pathway to impact from the proposed development to this species (refer to Appropriate Assessment (SISAA) document Valentia Island Energy: Appropriate Assessment (SISAA) – Chapter 5 – Appropriate Assessment Stage 1 Screening – *Table 5.1*) and as a result, otter is not considered here.

## 4.1. Annex IV species with potential to be in the survey area

Ireland has recorded 25 species of cetacean all of which are recognised as protected species under the EU Habitats Directive and the Irish Wildlife Act. According to Ireland Marine Atlas (2021) the following species have either been observed in or have ranges that overlap with the proposed Investigation Area:

- Fin Whale *(Balaenoptera physalus)*
- Humpback Whale (Megaptera novaeangliae)
- Minke Whale *(Balaenoptera acutorostrata)*
- Pilot Whale *(Globicephala melas)*
- Killer Whale *(Orcinus orca)*
- Common Dolphin *(Delphinus delphis)*
- Risso's Dolphin *(Grampus griseus)*
- White-beaked Dolphin *(Lagenorhynchus albirostris)*

- Harbour Porpoise *(Phocoena phocoena)*

The following Annex II species are also known to occur within five (5) Management Unit (MU) geographical areas relative as defined in the JNCC 2015 report 'Management Units for cetaceans in UK waters' (JNCC, 2015).

- Bottlenose Dolphin
- Harbour Porpoise

## 4.2. Baseline Assessment of Annex IV species

**Fin Whale**

According to Berrow *et al.* (2010) fin whales (*Balaenoptera physalus*) are abundant and widespread in the North Atlantic, preferring deep waters beyond the edge of the continental shelf. In some localities such as the south coast they may occur close inshore. Fin whales in Irish waters are frequently recorded inshore off the south and southwest coasts (Whooley, et al., 2008) and very rarely in the Irish Sea (Berrow, et al., 2002). Fin whales off the south coast have shown an inshore movement in early summer between May and June in seven of the last nine years (2001-2009) (Berrow, et al., 2010). Both ranges and observations of Fin whales have been identified within the Valentia Island Energy Investigation Area.

**Humpback Whale**

The Humpback whale (*Megaptera novaeangliae*) sightings are low in the summer months, with a strong peak during November; the majority of which were from the south and southwest coasts in counties Cork (56%), Waterford (16%) and Kerry (10%), with the remainder distributed along the west, north and even east coasts (Berrow, et al., 2010). Observations of Humpback whales have been identified within the Valentia Island Energy Investigation Area.

**Minke Whale**

The Minke whale (*Balaenoptera acutorostrata*) is the smallest and most frequently sighted and stranded baleen whale in Irish waters (Berrow, et al., 2010). The species appears to move inshore in April and May with a peak in sightings in August, but they can be seen off the south coast through the autumn and early winter (Berrow, et al., 2010). Both ranges and observations of Minke whales have been identified within the Valentia Island Energy Investigation Area.

**Pilot Whale**

Pilot Whales' frequent deep-water habitats along the Rockall trough and continental shelf year-round (Irish Whale and Dolphin Group, 2015). Sightings of this species in inshore waters are biased towards the southwest, however, they are rare and likely to be associated with live stranding events. Pilot Whales have been stranded along all the coasts of Ireland, but the highest density of events happens along the western seaboard and between counties Kerry and Mayo (Berrow, et al., 2010). Ranges of Pilot whales have been identified within the Valentia Island Energy Investigation Area.

**Killer Whale**

According to Berrow et al. (2010) Killer whales are occasionally sighted, with 117 records (1%) of a total of 313 individuals in Irish waters. Although killer whales were reported in all waters, sightings data suggest that the west, southwest and north coasts including the North Channel have a higher proportion of sightings than southeast and east coasts (Berrow, et al., 2010). The highest number of Killer whale sightings was from Co Cork. Both ranges and observations of Killer whales have been identified within the Valentia Island Energy Investigation Area.

