Dún Laoghaire Harbour Maritime Usage Licence Application for Site Investigation Works Risk Assessment for Annex IV Species

Client	Dún Laoghaire-Rathdown County Council
Document Ref.	24157-REP-004-01
Project Title	Dún Laoghaire Harbour Maintenance Dredging Project
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REVISION SUMMARY

Rev	Date	Section(s)	Detail of Change
[00]	[Selec]	[Section]	[Enter details]

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

This Risk Assessment for Annex IV Species (RAAIVS) has been prepared to support a Maritime Usage Licence (MUL) application for proposed marine site investigation (SI) activities within Dún Laoghaire Harbour, County Dublin. The purpose of the SI activities is to inform the feasibility and design of and environmental assessments for potential future dredging works within the harbour. This application relates solely to the SI activities and does not include any dredging operations.

The proposed activities include:

- Vibrocore sampling (up to 16 cores)
- Grab sampling (up to 30 stations)
- Side Scan Sonar (SSS) survey
- Magnetometer survey

All works will occur entirely within the confined marine environment of Dún Laoghaire Harbour, a historically modified and operational port, over a short total duration of approximately 2–3 weeks (weather permitting). The SI works are low in intensity and spatial scale, using low-speed survey vessels and non-intrusive geophysical methods.

The potential for impacts on Annex IV species listed under the EU Habitats Directive is assessed in this RAAIVS, specifically:

- Cetaceans
- Otter (*Lutra lutra*)
- Marine turtles
- All bat species occurring in Ireland

Baseline data were reviewed from the IWDG Sightings Database, ObSERVE Programme, National Biodiversity Data Centre, and previous survey work (RPS, 2022). The assessment concludes:

- **Cetaceans**: Harbour porpoise was the most frequently recorded species in the area. Bottlenose dolphins and unidentified small cetaceans were infrequently recorded. Given the short duration and low-intensity nature of SI activities, no risk of injury or significant behavioural disturbance is predicted. The underwater noise risk from both geophysical (SSS) and geotechnical (vibrocore) surveys was assessed. These activities are not expected to exceed thresholds for auditory injury, auditory impairment or significant disturbance, particularly given the high-frequency, low-range sound profiles and the already elevated ambient noise levels in the port.
- **Otter**: No signs of otter activity were recorded within the MUL area during previous surveys. Use of the harbour by otters is considered occasional and transient, and no impacts on foraging or resting behaviour are anticipated. The underwater noise risk from both geophysical (SSS) and geotechnical (vibrocore) surveys was assessed. These activities are not expected to exceed thresholds for auditory injury, auditory impairment or significant disturbance, particularly given the high-frequency, low-range sound profiles and the already elevated ambient noise levels in the port.
- **Marine turtles**: While leatherback turtles have been recorded in the wider area historically, the likelihood of presence within the harbour is extremely low. Other turtle species are considered absent from the area.

- **Bats**: Leisler's bat and common pipistrelle have been recorded in the wider area. However, the SI activities will not impact potential foraging or roosting habitat, and no effects on bats are predicted.

A review of cumulative and transboundary effects concluded that no in-combination or cross-border impacts are anticipated. No significant residual effects remain after completion of the works.

In summary, the proposed SI activities will:

- Not result in any offence under Article 12 of the Habitats Directive
- Not require derogation under Article 16
- Not require mitigation or management measures, due to the negligible level of risk

This report concludes that the proposed SI activities will not have a significant effect on any Annex IV species, and no further assessment is considered necessary. Final determination regarding the need for additional assessment lies with the Minister for Housing, Local Government and Heritage.

1 INTRODUCTION

1.1 BACKGROUND

Dún Laoghaire Rathdown County Council proposes to undertake a suite of marine site investigation (SI) activities to assess the feasibility of potential future dredging within the harbour. The dredging aims to remove approximately 56,400 m^3 of material from Dún Laoghaire Harbour to achieve a target depth of -6.1 m.

Dún Laoghaire Harbour has prepared this report in support of an application for a Maritime Usage Licence (MUL) under the Maritime Area Planning Act (2021) to undertake SI activities to support dredging design. This submission does not constitute an application for dredging; a separate application for dredging activities will be submitted at a later stage.

The Maritime Usage Licence Application Area (hereafter referred to as MUL Area) is located entirely within Dún Laoghaire Harbour, approximately 12 km southeast of Dublin.

The proposed MUL Area is 0.2585 km^2 (25.85 ha); refer to Figure 1.1. Proposed sampling locations are also shown in Figure 1.1. All SI activities will remain entirely within the MUL Area.

1.2 PROPOSED ACTIVITIES, LOCATION AND SURVEY SCHEDULE

1.2.1 SITE LOCATION

Dún Laoghaire Harbour has a history spanning over 200 years and is defined by two outer harbour walls: the East Pier (1.3 km long) and the West Pier (0.96 km long). The harbour entrance is 232 m wide and encloses four principal inner harbours: the Old Harbour, Coal Harbour, Marina Harbour and the Main Harbour. The MUL Area comprises a rectangular zone extending from the harbour entrance southwards to include a turning circle, and a second rectangular area adjacent to St Michael's Pier, extending southeast across to Carlisle Pier. The entire MUL Area lies within the marine environment.

The objective of the proposed marine SI works is to inform the concept design of and environmental assessments for future dredging works by gathering baseline environmental and geotechnical data. The SI activities (and equipment) will include:

- Collection of sediment samples for sediment characterisation and chemical analysis (vibrocore);
- Ecological characterisation of the benthic environment (grab sampler and drop-frame camera system);
- Identification of potential hazards such as shipwrecks or other underwater features through geophysical surveys (side scan sonar and magnetometer).

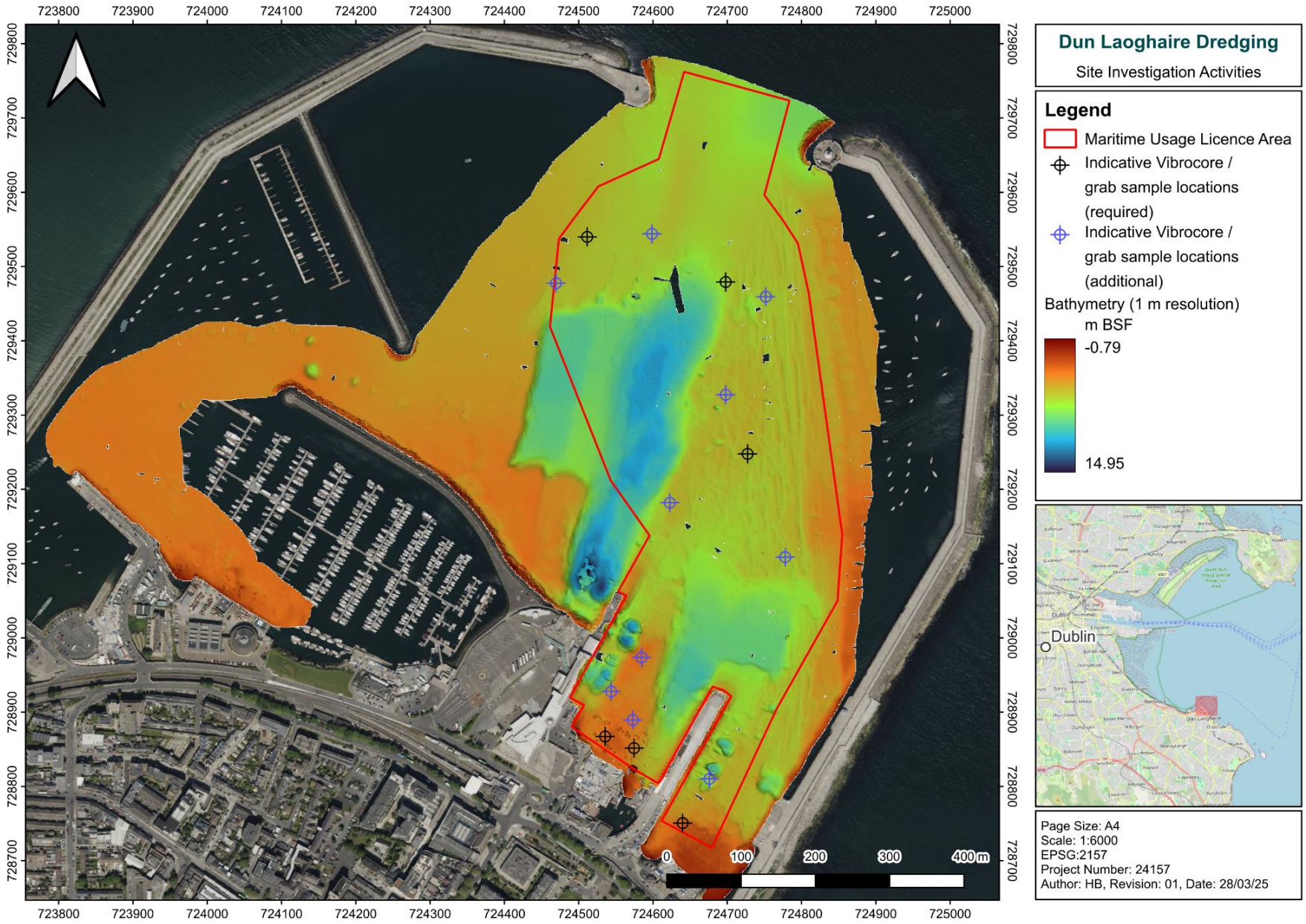

Figure 1.1 Proposed MUL Area, indicative vibrocore locations and bathymetry

1.2.2 SURVEY SCHEDULE

The SI activities are intended to commence as soon as practicable following the grant of the MUL, with a phased approach to allow flexibility in scheduling. The timing of activities will depend on factors such as weather conditions, tidal flows, vessel availability, and the licence award. Some elements of the investigation may be undertaken during winter months to minimise disruption to harbour operations and vessel traffic.

1.2.3 PROPOSED SI ACTIVITIES

The proposed SI activities to be undertaken within the MUL Area are described in detail in Section 2 of the Assessment of Impact on the Maritime Usage (AIMU) document (Doc reference 24157-REP-002-01 AIMU) accompanying this MUL application. The exact technical specifications of the equipment to be used will not be known until the survey contracts have been awarded. However, a description of typical equipment and expected survey parameters is provided in Appendix A of the AIMU.

