

Marine Mammal Observer's Report
Fastnet Cable Route Project
Geophysical Survey off Castlefreke, West Cork
15th – 21st May 2025

Client: MCS Ireland Ltd.
Contractor: Subcom
Environmental Consultants: IWDG Consulting

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1. Executive Summary

The Irish Whale and Dolphin Group IWDG Consulting was commissioned to undertake and enact marine mammal mitigation measures as outlined by departmental guidelines and licencing conditions. The guidelines in question, titled “Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters”, were implemented by a Joint Nature Conservation Committee (JNCC) certified Marine Mammal Observer, who was present during all noise producing survey operations. Operation equipment included the use of a side scan sonar, a magnetometer (not sound producing), a multibeam echosounder and a sub bottom profiler (SBP) (Innomar).

This geophysical and geotechnical inshore survey was conducted to aid the installation of a subsea fibre optic cable which will make landfall at Owenahincha beach, Castlerefere in Co. Cork. Operations took place onboard the vessel, AMS Panther. The vessel and its crew were provided by Alpha Marine. Mobilisation of the survey began on the 15 May, and due to software issues, did not conclude until 18 May 2025. The survey then took three days to complete, concluding on the 20 May with the 21 May being used as a demobilisation day.

There was a total of 16 hours 58 minutes of sound producing activity, this includes four soft starts conducted using the SBP Innomar system. There was a total of 19 hours 55 minutes of visual watch conducted with four designated pre watches prior to equipment being used. Two sightings occurred during the survey, one while the vessel was at dock, the other while the equipment had been at full power for some time. Neither are likely to have impacted the animals in question.

Therefore, it is the opinion of IWDG Consulting that it is unlikely that the geophysical activities conducted during this survey had any adverse impact on marine mammals in the area.

2. Introduction

2.1. Marine Mammals in Ireland

Ireland's Exclusive Economic Zone (EEZ), which extends 200 nautical miles from its coastline, is home to a host of marine mammals that include 26 species of cetacean, two species of pinniped, and the Eurasian otter (*Lutra lutra*). As such these waters have been designated as a Whale and Dolphin sanctuary since 1991. There is national and international legislation in place that offers protection for these animals. These include the Wildlife Act (1976) and its amendments in 2000, 2005, 2010 and 2012, and the EU Habitats Directive (1992), in which all cetaceans are included in Annex IV of the Directive as species 'in need of strict protection'. Under these legislations it is legally prohibited to hunt, kill or disturb any protected species or their breeding, feeding, or resting places.

As cetaceans' primary sense is sound, they rely heavily on their use of hearing and sound production to communicate, forage, and to navigate. With an increasing sound output by man-made activities in the marine environment, the National Park Wildlife Service (NPWS) developed guidelines titled, "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (NPWS, 2014)". These guidelines are to be adhered to during all sound producing activities, such as the ones used in this geophysical survey of the Cork coast. A qualified MMO must be present to log all necessary data using the NPWS standard data recording forms, implement mitigation measures where appropriate, and advise operations crew of best practice procedures to minimise risk to marine mammals and ensure full compliance in adherence with the guidelines mentioned above.

2.2. Survey Area & Vessel

The survey site for this project is just offshore from Owenahincha beach at Castlerefere Co. Cork. This is a shallow water site with a mostly sandy seabed with rocky outcrops either side of the survey zone and a steep sandy beach on the northern end. The home port for the vessel during this survey was Keelbeg Harbour just east of Union Hall. This meant a roughly 30/40-minute transit to and from the survey site each day. Figure 1 illustrates the survey site (right) and the home port (left) both highlighted in red, with the cable route highlighted in white.



Figure 1. Map showing the survey site (right) and the home port (left) both in red. The cable route is highlighted in white and extends out into the Atlantic to make landfall on the east coast of the US.

The vessel being contracted for this survey was the AMS Panther, operated by Alpha Marine. It is a 17m survey catamaran specifically configured for nearshore geophysical and hydrographic surveys. The raised bridge and viewing platform above ensure all round 360° visibility, ideal for visual watches.



Figure 2. AMS Panther, photo taken by the author on a previous job in Wicklow.



Figure 3. View from the vessels viewing platform above the wheelhouse.