**Common Dolphin**

The Common dolphin (*Delphinus delphis*) is the most frequently sighted Irish dolphin species. While the biggest concentrations in Ireland are over the continental shelf and in deeper waters, they are frequently observed in shallow inshore waters off the south and southwest coasts and around the Aran Islands but also frequently seen in the southern Irish Sea and offshore (Berrow, et al., 2010). Although frequently seen off headlands during the summer months, there is evidence of a strong inshore winter peak along the south coast, possibly associated with movements of sprat and herring. In a survey conducted in February 2001 by the Irish Whale and Dolphin Group (2015), Common dolphins were observed over 9 days in groups ranging from 300—1000 inside Cork harbour. But aggregations of several hundred are not unusual from headlands that benefit from regular effort watches in Counties Kerry, Cork, and Waterford (Irish Whale and Dolphin Group, 2015). Observations of Common dolphins have been identified within the Valentia Island Energy Investigation Area.

**Risso's Dolphin**

Risso's dolphin (*Grampus griseus*) is a cetacean species in sighted in Ireland and are typically observed across inshore waters and offshore islands. They are most frequently observed in islands off the Saltee Islands in County Wexford, the Blasket Islands in County Kerry, and are also observed of the Cork (Irish Whale and Dolphin Group, 2019a). This cetacean is most frequently sighted between the summer months of May and June, and this suggests a late spring inshore movement, but have also been recorded in all areas and in all months (Berrow, et al., 2010). Observations of Risso's dolphin have been identified within the Valentia Island Energy Investigation Area.

**White-beaked Dolphin**

White-beaked dolphin (*lagenorhynchus albirostris*) sightings in Irish waters have been rare, with a West/North westerly bias and a preference to shelf waters of the North Atlantic. However, records of sightings and stranding's have been found been found all around the Irish coast (Berrow et al, 2010), with the highest abundance found in offshore waters off county Donegal and county Mayo (Irish Whale and Dolphin Group, 2015). Observations of White-beaked dolphin has been identified within the Valentia Island Energy Investigation Area.

**Harbour Porpoise**

The Harbour porpoise (*Phocoena phocoena*) is a protected species under the Wildlife Acts 1976 to 2018 and Annex II of the EU Habitats Directive. The harbour porpoise is found within the northern latitudes of the Atlantic and Pacific Oceans and primarily in the continental margins. This cetacean species is the most widespread of any marine mammals across Ireland. In conjunction with previous surveys carried out by NPWS (2019), Ireland have recognised that monitoring requires a dedicated vessel during near-calm sea conditions to make a reliable count of Harbour porpoises. Observations of Harbour porpoise have been identified within the Valentia Island Energy Investigation Area.

# 5. Assessment and Mitigation of Potential Impacts

*Section 4* above identified three sources of potential impact upon Annex IV species:

- Disturbance from vibration and underwater noise associated with surveys
- Injury due to collision (survey vessels/sampling equipment)
- Pollution event

## 5.1. Disturbance from vibration and underwater noise

This impact is due to anthropogenic noise pollution generated during the surveys namely due to shipping, ultra-high resolution seismic, sub-bottom profiler, and drilling (depending on the frequency).

The Annex IV species which have the potential to be in the survey are sensitive to underwater noise generated by geophysical surveys. *Table 5.1* below lists the hearing ranges for these species and the potential sources of impact from the proposed surveys i.e., shipping noise, ultra-high resolution seismic, sub-bottom profiler, and drilling (depending on the frequency).

*Table 5.1: Marine Mammal Auditory Band Width and relevant surveys and Annex IV with potential to be in the survey area.*

| Frequency | Annex IV Species | Estimated Auditory Band Width (Hz) | Potential Impact |
|---|---|---|---|
| Low Frequency Cetaceans | Humpback, Fin and Minke whale | 7-22 000 | Shipping, SBP, UHRS, Drilling |
| Mid Frequency Cetaceans | Pilot whale, Risso's and Common dolphin | 150-160 000 | Shipping, SBP, UHRS, Drilling |
| High Frequency Cetaceans | Harbour porpoise | 200-180 000 | Shipping, SBP, UHRS, Drilling |

The protocol 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (DAHG, 2014) will be followed at all times. In addition to the fact that the proposed works will be short in duration and of a temporary nature and survey vessels will be slow moving and therefore any risk due to collision is unlikely.

## 5.2. Injury due to collision survey vessels

As outlined in *Section 4* there is a risk of collision between Annex IV species and survey vessels. However, as stated, the key factor contributing such collisions is speed with ships travelling at 14 knots or faster being most likely to cause lethal or serious injuries. As survey vessels are likely to be either stationary or travelling very slow (5 knots) it is predicted that species in the area would have enough time to avoid any collisions.

