



Gas  
Networks  
Ireland

# **Strategic Gas Emergency Reserve – Moored Devices Survey Activity**

## Assessment of Impacts on the Maritime Usage (AIMU) Report

# RSK General Notes

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# 1 Introduction

## 1.1 Overview

During 2022 and 2023, the Department for the Environment, Climate and Communications (DECC) reviewed a range of Ireland's energy security policies and subsequently published '[Energy Security in Ireland to 2030 – Energy Security Package](#)' in November 2023.

Analysis showed that Ireland must enhance its resilience in the event of a disruption to the country's national gas supplies. Policy makers decided that a disruption to Ireland's supplies of gas is an unlikely, but high impact event, and a disruption would lead to unacceptably high economic and social costs.

Action 17 of the Energy Security Package seeks to address the risk to the security of Ireland's gas supply through the implementation of a state-led **Strategic Gas Emergency Reserve**.

In line with the Government decision to develop a Strategic Gas Emergency Reserve, and as a final part of the review of Ireland's energy security, the Department of Environment, Climate and Communications, in consultation with the gas transmission system operator (GNI), is completing further studies to support this review.

The implementation of a Strategic Gas Emergency Reserve is on a transitional and temporary basis for use in the event of a disruption to natural gas supplies. GNI is undertaking a rigorous assessment, and a number of solutions are currently under consideration, some of which may include the potential for onshore and offshore facilities. The information collated and gathered from this assessment will be returned to Government to help inform the decision-making process.

To finalise the proposal for the Strategic Gas Emergency Reserve, the Department for the Environment, Climate and Communications has instructed GNI to acquire additional information and data which it cannot obtain through publicly available sources.

## 1.2 Purpose of The Report

This document has been prepared by RSK Environment Ltd. on behalf of GNI in support of the Maritime Usage Licence Application to the Maritime Area Regulatory Authority (MARA). The scale and complexity of an AIMU should reflect the scale and complexity of the project. This report contains an analysis of the likely (positive and negative) effects for the proposed maritime activities involved in the deployment and retrieval of up to two temporary moorings equipped with hydrophones and one temporary mooring equipped with an acoustic doppler current profiler (ADCPs) per study area to collect baseline data on cetaceans (dolphins, whales, and porpoises) and water flow (wave and current conditions). The results of these surveys may be used as part of the site-selection process, as well as providing baseline data for any subsequent Environmental Impact Assessment Report (EIAR) and Appropriate Assessment Natura Impact Statement (NIS) should the development be taken forward to the planning/consenting stage.

### 1.3 Statement of Authority

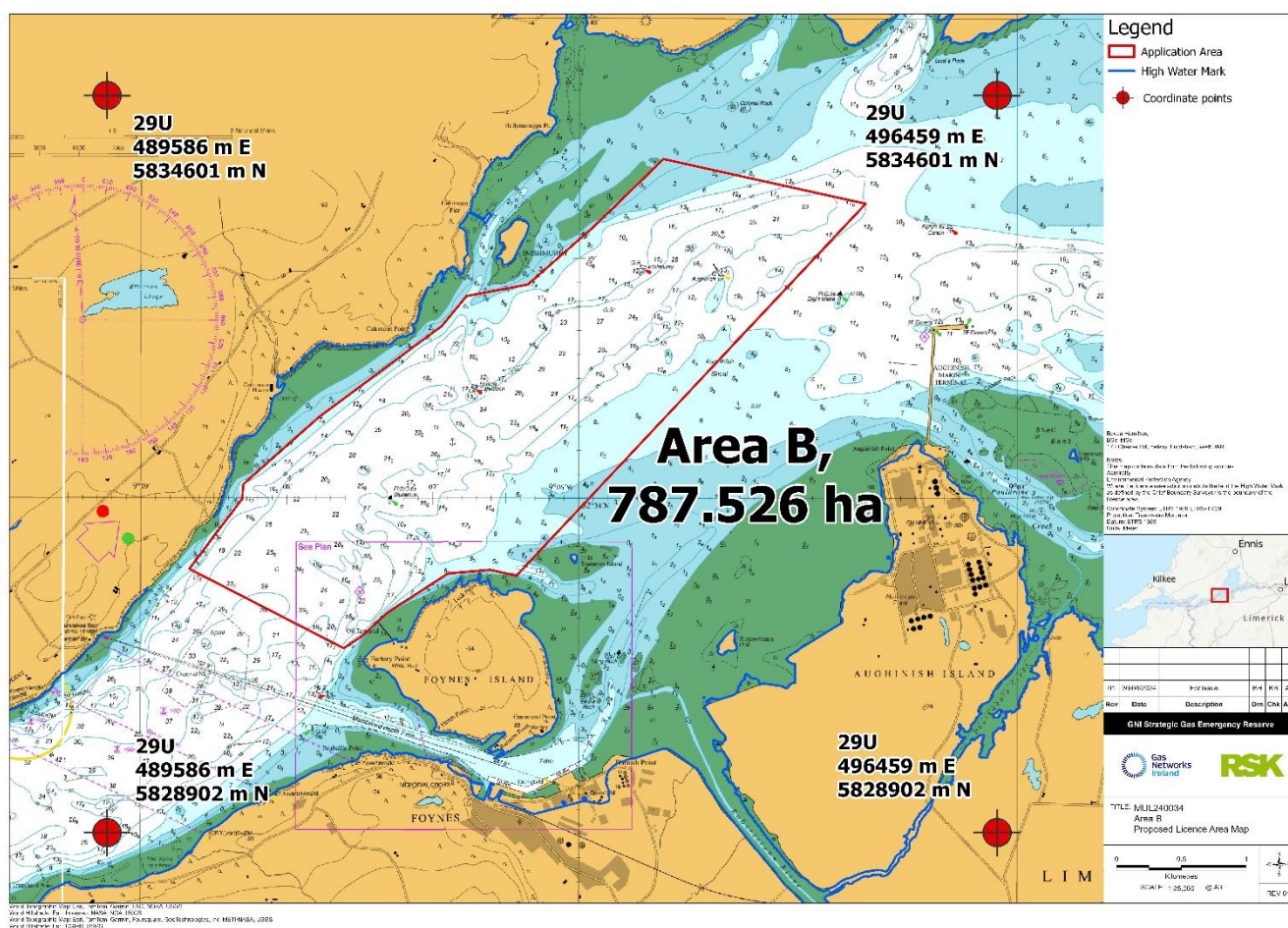
This report has been prepared by RSK on behalf of GNI. The technical competence of the authors is outlined below:

██████████ is Technical Director within the International Projects Group Marine Team in RSK. He has over 20 years of experience in marine environmental surveying and consulting. He holds an honours degree in Marine Biology and Oceanography and a Masters in Marine Resource Development and Protection. He has particular experience in marine ecology surveys, and the subsequent analysis and reporting of marine survey data for EIA projects, including Appropriate Assessment and Annex IV species reports.

██████████ is a Marine Consultant within the International Projects Group Marine Team in RSK. She has over 10 years of experience in the marine ecology field. She holds an honours degree in Marine Science and a Masters in Biology. She has contributed to numerous marine environmental projects including Appropriate Assessments, Natura Impact Statements and EIAR chapters.







