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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Title: Strategic Gas Emergency Reserve – Moored Devices Survey Activity: Assessment of Impacts on the Maritime Usage (AIMU) Report

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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) at each location 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:

[redacted] 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.

[redacted] s 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.

2 Project Description

2.1 Site Location

Cork Harbour is a large, sheltered bay system, with several river estuaries - namely those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The sediment in the area is largely coarse sediments (https://emodnet.ec.europa.eu/en/seabed-habitats) as well as intertidal flats that are often muddy in character and support a range of macro-invertebrates. The harbour has sheltered conditions and water depths that range from the intertidal to around 30m below chart datum.

There is a lot of existing infrastructure within Cork Harbour, including a jetty off Corkbeg Island. To inform baseline for this potential development site, the marine study area extends from Corkbeg island, including the deep water channel down to the harbour entrance with a buffer area of 200m for a total area of 626.125ha (Figure 2.1).

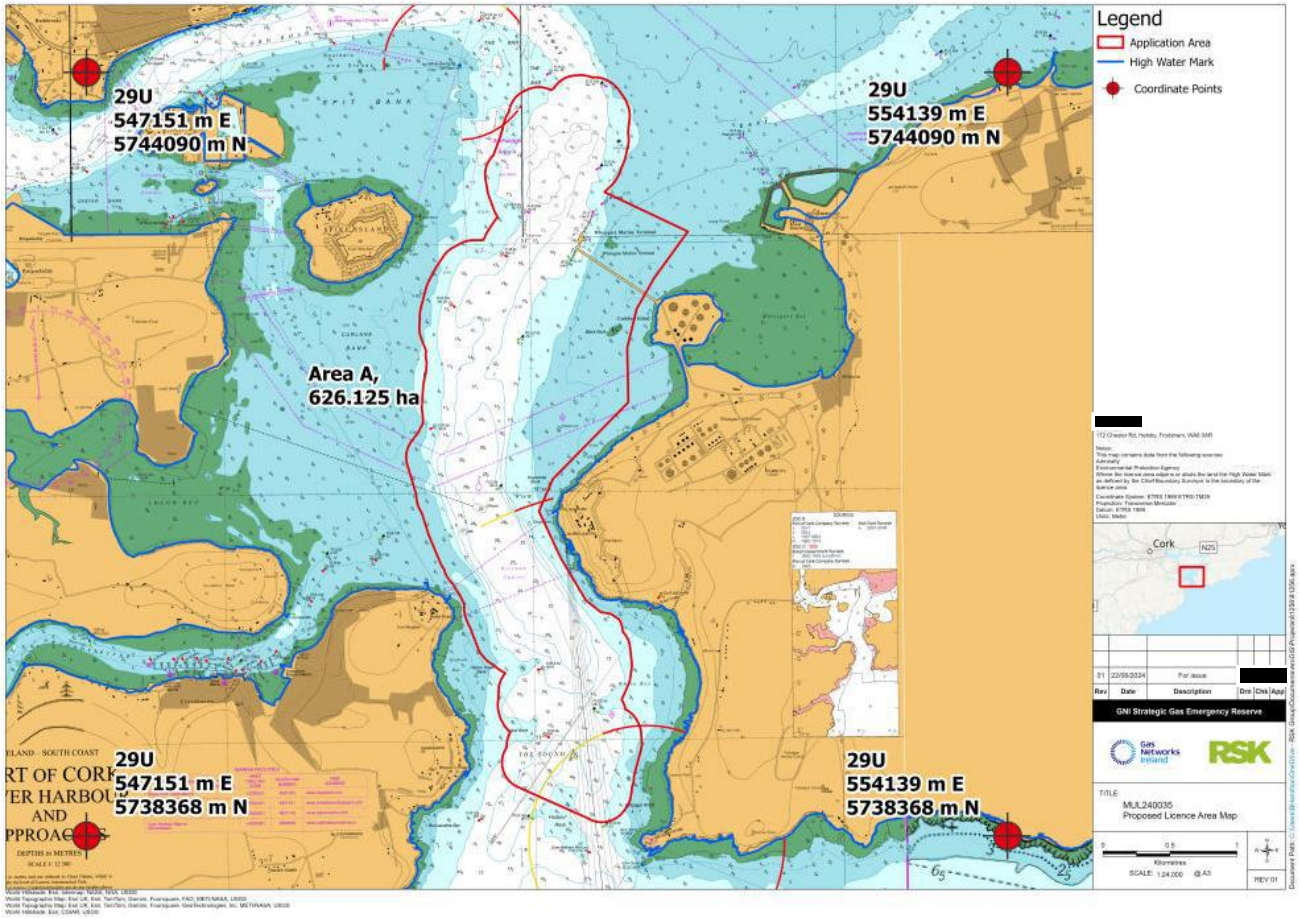

Figure 2.1
Cork Harbour Study Area

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 both static acoustic monitoring (SAM) devices and ADCPs within the study area 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)
- Indicative device deployment map (Figure A1.2).