2.3. Survey Equipment

The equipment used by the survey team on this project included:

- a) Magnetometer used to detect distortions of the earth's magnetic field on the seafloor. This would indicate the presence of any large metal objects that could affect the installation phase of the cable. The "Mag" does not emit sound and so no mitigation was required for its use.
- b) A multi beam echosounder (Norbit Winghead i77h model) & a side scan sonar (Edgetech 4125). Both of which create high frequency acoustic energy outputs that create ultra-high-resolution imagery of the seabed. Both pieces of equipment emit noise in a frequency that is above the detection range of marine mammals (> 400 kHz), and therefore did not require any soft start or mitigation procedures.
- c) A SBP (Innomar SES2000 Compact) system was used to create a profile of the seafloor and the subsurface layers beneath it. It does this by emitting acoustic energy and analysing the returning waves. This acoustic output is within the hearing range of marine mammals (~ 100 kHz) and above the 170 dB threshold as outlined by the NPWS guidelines, and so mitigation procedures were required.
*(see methodology)

3. Marine Mammal Methodology

The methodology used by the MMO is outlined in the NPWS's guidelines (2014) below:

1. A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms.
2. Unless information specific to the location and/or plan/project is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, acoustic surveying using the above equipment shall not commence if marine mammals are detected within a **500m** radial distance of the sound source intended for use, i.e., within the Mitigation Zone.

Pre-Start Monitoring

3. Sound-producing activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible.
4. An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (see below). It shall only proceed on positive confirmation with the MMO.
5. In waters up to 200m deep, the MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Sound-producing activity shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Mitigation Zone by the MMO.
6. This prescribed Pre-Start Monitoring shall subsequently be followed by a Ramp-Up Procedure which should include continued monitoring by the MMO.

Ramp-Up Procedure

7. In commencing an acoustic survey operation using the above equipment, the following Ramp up Procedure (i.e., “soft-start”) must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m:

- a) Where it is possible according to the operational parameters of the equipment concerned, the device’s acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.
- b) This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
- c) ** Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched “on” and “off” in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output. **

8. In all cases where a Ramp-Up Procedure is employed the delay between the end of ramp-up and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment.

9. Once the Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source, i.e., within the Mitigation Zone.

Breaks in sound output

10. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) must be undertaken.

11. For higher output survey operations which have the potential to produce injurious levels of underwater sound (see sections 2.4, 3.2) as informed by the associated risk assessment, there is likely to be a regulatory requirement to adopt a shorter 5-10 minute break limit after which period all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) shall recommence as for start-up.

****Note****

None of the equipment used in this survey was capable of a preset soft-start procedure. Therefore, the SBP Innomar was used to perform a manual soft-start by switching it on and off periodically, first for one minute, then for two, three and four minutes – totalling the 20 minutes required by the guidelines.

3.1. Summary of MMO procedures

- Once onsite, MMO conducts a 30-minute pre watch of the 500m mitigation zone. Time, position and weather conditions are recorded.
- If no animals are observed, 'all clear' is given to survey team and the soft start is initiated using the SBP Innomar system.
- If an animal is sighted within the mitigation zone, a 30 minute delay from the last sighting will take place. Once 30 minutes have elapsed with no further sightings, the soft start can commence.
- The soft start is conducted by turning the SBP Innomar system on for one minute and off for one minute. This is repeated for two minutes, three minutes and four minutes, totalling the 20-minute requirement.
- If a break in sound production of more than 30 minutes occurs, a full pre watch and soft started will be needed.

4. Results

4.1. Sound Production

Sound producing activities occurred over four days and resulted in a total of 16 hours and 58 minutes of sound production. This includes the four 20-minute soft starts conducted throughout the survey. An overview of the start and end times of sound production can be seen below in Table 1 and the 'Record of Operation/Activity' sheet in Appendix III.

Table 1. Breakdown of sound production of the four days of survey.

Date (dd/mm/yyyy)	Sound producing activity			Total time sound was produced
	Time when soft start began	Time when equipment reached full power	Time when equipment stopped or shut down	
15/05/25'	-	-	-	-
16/05/25'	-	-	-	-
17/05/25'	15:20	15:40	18:05	02:45
18/05/25'	12:42	13:02	17:35	04:53
19/05/25'	08:40	09:05	16:01	07:21
20/05/25'	09:57	10:17	11:56	01:59
			Total =	16:58

4.2. Monitoring Effort

There was a total of 19 hours and 55 minutes of visual monitoring for marine mammals during this survey. This includes four designated pre watches prior to equipment soft starts, totalling 1 hours and 20 minutes of designated pre watches. There was a total of 9 hours and 12 minutes of sound production while visual monitoring occurred. A full breakdown of monitoring effort can be seen below in Table 2, and the ‘Record of Marine Mammal Observer Effort’ sheet is included in Appendix II.

