



**POSEIDON Bird and Marine Mammal Aerial Surveys for the  
Southwest Celtic Sea**

**Natural England**

**P00011684**

**Survey Report: July – September 2024 (seasonal)**

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## Revision and Amendment Register

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1.0	30/08/2024	All	All	Creation	MP
1.1	03/09/2024	All	All	Internal Review	SY
1.2	25/09/2024	All	All	Client Comments	SY
1.3	18/11/2024	2	3	Table 1 amendment	SY

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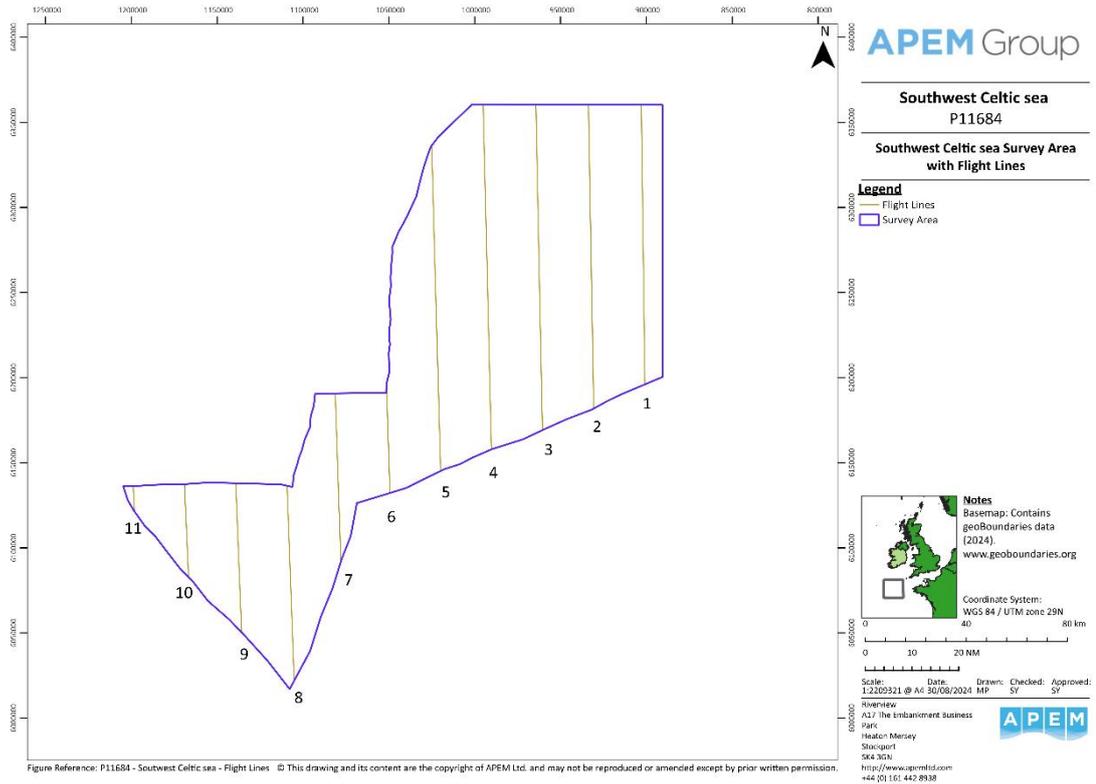
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# 1. Introduction

Natural England contracted APEM Ltd (APEM) to undertake a second-year programme of four seasonal aerial digital surveys within the South-West Celtic Sea (Figure 1), commencing October 2023. This programme will repeat the four year-one seasonal aerial digital surveys of the same study area completed by APEM from 2022 – 2023. The purpose of the surveys is to provide information on the distribution and abundance of birds and marine megafauna within the survey area.



**Figure 1 Location of the SW Celtic Sea site**

## 2. Summary of Survey

The fourth (July to September 2024 seasonal) aerial survey was undertaken across three flights. The flights occurred on the 21<sup>st</sup> of August 2024 using a Vulcanair P68 twin-engine survey aircraft and two Diamond DA-42 MPP aircrafts. The survey involved high-resolution digital still image collection using a GPS-linked bespoke flight management system to ensure tracks were flown with a high degree of accuracy.