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 of a moored device setup is shown in Figure 2.2. The exact technical specification of the equipment to be used will not be confirmed until the survey contract has been awarded. Devices will be deployed, maintained in-situ, and recovered from a singular vessel. Devices will be retrieved using an acoustic release, eliminating the requirement for a surface buoy during deployment. The vessel for operational activities or company contracted is subject to budget, weather, and vessel availability. The proposed start date for the works is autumn 2024. Descriptions of typical equipment and survey parameters have been used within this report. The predicted duration and footprint for the activities are presented in

Table 2.2. Moored devices will 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 require the devices to be moved to areas of particular interest.

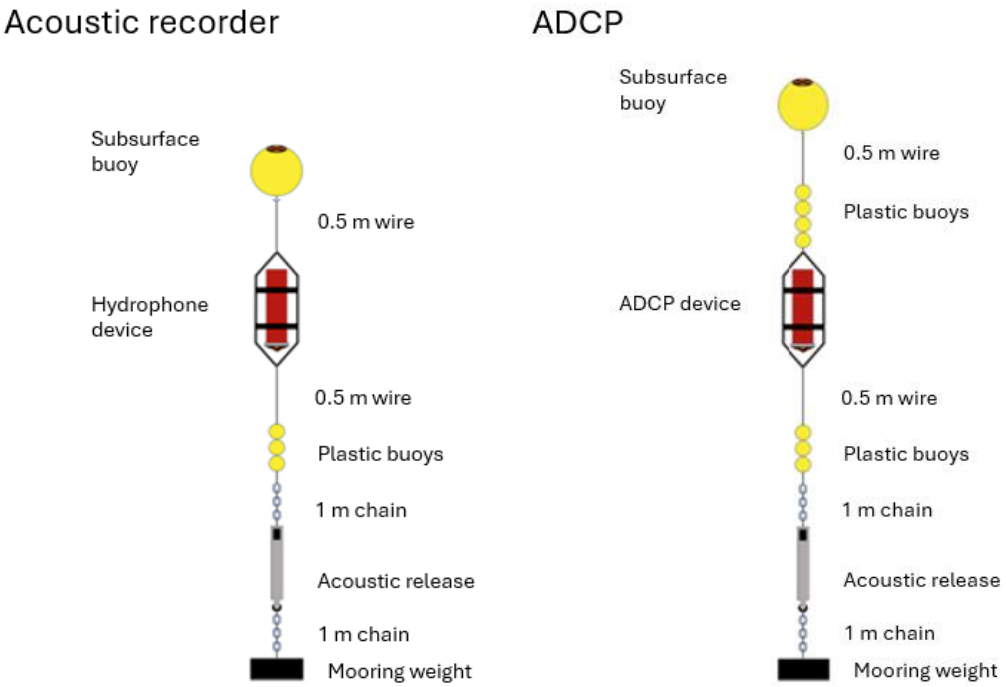

Figure 2.2
Indicative schematics of moored devices

Table 2.1
Proposed programme of works

Survey	Method	Method detail	Purpose	Sampling Effort
Metocean	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 1 ADCP may be used to examine wave and current conditions.
Marine Environmental/ Ecological	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 2 permanent locations will be selected, or the 2 devices will be relocated during battery changes. The device locations are subject to consultation with an experienced marine mammal ecologist.	A maximum of 2 SAM devices may be used to study cetacean presence.

