



**AQUAFACT**  
APEM Group

## **Galway Harbour Extension**

### **Marine Mammal Observer Report**

**Produced by**

**AQUAFACT – APEM Group**

**On behalf of**

**Galway Harbour Company**

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## 1. Introduction

### 1.1. Overview

This report forms part of a proposal for the extension of the Galway Harbour, the ‘Galway Harbour Extension’ (GHE) development (herein as ‘proposed development’) from the Galway Harbour Company. The GHE development was assessed under the Strategic Infrastructure Act (Strategic Infrastructural Development – SID), as An Bord Pleanála (ABP) determined that the proposed development is of “strategic economic importance to the state and west region” within the definition of Section 37A of the Planning and Development Act, 2000 (as amended). Any application for permission for the proposed development must be made directly to ABP under Section 37E of the Act.

The proposed development consists in a ten-year planning permission for the extension of Galway Harbour at Renmore, Townparks Townland, on lands to be reclaimed from the foreshore and the sea in Galway Bay located to the south of the existing Galway Harbour Enterprise Park. Some of the works also include some areas of the Galway Harbour Enterprise Park. Access to the proposed development will be via the existing access at the junction of Lough Atalia Road and Bóthar na Long. The construction works of the proposed project include:

- Quay walls, breakwaters and wave walls to create commercial quays and a deep-water docking facility, extending southwards into Galway Bay,
- Dredge works to create a new approach channel to the commercial quays and deep-water docking facility berths,
- Land reclamation of approximately 27 hectares from the foreshore and seabed and
- Construction of new oil and bitumen transfer pipelines, road improvements, rail link harbour related buildings and landscape areas.

### 1.2. Purpose of this report

This report has been to record the marine mammal activity in the vicinity of the proposed development.

## 2. Material and Methods

### 2.1. Data collection

The survey was carried out by a Marine Mammal Observer (MMO) for ten days between the 18<sup>th</sup> of January until the 28<sup>th</sup> of April of 2023 during daylight hours mainly from 09:00hr to 17:00. Nine land-based watches were carried out at the top wall at Nimmo's Pier and one boat-based watch was carried out in the vicinity of Galway Bay (**Figure 2-1**). Effort watches were stopped when weather conditions were deemed unfavourable, *i.e.*, sea state = choppy (many white caps) and/or swell = medium (2-4 m) and/or visibility = poor (less than 1km), however watches were carried out these conditions when the observer deemed it appropriate.

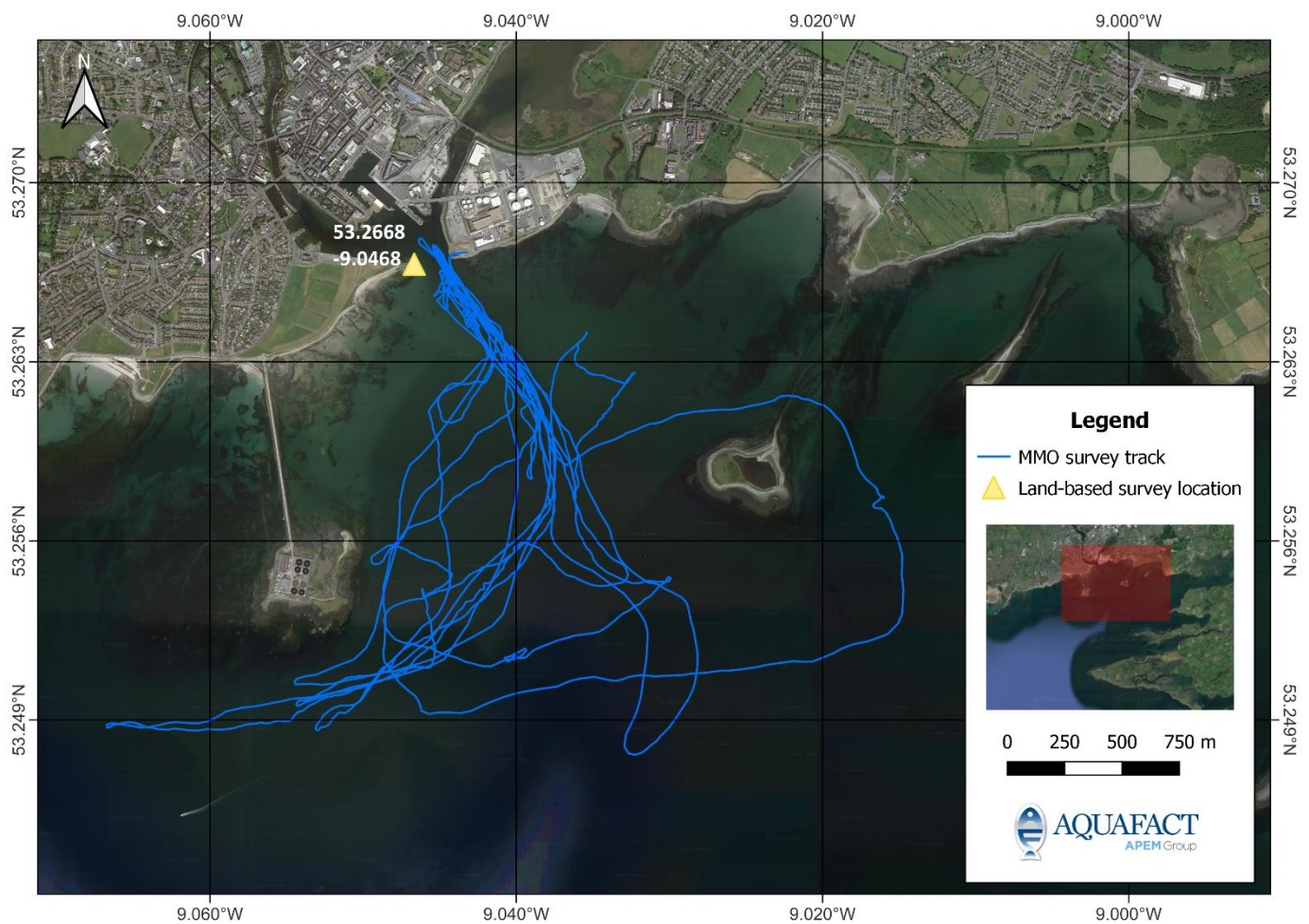


Figure 2-1: MMO land-based survey location and survey track (for boat-based survey) in Galway Bay.