**Figure 2.2**

Shannon MUL licence area: East Shannon (Area B)

## 2.2 Description of The Works

### 2.2.1 Overview

The results of these surveys may be used as part of the site selection process, as well as providing baseline data for any subsequent Environmental Impact Assessment Report (EIAR) and Appropriate Assessment Natura Impact Statement (NIS) should the development be taken forward to the planning/consenting stage. As such, deployment and retrieval of all static acoustic monitoring (SAM) devices and ADCPs within the study areas is considered necessary. The proposed programme of works is presented in Table 2.1.

It should be noted that all locations shown are indicative and may be subject to a degree of change on-site.

The following drawings have been prepared in support of the Maritime Usage Licence application to the MARA:

- Maritime Usage License application area (Figure A1.1, Figure A1.2 and Figure A1.3)
- Indicative device deployment map (Figure A1.4, Figure A1.5 and Figure A1.6)

These figures are included in Appendix 1 of this report.



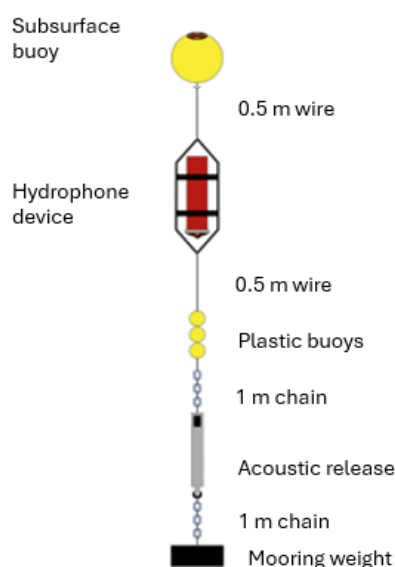
Each moored device is likely to consist of:

- Two mooring weights (circa 20 kg each)
- An acoustic release system
- One or two hydrophones (SAM devices) / one ADCP
- Multiple subsurface buoys.

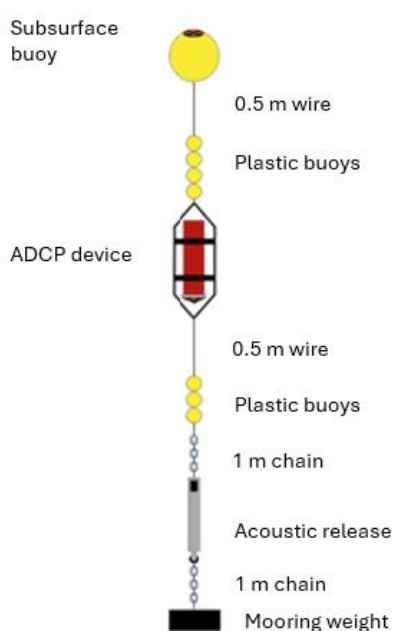
An indicative example moored device setup is shown in Figure 2.3. The exact technical specification of the equipment to be used will not be confirmed until the survey contract has been awarded. The vessel for operational activities or company contracted is subject to budget, weather, and vessel availability. The start date for the works would preferably be autumn 2024. Descriptions of typical equipment and survey parameters has been used within this report. Predicted time and footprint for the activities are presented in Table 2.2. Moored devices would be recovered every three to four months for maintenance and redeployments for at least one year, up to two years.

It is noted that the requirement for additional and more refined works may arise as the project site selection and site investigation works progress. This may include moving devices to areas of particular interest.

### Acoustic recorder



### ADCP



**Figure 2.3**

*Indicative schematics of moored devices*

**Table 2.1***Proposed programme of works per study area*

Survey	Method	Method detail	Purpose	Sampling Effort
<b>Metocean</b>	Acoustic Doppler Current Profiler (ADCP)	An ADCP is a hydroacoustic current meter used to measure water current velocities over a depth range using the doppler effect of sound waves scattered back from particles within the water column. In the present case ADCPs operating in the range of 600 Khz or 1 Mhz will be used. The instrument emits low amplitude “pings” of sound at a sampling rate of 1-minute average every 10 minutes. These pings will be emitted in a narrow sound beam (typically a few degrees in width) with a typical echo intensity profile of 80 dB (+/- 1.5 dB).	ADCPs may be used to examine wave and current conditions in each study area. This equipment is installed on the seabed and anchored with a suitable mooring structure.	A maximum of 2 ADCPs may be used to examine wave and current conditions per study area.
<b>Marine Environmental /Ecological</b>	Marine mammal acoustic monitoring (i.e., SAM)	SAM devices (CPODS or FPODs) are non-invasive underwater sound recorders used to detect the presence/absence of cetacean species (dolphins, whales, and porpoises). The acoustic signature of dolphins can be distinguished from that of harbour porpoise, the two species most likely to be recorded in the study area. An optional SoundTrap device may be deployed to measure overall background noise levels within the study area.	Marine mammal acoustic monitoring using SAM devices (CPODs or FPODs) deployed on the seabed. SoundTrap hydrophones may be deployed alongside the SAM devices for periods throughout the monitoring campaign. Either permanent locations will be selected, or the devices will be relocated within the study area during battery changes. The device locations are subject to consultation with an experienced marine mammal ecologist.	A maximum of 3 SAM devices may be used to study cetacean presence per study area.

**Table 2.2***Predicted time and footprint of each survey activity per study area*

Survey Activity	Typical time period required	Total number of devices per study area	Total time for activity	Footprint affected per activity (m <sup>2</sup> )	Total maximum footprint per activity (km <sup>2</sup> )
<b>ADCP</b>	4 weeks – 12 months in any one location	1 - 2	1 – 12 months. Deployment will include 1 day to deploy and 1 day to retrieve.	1 - 2m <sup>2</sup>	0.000002
<b>SAM</b>	3 months – 2 years in any one location)	2 - 3	12 – 24 months. Deployment will include 1 day to deploy and 1 day to retrieve.	2 - 3m <sup>2</sup>	0.000003

## 2.3 General Survey Requirements

All appointed survey contractors shall obtain and comply with all necessary marine operational permits including routine and customary vessel/crew/equipment clearances from Customs Agencies, Port Authorities, Marine Survey Office, etc.

### 2.3.1 Quality Assurance

Each of the appointed survey contractors shall comply with the following as a minimum:

- Quality and Environmental Management Systems based on ISO9001:2015
- Provision of site and activity specific Method Statements for all the marine operations within their scope
- Provision of Quality Management Plans for all the marine operations.

### 2.3.2 Health & Safety

Health, safety, environment, and welfare considerations will be a priority in the evaluation of possible contractors for the various survey scopes and will be actively managed during the survey work.

Appointed contractors will be required to comply with all legislation relevant to the activities within their scope of work.

Project / survey specific Health, Safety and Environment (HSE) plans will be put in place which will form part of the survey project execution plans.

### 2.3.3 Working Hours

The working hours for the deployment, maintenance and retrieval of the devices are proposed to be during daylight hours, any day of the week. It is anticipated that deployment, maintenance, and retrieval will each take one day per study area. Assuming a data collection period of two years total and maintenance visits every three months, this would equate to five days of boat activity per study area per year.

Weather conditions and/or sea-state will impact on the working hours, and it may be necessary to temporarily suspend operations when adverse weather conditions and/or sea-state are encountered or forecast. As such, survey plans will remain flexible to take advantage of optimal weather windows. Similarly, equipment or vessel maintenance and repair may impact on survey activities resulting in changes to the survey schedule.