The proposed site investigation activities include:

- Vibrocore sampling – Up to 16 cores will be collected to characterise sub-seabed sediments.
- Seabed imagery and grab sampling – Up to 30 stations will be sampled to gather benthic ecology data.
- Side Scan Sonar (SSS) survey – MUL Area will be surveyed to map seabed features
- Magnetometer survey – MUL Area will be surveyed to detect potential subsurface obstructions and metallic anomalies.

A total licence duration of the 5 years is being sought for the SI activities.

Surveys will be conducted from one or two inshore workboats, expected to be <12 m in length.

1.3 AIM OF THIS REPORT

This RAAIVS Report has been prepared to evaluate the potential impacts of proposed projects or activities on species listed under Annex IV of the European Union (EU) Habitats Directive (Directive 92/43/EEC). This report supports the MUL application process and includes information to inform the risk assessment for Annex IV species (RAAIVS), which includes the Qualifying Interests (QI) of Special Areas of Conservation (SACs).

The report aims to provide the necessary information to the competent authorities to assist them in making an informed decision on whether the proposed activities remove the system of strict protection established for Annex IV species, whether a derogation licence is required, and if so, whether the criteria for derogation are met.

The primary purpose of the Report is to ensure that any planned development or activity complies with the stringent protection measures mandated by the Habitats Directive by prohibiting actions that could cause those species to decline in the wild or which would impair their chances of successful breeding. Disturbance during breeding, migration or hibernation can have a detrimental effect on species survival. The measures taken to protect individual species must relate to the threats experienced by that species, within its natural range.

It should be noted, potential impacts on non-Annex IV species such as the phocid species, Grey Seal (*Halichoerus grypus*) and Harbour (Common) seal (*Phoca vitulina*) have been assessed in the accompanying Assessment of Impact on the Maritime Usage (AIMU) report (document reference number 24157-REP-002-01) and Supporting Information for Screening for Appropriate Assessment (SISAA) report (document reference number 24157-REP-003-01) to ensure no adverse effects occur to any protected species that have been identified within the MUL Area.

Within this report, the term **No Likely Significant Effect (LSE)** will be used where the proposed activities, or a specified source of impact from the proposed activities, are not likely to have a significant effect on an Annex IV listed species.

1.4 LEGISLATIVE AND REGULATORY CONTEXT (INTERNATIONAL DIRECTIVES)

As directed by Article 12 of the Habitats Directive (Directive 92/43/EEC), species listed in Annex IV are considered species of community interest in need of strict protection across their entire natural range within the EU, both within and outside Natura 2000 sites. In addition to cetaceans, other European Protected Species (EPS) occurring in Irish waters are the Eurasian otter (*Lutra lutra*), leatherback turtle and loggerhead turtle.

All bat species occurring Ireland are listed under Annex IV of the Habitats Directive, and are therefore subject to the same strict protection measures.

The Habitats Directive has been transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No 477 of 2011), which consolidate and replace earlier instruments, including the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010.

These Regulations provide for the strict protection of Annex IV listed species, including all cetaceans, bats, otters and marine turtles, across their natural range. Under these provisions, it is an offence to:

- Deliberately capture or kill any specimen of these species in the wild;
- Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration;
- Deliberately take or destroy eggs of those species from the wild;
- Damage or destroy a breeding site or resting place of such an animal; or
- Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.

The term ‘deliberate’ has been interpreted by the European Commission in its 2007 ‘*Guidance document on the strict protection of animal species of community interest under the Habitats Directive 92/43/EEC’*, as follows:

“‘Deliberate’ actions are to be understood as actions by a person who knows, in light of the relevant legislation that applies to the species involved, and the general information delivered to the public, that his action will most likely lead to an offence against a species, but intends this offence or, if not, consciously accepts the foreseeable results of his action”.

Therefore, any individual undertaking an activity which they should reasonably be aware could result in an offence under these Regulations - including injury as defined in the Regulations and / or disturbance to resting/breeding sites - may be acting unlawfully.

Under Article 16 of the Habitats Directive, a derogation licence may be granted by the Minister to allow activities that would otherwise constitute an offence, provided that:

- There is no satisfactory alternative; and,
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a Favourable Conservation Status in their natural range.

In addition, Ireland is also signatory to conservation agreements for the protection such as the Bonn Convention on Migratory Species (1983), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Berne Convention on Conservation of European Wildlife and Natural Habitats (1979), the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic (1992) and the International Convention for the Regulation of Whaling (ICRW). Cetaceans are also provided protection under the Whale Fisheries Act 1937.

1.5 STATEMENT OF AUTHORITY

This report has been prepared by [redacted] (BSc. (Hons) Marine Sciences). [redacted] s a Marine Ecologist and Ornithologist with experience in terrestrial, aquatic and marine/coastal ecology and is a trained Marine Mammal Observer (MMO). Her expertise includes specialised mammal, bird (land based and aerial) and habitat surveys, as well as freshwater surveys such as assessments for white-clawed crayfish, pearl mussels, and Biotic Indices (Q-values) Surveys. Her current work includes ecological and environmental desktop studies for terrestrial, aquatic and marine environments, specialised mammal surveys, ornithological surveys, map preparation and reporting (AA/NIS, EcIA, EIAR).

This report has been checked by [redacted] (BSc. Hons Geological Science, MSc. Geochemistry). [redacted] is a Senior Environmental Scientist at GDG with 25 years' experience and an IEMA Practitioner. She has worked across the environmental, compliance, planning and monitoring industries for both the public and private sector. She has experience in environmental impact assessment of port expansion, onshore windfarm and energy from waste projects and of marine licencing.

This report has been reviewed by [redacted] (BSc. (Hons) Marine Science, MSc. Engineering in the Coastal Environment). [redacted] is an Environmental Impact Assessment practitioner and Marine Scientist with coastal engineering expertise and extensive experience of offshore survey and Marine Protected Area monitoring, who has undertaken multiple environmental assessments for GDG and as a statutory adviser to the UK government and its devolved administrations with the Joint Nature Conservation Committee (JNCC).

2 BASELINE INFORMATION

2.1 RECEIVING ENVIRONMENT

The receiving environment of the proposed SI activities is restricted to the immediate waters of Dún Laoghaire Harbour (Figure 1.1), areas outside the harbour are unlikely to be subject to any significant effects arising as a result of the proposed SI activities. The receiving environment relevant to this assessment is that used by Annex IV species.

This report addresses marine, semi-aquatic and volant species listed under Annex IV of the Habitats Directive which are known to occur in Irish coastal waters and are identified as being relevant to the proposed activities.

2.2 RELEVANT ANNEX IV SPECIES

Annex IV species are those of European Community interest that require strict protection due to their vulnerability, rarity, or declining populations. All species listed under Annex IV of the Habitats Directive with the potential to be impacted by the proposed SI activities have been considered in this report, including species assessed in the SISAA report (document reference number 24157-REP-003-01) which accompanies this application.

All species of cetacean (whales, dolphins and porpoises) occurring in EU waters are considered EPS under Annex IV of the Habitats Directive. Marine turtles, such as leatherback turtle (*Dermochelys coriacea*) and loggerhead turtle (*Caretta caretta*) are also listed under Annex IV of the Habitats Directive.

As the proposed SI activities will be conducted within Dún Laoghaire Harbour, Eurasian otter and bat species are considered relevant to the assessment. The location introduces a potential pathway in the Source-Pathway-Receptor (S-P-R[1]) model (OPR, 2021) as otters are known to utilise sheltered coastal and harbour environments for foraging and commuting. Coastal otters typically feed within 80-100 m of the shoreline in shallow waters (<3 m) with a diving depth limit of up to 10-12 m (Kruuk, 2006).

Bat species, particularly Leisler's bat (*Nyctalus leisleri*), common pipistrelle (*Pipistrellus pipistrellus*), and soprano pipistrelle (*Pipistrellus pygmaeus*), have also been recorded foraging along coastal habitats and may use harbour infrastructure (e.g. crevices in quay walls or buildings) as roosting sites. Artificial lighting and construction disturbance could therefore result in potential effects on local bat activity.

Of the animal and plant species listed on Annex IV of the Habitats Directive and known to occur in Ireland[2] , the following Annex IV species are considered relevant to the proposed project:

- All cetaceans
- Otter
- Marine Reptiles (turtles)

[1] The source of impact (e.g. pollution) is the activity that leads to the impact causing an effect. The pathway (e.g. water) is the part of the environment that an impact (e.g. pollution) travels on its journey towards the receptor. The receptor is the thing (e.g. species, habitat and non-living things such as monuments) that is being harmed by the source.
[2] https://www.npws.ie/legislation

- All bat species occurring in Ireland

2.3 CETACEANS

This RAAIVS is based on a review of the available literature and validated marine mammal sighting records. The Irish Whale and Dolphin Group (IWDG) Sightings Database[3], which is validated and updated daily, was accessed on 25th March 2025. Data covering a one-year period (March 2024 to March 2025) was exported and mapped (Table 2.1 and Figure 2.1.).

Table 2.1 Cetacean sightings (IWDG Sightings Database, 2025) recorded in Dún Laoghaire Harbour and adjacent waters from March 2024 to March 2025

Record ID	Species	No. of Animals	Event Date
49436	Bottlenose Dolphin	5	15/02/2025
48705	Harbour Porpoise	2	02/11/2024
48715	Harbour Porpoise	3	31/10/2024
48636	Harbour Porpoise	2	12/10/2024
48559	Harbour Porpoise	4	07/10/2024
48134	Harbour Porpoise	2	25/08/2024
48126	Harbour Porpoise	2	23/08/2024
47708	Dolphin species, possibly harbour porpoise	5	01/08/2024
47514	Harbour Porpoise	2	21/07/2024
47561	Harbour Porpoise	2	16/07/2024

In addition to the IWDG dataset, data from the ObSERVE Programme (Phases I and II) were consulted. The most recent broad-scale survey available was conducted by Giralt Paradell *et al*. (2024) under Phase II of the ObSERVE programme, building upon baseline data from Phase I (Rogan *et al.,* 2018). These surveys provided surface density maps for cetacean species across the Irish Exclusive Economic Zone (EEZ) and were conducted using a Partenavia P-68 fixed-wing aircraft flying at 90-100 knots (167-185 km/hr) and an altitude of 600 feet (183 m) above sea level.