Table 2. Details of the monitoring effort during survey

Date (dd/mm/yyyy)	Time you began monitoring for MM	Time you stopped monitorin g for MM	Duration of monitoring watch	Duration of sound production while monitoring for MM
16/05/2025	14:05	16:00	01:55	0
16/05/2025	16:50	17:55	01:05	0
17/05/2025	11:00	12:30	01:30	0
17/05/2025	14:15	16:00	01:45	0:40
18/05/2025	09:45	10:45	01:00	0
18/05/2025	12:10	14:10	02:00	1:28
18/05/2025	15:40	17:40	02:00	1:55
19/05/2025	08:05	10:10	02:05	1:30
19/05/2025	11:55	14:00	02:05	2:05
19/05/2025	15:30	17:15	01:45	0:31
20/05/2025	09:00	11:00	02:00	1:03
20/05/2025	13:00	13:45	00:45	0
Total			19:55	09:12

4.3. Sightings

One sighting occurred on 17 May, when a grey seal (*Halichoerus grypus*) was incidentally observed while the vessel was in port. The second sighting occurred on 19 May, when two common dolphins (*Delphinus delphis*) surfaced beside the vessel while the sound source was at full power. A full breakdown of the sightings is provided below in Table 3. Figure 4 shows the locations of the sightings during the survey, while Figures 5 and 6 show photographs of the animals observed.

Table 3. Details of sightings during the survey

Sighting number	Date (dd/mm/yyyy)	Time at start of encounter	Species or species group	Range of animal (metres)	Total number	Behaviour	What action was taken?
1	17/05/2025	09:35	Grey seal	50m	1	Basking in sun	No
2	19/05/2025	17:01	Common dolphin	20m	2	Swimming, breaching	No



Figure 4. The two sightings during this survey. The grey seal (left) was sighted at port in Keelbeg. The common dolphins (right) were seen travelling north past the vessel while operations were at full power.

Sighting 1



Figure 5. Large grey seal (*Halichoerus grypus*) lying on top of a large piece of wood, bathing in the sun. The elongated snout can be seen, distinctive in this species.

Sighting 2



Figure 6. Common dolphin (*Delphinus delphis*) seen swimming north away from the vessel. Distinct hourglass pattern can be seen on its flank.

4.4. Conditions

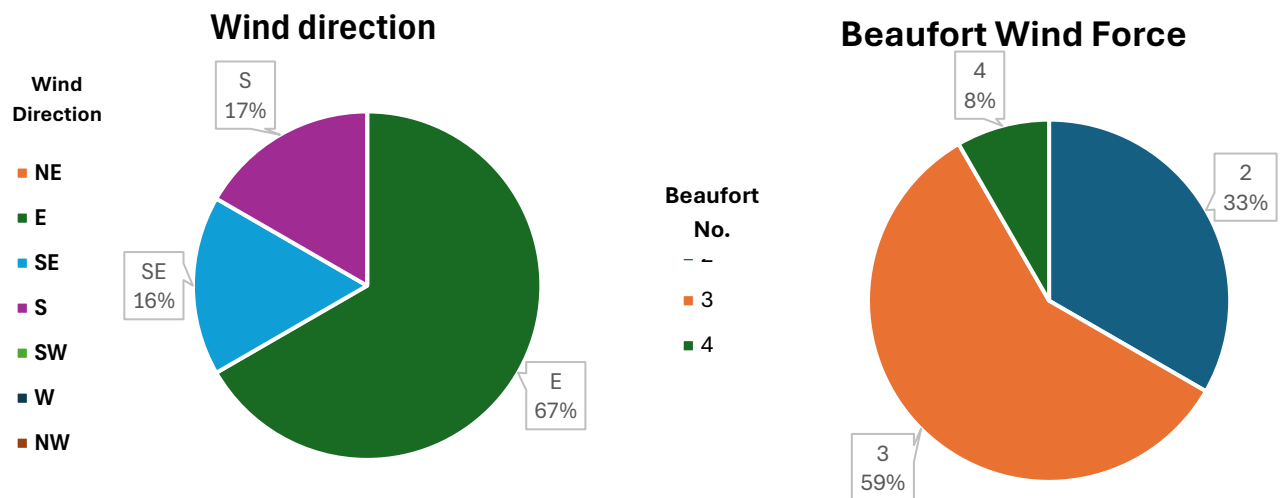


Figure 7. Percentage of wind direction (left) and wind force (right) measured in the Beaufort.