### 2.3.4 Environmental Procedures

Environmental procedures to be followed by the appointed survey contractors are detailed within the Appropriate Assessment report.

### 2.3.5 Vessels

All vessels will be fit for purpose, certified and capable of safely undertaking all required survey work. Marine vessels will be governed by the provisions of the Sea Pollution Act 1991, as amended. In addition, all vessels will adhere to published guidelines and best working practices such as: the National Maritime

Oil/HNS Spill Contingency Plan (NMOSCP), Marine Pollution Contingency Plan (MPCP), Chemicals Act 2008 (No. 13 of 2008), Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated regulations.

Vessels shall have a Health, Safety and Environmental Managements system which should conform to the requirements of the latest International Maritime Organisation (IMO), Safety of Life at Sea (SOLAS) and environmental requirements for their classification and with any national requirement of the territorial or continental / EEZ waters to be operated in.

The works will be undertaken from vessels in accordance with the relevant guidelines required to manage the risk to marine mammals from man-made sound sources in Irish waters.



## 3 Planning and Development

### 3.1 EIA Directive

#### 3.1.1 Overview

In accordance with Directive 2011/92/EU, as amended by Directive 2014/52/EU (hereafter, the EIA Directive), projects that are likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location must be subject to an EIA. The proposed work is temporary and small-scale, utilising equipment that is non-invasive. Therefore, it is assessed that significant effects on the seabed and the marine ecosystem are not likely. As such, there is no need to consider an EIA for the proposed works.

### 3.2 Habitats and Birds Directives

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) provides protection for habitats and species of European importance; Council Directive 79/409/EEC (the Birds Directive) aims to protect all 500 wild bird species naturally occurring in the European Union (EU). Areas designated for protection under the Habitats Directive are described as Special Areas of Conservation (SAC) and those designated under the Birds Directive, as Special Protection Areas (SPA) and the sites are known collectively as Natura 2000 sites. As each member of the EU is required to designate areas in their jurisdiction, the establishment of this network of Natura 2000 sites under Articles 3 to 9 of Directive 92/43/EEC is the key measure to protect nature and biodiversity in the EU.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of Natura 2000 sites. Article 7 of the Habitats Directive extends the scope of its articles 6(3) and 6(4) to the Birds Directive.

The Habitats and Birds Directives have been transposed into Irish Legislation under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

The impact(s) from the works in relation to the Habitats and Birds Directives are separately discussed in the following report:

- Supporting Information for Screening and Appropriate Assessment (SISAA)

### 3.3 Water Framework Directive (WFD)

Since 2000, the Water Framework Directive (WFD) [Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy] has been the main law for water protection in Europe. It applies to inland, transitional, and coastal waters as well as groundwaters. An objective of the WFD is to achieve the protection of aquatic ecology and habitats, drinking resources and bathing waters through river basin management planning and monitoring. This objective is summarised as Good Ecological Status (GES) and Good Ecological Potential (GEP) for artificial or heavily modified water bodies.

Considering the limited nature, scale, size, and duration of the works there will not be deterioration in

WFD GES in any water body and the works will not impact on achieving or maintaining WFD GES.

### 3.4 Marine Strategy Framework Directive (MSFD)

The Marine Strategy Framework Directive (MSFD) (2008) is European legislation, which aims to protect the marine environment. It requires the application of an ecosystem-based approach to the management of human activities, enabling a sustainable use of marine goods and services. The MSFD Directive aims to ensure clean, healthy, and productive oceans and seas with sustainable use of the marine environment for current and future generations.

To implement the Directive each member state is required to:

- Describe what they consider is a clean, healthy, and productive sea i.e., GES
- Monitor and assess the quality of their seas against GES
- Ensure they take appropriate action by 2020 to maintain or achieve GES.

Good Environmental Status is key to compliance with the MSFD Directive and is described by the following 11 Descriptors:

- D1 Biodiversity
- D2 Non-indigenous species
- D3 Population of commercial fish/shellfish
- D4 Elements of marine food webs
- D5 Eutrophication
- D6 Sea floor integrity
- D7 Alteration of Hydrographical conditions
- D8 Contaminants
- D9 Contaminants in fish and seafood for human consumption
- D10 Marine Litter
- D11 Introduction of energy, including underwater noise.

The basic principle of Good Environmental Status is to ensure sustainable use of marine resources. When assessing a project against MSFD requirements it is assessed on its impact on the descriptors listed above. A project may not improve Good Environmental Status, but it should not have a permanent negative impact on any criteria and is required to be assessed against each of the MSFD Good Environmental Status Descriptors.

Considering the limited nature, scale, size, and duration of the works there will not be deterioration in MSFD Good Environmental Status, and the works will not impact on achieving or maintaining MSFD Good Environmental Status. Table 3.1 demonstrates the project's compliance with the MSFD.

**Table 3.1**  
MSFD Analysis

Descriptor	Analysis	Assessment
<b>D1 Biodiversity</b>	As concluded within this report, in addition to the SISAA and Annex IV Risk Assessment prepared for this project, no potential impact on biodiversity was recorded.	No potential for impact.
<b>D2 Non-indigenous species</b>	No element of the proposed project has been identified that has the potential to introduce or spread. non-indigenous species.	No potential for impact.
<b>D3 Population of commercial fish/shellfish</b>	Some commercial fishing occurs within the proposed project area. While disturbance to commercial fisheries activity may occur, this disturbance will be of a temporary nature (days) and will not have a significant impact on commercial fishery activity in the area	No potential for significant impact
<b>D4 Elements of marine food webs</b>	No project related impacts with the potential to impact food webs or affect long-term abundance and/or reproduction of species is considered possible.	No potential for impact
<b>D5 Eutrophication</b>	No impacts relative to eutrophication are possible.	No potential for impact
<b>D6 Sea floor integrity</b>	The project involves interaction with the sea floor. Given the small-scale nature of the project, no potential for significant impact was identified.	No potential for significant impact
<b>D7 Alteration of Hydrographical conditions</b>	The proposed project does not have the potential to cause any hydrographical changes.	No potential for impact
<b>D8 Contaminants</b>	The proposed project does not have the potential to lead to the introduction of any contaminants.	No potential for impact
<b>D9 Contaminants in fish and seafood for human consumption</b>	The proposed project does not have the potential to add to or alter contaminants in the seafloor.	No potential for impact
<b>D10 Marine litter</b>	The proposed project does not have the potential to lead to marine littering.	No potential for impact
<b>D11 Introduction of energy, including underwater noise</b>	The ACDP device and the presence of a single survey vessel have been identified as potential for introduction of underwater noise. Given the small-scale nature of the survey works and the current vessel traffic in the study areas, no potential for significant impact was identified.	No potential for significant impact

### 3.5 Statement of Consistency with the National Maritime Planning Framework (NMPF)

It has been assessed that, due to the temporary and small-scale nature of the works, there will be no impact on planning and development in the area.

The NMPF establishes Overarching Marine Planning Policies (OMPPs) that govern all marine activities and developments. These policies address aspects such as biodiversity, coastal and island communities, and infrastructure. The survey works will be used to inform the EIAR and Appropriate Assessment of the Strategic Gas Emergency Reserve development. While this MUL application relates only to marine survey works, it is an objective of the NMPF to support the development of natural gas storage, where

appropriate, in the context of the outcome from review of the security of Ireland's electric and natural gas supplies.