Table 2.2
Predicted time and footprint of each survey activity

Survey Activity	Typical time period required	Total number of devices	Total time for activity	Footprint affected per activity (m^2)	Total footprint per activity (km^2)
ADCP	1 – 12 months in any one location	1	1 – 12 months. Deployment will include 1 day to deploy and 1 day to retrieve.	$1m^2$	0.000001
SAM	3 months – 2 years in any one location)	2	12 – 24 months. Deployment will include 1 day to deploy and 1 day to retrieve.	$2m^2$	0.000002

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 ISO 9001:2015
- 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 scopes of 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. 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 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 Organization (IMO), Safety of Life at Sea (SOLAS) and environmental requirements for their classification and with any national requirement of the territorial or continental / Economic Exclusion Zone (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 the 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 92/43EEC 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, attached to this application:

- 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 proposed 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 proposed 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
D1 Biodiversity	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.
D2 Non-indigenous species	No element of the proposed project has been identified that has the potential to introduce or spread non-indigenous species.	No potential for impact.
D3 Population of commercial fish/shellfish	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
D4 Elements of marine food webs	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
D5 Eutrophication	No impacts relative to eutrophication are possible.	No potential for impact
D6 Sea floor integrity	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
D7 Alteration of Hydrographical conditions	The proposed project does not have the potential to cause any hydrographical changes.	No potential for impact
D8 Contaminants	The proposed project does not have the potential to lead to the introduction of any contaminants.	No potential for impact
D9 Contaminants in fish and seafood for human consumption	The proposed project does not have the potential to add to or alter contaminants in the seafloor.	No potential for impact
D10 Marine litter	The proposed project does not have the potential to lead to marine littering.	No potential for impact
D11 Introduction of energy, including underwater noise	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 area, 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 proposed 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

Environmental – Ocean Health	
Biodiversity and Protected Marine Sites	
Biodiversity	The project is supported by the following documents: • Supporting Information for Screening for Appropriate Assessment (SISAA) • Annex IV Risk Assessment • Assessment of Impact on Maritime Usage Report (AIMU) 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.
Protected Marine Sites	The conclusion of the SISAA, Annex IV Risk Assessment and AIMU is that no impact on protected marine sites will occur.
Non-indigenous Species	The SISAA and AIMU did not identify any potential for the introduction of non-indigenous species.
Water Quality	The SISAA and AIMU did not identify potential impacts on water quality.
Seafloor and Water Column Integrity	The scale and scope of the project does not have the potential to impact Seafloor and Water Column Integrity as documented in this AIMU.
Marine Litter	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.

Environmental – Ocean Health	
Underwater Noise	The conclusion of the SISAA, Annex IV Risk Assessment and AIMU is that no impact relating to underwater noise will occur.
Air Quality	Not relevant: The project does not have the potential to impact air quality.
Climate Change	Not relevant: The project does not have the potential to impact climate change.
Economic – Thriving Maritime Economy	
Co-existence	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 area. No other significant activities have been identified.
Infrastructure	No potential for impact on the infrastructure policy. No permanent infrastructure is proposed.
Social – Engagement with the sea	
Access	No access issues have been identified.
Employment	Not applicable. It is considered the Employment Policy 1 is not relevant to the proposed project.
Heritage Assets	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 area. However, the proposed project will have no interaction with the seabed directly adjacent to these wrecks. As such, there is no potential for impact.
Rural Coast and Island Communities	This policy is not considered relevant to the proposed project.
Seascape and Landscape	No impact possible.
Social Benefits	No impact possible.
Transboundary	No transboundary effects are possible.

4 Supporting Information for Assessment of Impacts

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

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

The proposed licence area overlaps one European site: Cork Harbour SPA (004030). The qualifying interests of this site are as follows:

- little grebe (*Tachybaptus ruficollis*) [A004]
- great crested grebe (*Podiceps cristatus*) [A005]
- cormorant (*Phalacrocorax carbo*) [A017]
- grey heron (*Ardea cinerea*) [A028]
- shelduck (*Tadorna tadorna*) [A048]
- wigeon (*Anas penelope*) [A050]
- teal (*Anas crecca*) [A052]
- pintail (*Anas acuta*) [A054]
- shoveler (*Anas clypeata*) [A056]
- red-breasted merganser (*Mergus serrator*) [A069]
- oystercatcher (*Haematopus ostralegus*) [A130]
- golden plover (*Pluvialis apricaria*) [A140]
- grey plover (*Pluvialis squatarola*) [A141]
- lapwing (*Vanellus vanellus*) [A142]
- dunlin (*Calidris alpina*) [A149]
- black-tailed godwit (*Limosa limosa*) [A156]
- bar-tailed godwit (*Limosa lapponica*) [A157]
- curlew (*Numenius arquata*) [A160]
- redshank (*Tringa totanus*) [A162]
- black-headed gull (*Chroicocephalus ridibundus*) [A179]
- common gull (*Larus canus*) [A182]
- lesser black-backed gull (*Larus fuscus*) [A183]
- common tern (*Sterna hirundo*) [A193]
- wetland and waterbirds [A999].