Effort watches was focused on an arc of 180° and up to 1km distance in priority. Sightings outside of this distance are extremely hard to record. Effort watches were conducted with the naked eye and the help of a 10x50 binoculars from Oregon by Opticron BAK-4 fully multi-coated, to confirm species identification, group size and behaviour of the animals encountered. Initially, photographs of the sightings were going to be taken using a Canon 450D with a canon 55-100mm lens; however, due to a malfunctioning of the lens, a camera from an iPhone 10 was used to take photographs when possible. The only one effort watch where the camera was used was the boat-based survey (day 10) due to the proximity to the animals.

Species identification, group size, age composition, heading and behaviour of the animals were also recorded for each sighting. All sightings were identified to species level when possible. However, whether the identification could not be confirmed, appropriate taxonomic levels and associated confidence levels were assigned to the animals observed. All cetacean sightings that occurred off effort and were reported to the MMO were also recorded as auxiliary sightings in an independent form.

Environmental variables were also recorded every two hours approximately and/or when a weather variable changed. These variables included:

- Wind direction: in degrees.
- Wind force: in Beaufort scale.
- Sea state: g = glassy (like mirror), s = slight (no/few white caps), c = choppy (many white caps), r = rough (big waves, foam, spray).
- Swell: o = low (< 2m), m = medium (2-4 m), l = large (> 4m).
- Visibility: p = poor (< 1km), m = moderate (1-5 km), g = good (> 5km).
- Sun glare: n = none, wf = weak forward, sf = strong forward, vf = variable forward, wb = weak behind, sb = strong behind, vb = variable behind.
- Precipitation: n = none, l = light rain, m = moderate rain, h= heavy rain, s = snow.

The 'Marine Mammal recording form' for sightings include several parameters including:

- Date, time, position of the encounter,
- Species group and behaviour,
- Group size (number of adults, juveniles and calves),
- Bearing of the animal,
- Range to the animal, and
- Direction of travel.

All sightings and environmental data were recorded in paper form; however, it was not possible to record all data due to short duration of the sightings.

## 2.2. Data treatment

All watches and sightings data were recorded in an excel file. For the 21<sup>st</sup> of April of 2023, the survey track was recorded through a GPS device and mapped using QGIS Desktop (version 3.22.6). The location of the land-based effort watches was also mapped using QGIS Desktop (version 3.22.6). Due to the location of the survey, tidal cycle phases were also added to each sighting, with the four phases: high tide (H), ebb (E), low tide (L) and flood (F). For the high and low tides, the period of an hour before and after was also classified as H or L.

All photographs and videos of the sightings were organised by sighting no., (picture no. if more than one photograph of the same sighting was taken), date (ddmmyyyy) and species ID (if possible) (e.g., 7(6)\_21042023\_bnd).

### 3. Results

#### 3.1. Survey effort & weather conditions

A total of 68 hours and 5 minutes was recorded for the 10-day survey effort. The MMO started the effort watches in the winter month of January when the sunrise is recorded at 08:40 and the sunset at 16:53; however, two of the surveys had to be interrupted due to the weather conditions. The same scenario was seen in February until April where the weather conditions were milder and more suitable for visual watches. One of the watches was carried out on the AQUAFAC 1, a Rigid Inflatable Boat (RIB) with 6.8 meters of length, in the vicinity of the Galway Harbour, from Mutton Island to Hare Island, Co. Galway. All GPS positions were recorded through the Garmin GPS Positioning system. Summary of the surveys' details can be found in

**Table 3-1.**

**Table 3-1: Summary of the MMO survey watches (\* detailed track in Figure 2-1).**

Date	Time (start)	Time (end)	Duration	Location	Wind direction (°)	Wind force (Beaufort scale)	Sea state	Swell	Visibility	
18/01/2023	10:30	12:50	02:20	Nimmo's Pier	325	4	s	o	g	
	12:50	14:00	01:10		290	4	c	o	g	
24/01/2023	09:40	13:30	03:50		206	2	g	o	m	
	14:30	16:35	02:05		230	3	s	o	m	
26/01/2023	09:25	13:45	04:20		3	2	s	o	g	
	14:40	15:45	01:05		360	3	c	o	g	
07/02/2023	09:35	14:25	04:50		23	3	s	o	g	
	14:25	16:45	02:20		79	1	s	o	g	
23/02/2023	09:00	12:55	03:55		352	2	g	o	g	
	13:05	16:50	03:45		293	2	s	o	g	
24/02/2023	09:15	17:00	07:45		343	3	s	o	g	
14/04/2023	08:35	11:45	03:10		335	1	g	o	g	
	12:20	16:35	04:15		285	3	s	o	g	
17/04/2023	09:30	17:30	08:00		165	3	s	o	g	
21/04/2023	09:45	15:10	05:25		Galway Bay*	75	4	c	o	g
	15:10	17:00	01:50		43	4	c	o	g	
28/04/2023	08:40	10:00	01:20	Nimmo's Pier	242	3	s	o	m	
	10:00	16:40	06:40	279	2	g	o	g		
<b>Total</b>			68:05							

#### 3.2. Sightings

A total of 109 sightings were recorded during the 10-day survey (**Table 1-1 in Appendix 1**), with some species sighted in the same sighting and 5 additional sightings recorded outside of an effort watch on the 4<sup>th</sup> and 9<sup>th</sup> of May of 2023 (**Table 3-3**). A total of 4 different species were recorded in this survey which included two seal



species, one odontocete species and one aquatic mammal. Although, the otter (*Lutra lutra*) is not usually recorded in MMO surveys, otter sightings were also included in the sightings form due to the location of the MMO on the land-based surveys and the frequency of encounters. There was a considerable increase in the number of sightings from the end of month of February to April, except for one day in April (14<sup>th</sup> April 2023) (**Table 3-2**).

### 3.2.1. Land-based surveys

The two seal species encountered were the harbour seal (*Phoca vitulina*) and the grey seal (*Halichoerus grypus*) (**Table 3-2**). The harbour seal was the most sighted species with a total of 38 sightings (corresponding to 33% of the total of sightings), while the grey seal was recorded in a total of 9 sightings (8% of the total sightings) (**Figure 3-1**). At least one odontocete species was encountered during the effort watches, the bottlenose dolphin (*Tursiops truncatus*) with a total of 22 sightings (19% of the total of sightings) (**Table 3-2**). A large portion of the sightings were unidentified dolphin and seal species with 13% and 15% of the total of sightings, respectively. There were 14 sightings of otter which corresponded to 12% of the total of sightings (**Figure 3-1**). Otter and the harbour seals were also the most frequent sighted species during the survey, with sightings in 7 days of the survey (70% of the sightings) (**Table 3-2**). All sightings can be found in **Appendix 1**.