Also, as a proposed survey area is a relatively busy area for fishing and pleasure craft (please refer to *Figure 12* in "Other Marine Users" Doc.) species frequenting the area would already be exposed to vessels of all sizes on a regular basis.

Therefore, the collision risk posed by the proposed survey vessels is likely to be significantly lower than that posed by the regular commercial shipping activity in the area.

## 5.3. Pollution Event

The proposed site investigations will result in a temporary increase in vessels using the area which would therefore theoretically increase the risk of accidents and resultant fuel spills. Given the nature and size of the vessels it is unlikely that any spillage would be significant. However, in the event of an accidental spillage/pollution event, any pollutant would immediately be diluted and mixed within the water column due to tidal currents, wind, and wave action.

Also, as all vessels used shall, as required by law, be MARPOL compliant and fully certified by the Maritime Safety Office it is considered not likely that there would be any occurrence of a pollution event that could directly or indirectly affect Annex IV species.

# 6. ARTICLE 12 ASSESSMENT CONCLUSIONS

This report has been prepared to allow the competent authority to assess the potential impacts of the proposed survey works. Our suitably qualified ecologists have followed the requirements of the relevant regulations and associated guidance to conduct the assessment to the level of detail required to inform a conclusion.

We have considered the short duration and temporary nature of the proposed survey works. We confirm that best practice measures in relation to geophysical acoustic surveys as specified in 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (Section 4.3.4) (DAHG, 2014) will be followed at all times. As recommended in the DAHG (2014) guidance, pre-monitoring will be carried out by a qualified and experienced MMO where appropriate and followed by the use of the 'soft-start' procedure. The MMO will be appointed to monitor for marine mammals and to log all relevant events throughout the duration of the survey. Employing such practices will allow for disturbance of these species to be avoided. In addition, the survey vessels will be slow moving and therefore any risk due to collision is unlikely.

These measures ensure that no marine mammals (non-qualifying interests), whose range overlap the survey area will be impacted by the proposed marine surveys.

# 7. REFERENCES


Berrow, S., Whooley, P. & Ferriss, S., 2002. *Irish Whale and Dolphin Group Cetacean Sighting Review,* s.l.: s.n.

Berrow, S., Whooley, P., O'Connell, M. & Wall, D., 2010. *Irish Cetacean Review (2000-2009),* s.l.: Irish Whale and Dolphin Group.

DAHG, 2014. *Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. January 2014. Prepared by the National Parks and Wildlife Service of the DAHG.,* s.l.: s.n.

Erbe, C., 2002. Underwater noise of whale watching boats and potential effects on killer whales (Orcinus orca) based on an acoustic impact model. *Marine Mammal Science 18,* pp. 394-418.

Irish Whale and Dolphin Group, 2015. *Irish Whale and Dolphin Group.* [Online] Available at: https://iwdg.ie/cms_files/wp-content/uploads/2019/04/Common-dolphin-profile.pdf [Accessed 27 May 2021].

Irish Whale and Dolphin Group, 2019a. [Online] Available at: https://iwdg.ie/cms_files/wp-content/uploads/2019/04/Risso_s-dolphin-profile.pdf [Accessed 27 May 2021].

JNCC, 2015. *Management Units for cetaceans in UK waters.* [Online] Available at: https://data.jncc.gov.uk/data/f07fe770-e9a3-418d-af2c-44002a3f2872/JNCC-Report-547-FINAL-WEB.pdf
[Accessed 05 July 2022].