Potential impacts on this European site 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 area. 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 sediment in the area is largely coarse sediments (https://emodnet.ec.europa.eu/en/seabed-habitats) as well as intertidal flats that are often muddy in character and support a range of macro-invertebrates. The harbour has sheltered conditions and water depths that range from the intertidal to around 30m below chart datum. The intertidal area is recognised as an important feeding area for birds, particularly species associated with the Cork Harbour SPA. There are no reefs or other protected benthic habitats in the study area.

4.3 Marine Mammals

Bottlenose dolphins (*Tursiops truncatus)* are considered infrequent visitors to Cork Harbour. The individuals seen within Cork Harbour are transient and not resident or permanent in the area. The individuals seen in Cork Harbour are, therefore, unlikely to be associated with any coastal SACs.

In a survey of harbour porpoise (*Phocoena phocoena*) around Ireland in 2008, densities were lowest along the Cork coast, with a higher density within Roaringwater Bay and Islands SAC (Berrow et al., 2008). As of August 2024, less than ten sightings of harbour porpoise were recorded within Cork Harbour during the last 12 months (IWDG, 2024). This suggests that species usage of the area is low. However, due to large foraging distances of the species, it is possible that harbour porpoise seen within Cork harbour could be associated with the Roaringwater Bay and Islands SAC. This site has been included for assessment within the accompanying SISAA due to this possible connection.

Telemetry data indicates that harbour seal (*Phoca vitulina*) foraging trips in the south-west of Ireland generally extend no further than 20km from haul-out sites (Cronin et al., 2008). Harbour seals are rarely seen within Cork Harbour; as of August 2024, no sightings of harbour seals have been recorded in Cork Harbour within the last 12 months (IWDG, 2024). The closest European site designated for harbour seal is the Kenmare River SAC, located approximately 160km from the proposed study area. It is therefore highly unlikely that harbour seals from this SAC will be present within Cork Harbour and therefore harbour seals are highly unlikely to be present during survey works.

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 50.85km (Cronin et al., 2011). Grey seals are rarely sighted within Cork Harbour; no sightings of grey seals have been recorded in Cork Harbour within the last 12 months, as of August 2024 (IWDG, 2024). The closest European site designated for grey seal is the Roaringwater Bay and Islands SAC, approximately 85km distance from the study area by sea. While it is possible that individuals from the Roaringwater Bay and Islands population may be present in Cork Harbour, it is considered unlikely that the proposed study area represents an important foraging ground and therefore grey seals are highly unlikely to be present during survey works.

Otter (*Lutra lutra*) inhabit coastal sites where there is suitable habitat, food availability, and shelter for resting and breeding. A recent survey for evidence of otter within Cork Harbour found evidence of otters and identified six potential coastal nesting sites (Dalton et al., 2022). The closest of these sites to the study area is Curraghbinny Woodland, approximately 2.4km from the western boundary of the study area. Individuals associated with this potential nesting site may be found near or transiting

through the proposed study area, although these individuals would not be associated with an SAC designated for otters, the nearest of which is Roaringwater Bay and Islands SAC, 85km from the study area.

4.4 Basking Shark and Marine Reptiles

Basking shark (*Cetorhinus maximus*) sightings are very rarely recorded within Cork Harbour, while no turtle species sightings have been reported for Cork Harbour within the past 12 months, as of August 2024 (IWDG, 2024). As such, these species are considered unlikely to be present in the study area during the proposed surveys.

4.5 Fish

4.5.1 Migratory Fish

As migratory fish migrate to and from their natal rivers, it is considered highly unlikely that migratory fish from other river systems or SACs will migrate through Cork Harbour. The Blackwater River (Cork/Waterford) SAC is approximately 29 km from Cork Harbour and is the closest designated site for the following fish species: sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), river lamprey (*Lampetra fluviatilis*), twaite shad (*Alosa fallax*), and salmon (*Salmo salar*). While it is considered possible that fish associated with this SAC could be within Cork Harbour, this is considered unlikely.

4.5.2 Fisheries and Aquaculture

Low levels of bottom otter trawl fishing and pot fishing occur within the study area (Ireland's Marine Atlas, 2024). Blue mussel aquaculture takes place within the northeast area of Cork Harbour, but not directly overlapping with the study area.

4.6 Culture heritage

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 area. However, the proposed project will have no interaction with the seabed directly adjacent to these wrecks.

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 temporary 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 area.