There were 5 different behaviours recorded during the survey which included 'feeding', 'foraging', 'playing', 'resting (bottling)' and 'travelling'. The 'travelling' behaviour was divided into two subsections ('travelling/foraging' and 'travelling/resting("bottling")') since this behaviour is normally accompanied with other behaviours in longer sightings. The 'resting("bottling")' (and 'travelling/resting("bottling")') behaviours are specific to the seal species which is displayed when a seal is resting vertically with only the head outside the surface of the water, and the nose pointing at the sky. 'Travelling' was the most sighted behaviour during the survey which accounted for 45 sightings (40.2% of the total of sightings). This behaviour was the most recorded behaviour for the grey seal, otter, unidentified dolphin species and unidentified seal species. A large portion of the behaviour recorded was 'foraging' and 'resting("bottling")' which was present in a total of 23 and 19 sightings (20.5% and 17%), respectively. For the harbour seal, the most sighted behaviours were 'resting("bottling")' and 'travelling', recorded in 15 and 14 of the harbour seal's sightings, respectively (**Table 1-1 in Appendix 1**). For bottlenose dolphins, 'foraging' was recorded in 17 sightings which corresponded to 77.3% of the total of sightings for this species (**Table 1-1 in Appendix 1**). Note that, there were 6 sightings which recorded two different species in the same sighting. From these sightings, 3 recorded the same behaviour displayed by the two species (**Table 1-1 in Appendix 1**).

During the survey, 48,6% of sightings were recorded during flood tidal phase which corresponded to 53 sightings, 22.0% and 22.9% of sightings occurred during ebb and high tidal phases, respectively. There was only



one sighting of a bottlenose dolphin which was recorded during two tidal phases, which corresponded to the longest sighting in the survey with a total of 3 hours and 52 minutes (**Table 1-1** in **Appendix 1**).

There 5 sightings recorded outside of the effort watches which recorded (possibly) two odontocete species and two seal species (**Table 3-3**). On the 9<sup>th</sup> of May 2023, the striped dolphins were seen chasing multiple birds at the entrance of the harbour.

**Table 3-2: Total number of sightings per marine mammal species recorded during the 10-day survey and the additional off-effort day (marked with \*).**

Date	Species						Total
	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	Grey seal ( <i>Halichoerus grypus</i> )	Harbour seal ( <i>Phoca vitulina</i> )	Otter ( <i>Lutra lutra</i> )	Unidentified dolphin species	Unidentified seal species	
18/01/2023	-	-	-	2	-	-	2
24/01/2023	-	1	1	-	-	1	3
26/01/2023	-	-	-	4	-	1	5
07/02/2023	1	-	1	1	-	-	3
23/02/2023	-	4	4	2	-	4	14
24/02/2023	-	2	14	1	-	4	21
14/04/2023	3	-	-	1	3	-	7
17/04/2023	9	-	6	3	4	2	24
21/04/2023	6	-	1	-	1	2	12
28/04/2023	3	2	11	-	7	3	26
<b>Total</b>	<b>22</b>	<b>9</b>	<b>38</b>	<b>14</b>	<b>15</b>	<b>17</b>	

**Table 3-3: Off-effort sightings recorded on the 4<sup>th</sup> of May 2023 in the vicinity of the Galway Harbour.**

Date	Time (Start)	Time (end)	Species	Group size	Location (approx.)
04/05/2023	10:00	13:00	Unidentified dolphin species	1	Navigational channel
			Unidentified dolphin species	2	off Nimmo's Pier
			Harbour seal ( <i>Phoca vitulina</i> )	1	-
			Grey seal ( <i>Halichoerus grypus</i> )	1	-
09/05/2023	Around 16:30		Striped dolphin ( <i>Stenella coeruleoalba</i> )	3	off Nimmo's Pier

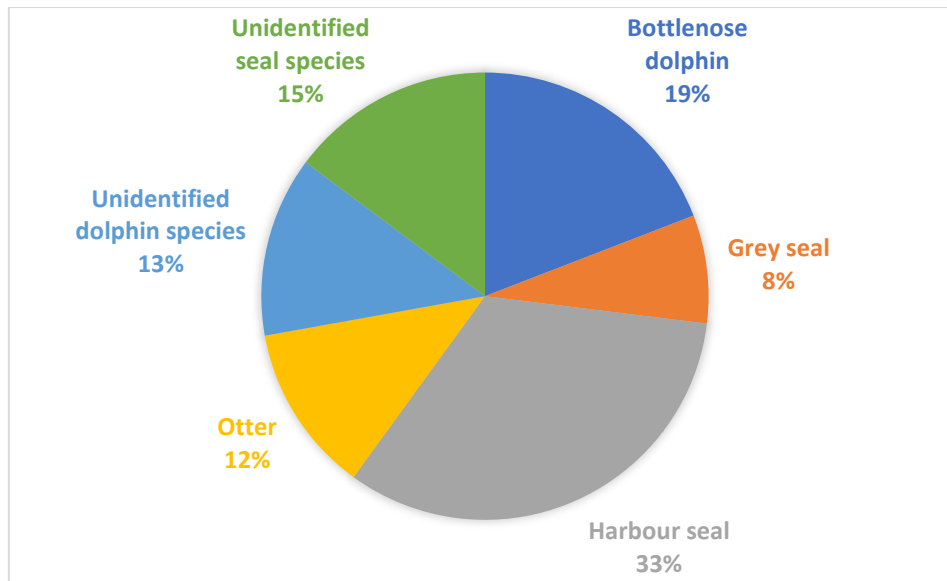


Figure 3-1: Diagram with the percentage (%) of species per total of sightings.