The proposed survey works are deemed to have minimal impact on these overarching policies. Nevertheless, an analysis of these policies in relation to the proposed survey works has been conducted and is presented in Table 3.2. This table demonstrates compliance with the NMPF and concludes that the proposed survey works align fully with the objectives and policies of the NMPF, with no aspects of the project conflicting with these policies.

**Table 3.2**

*Assessment of compliance with the NMPF*

<b>Biodiversity and Protected Marine Sites</b>	
<b>Biodiversity</b>	<p>The project is supported by the following documents:</p> <ul style="list-style-type: none"> <li>• Supporting Information for Screening for Appropriate Assessment (SISAA)</li> <li>• Annex IV Risk Assessment</li> <li>• Assessment of Impact on Maritime Usage Report (AIMU)</li> </ul> <p>The conclusion of the SISAA, Annex IV Risk Assessment and AIMU is that no impact on biodiversity will occur. Furthermore, the project's scale and scope are considered too small to lead to adverse effects on the local or wider marine environment.</p>
<b>Protected Marine Sites</b>	<p>The conclusion of the SISAA, Annex IV Risk Assessment and AIMU is that no impact on protected marine sites will occur.</p>
<b>Non-indigenous Species</b>	<p>The SISAA and AIMU did not identify any potential for the introduction of non-indigenous species.</p>
<b>Water Quality</b>	<p>The SISAA and AIMU did not identify potential impacts on water quality.</p>
<b>Seafloor and Water Column Integrity</b>	<p>The scale and scope of the project does not have the potential to impact Seafloor and Water Column Integrity as documented in this AIMU.</p>
<b>Marine Litter</b>	<p>The scale and scope of the project does not have the potential to intentionally or accidentally contribute to the impacts on marine litter policy as documented in this AIMU.</p>
<b>Underwater Noise</b>	<p>The conclusion of the SISAA, Annex IV Risk Assessment and AIMU is that no impact relating to underwater noise will occur.</p>
<b>Air quality</b>	<p>Not relevant: The project does not have the potential to impact air quality.</p>
<b>Climate Change</b>	<p>Not relevant: The project does not have the potential to impact climate change.</p>
<b>Economic – Thriving Maritime Economy</b>	
<b>Co-existence</b>	<p>No potential for significant impact. The proposed works are temporary in nature (days). While disturbance to commercial fisheries activity may occur, this disturbance will be of a temporary nature (days) and will not have a significant impact on commercial fishery activity in the areas. No other significant activities have been identified.</p>

## Environmental – Ocean Health

<b>Infrastructure</b>	No potential for impact on the infrastructure policy. No permanent infrastructure is proposed.
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## Social – Engagement with the sea

<b>Access</b>	No access issues have been identified.
<b>Employment</b>	Not applicable. It is considered the Employment Policy 1 is not relevant to the proposed project.
<b>Heritage assets</b>	A review of the National Monument Services Historic Environment Viewer and Wreck Viewer (Accessed July 2024) indicated the presence of four historic wreck sites within the areas. However, the proposed project will have no interaction with the seabed directly adjacent to these wrecks. As such, there is no potential for impact.
<b>Rural, Coast, and Island Communities</b>	This policy is not considered relevant to the proposed project.
<b>Seascape and Landscape</b>	No impact possible.
<b>Social Benefits</b>	No impact possible.
<b>Transboundary</b>	No transboundary effects are possible.



## 4 Supporting Information for Assessment of Impacts

This section contains a summary of environmental baseline for the study areas.

### 4.1 European Sites (SAC's and SPA's)

Both proposed licence areas overlap two European sites: the Lower River Shannon Special Area of Conservation (SAC) (002165) and the River Shannon and River Fergus Estuaries Special Protection Area (SPA) (004077).

The qualifying interests of the Lower River Shannon SAC are as follows:

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the atlantic and baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*glauco-puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *ranunculion fluitantis* and *callitricho-batrachion* vegetation [3260]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*molinion caeruleae*) [6410]
- Alluvial forests with *alnus glutinosa* and *fraxinus excelsior* (*alno-padion*, *alnion incanae*, *salicion albae*) [91e0]
- Freshwater pearl mussel (*margaritifera margaritifera*) [1029]
- Sea lamprey (*petromyzon marinus*) [1095]
- Brook lamprey (*lampetra planeri*) [1096]
- River lamprey (*lampetra fluviatilis*) [1099]
- Atlantic salmon (*salmo salar*) [1106]
- Common bottlenose dolphin (*tursiops truncatus*) [1349]
- Otter (*lutra lutra*) [1355].

The qualifying interests of the River Shannon and River Fergus Estuaries SPA are as follows:

- Cormorant (*Phalacrocorax carbo*) [A017] (breeding and wintering)
- Whooper swan (*Cygnus cygnus*) [A038] (wintering)
- Light-bellied brent goose (*Branta bernicla hrota*) [A046] (wintering)
- Shelduck (*Tadorna tadorna*) [A048] (wintering)
- Wigeon (*Anas Penelope*) [A050] (wintering)
- Teal (*Anas crecca*) [A052] (wintering)
- Pintail (*Anas acuta*) [A054] (wintering)

- Shoveler (*Anas clypeata*) [A056] (wintering)
- Scaup (*Aythya marila*) [A062] (wintering)
- Ringed plover (*Charadrius hiaticula*) [A137] (wintering)
- Golden plover (*Pluvialis apricaria*) [A140] (wintering)
- Grey Plover (*Pluvialis squatarola*) [A141] (wintering)
- Lapwing (*Vanellus vanellus*) [A142] (wintering)
- Knot (*Calidris canutus*) [A143] (wintering)
- Dunlin (*Calidris alpina*) [A149] (wintering)
- Black-tailed godwit (*Limosa limosa*) [A156] (wintering)
- Bar-tailed godwit (*Limosa lapponica*) [A157] (wintering)
- Curlew (*Numenius arquata*) [A160] (wintering)
- Redshank (*Tringa totanus*) [A162] (wintering)
- Greenshank (*Tringa nebularia*) [A164] (wintering)
- Black-headed gull (*Chroicocephalus ridibundus*) [A179] (wintering)
- Wetlands [A999].

Potential impacts on these European sites are considered more thoroughly within a Statement to inform Screening for Appropriate Assessment (SISAA) report, which has been prepared alongside this AIMU.

There are also records of sightings of Annex IV species within the study areas. A separate Annex IV risk assessment has been prepared to support this application to assess potential impacts on Annex IV species.

## 4.2 Benthic Habitats

The substrate in the study areas is dominated by fine sandy habitat with depths up to 50 m below chart datum and provides a number of typically estuarine seabed habitats. The Lower River Shannon SAC includes designation for several protected habitats, such as reefs, mudflats, and sandflats not covered by seawater at low tide.

## 4.3 Marine Mammals

Bottlenose dolphin are a QI of the Lower River Shannon SAC, within which the proposed surveys will occur. Bottlenose dolphins are present throughout the year and are genetically discrete compared to bottlenose dolphins found elsewhere in Irish waters due to geographical and social isolation (Mirimin et al., 2011) and the estuary is an important calving area (MERC, 2021). The population is estimated at around 145 individuals with only 80 adults (Baker et al., 2018 in MERC, 2021). This small, genetically discrete population is vulnerable to even small increases in adult mortality or a reduction in reproduction rates (Blásquez et al., 2020 in MERC, 2021). An overview of existing data on bottlenose dolphin populations in the Lower Shannon Estuary shows that there is a well-known hotspot for the species in the waters off Moneypoint Generating Station (MERC, 2021). Rogan et al. (2000) recorded bottlenose dolphins in the estuary all year round with a peak from May to September and noted the presence of neo-natal calves from July to September as evidence of a well-defined breeding season in the Shannon Estuary.