Winds were easterly for much of the survey, accounting for 67% of the monitoring time. Southerlies accounted for 17% and south easterlies for 16%. The wind force remained relatively low, ranging from 2 to 4 on the Beaufort scale. Beaufort 3 accounted for the most time making up 59% with Beaufort 2 in second with 33% and Beaufort 4 accounting for only 8%. The Sea State remained consistent at 3 for 83% of the total survey time, with sea state 2 accounting for the other 17%.

The swell height remained “Low” for the whole survey period except for evening of the 16th, where it dropped to “0”. The visibility remained “Good” for the entirety of the survey. Overall, the conditions for sighting were good throughout, most days had small although consistent whitecaps, resulting in difficulty seeing beyond 10km range needed for “High”.

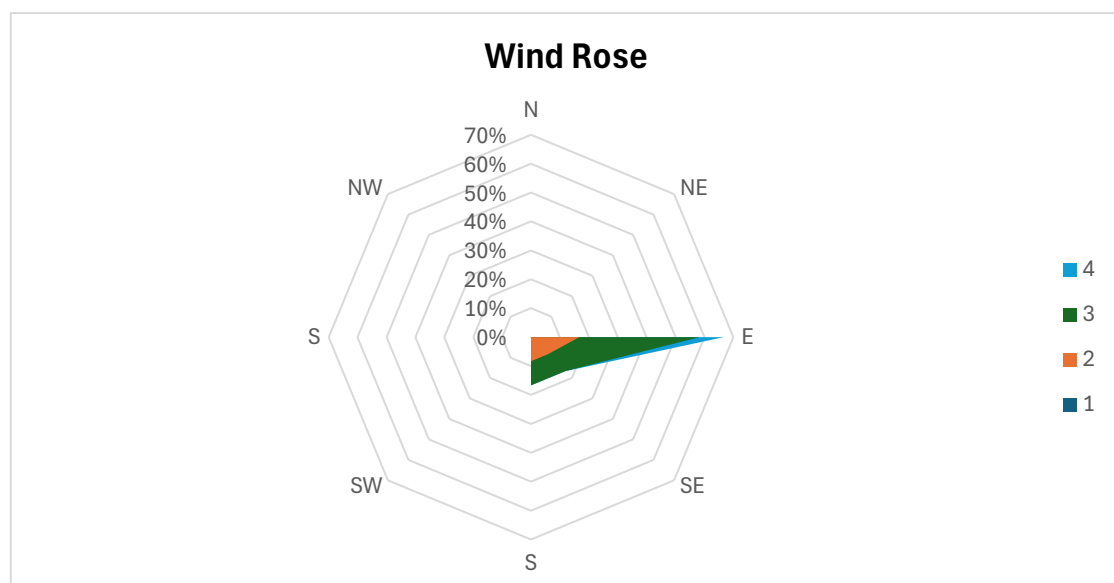


Figure 8. The frequencies of wind speed and direction throughout the survey.

5. Conclusion

A qualified MMO conducted a 30-minute pre-start watch before any geophysical activities commenced, to ensure there were no marine mammals within the 500m mitigation zone. No animals were sighted in this 30-minute window throughout the project, and therefore no delays were necessary. There were no breaks of longer than 30 minutes, therefore no additional pre watches and soft starts were required. No mitigation actions were required, and the survey was conducted in full adherence to the NPWS guidelines (2014). A total of 16 hours and 59 minutes of sound producing activity occurred during the survey. The MMO conducted 19 hours and 55 minutes of visual watches, during which sound was produced for 9 hours and 12 minutes.

Two sightings occurred during the survey. On 17 May, a grey seal was incidentally sighted while the vessel was in port. On 19 May, two common dolphins were observed very close to the vessel while the equipment was operating at full power. No behavioural changes were observed in either group, as the animals continued swimming north, away from the vessel.

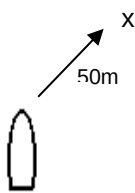
Conditions for marine mammal observation remained good throughout the survey. There was, however, most days a strong enough wind to create small but consistent white caps. This made it difficult to see beyond the 10km range for “High” visibility, but did not affect the 500m mitigation zone for this survey. The swell remained low throughout, and the sea state was predominantly 3, dropping to 2 on occasions. The wind alternated between east, southeast, and south directions, with east being the dominant one.