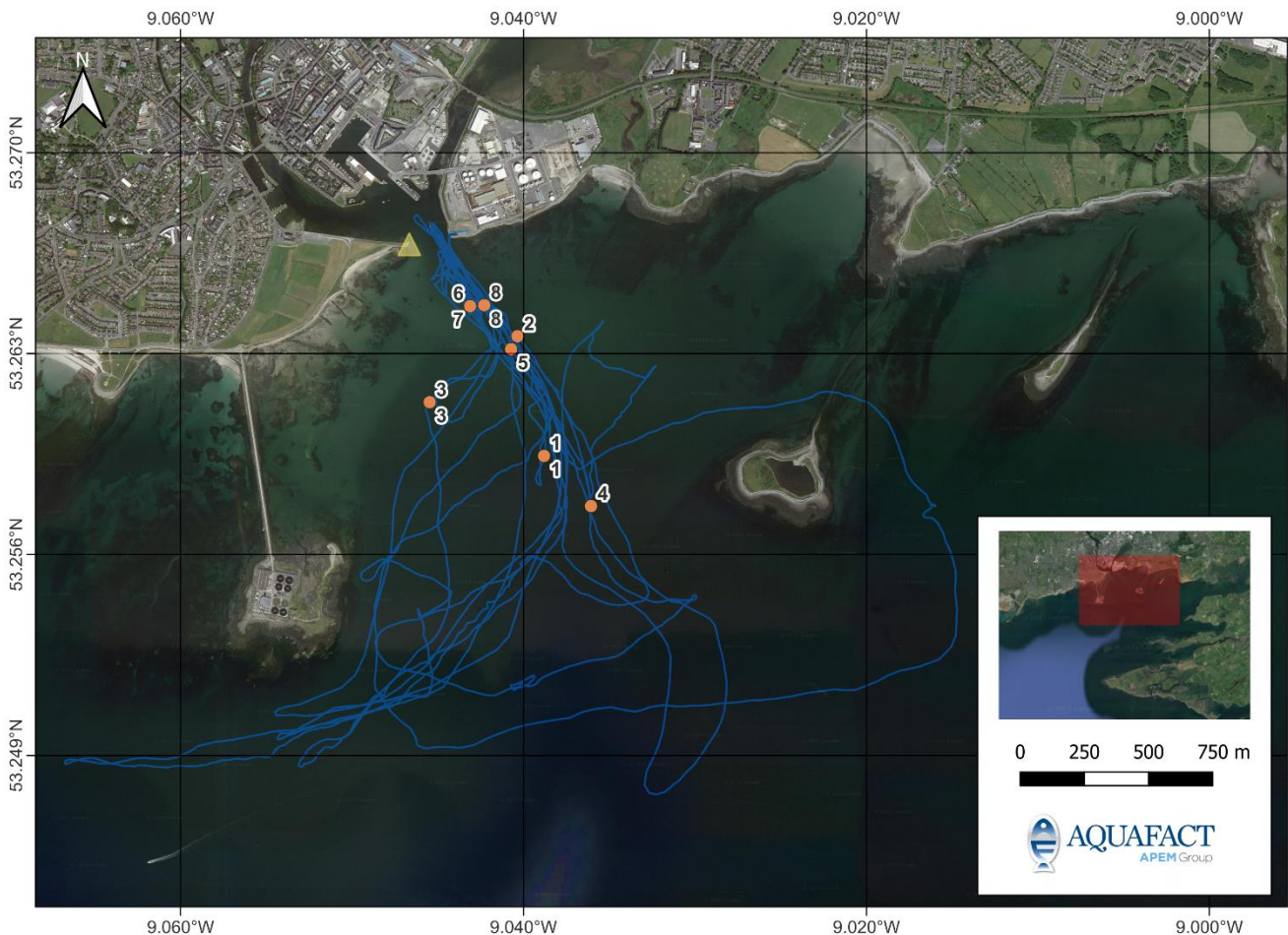
### 3.2.2. Boat-based survey – day 9 (21 April 2023)

For the boat-based survey, 8 sightings were recorded in a total of 7 hours and 45 minutes of survey watch. Similarly, to the land-based surveys, the most frequent behaviour was ‘foraging’ which was recorded in half of the sightings in the boat-based survey (Table 3-4). Due to the location of the Galway Harbour, weather conditions became more adverse (with bigger swells and stronger winds) past Mutton Island and Hare Island. In case of a sighting, the best practices were put in place by positioning the RIB as parallel as possible to the individual(s) and a maximum period of 15 minutes to avoid any type of disturbance.

Table 3-4: Sighting records from the boat-based survey in the vicinity of the Galway Harbour.

Sighting	Time (start)	Time (end)	Latitude	Longitude	Species	Group size	Behaviour	Tide
1	11:07	11:12	53.25944	-9.0388	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	4	Foraging	E
2	12:29	12:29	53.26361	-9.04035	Unidentified seal species	1	Resting ("bottling")	L
3	13:05	13:11	53.26131	-9.04547	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Travelling	L
4	14:13	14:30	53.25769	-9.03606	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Travelling	F
5	14:57	15:01	53.26316	-9.04072	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	2	Foraging	F
					Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	
6	15:12	15:47	53.26466	-9.04311	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Foraging	F
7	15:39	15:39	53.26466	-9.04311	Unidentified seal species	1	Resting ("bottling")	F
8	16:31	16:49	53.26469	-9.04229	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	F
					Unidentified dolphin species	1		

From 8 sightings, 7 occurred in the navigational channel in Galway Bay (87.5% of the sightings) (**Figure 3-2**), which 4 of those recorded a foraging behaviour (**Table 3-4**). The most recorded species was the bottlenose dolphin with 4 sightings and a group size between 2 and 3 individuals (**Table 3-4**). Most sightings were recorded during flood tidal phase which corresponded to 63% of the total of sightings during the boat-based survey. Two sightings recorded during the low tidal phase and one occurred during the ebb tidal phase (**Table 3-4**).



**Figure 3-2: Location of sightings during the boat-based survey in the vicinity of the Galway Harbour.**

## 4. Conclusion

This survey was undertaken to monitor the marine mammal activity in the vicinity of the proposed development in Galway Bay. The monitoring plan was successful with the exception of two days in January, when the effort watch had to be interrupted due to the worsening of weather conditions.

During the 10-day survey, a total of 68 hours and 5 minutes were recorded, and 4 different species were sighted. All cetaceans and seal species are strictly protected under Annex IV and Annex II, V of the Habitats Directive, respectively, and the otter is listed under Annex II and IV of the Habitats Directive.