[3] https://iwdg.ie/browsers/sightings.php

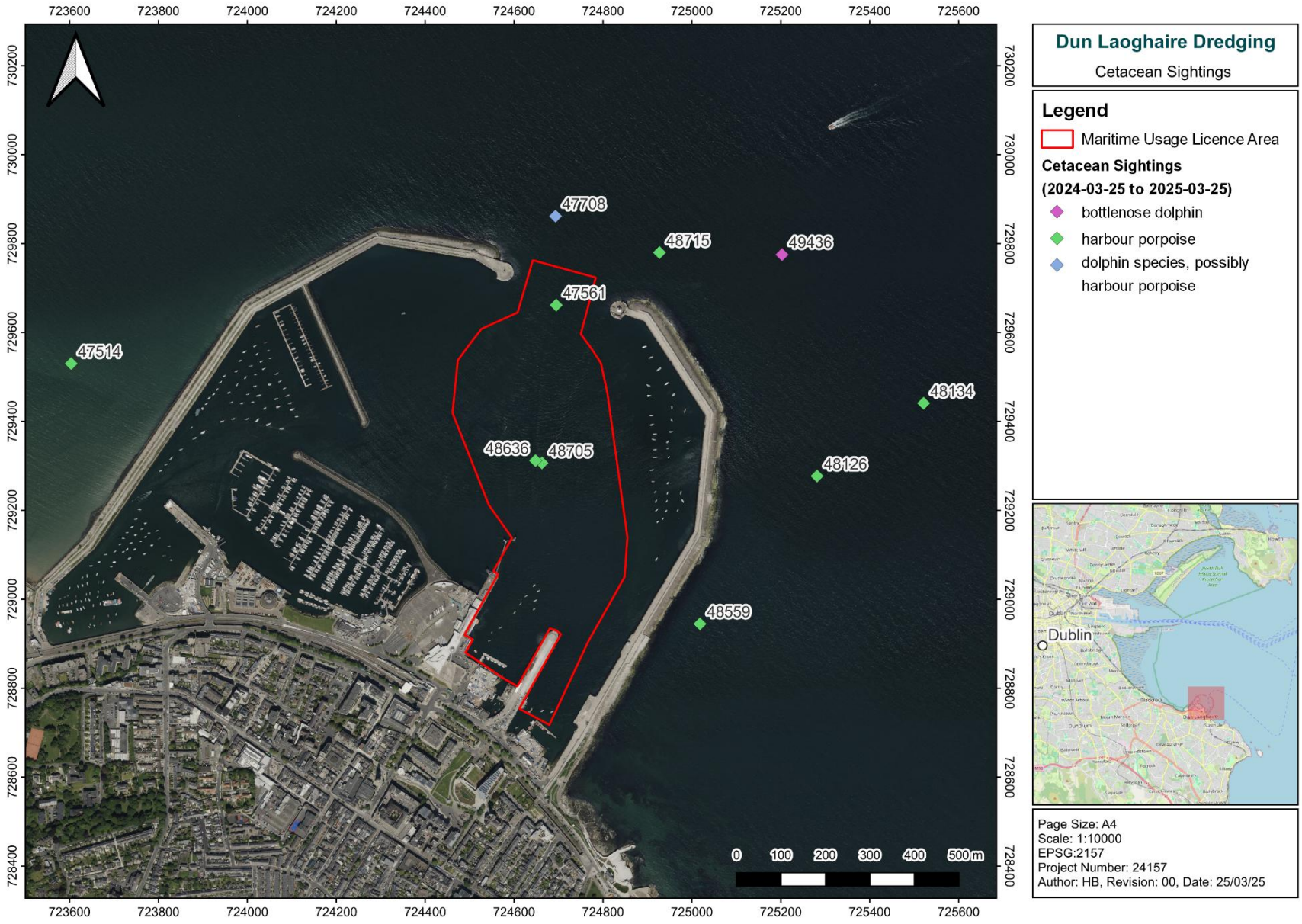

Figure 2.1 Sightings of cetaceans in Dún Laoghaire Harbour and adjacent waters (IWDG Sightings Database, 2025)

2.3.1 HARBOUR PORPOISE (*PHOCOENA PHOCOENA*)

Harbour porpoise (*Phocoena phocoena*) was the most frequently recorded species in the harbour in the IWDG database from March 2024 to March 2025, with eight separate sightings comprising a total of 24 animals between 16th July 2024 to 2nd February 2025. An additional sighting of five unidentified dolphins—possibly harbour porpoise—was recorded on 1st August 2024.

Harbour Porpoise were the most frequently recorded species off the east of Ireland both during summer and winter ObSERVE surveys (Figure 2.2). Density estimates from the model-based approach were 0.4158 (summer 2021), 0.262 and 0.379 (summer and winter 2022, respectively) porpoises per km^2 (Giralt Paradell *et al*., 2024).

The Phase I of the ObSERVE Aerial surveys (2015-2017) also found the Irish Sea to be an important area for Harbour Porpoise across all seasons (Figure 2.3), with higher densities in this area compared to other strata. Density estimates from the model-based approach were higher than those recorded during Phase II, with 0.675 and 0.942 porpoises per km^2 in summer 2015 and 2016, respectively (there were too few sightings of this species to generate model-based density distributions in each winter survey period).

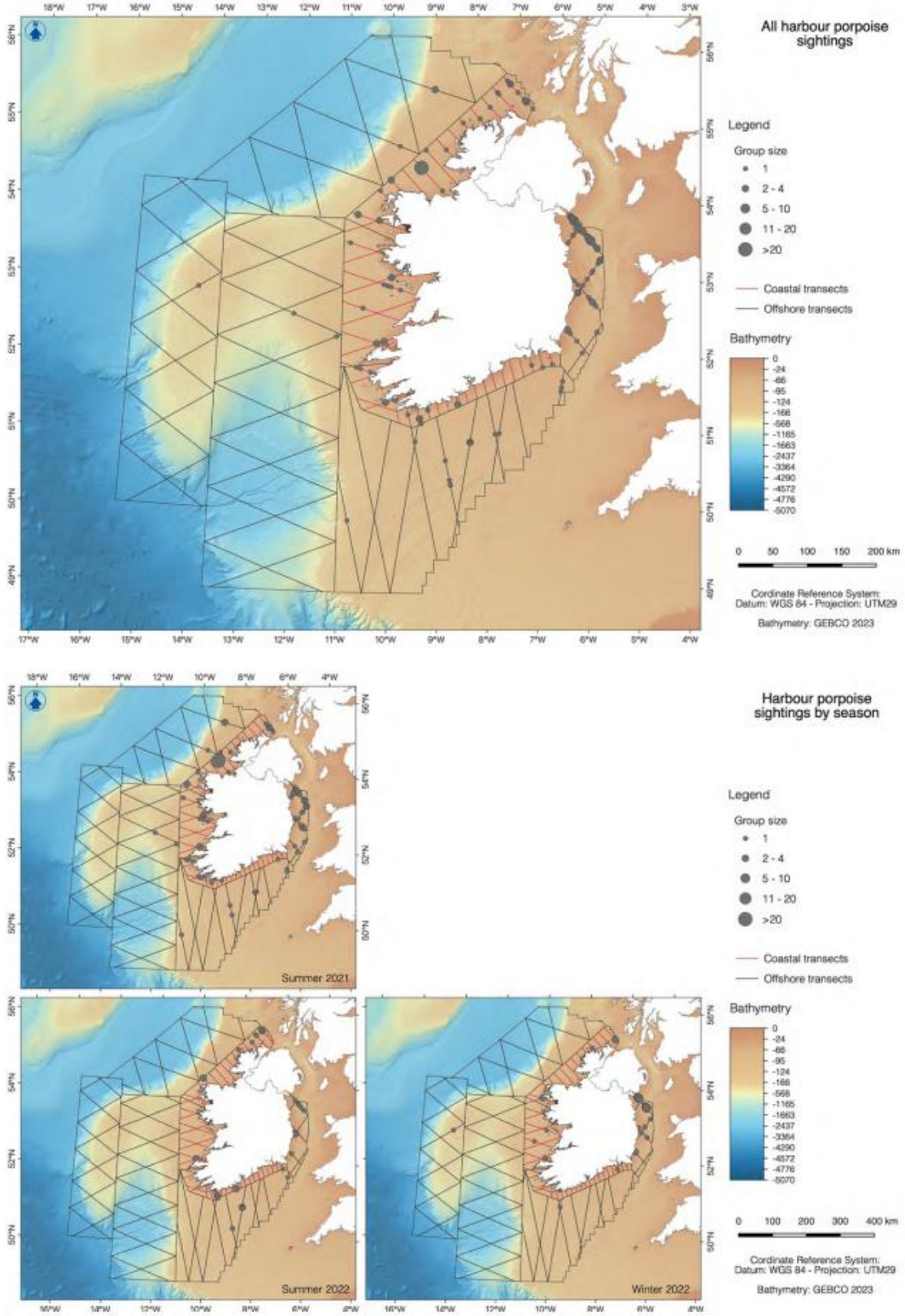

Figure 2.2 Harbour Porpoise sightings during Phase II of the ObSERVE Aerial Surveys carried out in summer and winter 2021 and 2022. Note that no surveys were carried out in winter 2021. Grey lines indicate the survey tracklines in the offshore strata and red lines lines indicate the tracklines in the coastal strata. Circles are proportional to the number of porpoises in each sighting (from Giralt Paradell *et al.*, 2024)