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 area.

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 80dB) in a very narrow beam (typically a few degrees). Given the current vessel traffic in the study area, the addition of one small vessel travelling slow speeds will add an insignificant amount of noise to the 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 area.

5.8 Shipping and Navigation

The addition of a single vessel to the study area 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

Four historical wrecks have been identified within the study area. The deployment locations of the survey devices will not interact with these wrecks. As a result, 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 area 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 area.

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 area.

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 involves the deployment of temporary, small-scale, non-invasive equipment that will have no, or no significant, impact on environmental or human receptors. Therefore, no mitigation measures with regard to the proposed survey works are required.

7 References

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National Monuments Service (2024) 'Historic Environment Viewer'. https://www.archaeology.ie/archaeological-survey-ireland/historic-environment-viewer-application. Accessed: July 2024.

National Monument Service (2024) 'Wreck Viewer'. https://www.archaeology.ie/underwater-archaeology/wreck-viewer. Accessed: July 2024.

8 Appendix 1

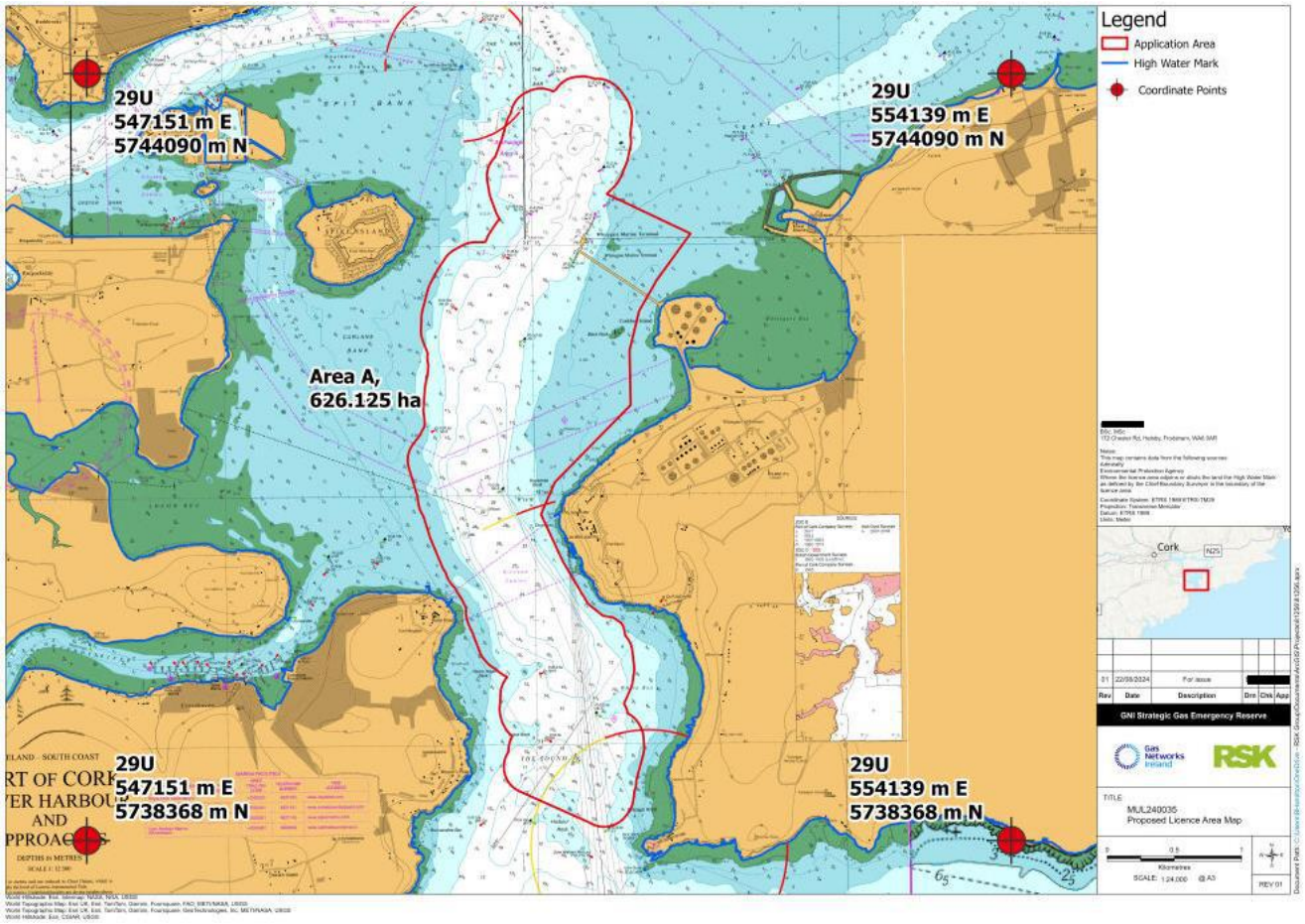

Figure A1.1
MUL application area: Cork Harbour

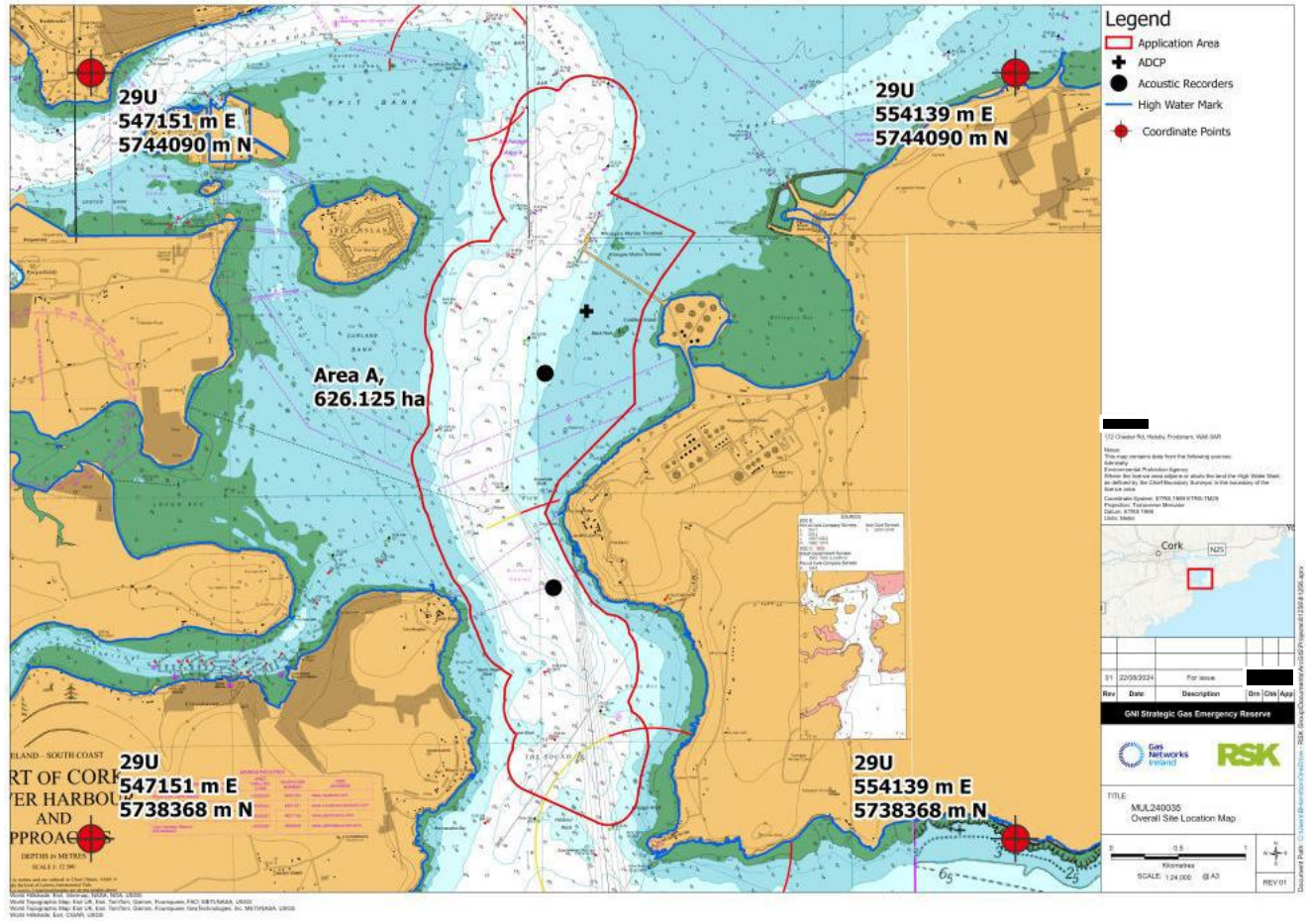

Figure A1.2
Indicative device deployment map: Cork Harbour