From the sighted species, the harbour seal and the otter are listed as qualifying interests for the Galway Bay Complex SAC. Harbour seals were the most sighted species during the survey, which is in accordance with the sighting records on the National Biodiversity Data Centre (NBDC) map viewer<sup>1</sup> with 18 sightings around the Galway Harbour. Furthermore, Morris and Duck (2019) carried out thermal-imaging surveys along the coastline of Ireland in August 2017 and August 2018, which calculated a total of 570 of harbour seals from the area of Carraroe to the Burren area in Co. Clare. Other studies carried out in the same area in 2003 (Cronin *et al.* 2004; 2007) and in 2011/2012 (Duck & Morris, 2012; 2013) recorded a total of 393 and 501 counts, respectively. Otters were the second most recorded species during the survey, which is also in accordance with the NBDC map viewer data records. This species tends to forage and feed within 80m to 100m of the coastline (Kruuk & Moorhouse, 1991; De Jongh & O'Neill, 2010) and can travel distances up to 500m across estuaries or between the mainland and an island, therefore it is important that such commuting routes are not obstructed (De Jongh & O'Neill, 2010).

Other common species that have been recorded in the vicinity of Galway Harbour include the bottlenose dolphin, which has the highest number of sightings in the NBDC map viewer from all the species recorded in this survey, and the grey seal with 8 sightings recorded in the NBDC map viewer. Morris and Duck (2019) also calculated a total of 32 grey seals, while Cronin *et al.* (2004b; 2007) and Duck & Morris (2012; 2013) recorded a total of 7 and 11 grey seals, respectively.

On the other hand, the NBDC map viewer only has stranding records of the striped dolphin in the vicinity of Galway Bay. This species has been recorded on the slopes of the Porcupine Bank in the summer months (Wall *et al.*, 2013).

Although survey effort was not concentrated equally throughout the months of January and April, the information gathered in this report was in accordance with previous literature and should be considered as a baseline. The finding that otter and common seal were the commonest recorded aquatic mammals in the area

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<sup>1</sup> [Home - Biodiversity Maps \(biodiversityireland.ie\)](https://biodiversityireland.ie)

is the same as for previous surveys in the area. Additionally, as for previous studies, grey seals and bottle nose dolphins consistently occur in low numbers in the same area.

This report can also confirm the presence of species (the striped dolphin) that have not been previously recorded in this area.

## 5. References

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## Marine Mammals Desk Study

## **Harbour Seal (*Phoca vitulina*)**

### Desk Study

Harbour seal (*Phoca vitulina*) was previously identified in the original NIS and subsequent Addendum/Errata documents as a Qualifying Interest of Galway Bay Complex SAC (formerly cSAC). A marine mammal risk assessment was carried out by Kelp Marine Research Ltd. The risk assessment concluded the following in relation to harbour seal:

*'Potentially strong variation in diving behaviour, habitat use, ranging patterns, diet and foraging strategies between age- and sex classes exists, and may render certain individuals more sensitive to disturbance, or to changes in their habitat. In addition, these differences between age- and sex-classes generally vary between areas, for example depending on prey availability or habitat-type. Most studies show large individual variation, which reduces the extent to which individual behaviour can be used to predict population level effects. With the exception of mothers with nursing calves, it is therefore not possible to conclude which part of the population in the Galway Bay cSAC may be more or less vulnerable to the proposed construction activities. Nursing calves may accompany their mothers on foraging trips and are often nursed in the water. Ranging patterns during pupping, and of nursing mothers and calves, are more limited than those of the other life stages in the population, restricted to the areas more proximate to haulouts. This spatial restriction will render them more vulnerable to disturbance from the marine construction activities associated to the Galway Harbour Extension. Information on the aquatic habitat use of harbour seals in Ireland remains limited. However, the proximity to harbour seal haul-outs, the presence of water depths preferred for foraging (10 – 100 m), and of suitable habitat types and prey species in the area, in combination with observations of foraging harbour seals, suggest that the area can be used for foraging. In addition, it is furthermore likely that areas in proximity to the haul-outs are used for mating, nursing and during breeding, or as a travelling corridor by individuals in the Galway Bay cSAC.'*

To provide further background to the assessment conducted by Kelp Marine Research Ltd. The National Biodiversity Data Centre and National Parks and Wildlife records were incorporated into this assessment.

The National Biodiversity Data Centre (NBDC) map viewer<sup>2</sup> was consulted on the 27/06/2024 to check if there were any recent records of harbour seal sightings in the vicinity of the Proposed Development area within the last 5 years. Table 1 details all records of the species in the last 5 years.

**Table 1- NBDC records of Harbour seal *Phoca vitulina* in the vicinity of the Proposed Development area within the last 5 years.**

<sup>2</sup> National Biodiversity Data Centre- Map Viewer <https://maps.biodiversityireland.ie/Map> Accessed on 28/06/2024

Type of Sighting	Number of Individuals	Date	Location
Live sighting	1	11/03/2020	Lough Atalia
Live sighting	1	23/01/2019	Lough Atalia
Live sighting	1	01/02/2020	Lough Atalia
n/a	n/a	19/05/2020	Nimmo's Pier
Live sighting	1	21/10/2019	Claddagh

Additionally, the Aerial Thermal-Imaging Survey of Seals in Ireland 2017/2018<sup>3</sup> was reviewed to inform this assessment. The report detailed that a total of 4,007 harbour seals were counted during this survey, with harbour seals status relatively stable in Ireland. Numbers of harbour seals recorded were greatest in the west of Ireland with counts higher in the 2017/2018 survey than previously recorded in the 2011/2012, and 2003 surveys. The report noted 421 individuals present within Galway Bay Complex SAC in 2017/2018.

### **Grey Seal *Halichoerus grypus***

#### Desk Study

Grey seal *Halichoerus grypus* were previously identified in the original NIS and subsequent Addendum/Errata documents as a Qualifying Interest of Galway Bay Complex SAC (formerly cSAC). A marine mammal risk assessment was carried out by Kelp Marine Research Ltd. The following details are key points noted in relation to grey seal:

*'Grey seals occur infrequently in the area (O'Brien 2009). Grey seals generally conduct large offshore movements and individuals tagged on the Blasket Islands, Co. Kerry, did not utilize the inner Galway Bay, despite individuals travelling multiple times up and down the west coast passing Galway Bay (Jessops et al. 2013). Hence, it is therefore unlikely the developed area comprises important habitat for the species.*

*Since very low numbers of grey seals are sighted in the proposed area, disturbance due to the construction activities is unlikely to impact a specific section of the population.*

*In two consecutive monitoring periods, only 8 grey seals were recorded in the vicinity of Galway harbour (Duck & Morris 2013a,b). Since the monitoring study was not focussing specifically on grey seals, this can be an underestimation. However, considering this low density, it is unlikely that a substantial number of individuals will be affected by the procedures.*

*Since grey seals only occasionally occur in the Galway Bay cSAC, secondary impact due to displacement or removal of prey species is unlikely to have an effect.*

*Grey seals rarely occur in the vicinity of the harbour and therefore the likelihood for this species to be injured by collision is considered small.'*

<sup>3</sup> C.D. Morris & C.D. Duck (2019) Aerial thermal-imaging survey of seals in Ireland, 2017 to 2018. Irish Wildlife Manuals, No. 111 National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland

To provide further background to the assessment conducted by Kelp Marine Research Ltd. The National Biodiversity Data Centre and National Parks and Wildlife records were incorporated into this assessment.