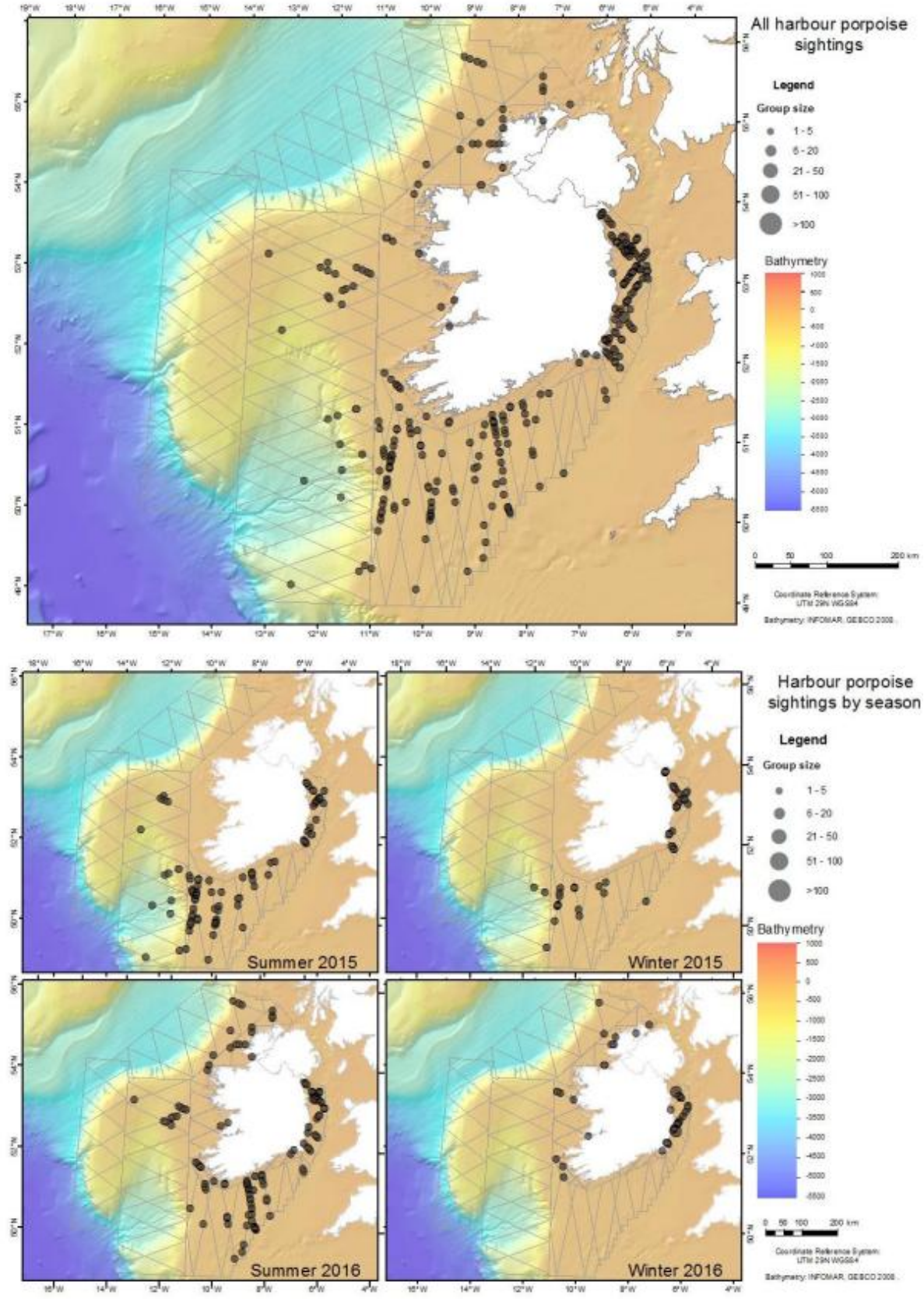

Figure 2.3 Harbour Porpoise sightings during the Phase I of the ObSERVE Aerial Surveys carried out in summer and winter 2015 and 2016 (from Rogan et al., 2018)

2.3.2 BOTTLENOSE DOLPHIN (*Tursiops truncatus*)

Bottlenose dolphins (*Tursiops truncatus*) were recorded in the harbour in the IWDG database on a single occasion between March 2024 to March 2025 on 15th February 2025, with five individuals recorded.

Bottlenose Dolphin were sporadically observed by ObSERVE surveys in the Irish Sea (stratum 5) during summer 2022, with a model-based estimate of 0.059 dolphins per km^2, showing this species' preference for continental shelf waters (Figure 2.4). No Bottlenose (*Tursiops truncatus*) or Common Dolphin (*Delphinus delphis*) were sighted in stratum 5 during Phase I of the ObSERVE Aerial Surveys (Rogan *et al.,* 2018), refer to Figure 2.5.

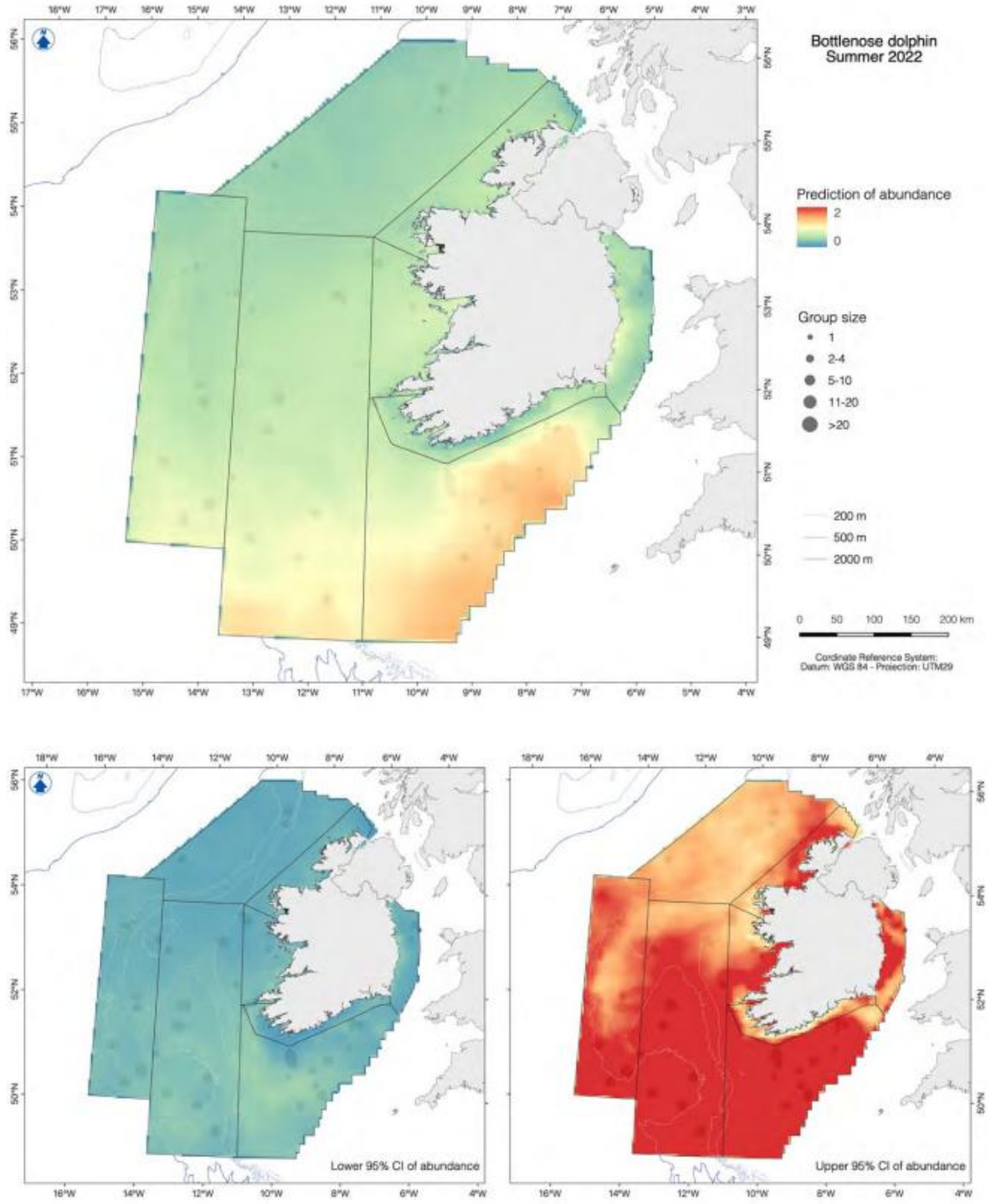

Figure 2.4 Predicted summer distribution of Bottlenose Dolphin in 2022 during Phase II of the ObSERVE Aerial Surveys (from Giralt Paradell et al., 2024)