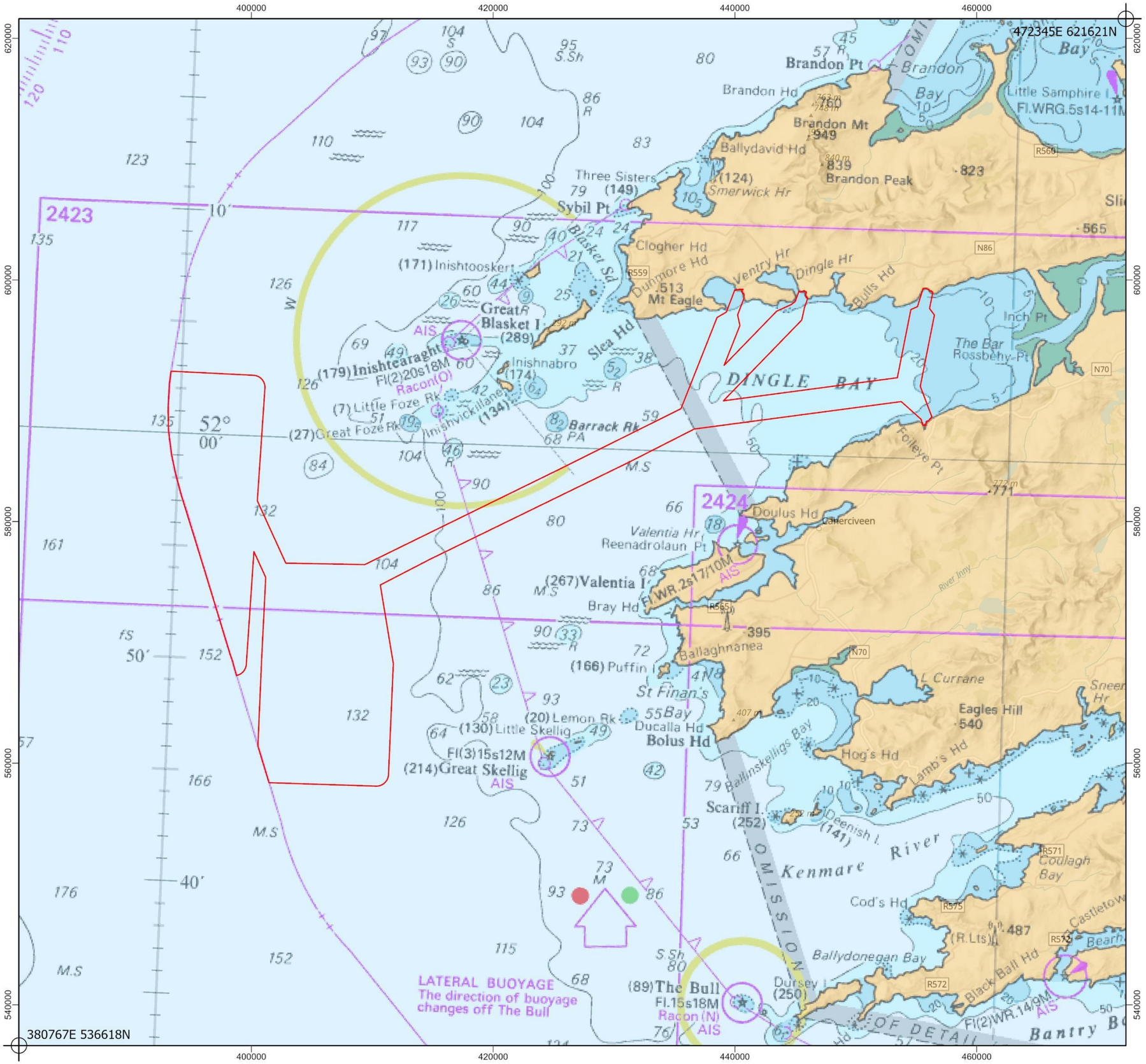
Richardson, J., Greene, C. J., Malme, C. & Thompson, D., 1995. Marine Mammals and Noise. *Academic Press, Elsevier,* pp. 1-576.

Southall, B. et al., 2019. Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects.. *Aquatic Mammals.*

Whooley, P., Berrow, S. & Barnes, C., 2008. Photo-identification of fin and humpback whales off the south coast of Ireland. European Research on Cetaceans Proceedings of the 26th ECS Conference.

# Appendix 1. A3 MAPS

Map A: Investigatory Foreshore Licence Area




**Project:**

# Valentia Island Energy

**Title:**

## Foreshore Licence Area

**Legend**

Foreshore Licence Area

Aqualicense Limited
Arklow, Co. Wicklow,
Y14 PN29
Email: info@aqualicense.com
Ph: +353 (0)404 61248, +353 (0)85 1367 600

For project identification purposes only. For Client use only. © Aqualicense Ltd.

Scale: 1:300,000@ A3

Coordinate System: IRENET95 Irish Transverse Mercator

0 3.5 7 14 Kilometers

N

| Revision No. | Date | Drawn By | Reviewed By |
|---|---|---|---|
| 01 | 04/03/2021 | [redacted] | |
| 02 | 01/06/2022 | | |

[redacted]

AQUALICENSE

VI Energy Valentia Island Energy Ltd

*Map A. Investigatory Foreshore Licence Area*