As of August 2024, there have been a total of 18 dolphin sightings along the Shannon Estuary, concentrated to the Shannon Ferry route within the last 12 months, of these seven are located within the

marine study areas (IWDG, 2024). Hence, there is potential for them to overlap with survey activities.

Very few sightings of harbour porpoise (*Phocoena phocoena*) have been recorded within the Shannon Estuary with no recorded sightings between November 2022 and November 2023 (IWDG, 2023). There was one sighting adjacent to Moneypoint in 2018 (IWDG), and strandings have been recorded as far up the estuary as Foynes (O'Callaghan et al., 2021). Violent interactions have been recorded between bottlenose dolphins and harbour porpoise (Ross and Wilson, 1996; Gross et al., 2020) and suggested reasons for this aggression include interspecies territoriality, defence of group members, food competition, feeding interference and object-orientated play (Gross et al., 2020). A single sighting of harbour porpoise occurred within the past 12 months (as of August 2024), located at the entrance of the Shannon Estuary Aill Na Brun (IWDG, 2024). From the lack of recorded sightings of harbour porpoise within the Shannon Estuary, it is likely that they largely avoid the areas.

Telemetry data indicates that harbour seal (*Phoca vitulina*) foraging trips in the south-west of Ireland generally extend no further than 20 km from haul-out sites (Cronin et al., 2008). As of August 2024, no sightings of harbour seal have been recorded in the Shannon Estuary within the last 12 months (IWDG, 2024). Additionally, the closest European site designated for harbour seal is the Kilkieran Bay and Islands SAC, located approximately 120 km from the proposed study areas in the Shannon. It is therefore considered unlikely that individuals will overlap with the survey activities.

Grey seals (*Halichoerus grypus*) have been recorded undertaking foraging trips over hundreds of kilometres, although the mean distance travelled in a telemetry study carried out in 2011 for NPWS was 50.85 km (Cronin et al., 2011). NPWS-funded aerial thermal-imaging of seal in Ireland (Morris and Duck, 2019) shows very low usage of the Shannon Estuary by both harbour seal and grey seal, indicating that the estuary is not likely to be an important area for hauling out. As of August 2024, no sightings of grey seals have been recorded in the Shannon Estuary within the last 12 months (IWDG, 2024). Additionally, the closest European site designated for grey seal is the Blasket Islands SAC, located approximately 90 km by sea from the proposed study areas. It is therefore considered unlikely that individuals will overlap with the survey activities; the proposed study areas are not likely to represent an important foraging ground and as a result SACs with grey seal as a QI are not considered relevant for ex situ effects.

Four Annex IV turtle species known to occur in Ireland include the leatherback turtle (*Dermochelys coriacea*), Kemp's Ridley turtle (*Lepidochelys kempii*), loggerhead turtle (*Caretta caretta*) and hawksbill turtle (*Eretmochelys imbricata*). Leatherback turtles have been recorded along the west coast of Ireland and within the Lower Shannon Estuary (at Ballylongford (1970) and at Kilkee (IWDG, 2024)); however, no sightings have occurred within the last 12 months as of August 2024 (IWDG, 2024). Kemp's Ridley have been recorded along the west coast at Banna Strand in Co. Kerry (approximately 40 km south-west). This is beyond the proposed surveys boundary with no suspected impacts from the proposed surveys; there have additionally been no recorded sightings in the Shannon Estuary within the last 12 months as of August 2024 (IWDG, 2024). Loggerheads are also recorded along the west coast of Ireland; one was recorded beyond the Shannon Estuary at Loop Head (approximately 31 km west of the proposed study areas boundaries), since then none have been recorded within the Shannon Estuary within the last 12 months as of August 2024 (IWDG, 2024). Therefore, no significant impacts are expected. One record of a hawksbill turtle has been recorded in the south of Ireland at Cork Harbour as bycatch, no records have been noted along the west coast or near the proposed study areas. Of the turtle species noted in Ireland

Leatherback turtles have the potential to utilise the Lower River Shannon Estuary based on historical records, but as these counts only amount to one or two individuals across many years it is unlikely that they will be present within the study areas during the proposed works.

Basking sharks (*Cetorhinus maximus*) tend to arrive in Irish waters during spring, with numbers peaking in May and June. As of August 2024, there have been several sightings of this species in proximity to the Shannon Estuary over the past 12 months, with recordings concentrated to Aill Na Brun and Derrynadivva (IWDG, 2024). Given the lack of sightings within the estuary itself, it is unlikely basking sharks will be present within the study areas during the survey activities.

## 4.4 Fish

### 4.4.1 Migratory Fish

The Lower Shannon Estuary is used by several of Ireland's native diadromous fish species as they pass through to or from freshwater spawning grounds or use the area for feeding during maturation. These species include twaite shad (*Allosa fallax fallax*), sea lamprey, river lamprey and Atlantic salmon.

Inland Fisheries Ireland conducted fish stock surveys in the Lower Shannon Estuary in October 2017, recording generally low abundance for most species, with the exception of four species: sprat (*Sprattus sprattus*), common goby (*Pomatoschistus microps*), sand goby (*Pomatoschistus minutus*) and flounder (*Platichthys flesus*) (Coyne et al, 2018). This was consistent with the previous two surveys in 2014 and 2008. Overall, the Shannon Estuary was given a status of "good" for fish populations, an improvement on the previous surveys.

### 4.4.2 Fisheries and Aquaculture

Several commercial fisheries activities occur within the Shannon Estuary. Local licensed fishing vessels most frequently partake in pot fishing, gillnets and tangle nets (Shannon Estuary SIFP 2013). Shrimp fishing also takes place within the later summer and early spring, some of which launches from Tarbert within the study areas. Several sections of the Shannon Estuary are also designated under the Shellfish Waters Directive, although not any areas overlapping with the study areas.

## 4.5 Cultural Heritage

A review of the National Monument Services Historic Environment Viewer and Wreck Viewer (Accessed July 2024) indicated the presence of no historic wreck sites within the study areas.

## 5 Assessment of Potential Impacts

### 5.1 Land and Soils

The mooring weights of the deployed devices are expected to temporarily disturb the seabed during deployment, maintenance, and retrieval. Where deployed, the mooring weights will cause a small-scale permanent loss of benthic habitat. Due to the temporary and small-scale nature of this impact on the seabed, it is assessed that there will be no impact to land and soils in the area.

### 5.2 Water

As a result of the works, it is assessed that there will be no impact on water quality in the area.

### 5.3 Biodiversity

The devices will interact with benthic habitat, causing a small-scale temporary loss of habitat for benthic species. Due to the small-scale nature of this impact on the seabed, it is assessed that there will be no impact on biodiversity in the study areas.

### 5.4 Fisheries and Aquaculture

While disturbance to commercial fisheries activity may occur, this disturbance will be of a temporary nature (days) and it has been assessed that there will not be significant impact on commercial fishery activity in the study areas.