The National Biodiversity Data Centre (NBDC) map viewer<sup>4</sup> was consulted on the 28/06/2024 to check if there were any recent records of grey seal sightings in the vicinity of the Proposed Development area within the last 5 years. Table 2 details all records of the species in the last 5 years.

**Table 5- NBDC records of Grey seal *Halichoerus grypus* in the vicinity of the Proposed Development area within the last 5 years.**

Type of Sighting	Number of Individuals	Date	Location
Live sighting	1	01/11/2019	Off Nimmo's pier
Live sighting	1	01/10/2019	Galway
Live sighting	1	21/10/2019	Galway
Live sighting	1	21/10/2019	Claddagh

Additionally, the Aerial Thermal-Imaging Survey of Seals in Ireland 2017/2018<sup>5</sup> was reviewed to inform this assessment. The report detailed a total of 3,698 Grey Seals were counted in 2017/2018 compared with 2,964 counted in 2011/2012 and 1,309 counted in 2003, with large groups of Grey Seals were generally located on more exposed shorelines, rocky skerries and offshore islands. The report also noted that the numbers of grey seal are increasing at a significantly higher rate than that of harbour seal, with estimations that there are 2.5 to 3.5 times more grey seals than harbour seals in Ireland.

### ***Bottlenose Dolphin *Tursiops truncatus****

#### Desk Study

A number of Special Areas of Conservation (SAC) list Bottlenose dolphin *Tursiops truncatus* as a Qualifying Interest, with the QI a new addition to Duvillaun Islands SAC 000496, West Connacht Coast SAC 002998, and Slyne Head Islands SAC 000328 (since the original NIS submission & subsequent Addendum/Errata documents).

A marine mammal risk assessment was carried out by Kelp Marine Research Ltd. The following details are key points noted from the summary of the report in relation to bottlenose dolphin:

*'Marine mammals either are unlikely to be affected at a population level (grey seal, minke whale, common dolphin, bottlenose dolphin), or are likely to recover from any impacts of the construction activities (harbour seal, harbour porpoise). Here, the probability and speed of recovery will depend on the relative importance of the area for the species, behavioural characteristics and area quality post-construction. Proposed mitigation*

<sup>4</sup> National Biodiversity Data Centre- Map Viewer <https://maps.biodiversityireland.ie/Map> Accessed on 28/06/2024

<sup>5</sup> C.D. Morris & C.D. Duck (2019) Aerial thermal-imaging survey of seals in Ireland, 2017 to 2018. Irish Wildlife Manuals, No. 111 National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland

*measures are likely to minimise strong and direct effects in close proximity to the construction activities for all marine mammals.'*

To provide further background to the assessment conducted by Kelp Marine Research Ltd. The National Biodiversity Data Centre and National Parks and Wildlife records were incorporated into this assessment.

The National Biodiversity Data Centre (NBDC) map viewer<sup>6</sup> was consulted on the 28/06/2024 to check if there were any recent records of bottlenose dolphin sightings in the vicinity of the Proposed Development area within the last 5 years. Table 3 details all records of the species in the last 5 years.

**Table 3- NBDC records of Bottlenose dolphin *Tursiops truncatus* in the vicinity of the Proposed Development area within the last 5 years.**

Type of Sighting	Number of Individuals	Date	Location
Live sighting	1	01/03/2019	Nimmo's Pier Galway Docks
Live sighting	1	30/05/2020	Galway City
Live sighting	1	19/05/2020	Nimmo's Pier
Live sighting	1	29/06/2020	Nimmo's Pier Galway Docks
Live sighting	1	23/07/2020	Nimmo's Pier Galway Docks
Live sighting	1	13/03/2020	Nimmo's Pier Galway Docks
Live sighting	1	20/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	22/04/2020	Nimmo's Pier Galway Docks
Live sighting	1	16/04/2020	Nimmo's Pier Galway Docks
Live sighting	1	25/03/2019	Nimmo's Pier Galway Docks
Live sighting	1	11/06/2020	Nimmo's Pier Galway Docks
Live sighting	1	24/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	30/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	29/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	28/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	05/04/2019	Nimmo's Pier Galway Docks

<sup>6</sup> National Biodiversity Data Centre- Map Viewer <https://maps.biodiversityireland.ie/Map> Accessed on 28/06/2024

Live sighting	1	18/03/2019	Nimmo's Pier Galway Docks
Live sighting	1	06/07/2020	Nimmo's Pier Galway Docks
Live sighting	1	17/03/2019	Nimmo's Pier Galway Docks
Live sighting	1	27/05/2020	Nimmo's Pier Galway Docks
Live sighting	1	13/07/2020	Nimmo's Pier Galway Docks
Live sighting	1	25/06/2020	Hare Island Galway Harbour - Co. Galway

Additionally, the Abundance, distribution and habitat use of Bottlenose dolphins in the west and north-west of Ireland<sup>7</sup> was reviewed to inform this assessment. During surveys in 2013, eight bottlenose dolphin schools were encountered in Connemara while in 2014, six dolphin schools were encountered in Connemara. The study showed that dolphins in Ireland have a degree of site-fidelity in the west and north-west and the species are wide-ranging along the coast.

### ***Harbour Porpoise *Phocoena phocoena****

#### Desk Study

A number of Special Areas of Conservation (SAC) list Harbour porpoise *Phocoena phocoena* as a Qualifying Interest, with the QI a new addition to Duvillaun Islands SAC 000496, West Connacht Coast SAC 002998, and Slyne Head Islands SAC 000328 (since the original NIS submission & subsequent Addendum/Errata documents).