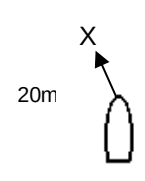
It is therefore the opinion of IWDG Consulting that it is unlikely that the geophysical activities conducted during this survey had any adverse impact on marine mammals in the area.

References

- NPWS (2014) Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. National Parks and Wildlife Service. Department of Arts, Heritage and the Gaeltacht.
- EC Habitats Directive (1992). Council Directive 92/43/EEC of 21 May 1992 on the Conservation of natural habitats and of wild fauna and flora. OJ L 206, 22.7.1992, p. 7–50.

Appendix I Sightings recording forms

Operation/Activity (please tick)		Dredging	Drilling	Pile Driving	Blasting	Geophysical X
Date 17/05/2025	Time 09:35	Time 08:35		Sighting Record no. 1		
How did this sighting occur? (please tick) While you were keeping a continuous watch for marine mammals _____ Spotted incidentally by you or someone else <u>X</u> <u>Details: Seal was sighted by the MMO while the vessel was at dock.</u>						
Platform type & name (e.g. ship, rig, headland) Ship. AMS Panther.			Observer's name Thomas Power			
Observer's position (Latitude/Longitude or 6-figure Grid reference) N 51°55.91 W -09°13.30					Water depth (metres) (if available) 5.4	
Species recorded Grey seal (<i>Halichoerus grypus</i>)			Certainty of identification (underline) <u>Definite</u> / probable / possible			
Total number of animals (best estimate) 1			No. of adults 1	No. of juveniles 0	No. of calves 0	
Maximum number (estimated total) 1			Minimum number (estimated total) 1			
Description (include features such as overall size; shape of head; position, shape and size of dorsal fin; colour and patterning; height, direction, shape of blow) Large seal with long body. Greyish coat with dark patches. Elongated snout with larger forehead.				Photograph or video taken <u>Yes</u> / No		
				Direction of travel of animals in relation to platform/vessel (draw arrow) 		
Behaviour Hauled out of the water on what looked like a piece of wood basking in the sun, local crew member says the seal is often there.				Direction of travel of animals (compass points or degrees) Stationary		
Activity of platform/vessel Docked	Operation/activity under way (when animals first seen) Yes / <u>No</u> / Pre-Start watch			Closest distance of animals from platform/vessel (metres) (Record even if not operating) 50m		

Operation/Activity (please tick)		Dredging	Drilling	Pile Driving	Blasting	Geophysical X
Date (dd/mm/yyyy) 20/05/2025	Time (Local) 17:01	Time (GMT/UTC) 16:01		Sighting Record no. 2		
How did this sighting occur? (please tick) While you were keeping a continuous watch for marine mammals X Spotted incidentally by you or someone else _____ Details: Sighting occurred while MMO was on continues watch, equipment was full power.						
Platform type & name (e.g. ship, rig, headland) Ship. AMS Panther			Observer's name Thomas Power			
Observer's position (Latitude/Longitude or 6-figure Grid reference) N 51° 32.95 W -9° 00.20					Water depth (metres) (if available) 21	
Species recorded Common dolphin (<i>Delphinus delphis</i>)			Certainty of identification (underline) <u>Definite</u> / probable / possible			
Total number of animals (best estimate) 2		No. of adults 2	No. of juveniles 0	No. of calves 0		
Maximum number (estimated total) 3		Minimum number (estimated total) 2				
Description (include features such as overall size; shape of head; position, shape and size of dorsal fin; colour and patterning; height, direction, shape of blow) Streamlined dolphin, smaller than bottlenose with short beak. Distinctive hourglass pattern on its flank				Photograph or video taken <u>Yes</u> / No		
				Direction of travel of animals in relation to platform/vessel (draw arrow) 		
Behaviour Breached just ahead of vessels port side, swimming under the boat and continuing away on the starboard side. Came very close to SBP Innomar system which was full power, no behavioural changes observed				Direction of travel of animals (compass points or degrees) NE		
Activity of platform/vessel Vessel was moving, equipment full power.	Operation/activity under way (when animals first seen) <u>Yes</u> / No / Pre-Start watch		Closest distance of animals from platform/vessel (metres) (Record even if not operating) 20m			