### 5.5 Air Quality

While emissions to air as a result of vessel exhausts is unavoidable, the level of such emissions would not be significantly above background levels in this area and would not have the potential to lead to Air Quality standards being exceeded. As a result, it is assessed that there will be no impact on air quality in the area.

### 5.6 Noise and Vibration

Noise will be generated from the ADCP device and the survey vessel. However, the noise generated by the single ADCP will be of low intensity (approximately 80 dB) in a very narrow beam (typically a few degrees). Given the current vessel traffic in the study areas, the addition of one small vessel travelling at slow speeds will not add a significant amount of noise to the existing environment. As a result, it is assessed that there will be no impact on noise and vibration in the area.

### 5.7 Landscape and Seascape

As a result of the works, it is assessed that there will be no potential for impact on landscape and seascape in the study areas.

### 5.8 Shipping and Navigation

The addition of a single vessel to the study areas on a short timescale is not considered a significant risk to shipping and navigation. As a result, it is assessed that there will be no impact on shipping and



navigation in the area.

## **5.9 Marine Archaeology and Cultural Heritage**

No historical wrecks have been identified within the study areas. Since the only pathway for potential impact to marine archaeology and cultural heritage would be direct interaction between deployed devices and wrecks on the seabed, it is assessed that there will be no impact on marine archaeology and cultural heritage in the area.

## **5.10 Population and Human Health**

As a result of the works, it is assessed that there will be no potential for impact on population and human health in the area.

## **5.11 Major Accidents and Disasters**

While a risk of an accidental fuel spill is unavoidable, the addition of a single survey vessel to the study areas is not considered a significant risk. As a result, it is assessed that there will be no risk of major accidents and disasters.

## **5.12 Climate**

Other than indirect impacts on climate change resulting from the use of vessel fuel, there is no potential for impact on climate.

## **5.13 Waste**

As a result of the works, it is assessed that there will be no potential for impact on waste in the study areas.

## **5.14 Material Assets**

As a result of the works, it is assessed that there will be no potential for impact on material assets in the study areas.

## **5.15 Interactions**

As a result of the works, it is assessed that there are no potential interactions to consider.

## 6 Summary of Mitigations

The proposed works involve the deployment, maintenance and recovery of temporary, small-scale, non-invasive equipment that will have no, or no significant, impact on environmental or human receptors. Therefore, no mitigation measures for the proposed survey works are required.

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## 8 Appendix 1



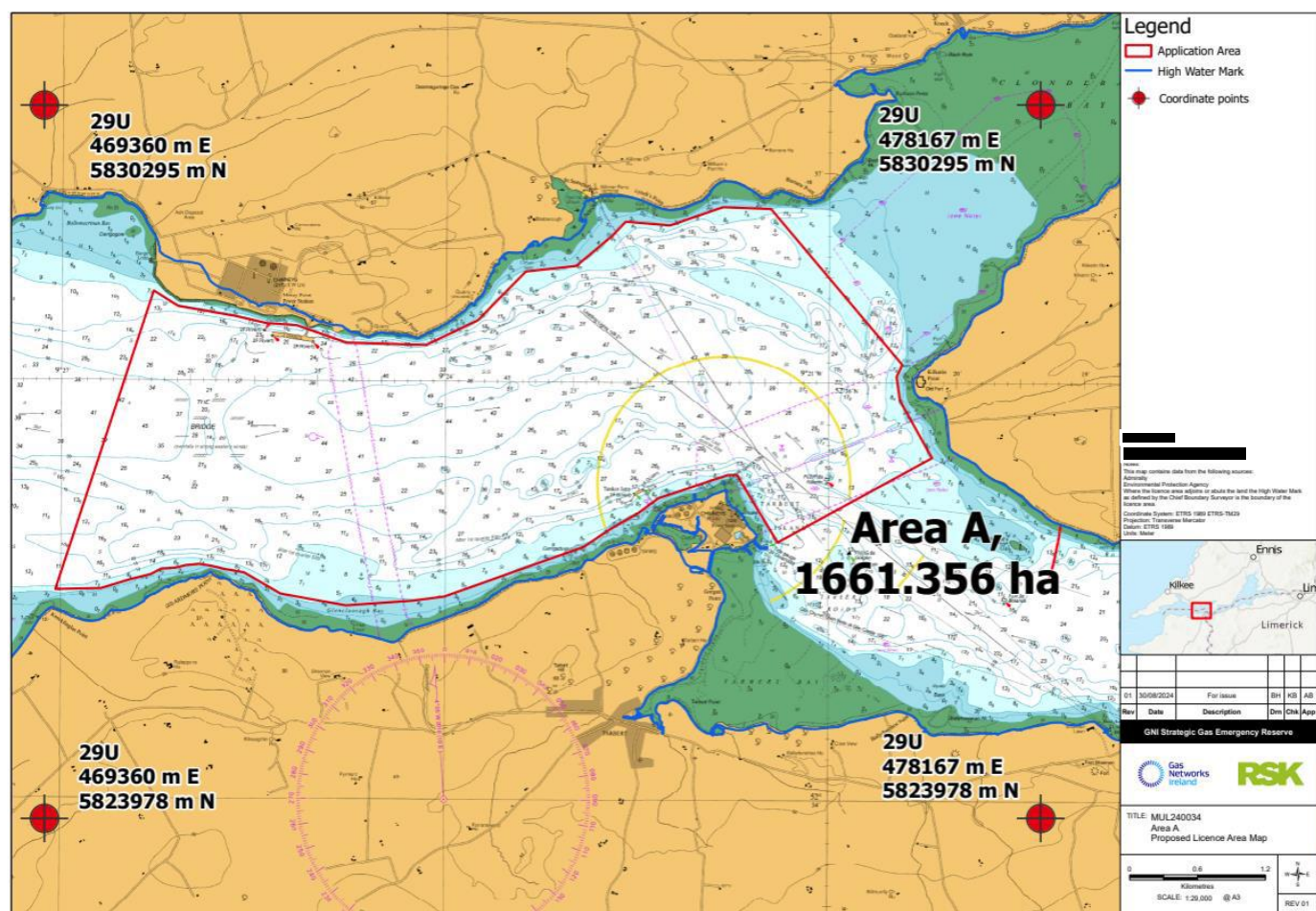


Figure A1.2

West Shannon MUL licence area (Area A)