A marine mammal risk assessment was carried out by Kelp Marine Research Ltd. The following details are key points noted from the report in relation to harbour porpoise :

*'Shipping noise was modelled to have little impact on the population level of harbour porpoise in Danish waters (Nabe-Nielsen et al. 2014). Using a precautionary approach, it should be considered likely that dredging for the Galway Harbour Extension project may result in behavioural disturbance (e.g. temporal area avoidance) of bottlenose dolphins, common dolphins and harbour porpoises present in the area during these activities.*

*Overall, pile driving can be considered to trigger strong short-term (avoidance) responses, which may change behaviour for multiple hours after sound exposure. Driving of multiple piles could therefore result in a carry-over effect, and deter harbour porpoises for longer periods of time, resulting in temporal loss of habitat during the period of construction. Close proximity to the pile driving activities could result in injury (TTS or PTS), but this risk is likely reduced by the tendency of harbour porpoises to avoid the area with pile driving activities.*

<sup>7</sup> Nykanen, Ingram, and Rogan (2015) Abundance, distribution and habitat use of Bottlenose dolphins in the west and north-west of Ireland, Final Report to the National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

*Mitigation actions, including 30 min pre construction watches and soft-start protocols will effectively reduce the likelihood of direct impact on harbour porpoise, but behavioural changes remain likely to occur.*

*Very little conclusive information is available on the response of harbour porpoises to boat noise. The fact that harbour porpoises can currently be found in the Galway Bay cSAC suggests that current sound levels can be tolerated.*

*Similar to the harbour seal, the impact of acoustic disturbance on harbour porpoise foraging success will therefore largely depend upon the relative abundance of different prey species, accessibility/proximity of alternative foraging locations, and preferred diet in the Galway Bay cSAC.*

*Harbour porpoises are currently the most frequently recorded cetacean species in the Galway Bay cSAC (O'Brien 2009). Given the general lack of knowledge on the fine-scale habitat use including foraging and mating/breeding areas, currently insufficient information exists to conclude whether construction activities would result in displacement from key functional areas.*

*Galway Bay is currently an urbanised but relatively undisturbed marine area, and harbour porpoise sightings are common. The probability and speed of recovery after the construction period will therefore depend on the relationship between the relative importance of the area for harbour porpoises and area quality postconstruction.'*

To provide further background to the assessment conducted by Kelp Marine Research Ltd. The National Biodiversity Data Centre and National Parks and Wildlife records were incorporated into this assessment.

The National Biodiversity Data Centre (NBDC) map viewer<sup>8</sup> was consulted on the 28/06/2024 to check if there were any recent records of harbour porpoise sightings in the vicinity of the Proposed Development area within the last 5 years. There were no records of harbour porpoise on the National Biodiversity Data Centre map viewer from within the last 5 years.

Additionally, the Density estimates of harbour porpoises *Phocoena phocoena* at eight coastal sites in Ireland<sup>9</sup> was reviewed to inform this assessment. The report detailed that six surveys were carried out in Galway Bay, with 62 sightings of a total of 134 individuals. Harbour porpoises were present throughout the study area of Galway Bay with concentrations off Black Head Co. Clare and towards the middle of the bay.

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<sup>8</sup> National Biodiversity Data Centre- Map Viewer <https://maps.biodiversityireland.ie/Map> Accessed on 28/06/2024

<sup>9</sup> Berrow, S., Hickey, R., O'Connor, I. And McGrath, D. 2014 Density estimates of harbour porpoises *Phocoena phocoena* at eight coastal sites in Ireland. Biology and Environment: Proceedings of the Royal Irish Academy 2014. DOI: 10.3318/BIOE.2014.03



## Sighting records

Table 5-1: Sighting records during the 10-day effort watches.

Date	Sighting	Time (start)	Time (end)	Species	Group size	Behaviour	Direction of travel	Tide
18/01/2023	1	10:55	11:00	Otter ( <i>Lutra lutra</i> )	1	Travelling/foraging	NE	F
	2	12:23	12:23	Otter ( <i>Lutra lutra</i> )	1	Travelling	N	F
24/01/2023	1	10:50	10:50	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S	E
	2	16:05	16:15	Unidentified seal species	1	Travelling	E/NE	F
	3	16:21	16:21	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling	SE	F
26/01/2023	1	10:58	10:59	Otter ( <i>Lutra lutra</i> )	1	Travelling	W	E
	2	11:30	11:30	Otter ( <i>Lutra lutra</i> )	1	Travelling	W	E
	3	11:33	11:33	Unidentified seal species	1	Travelling	SE/S	E
	4	11:37	12:09	Otter ( <i>Lutra lutra</i> )	1	Travelling	S	E
	5	13:14	13:14	Otter ( <i>Lutra lutra</i> )	1	Foraging	E	L
07/02/2023	1	10:04	10:10	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	S/SE	E
	2	10:24	10:24	Otter ( <i>Lutra lutra</i> )	1	Travelling	SW	E
	3	10:29	10:31	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	SE	E
23/02/2023	1	10:09	10:09	Unidentified seal species	1	Travelling/resting ("bottling")	E/SE	E
	2	10:49	10:49	Unidentified seal species	1	Travelling/resting ("bottling")	S	E
	3	15:01	15:08	Otter ( <i>Lutra lutra</i> )	1	Feeding	NE	F
	4	15:12	15:41	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling/foraging	N	F
	5	15:28	15:43	Harbour seal ( <i>Phoca vitulina</i> )	2	Travelling/resting ("bottling")	N/NW	F
	6	15:43	15:48	Unidentified seal species	1	Travelling	SW	F
	7	15:48	15:48	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S	F
	8	16:03	16:03	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling/resting ("bottling")	SE	F
	9	16:09	16:11	Unidentified seal species	1	Travelling	NW	F
	10	16:18	16:18	Grey seal ( <i>Halichoerus grypus</i> )	1	Foraging	NW	F
	11	16:20	16:22	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	E/NE	F
	12	16:23	16:34	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling	N/NW	F
	13	16:38	16:46	Otter ( <i>Lutra lutra</i> )	1	Feeding	N/NE	F
	14	16:39	16:39	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S	F
24/02/2023	1	09:16	09:25	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S/SE	E
	2	09:55	10:09	Otter ( <i>Lutra lutra</i> )	2	Playing	NE	E
	3	10:17	10:17	Unidentified seal species	1	Travelling	SE	E
	4	10:45	10:45	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S/SE	E
	5	12:05	12:05	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	W	L
	6	13:43	13:43	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NW	L
	7	15:02	15:02	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	S/SE	L
	8	15:12	15:14	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	E/NE	F
	9	15:22	15:35	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	E/NE	F
	10	15:43	15:48	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NE	F
	11	15:53	15:57	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NE	F
	12	16:01	16:04	Unidentified seal species	1	Travelling	NE/E	F
	13	16:05	16:07	Harbour seal ( <i>Phoca vitulina</i> )	2	Travelling/resting ("bottling")	N/NE	F