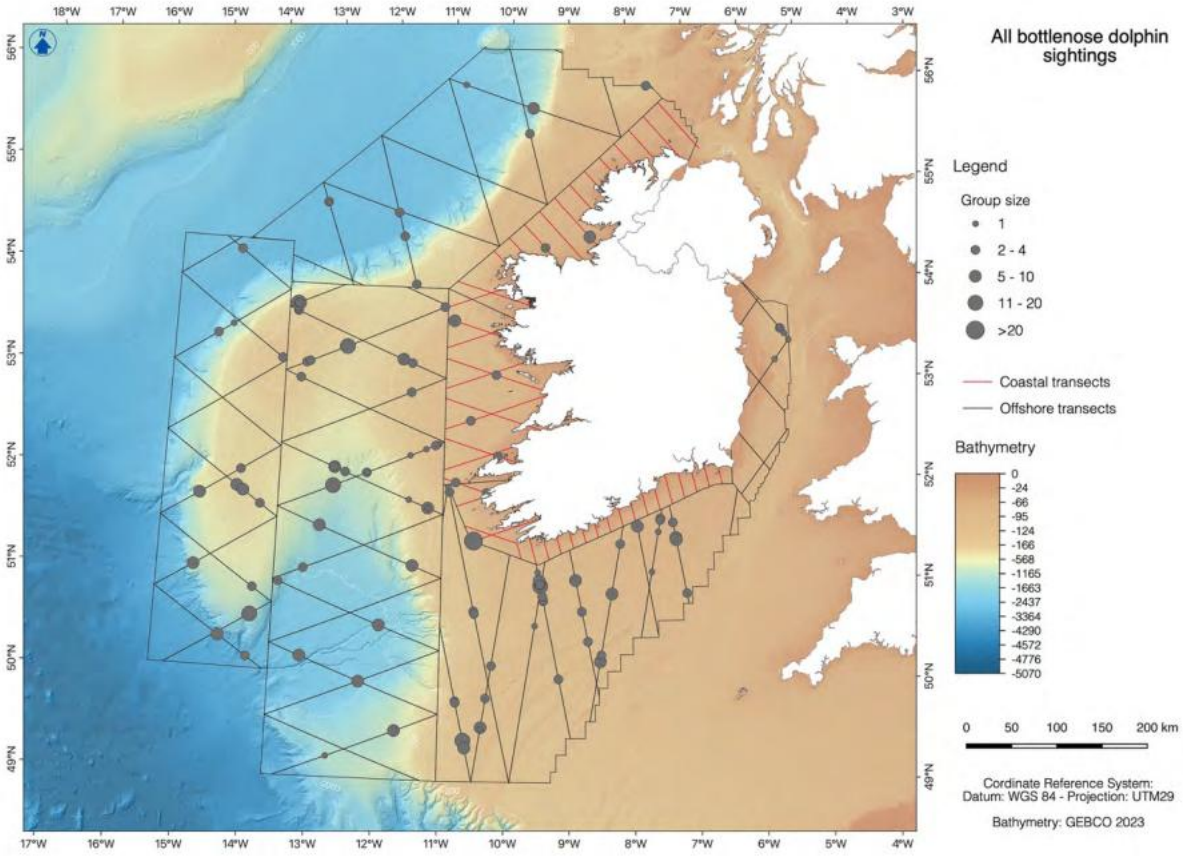

Figure 2.5 Sightings of Bottlenose Dolphin across all surveys. No surveys were carried out in winter 2021. Grey lines indicate the survey tracklines in the offshore strata and red lines indicate the tracklines in the coastal strata. Circles are proportional to the number of dolphins in each sighting (from Giralt Paradell *et al*., 2024)

2.3.3 COMMON DOLPHIN (*Delphinus delphis*)

Short-beaked common dolphin, although less frequent compared to other areas, were also observed off the east coast during summer ObSERVE surveys (model-based estimate of 0.411 dolphins per km^2; Figure 2.6) and winter 2022 (model-based estimate of 0.792 dolphins per km^2;Figure 2.7). Only one sighting of a White-Beaked Dolphin (*Lagenorhynchus albirostris*) was reported during the summer 2022 as well as sporadic sightings of Risso's Dolphin (*Grampus griseus*) were recorded during the same period; therefore, no abundance estimates were generated for these species. An unidentified dolphin was also recorded in stratum 5 during winter 2022 (Giralt Paradell *et al*., 2024).

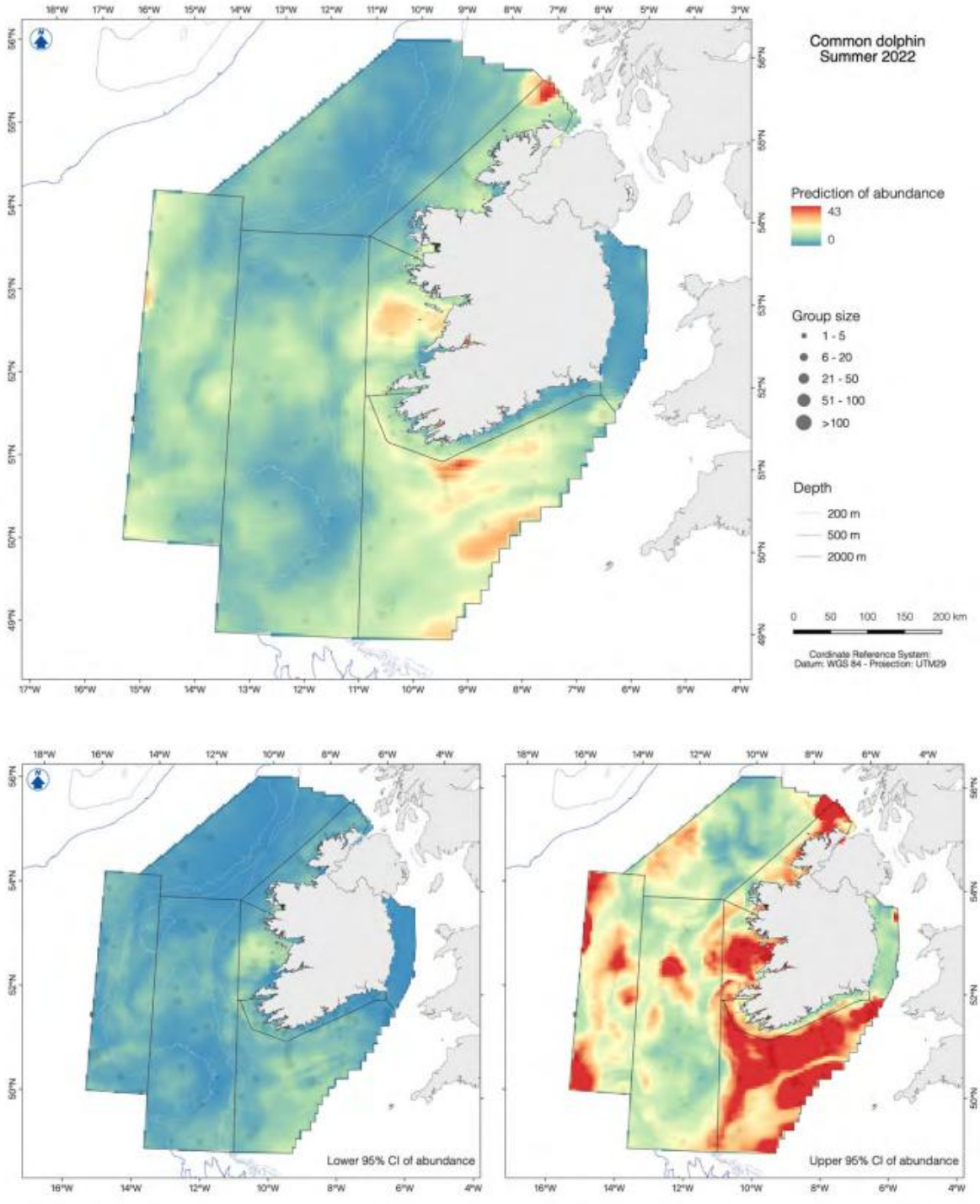

Figure 2.6 Predicted summer distribution of Common Dolphin in 2022 during Phase II of the ObSERVE Aerial Surveys (from Giralt Paradell et al., 2024)

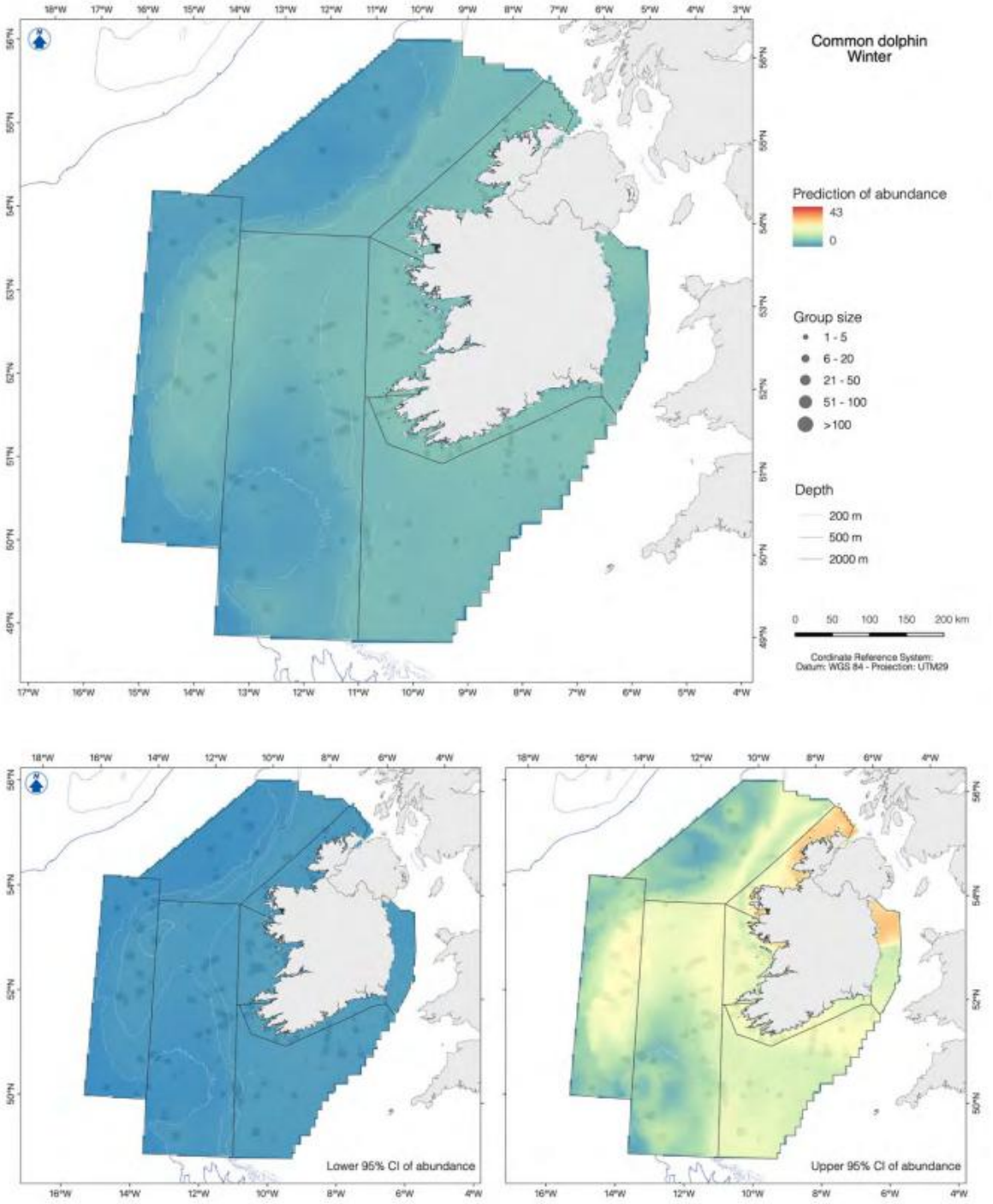

Figure 2.7 Predicted winter distribution of Common Dolphin in 2022 during Phase II of the ObSERVE Aerial Surveys (from Giralt Paradell et al., 2024)

2.4 SEMI-AQUATIC MAMMALS (OTTER)

Otters are listed under Annex IV of the EU Habitats Directive and are known to be widespread along the Irish coastline (Reid et al., 2013). A dedicated otter survey was carried out within a 300 m radius of the Carlisle Pier site in September 2022 as part of the RAAIVS for the Dún Laoghaire Maintenance of Moorings Project (RPS, 2022). The survey employed a combination of boat-based observation and

thermal imaging to access and assess harbour walls, platforms, jetties, and other typically inaccessible areas.