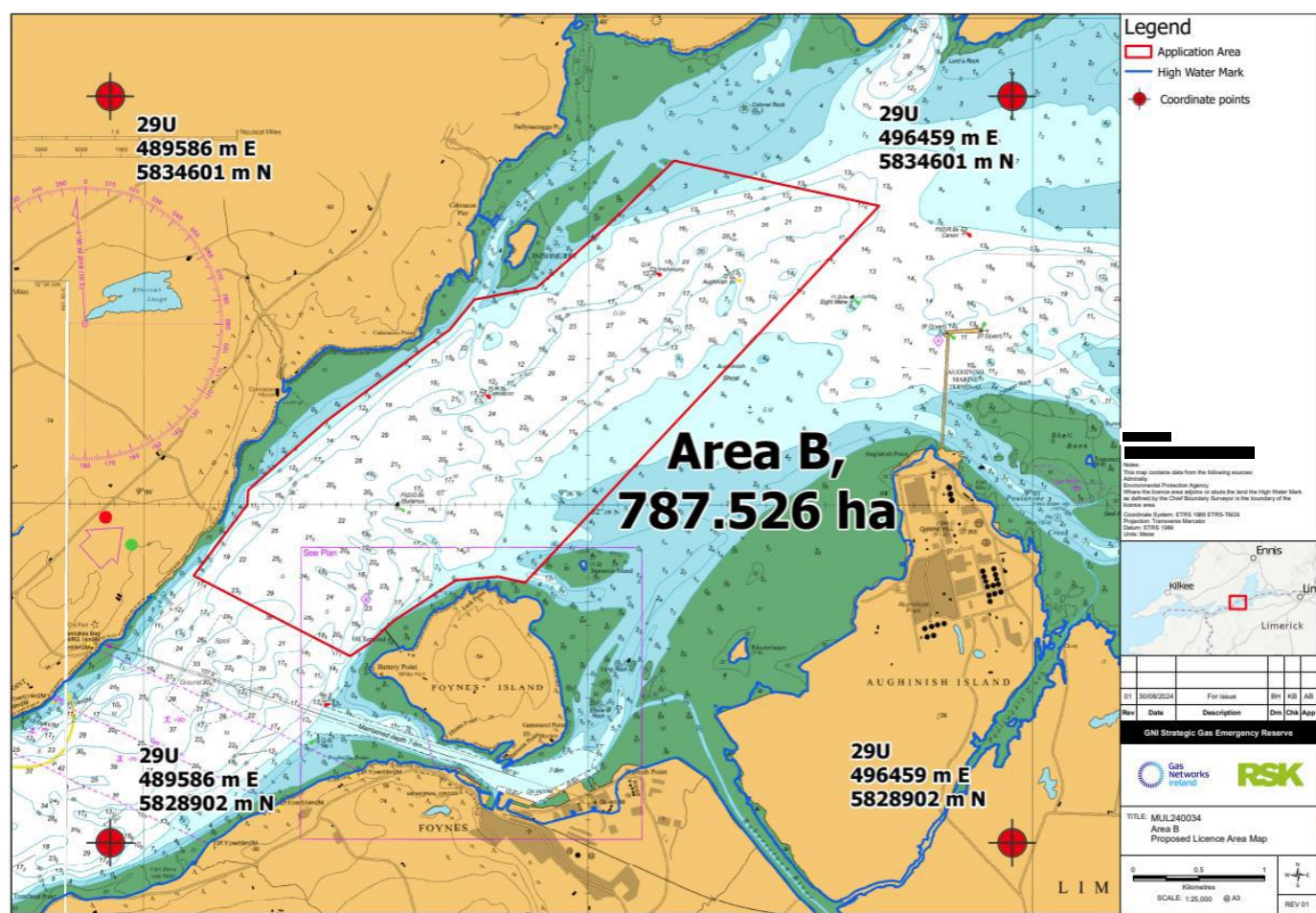


Figure A1.3

East Shannon MUL licence area (Area B)



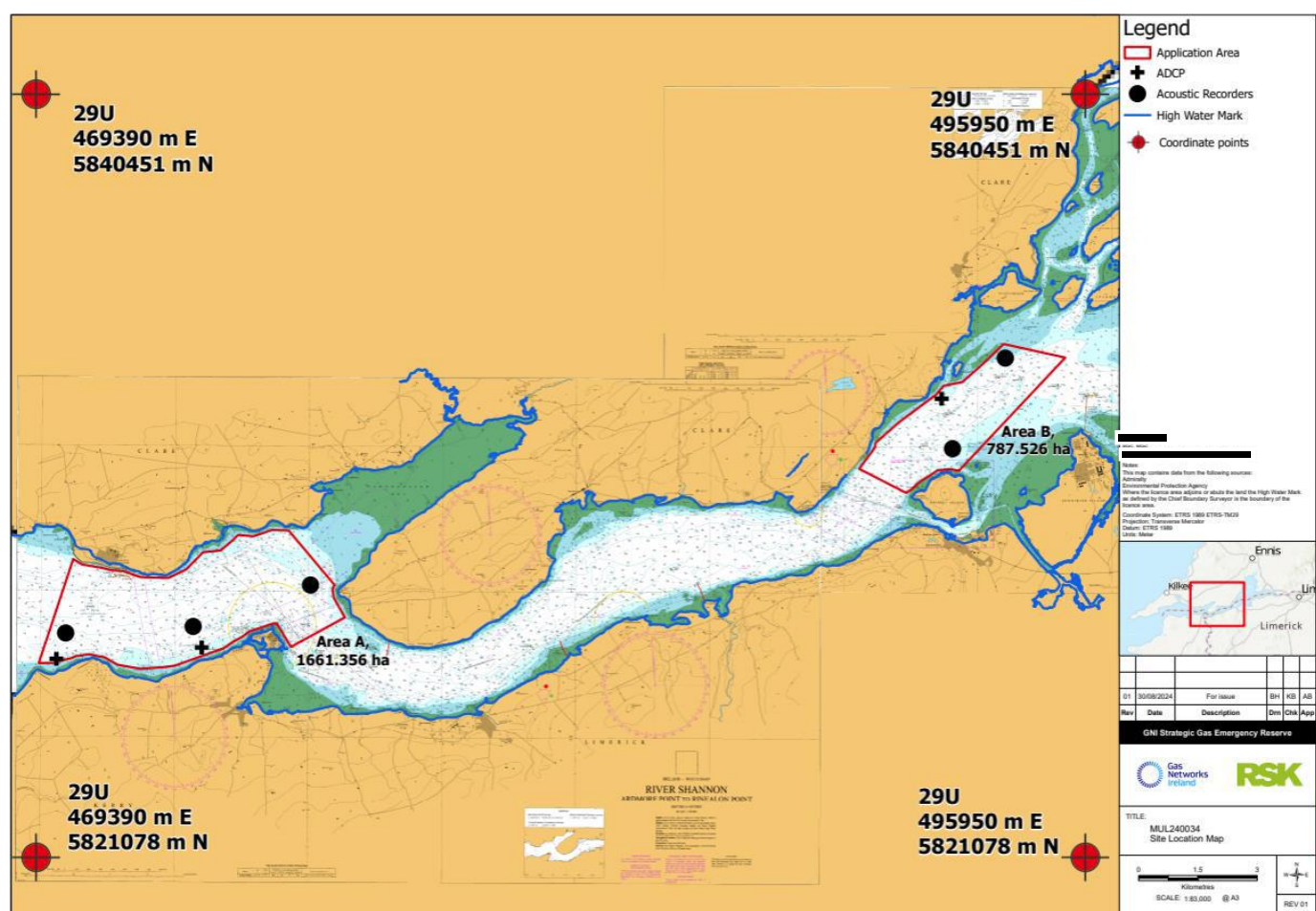
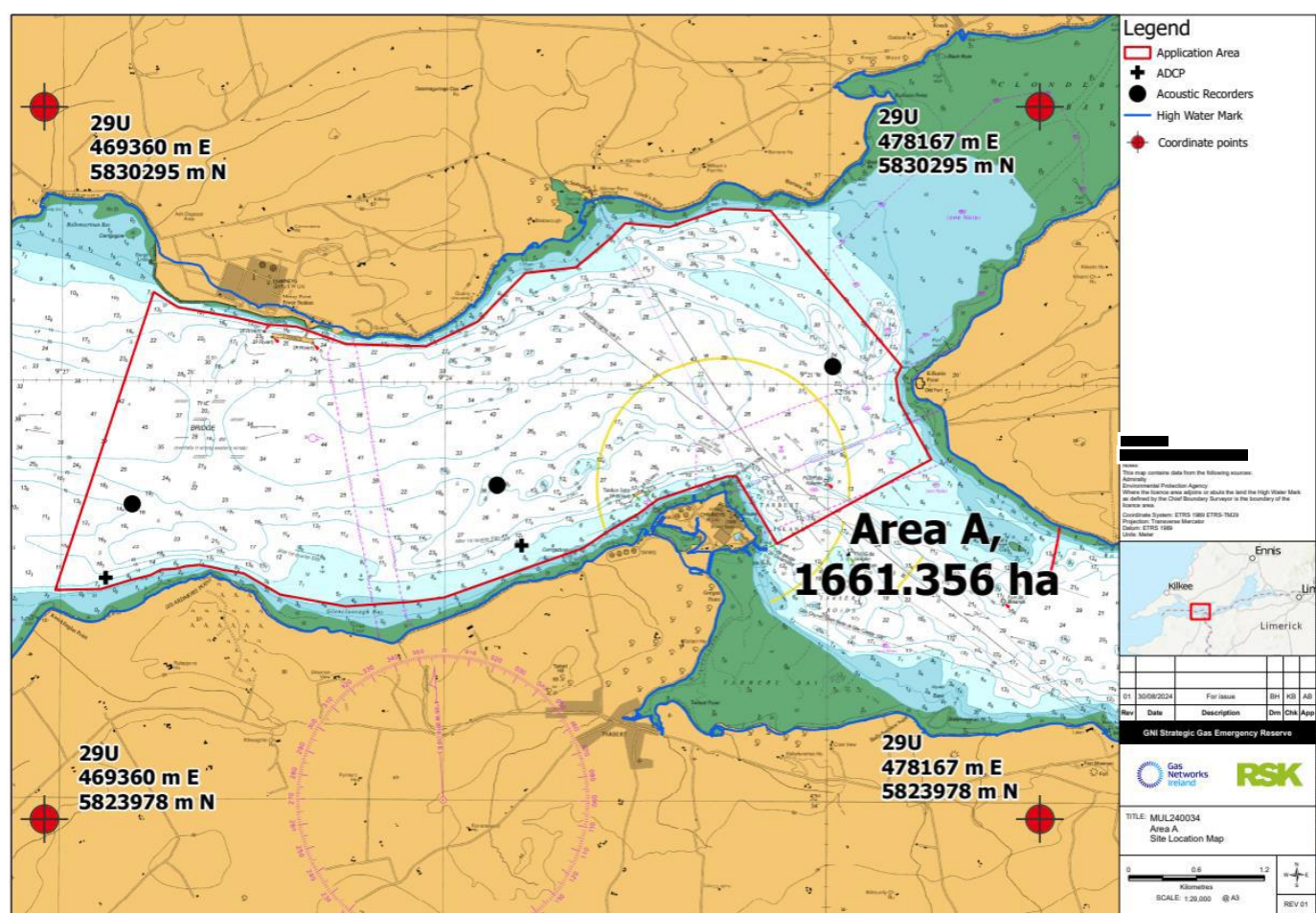