	14	16:15	16:15	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	N/NE	F
	15	16:23	16:23	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	N/NW	F
	16	16:29	16:37	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NW	F
	17	16:38	16:38	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling	NE/SE	F
	18	16:40	16:40	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	S/SE	F
	19	16:42	16:42	Unidentified seal species	1	Resting ("bottling")	N/NE	F
	20	16:50	16:58	Grey seal ( <i>Halichoerus grypus</i> )	1	Travelling/resting ("bottling")	N/NE	F
	21	17:02	17:04	Unidentified seal species	2	Travelling	E/SE	F
14/04/2023	1	09:22	10:07	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Travelling/foraging	At the entrance of the harbour	F
	2	09:50	10:20	Unidentified dolphin species	2	Foraging	At the entrance of the harbour & near the navigation buoys	F
	3	11:21	11:45	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	1 at the entrance of the harbour & 2 near the navigation buoys	H
				Unidentified dolphin species	2	Travelling		
	4	13:31	13:31	Otter ( <i>Lutra lutra</i> )	1	Travelling	E	H
5	14:49	15:15	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	1 at the entrance of the harbour & 3 near the navigation buoys going SW	E	
			Unidentified dolphin species	3				
17/04/2023	1	11:58	14:49	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	At the entrance of the harbour	F
	2	12:18	12:42	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	N/NW	F
	3	12:45	12:50	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	2	Foraging	At the entrance of the harbour	F
	4	12:52	12:52	Otter ( <i>Lutra lutra</i> )	1	Foraging	N/NW	F
	5	13:05	13:05	Unidentified dolphin species	2	Playing	SE/S	F
	6	13:12	13:21	Otter ( <i>Lutra lutra</i> )	1	Foraging	N/NW	F
	7	13:26	13:46	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	NE	F
	8	13:26	13:35	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	2	Foraging	At the entrance of the harbour	F
	9	14:00	14:04	Otter ( <i>Lutra lutra</i> )	1	Travelling	N	F
	10	14:08	14:47	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Foraging	At the entrance of the harbour	F
	11	14:27	14:27	Unidentified seal species	1	Travelling	SE/S	F
	12	14:38	14:45	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	W/NW	F
	13	15:01	15:48	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	At the entrance of the harbour	H
	14	15:06	15:06	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	NW	H
	15	15:22	15:22	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	W/NW	H
	16	15:24	15:55	Unidentified dolphin species	3	Travelling/foraging	N/NE	H
	17	16:11	16:39	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	SW	H
	18	16:16	16:30	Unidentified dolphin species	2	Travelling/foraging	E	H
	19	16:41	16:41	Unidentified dolphin species	1	Travelling	SW/S	H

	20	16:45	17:04	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	At the entrance of the harbour	H
	21	16:49	16:49	Unidentified seal species	1	Resting ("bottling")	SE	H
	22	16:54	17:07	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Playing	E/SE	H
	23	17:10	17:13	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	NE	H
	24	17:13	17:26	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	At the entrance of the harbour	H
21/04/2023	1	11:07	11:12	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	4	Travelling	S	E
	2	12:29	12:29	Unidentified seal species	1	Resting ("bottling")	N/NE	L
	3	13:05	13:11	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Travelling	S/SE	L
	4	14:13	14:30	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Travelling	N/NW	F
	5	14:57	15:01	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	2	Foraging	N/NW	F
				Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	N/NW	
	6	15:12	15:47	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Foraging	S/SE	F
	7	15:39	15:39	Unidentified seal species	1	Resting ("bottling")	W	F
8	16:31	16:49	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	N/NW/NE	F	
			Unidentified dolphin species	1				
28/04/2023	1	09:01	09:17	Harbour seal ( <i>Phoca vitulina</i> )	2	Travelling/resting ("bottling")	SE and N/NW	F
	2	09:18	13:10	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	Varied between E/S/N	F/H
	3	09:23	09:23	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	NW	F
	4	09:34	09:36	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	E	F
	5	09:43	09:43	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	NW	F
	6	09:57	10:48	Unidentified dolphin species	3	Travelling	W/SW	H
	7	10:31	10:31	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NE	H
	8	11:04	11:04	Unidentified seal species	1	Travelling	E	H
	9	11:09	11:09	Unidentified seal species	1	Travelling	NE	H
	10	11:16	11:16	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	N/NE	H
	11	11:25	12:09	Unidentified dolphin species	3	Travelling/foraging	S/SW	H
	12	12:05	12:05	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	NE	H
	13	12:09	12:09	Unidentified dolphin species	3	Travelling	S/SW	H
	14	12:52	13:09	Unidentified dolphin species	2	Travelling/foraging	Varied between E/S/W	H
	15	13:20	13:32	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling/resting ("bottling")	NE/N	H
	16	13:29	13:32	Harbour seal ( <i>Phoca vitulina</i> )	1	Resting ("bottling")	N/NE	H
	17	14:04	14:05	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	E/SE	E
	18	14:15	14:15	Harbour seal ( <i>Phoca vitulina</i> )	1	Travelling	E/NE	E
	19	14:48	14:48	Unidentified seal species	1	Travelling	E/SE	E
	20	15:27	16:38	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	1	Foraging	Varied between E/S/W	E
	21	15:43	15:54	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	3	Foraging	NE/N	E

	22	15:56	15:56	Unidentified dolphin species	1	Travelling	E	E
	23	16:09	16:09	Grey seal ( <i>Halichoerus grypus</i> )	1	Foraging	Varied between E/S/W	E
				Unidentified dolphin species	3	Travelling	Varied between E/S/W	
	24	16:32	16:32	Unidentified dolphin species	2	Travelling	SW/S	E
				Grey seal ( <i>Halichoerus grypus</i> )	1		N/NW	