No otter holts, resting places, or other field signs (e.g. spraints, tracks) were recorded during the survey. Based on these findings, no evidence of otter activity was identified within the immediate harbour area. Nonetheless, it is considered likely that otters may use the wider Dún Laoghaire Harbour occasionally, consistent with their known distribution along the Irish coast.

No recent high-use foraging areas records within the MUL boundary are present in the NBDC database accessed on 25th March 2025 (Figure 2.8).

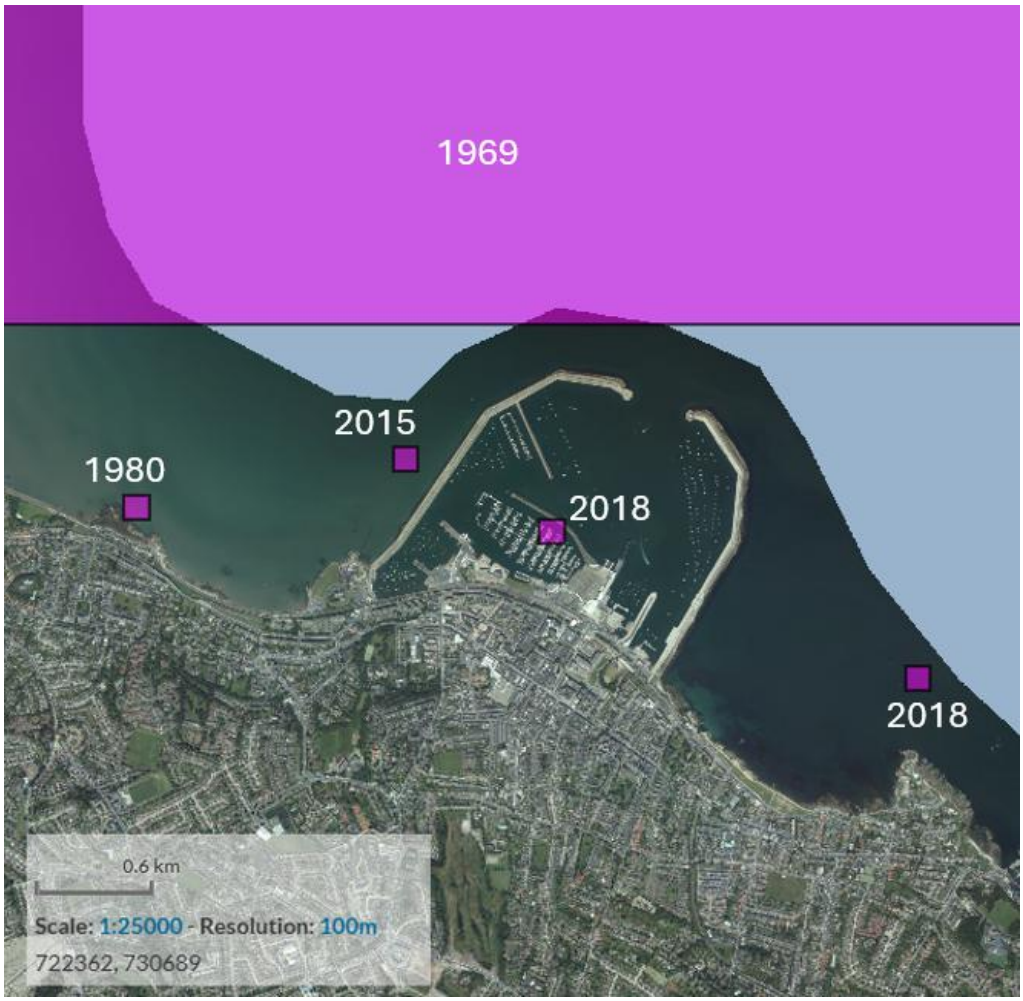

Figure 2.8 Otter records recorded in Dún Laoghaire Harbour and adjacent waters (NBDC, 2025)

2.5 MARINE REPTILES (TURTLES)

Five species of marine turtle have been recorded in Irish waters (King and Berrow 2009; Botterell et al. 2020): Leatherback (or Leathery) turtle (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), Kemps Ridley (*Lepidochelys kempii*), Hawksbill (*Eretmochelys imbricata*) and green turtle (*Chelonia mydas*). Of these, hawksbill and green turtles are extremely rare.

Records of hard-shell turtles stranded in the UK, including loggerhead turtles and Kemp's Ridley turtles, have increased over the past century, although a decline has been observed in recent years. Most of these strandings involved juvenile individuals and occurred during the boreal winter months, when sea surface temperatures are lowest in the North-east Atlantic. In contrast, leatherback turtles –

typically adult-sized – have been most frequently recorded in the boreal summer months, though a decline in annual records has been noted (Botterell et al. 2020).

All five species of marine turtles reported in Ireland are listed on Annex IV of the EU Habitats Directive.

Sightings of leatherback turtles have occasionally occurred in the waters off Dún Laoghaire Harbour, with King and Berrow (2009) documenting ten records prior to 1996. The most recent confirmed observation was reported on 5th December 2024 (NBDC, accessed on 25th March 2025,Figure 2.9). Other NBDC records of turtles in the area are over 20 years old with some dating back to the 1960s.

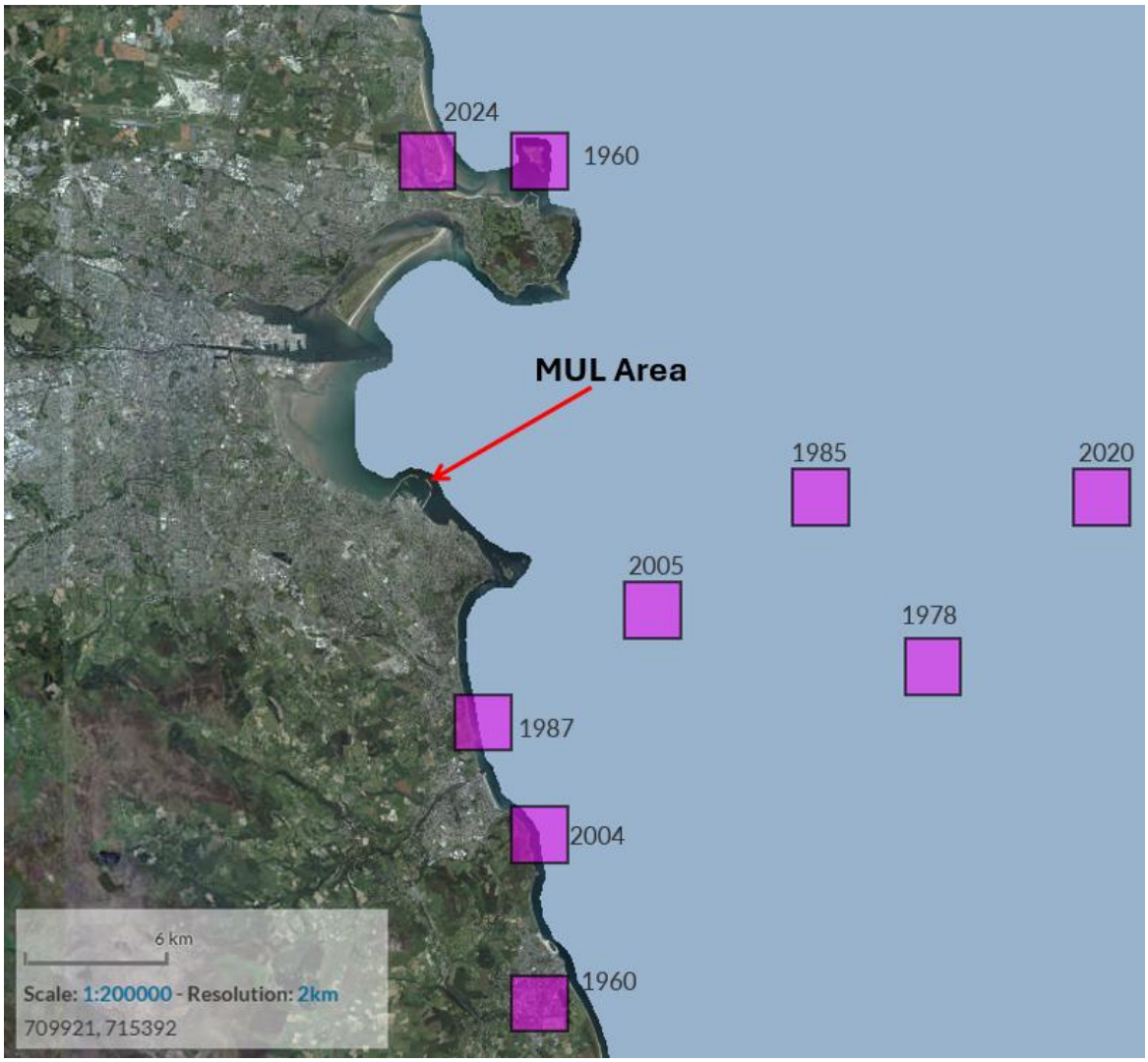

Figure 2.9 Map of leatherback turtle sighting records around Dún Laoghaire Harbour (and year of record) NBDC, accessed on 25th March 2025

Other marine turtle species, such as loggerhead and Kemp's Ridley turtles, are extremely rare in the vicinity of the MUL Area. While loggerhead turtles occasionally strand along the Irish coast, live sightings are uncommon, and no records exist within or near Dún Laoghaire Harbour on the NBDC database, accessed March 25th 2025. Similarly, Kemp's Ridley turtles have only been recorded off Co. Dublin on a single occasion in 1968, and are not considered likely to occur in the area (NBDC database, accessed March 25th 2025).