Appendix II: Record of Marine Mammal Observer Effort

DATA FORM FOR COASTAL/MARINE WORKS - RECORD OF MONITORING EFFORT															
Platform name:		AMS Panther		Platform type:		Vessel		Client:		McMahon Design & Management limiter		Contractor:		Subcom	
MMO:		Thomas Power													
Please record the following information every day (as many lines per day as you wish), even if no marine mammals are seen.															
Type of operation or activity	Date (dd/mm/yyyy)	MMO	Time you began monitoring for MM	Time you stopped monitoring for MM	Duration of monitoring watch	In minutes	Duration of sound-producing activity while monitoring for MM	Start Lat/Long position	End Lat/Long position (if moving)	Wind direction	Beaufort Wind Force	Sea State (WMO) (0 TO 9)	Swell height 0 = no swell L = 0-1m m = 1-2m H = 2+m	Visibility P = < 1 km M = 1-5KM G = 5-10KM H = >10KM	
Geophysical	16/05/2025	TP	14:05	16:00	01:55	115	0	N 51°33.08 W -9°06.60	N 51°32.67 W -9°05.63	E	3	3	L	G	
Geophysical	16/05/2025	TP	16:50	17:55	01:05	65	0	N 51°32.68 W -9°5.61	N 51°32.64 W -9°05.60	SE	2	2	0	G	
Geophysical	17/05/2025	TP	11:00	12:30	01:30	90	0	N 51°33.28 W -9°06.79	N 51°32.70 W -9°06.63	E	3	3	L	G	
Geophysical	17/05/2025	TP	14:15	16:00	01:45	105	40	N 51°32.80 W -9°06.36	N 51°32.67 W -9°06.49	E	4	3	L	G	
Geophysical	18/05/2025	TP	09:45	10:45	01:00	60	0	N 51°32.87 W -9°06.32	N 51°32.61 W -9°06.64	SE	3	3	L	G	
Geophysical	18/05/2025	TP	12:10	14:10	02:00	120	88	N 51°33.02 W -9°00.75	N 51°33.47 W -8°59.74	E	3	3	L	G	
Geophysical	18/05/2025	TP	15:40	17:40	02:00	120	115	N 51°33.23 W -9°00.24	N 51°33.49 W -8°59.68	E	3	3	L	G	
Geophysical	19/05/2025	TP	08:05	10:10	02:05	125	90	N 51°33.27 W -8°59.79	N 51°33.59 W -8°59.46	E	2	3	L	G	
Geophysical	19/05/2025	TP	11:55	14:00	02:05	125	125	N 51°33.67 W -8°59.77	N 51°33.33 W -8°59.52	E	3	3	L	G	
Geophysical	19/05/2025	TP	15:30	17:15	01:45	105	31	N 51°33.08 W -8°59.84	N 51°33.14 W -8°00.94	E	2	2	L	G	
Geophysical	20/05/2025	TP	09:00	11:00	02:00	120	63	N 51°32.97 W -9°00.17	N 51°33.75 W -8°59.73	S	2	3	L	G	
Geophysical	20/05/2025	TP	13:00	13:45	00:45	45	0	N 51°33.07 W -9°00.12	N 51°33.38 W -9°00.43	S	3	3	L	G	

Appendix III: Record of Operational Activity

DATA FORM FOR COASTAL/MARINE WORKS - RECORD OF OPERATION/ACTIVITY

Platform name:	AMS Panther	Platform type:	Vessel	Client:	McMahon Design & Management limited
Contractor:	Subcom	MMO:	Thomas Power		

Complete this form every time the sound-producing operation or activity (e.g., drilling, pile driving, blasting) occurs including overnight, whether for testing, full operation or any other purpose.

Type of operations or activity	Date	Sound producing operations or activity			Pre-start monitoring effort for marine mammals				Action necessary			Total time sound was produced
		Time when soft start began	Time when equipment reached full power	Time when equipment stopped or shut down	Who carried out monitoring for MM?	Start time of monitoring for marine mammals (Pre start up)	End time of monitoring for marine mammals	Reason for non-detection of MM	Were marine mammals present in 30 mins before start up?	If yes, give time of last sighting	If MM present, were actions taken?	
Geophysical	15/05/25'	-	-	-	-	-	-	-	-	-	-	00:00
Geophysical	16/05/25'	-	-	-	MMO	14:05	17:55	none present				00:00
Geophysical	17/05/25'	15:20	15:40	18:05	MMO	14:15	16:00	none present	no			02:45
Geophysical	18/05/25'	12:42	13:02	17:35	MMO	12:10	17:40	none present	no			04:53
Geophysical	19/05/25'	08:40	09:05	16:01	MMO	08:05	10:10	none present	no			07:21
Geophysical	20/05/25'	09:57	10:17	11:56	MMO	09:00	11:00	none present	no			01:59