Figure A1.4

Shannon study areas

**Figure A1.5**

West Shannon Study Area (Area A) with indicative device locations



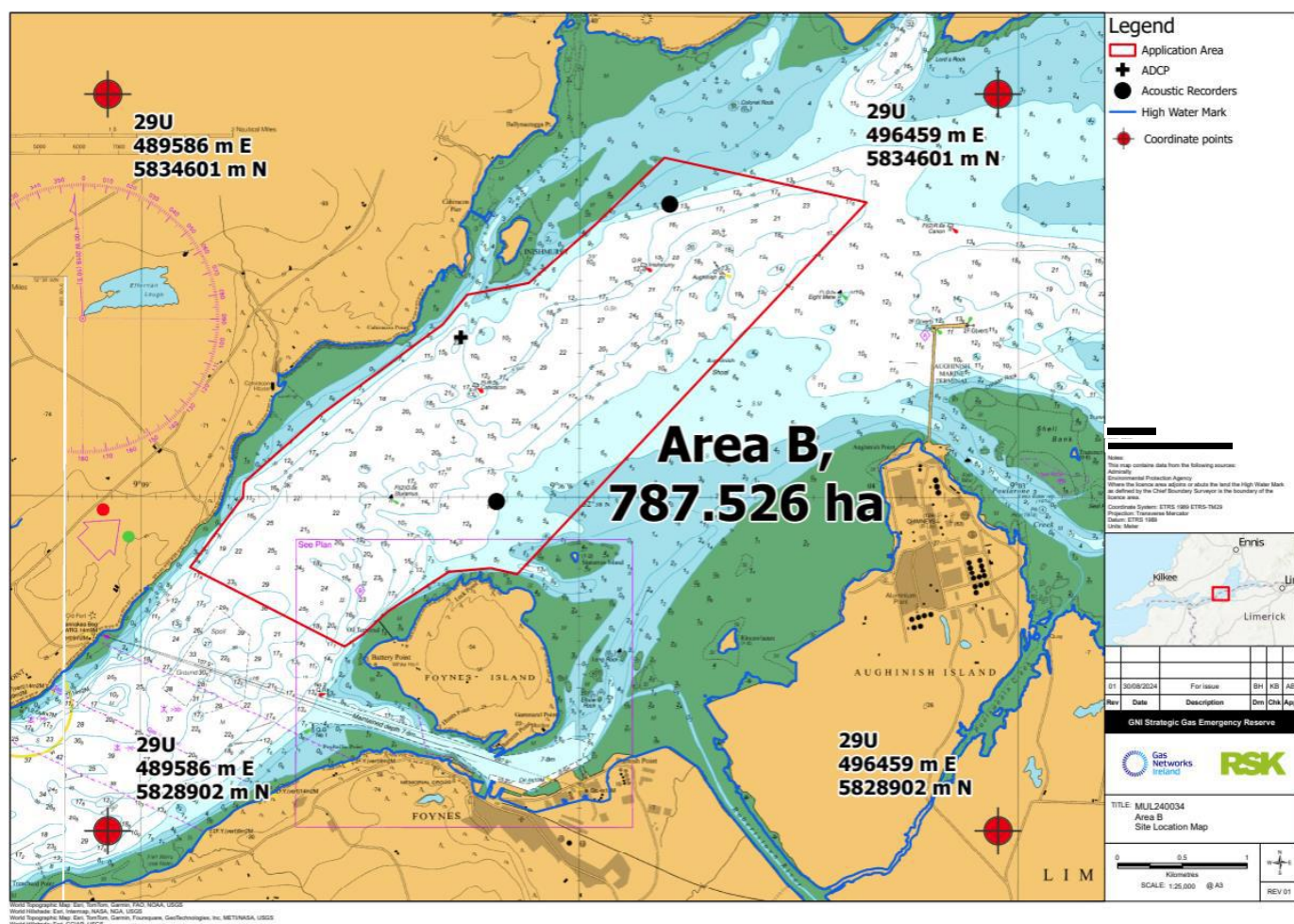


Figure A1.6

East Shannon Study Area (Area B) with indicative device locations