Therefore, relative to the scale and scope of the project and limited recordings of marine turtles in the proposed MUL Area, impacts on marine reptiles are considered highly unlikely, and are therefore scoped out from further assessment.

2.6 VOLANT MAMMALS (BATS)

There are no bat records within the spatial footprint of the MUL Area. The only bat species recorded in proximity to the proposed SI activities are Leisler's bat (*Nyctalus leisleri*) and the common pipistrelle (*Pipistrellus pipistrellus*) according to data supplied by the National Biodiversity Data Centre (accessed 25 March 2025); refer to Figure 2.10 and Figure 2.11, respectively.

Given the short duration of the proposed SI activities and the fact that they will take place entirely within an already busy and well-lit harbour environment, the vessel-based geophysical and geotechnical SI activities do not have the potential to impact bats, their habitats, or roost sites in any way. The temporary presence of one low-speed vessel is unlikely to alter existing conditions within the harbour, which is already subject to regular vessel traffic and artificial lighting. As such, no direct or indirect effects on bat species are anticipated from the proposed activities. Therefore, bats are scoped out from further assessment.

Figure 2.10 NBDC records of Leisler's Noctule (*Nyctalus leisleri*) within and surrounding Dún Laoghaire Harbour (NBDC, 2025)

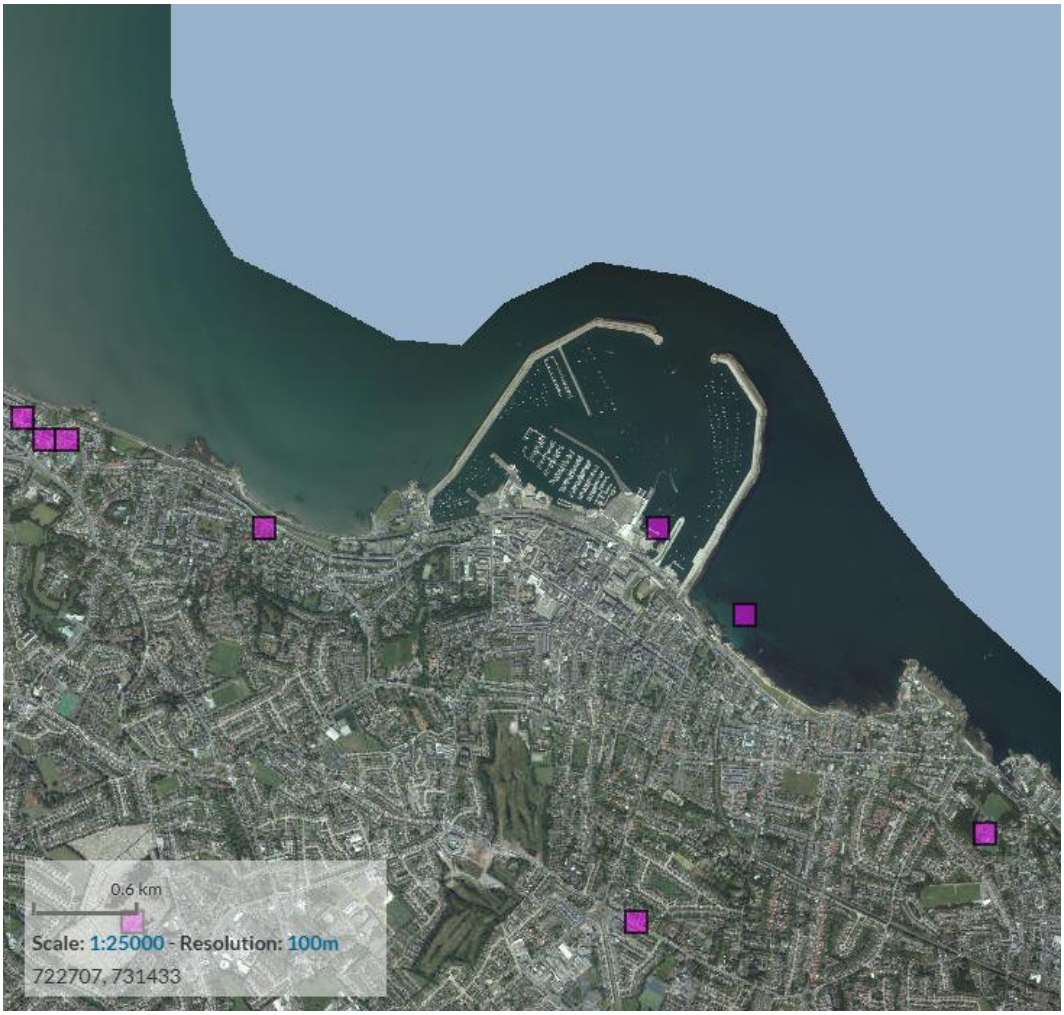

Figure 2.11 NBDC records of Common Pipistrelle (*Pipistrellus pipistrellus*) within and surrounding Dún Laoghaire Harbour (NBDC, 2025)

3 RISK ASSESSMENT

This section outlines the risk assessment undertaken for the proposed SI activities within Dún Laoghaire Harbour. The assessment considers the potential for significant effects on Annex IV species, arising from the geophysical and geotechnical survey methods proposed. The risk assessment evaluates the nature, scale, duration, and intensity of the activities, as well as the sensitivity of relevant ecological receptors, to determine whether any potential for significant effects exists and whether mitigation or management measures are required.

3.1 ELEMENTS SCOPED OUT

Vessel Collision Risk during SI Activities

The proposed SI activities within Dún Laoghaire Harbour are of short duration, expected to be completed within 2–3 weeks (weather permitting), and will involve a limited number of low-speed survey vessels operating intermittently. Activities include vibrocore sampling, grab sampling, dropframe camera deployment and side scan sonar (SSS) and magnetometer surveying.

Given the partially enclosed nature of the harbour, existing vessel traffic, and the low speeds typically associated with survey vessels, the risk of vessel collision with marine mammals is considered negligible. Survey vessels will adhere to standard navigation protocols and comply with embedded speed restrictions applicable within the confined waters of Dún Laoghaire Harbour, further reducing potential risk.

The temporary and low-intensity nature of the SI activities, combined with the ability of marine mammals to detect and avoid approaching vessels, supports the conclusion that the likelihood of vessel strikes is minimal. As such, this potential impact has been scoped out from further assessment.

Loss of Foraging Habitat and Prey Availability

The SI activities will involve small-scale sampling (up to 16 vibrocore and 30 grab sampling stations), along with remote sensing surveys using non-intrusive geophysical methods (dropframe camera, SSS and magnetometer). These works will result in only localised and temporary seabed disturbance, covering a very small footprint relative to the overall MUL Area. Given the low number of grab samples and vibrocores proposed, any potential disturbance to benthic habitats will be minimal and short-lived, and is not expected to be above background levels of disturbance experienced through natural (i.e. wave and tide events) and anthropogenic (i.e. vessel movements) disturbances.

Within Dún Laoghaire Harbour, benthic habitats are not considered important feeding grounds for cetaceans or otters, due to the busy and highly modified nature of the port environment. As such, any minor or temporary disturbance to prey species is not expected to significantly affect foraging opportunities for these species. Furthermore, marine mammals assessed in this context are generalist feeders and have access to more suitable and extensive foraging grounds outside the busy harbour environment.

No otter holts, resting places, or other field signs (e.g. spraints, tracks) were recorded during the previous site-specific survey. Based on these findings, no evidence of otter activity was identified within the immediate harbour area. Nonetheless, it is considered likely that otters may use the Dún Laoghaire Harbour and adjacent environments occasionally.

Given the lack of recorded activity (cetaceans and otters) within the MUL Area, the absence of suitable habitat for holts or regular resting, and the short-term, low-impact nature of the SI activities,

the potential impacts to foraging habitat and prey availability from the SI activities are considered negligible and have been scoped out from further assessment.

Sedimentation Disturbance (Direct and Indirect impacts)

The proposed SI activities involve low-intensity sampling (grab and vibrocore) and remote sensing techniques (dropframe camera, side scan sonar and magnetometer), which will not generate significant sediment resuspension. Any sediment disturbance will be highly localised (<6 m) and temporary (2-3 weeks), with no appreciable release of suspended sediments beyond the immediate sampling points. Given the limited scale, short duration, and enclosed nature of Dún Laoghaire Harbour, the potential for sedimentation-related impacts on water quality or ecological receptors is negligible. As such, sedimentation disturbance has been scoped out from further assessment.

Pollution Event (Direct and Indirect impacts)

All survey vessels engaged in the SI activities will be fully compliant with the International Convention for the Prevention of Pollution from Ships (MARPOL), and fully certified by the Maritime Safety Office (MSO). There will be no planned release of potentially harmful substances from the vessels. Strict maritime regulations, normal vessel operating standards, and operational precautions - compliant with all International Maritime Law and National Maritime Legislation - will ensure the risk of any release is low and no significant effects are predicted.

Given the short duration of the works, the limited number of vessels involved, and adherence to these environmental safeguards, it is considered unlikely that any pollution event, accidental or otherwise, would occur that could directly or indirectly affect the environment. This potential impact has therefore been scoped out from further assessment.

3.2 UNDERWATER NOISE RISK ASSESSMENT

In this section of the risk assessment, the potential risks to Annex IV species from noise emitted from the side scan sonar (SSS) and magnetometer is assessed. Underwater noise from the survey vessel engine(s) is not assessed.

Underwater sound can cause injury to the auditory system of marine mammals either following a brief exposure to extremely high sound levels or following more prolonged exposure to lower levels of continuous sound (Richardson *et al*., 1995).

The potential for auditory injury is related to the noise frequency relative to the hearing bandwidth of the marine mammal and is also influenced by the duration of exposure. The level of impact on an individual is a function of the Sound Exposure Level (SEL) that an individual receives as a result of underwater noise.

Table 3.1 details the various functional groups relative to hearing for the majority of cetaceans encountered in Irish waters. Note, Southall *et al*. (2019) does not provide Sound Pressure Levels (SPLs) for non-pulsed sounds therefore the non-pulsed threshold for cetaceans from Southall *et al*. (2007) has been used.

Table 3.1 Generalised marine mammal hearing groups and the zero-to-peak SPL and weighted SEL thresholds (Southall *et al.* 2019; 2007)

Hearing group & estimated auditory bandwidth (kHz)	Impulsive noise				Non-impulsive noise			
	Zero-to-peak SPL threshold (dB re 1 µPa^2)		Weighted cSEL threshold (dB re 1 µPa^{2}s)		Zero-to-peak SPL threshold (dB re 1 µPa^2)		Weighted cSEL threshold (dB re 1 µPa^{2}s)	
	PTS	TTS	PTS	TTS	PTS	TTS	PTS	TTS
LF cetaceans **0.007-35 kHz** (Minke whale)	219	213	183	168	219	213	199	179
HF cetaceans **0.15-160 kHz** (Bottlenose dolphin, Common dolphin & Risso's dolphin)	230	224	185	170	230	224	198	178
VHF cetaceans **0.275-180 kHz** (Harbour porpoise)	202	196	155	140	202	196	173	153
Phocid carnivores in water (PCW)* **0.05-86 kHz** (Grey seal & Harbour seal *Otter)	218	212	185	170	218	212	201	181
*The other carnivores hearing group includes otter species. The generalised hearing range of the other carnivores hearing group is similar to that of the phocid carnivores hearing group, but the thresholds for potential PTS and TTS impacts are higher (Southall *et al.,* 2019; NMFS, 2018, 2024). Therefore, potential impacts to other carnivores such as otters will be lower than those predicted for phocid carnivores.								

3.2.1 MORTALITY/INJURY DUE TO UNDERWATER NOISE FROM GEOPHYSICAL SI ACTIVITIES

Side Scan Sonar (SSS) and magnetometer will be used as part of the proposed SI activities within Dún Laoghaire Harbour (i.e. the MUL Area). The survey is anticipated to occur over a short duration of approximately 3–5 days, weather permitting. The harbour is a partially enclosed, high-traffic environment with water depths less than 10 m.

As the specific equipment models have yet to be finalised, frequency ranges and source levels for typical equipment have been assessed and are summarised in Table 3.2.

Table 3.2 Proposed geophysical equipment for the SI activities within the MUL Area

Equipment Type	Frequency Range	Maximum Source Pressure Level (dB re 1 µPa @ 1 m)	Source/Model
Side Scan Sonar (SSS)	300 to 900 kHz	210 – 228	Edgetech, 4205 sidescan
Magnetometer	No sound emitted	No sound emitted	Geometrics G-882

Magnetometers do not emit sound so are not considered further in this section.

SSS systems such as the Edgetech 4205 typically operate at high frequencies (300 kHz to 900 kHz), with source pressure levels ranging from 210 - 228 dB re 1 µPa @ 1 m (Table 3.2). These high-frequency signals attenuate rapidly in shallow coastal environments, particularly in confined areas such as Dún Laoghaire Harbour.

The potential for physical injury to marine mammals is considered negligible. Although some SSS systems may marginally exceed the 220 dB threshold for injury at 1 m, rapid attenuation, short operational ranges, and brief exposure durations substantially reduce the risk of permanent threshold shift (PTS).

Similarly, the potential for auditory injury (PTS) or temporary impairment (TTS) is negligible. The operating frequencies of SSS are well above the upper hearing limits of all relevant functional hearing groups - including high-frequency cetaceans (e.g. harbour porpoise) and otters. Therefore, the sound is unlikely to be audible to these species.

In terms of behavioural disturbance, the risk is considered low. The temporary and localised nature of the survey, coupled with existing background vessel noise in this busy port environment, is unlikely to elicit a behavioural response. Minor, short-term displacement may occur due to the presence of the vessel itself, further reducing the potential for exposure to noise.

Given the high frequency and low propagation range of SSS signals, the short duration of use, the confined harbour setting, and the shallow water environment (<10 m), the risk of noise-related impacts to marine mammals or otters from the use of SSS is considered negligible. As such, mitigation measures are not required, and the geophysical SI activities have been scoped out from further detailed assessment.

3.2.2 MORTALITY/INJURY DUE TO UNDERWATER NOISE FROM GEOTECHNICAL SI ACTIVITIES

Geotechnical survey activities (vibrocoring and grab sampling) may result in a localised increase in anthropogenic underwater noise, which has the potential to affect marine mammals. However, geotechnical survey activities are generally considered to pose a low risk of disturbance or injury to Annex IV species (JNCC, 2010).

The proposed geotechnical surveys will take place within the confines of Dún Laoghaire Harbour (i.e. within the MUL Area). The activities will involve a combination of vibrocore sampling and day grab sampling at a total of sixteen (16) locations.

Table 3.3 Geotechnical SI activities proposed within the MUL Area

Survey Type	Number of Locations	Frequency Range	Maximum Source Pressure Level (dB (rms) re 1 µPa @ 1 m)
Vibrocoring	16	50 Hz	188
Day Grabs	30	N/A	N/A
Source: Vibrocore from Chorney *et al*. (2011)			

Vibrocoring is considered a low-intensity source of underwater noise. The activity will be both short in duration and limited in spatial extent, with a maximum of 16 cores to be taken across the MUL Area. The noise produced may be within the audible range for some cetacean species and otters; however, the source level is relatively low (estimated at ~188 dB re 1 µPa @ 1 m), and sound propagation will be limited due to the partially enclosed nature of the harbour and existing ambient noise levels. Furthermore, the setup and operation of the vibrocoring equipment is expected to deter marine mammals and otters from the immediate vicinity (Chorney et al., 2011).

Grab sampling is a non-acoustic activity and does not produce underwater noise of concern.

Given the short duration, limited spatial footprint, and relatively low source levels of the geotechnical SI activities, no potential for lethal effects or auditory injury to marine mammals or otters is anticipated. Accordingly, no specific mitigation measures are required, and this potential impact is considered negligible.

3.2.3 CONCLUSION

In conclusion, the underwater noise generated by the proposed geophysical and geotechnical SI activities within Dún Laoghaire Harbour is predicted to be low in intensity, short in duration, and highly localised. The equipment types proposed - SSS, magnetometer, vibrocorer, and grab sampler - are not expected to exceed established thresholds for physical or auditory injury/impairment to marine mammals or otters. Additionally, the confined harbour setting, rapid attenuation of high-frequency signals, and limited spatial extent of the works further reduce the likelihood of exposure.

As a result, **no significant effects are predicted**, **no mitigation measures are required**, and **the risk of injury or behavioural disturbance to Annex IV species is considered negligible**.

3.3 PROTECTION/MANAGEMENT MEASURES

The Risk Assessment has found that the potential for the proposed activities to cause significant impacts to Annex IV listed cetaceans, otter and bat species are highly unlikely, therefore management measures are not required.

3.4 CUMULATIVE AND TRANSBOUNDARY EFFECTS

While a single development may not in itself cause a significant impact on the local ecosystem, a combination of projects within a localised area may cause a negative impact. Therefore, the cumulative impacts of a project or plan in association with other projects and plans must be taken into consideration when assessing the possible impacts of a development.

Transboundary effects refer to significant effects that a proposed development in one country may have on the environment of another. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, referred to as the 'Espoo Convention', adopted in 1991, establishes the requirement to consider transboundary impacts. The Espoo Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

The SISAA, which accompanies this MUL application (document reference number 24157-REP-003-01) has considered and assessed cumulative and transboundary effects that may occur as a result of the SI activities. Additional projects identified as having potential to act in-combination with the proposed SI activities are those most likely to contribute to, or generate, the same or similar pressures as those identified in this assessment.

The cumulative and transboundary assessment in Section 5.3 of the SISAA concluded that **no likely significant cumulative or transboundary effects** are anticipated from the proposed SI activities and other projects.

This RAAIVS has determined that no significant impacts (applicable to the relevant Annex IV species assessed in this risk assessment) are predicted to arise from the proposed SI activities. As a result, project-specific management or mitigation measures are not required. Accordingly, no likely significant cumulative or in-combination effects are anticipated during this campaign, and no transboundary effects are predicted.

3.5 RESIDUAL IMPACTS

No residual impacts are predicted for Annex IV cetaceans, otters and bat species from the proposed SI activities. The activities are of short duration (2–3 weeks), highly localised in nature, and involve low-intensity geophysical and geotechnical survey methods that are not expected to result in physical injury, auditory injury, or significant behavioural disturbance to protected species.

Survey vessels will operate at low speeds and within the confines of a busy, partially enclosed harbour under existing maritime regulations, including embedded speed restrictions. No sensitive habitats or features associated with foraging or breeding for these species are expected to be affected. The use of high-frequency equipment such as SSS is not anticipated to be audible to marine mammals and will attenuate rapidly in the water column.

Given the temporary nature of the works, the limited spatial extent, and the absence of identified significant effects, no residual impacts will persist following completion of the SI activities.

4 CONCLUSION

The relevant Annex IV species which could be present in the area and potentially affected by the proposed survey activities are cetaceans, otters and bat species.

As described in Section 3 of this risk assessment, the proposed SI activities are unlikely to have significant effects on cetaceans, otters and bat species within the MUL Area. Given the scale and nature of the proposed activities it can be concluded that the proposed SI activities will not result in the committing of any offence under Article 12 of the Habitats Directive towards any of the species listed in Annex IV of the Habitats Directive that have been considered in this report.

It is noted that formal determination of whether further assessment of Annex IV and Non-Annex IV species is required will be made by the Minister of the Department of Housing, Local Government and Heritage. The Minister's determination shall not be prejudiced by this report.

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