The survey comprised 11 transects orientated in an east-west direction and the aircraft captured imagery at approximately 1.5 cm Ground Sampling Distance (GSD) with a survey altitude of 1,300 ft. All survey lines were flown. On line 4, six nodes were missed due to the pilot coming off the flight line. A total of 6,397 image nodes were captured, and the approximate coverage was calculated to be 3.10% (Table 1).

On the 21<sup>st</sup> of August, three planes were used to survey lines 1-3 (take off at 06:47, landing at 11:35), 4-6 (take off at 06:45, landing at 11:38), and 7-11 (take off at 06:35, landing at 12:10), respectively.

On the 21<sup>st</sup> of August, clouds were scattered to broken (40-95% cloud cover). Visibility was 7->10 km throughout the survey. Winds of 9-17 knots (Beaufort Scale 3-5) blew from a south south-westerly to westerly direction and sea state was recorded as 2-3 (smooth to slight, wave height 0.10-1.25 m). Outside temperature was 9-14°C. Turbidity was 0-2 (clear to moderately turbid).

A summary of weather descriptions is given in Table 3. Weather details are recorded by air crew during surveys. Sea state and turbidity were visually estimated. Temperature and wind speed were recorded using the aircraft instruments.

No health and safety issues were reported during the survey.

**Table 1 Summary of image capture and other observations**

Survey line	N cameras capturing images	N image nodes	Camera issues*	Shipping observations	Anecdotal observations	Health and Safety issues
1**	3	762	Pilot drifted from line**	-	-	-
2	3	830	-	-	-	-
3***	3	888	System crashed***	-	-	-
4	3	935	Six nodes missing****	-	-	-
5	3	891	-	-	-	-
6	3	308	-	-	-	-
7	3	471	-	-	-	-
8	3	547	-	-	-	-
9	3	420	-	-	-	-
10	3	265	-	-	-	-
11	3	80	-	-	-	-
<b>Total</b>	<b>3</b>	<b>6,397</b>		<b>N/A</b>		

\*Due to the vast number of capture points collected during a survey it is not uncommon for camera systems to sometimes miss capture points. Typically, the number of missed capture points is low and random across the site. APEM collected additional data to ensure the required coverage was captured. Additionally, APEM’s onboard camera technician monitored data as it was being captured. Surveys are aborted or lines re-surveyed if camera issues impact data collection.

\*\*The pilot drifted from the line resulting in some missed nodes. The effected line was immediately resurveyed to ensure full coverage. All details for line 1 within this report refer to the successful resurvey.

\*\*\*The system went offline on the initial line 3 survey attempt. The issue was resolved, and the line immediately resurveyed to ensure coverage. All details for line 3 within this report refer to the successful resurvey.

\*\*\*\*On line 4, six nodes were missed due to the pilot coming off the flight line.

**Table 2 Summary of survey conditions**

Survey line	Date	Time on line (start / end)	Ground Speed (kts)	Cloud cover (%)	Visibility (km)	Outside temperature (°C)	Wind speed (kts)	Wind direction	Sea state (Douglas)	Turbidity
1	21/08/2024	10:11/10:22	120	80	10	13	13	220	2	0
2	21/08/2024	09:13/09:44	121	90	9	13	9	220	2	0
3	21/08/2024	08:38/09:08	118	95	9	13	12	210	2	0
4	21/08/2024	11:00/11:36	122	40	>10	13	8	245	2	2
5	21/08/2024	10:15/10:53	121	65	>10	13	14	240	2	2
6	21/08/2024	09:41/09:52	118	45	>10	14	7	210	3	2
7	21/08/2024	10:32/10:49	125	60	>10	14	16	240	2	1
8	21/08/2024	09:58/10:19	121	60	>10	14	16	240	2	1
9	21/08/2024	09:34/09:50	123	60	>10	14	16	230	2	1
10	21/08/2024	09:10/09:20	123	70	10	9	17	250	2	1
11	21/08/2024	08:58/09:01	123	70	7	9	15	260	2	1

### **3. Shipping Observations**

No vessels were observed from the aircraft in the July – September 2024 seasonal survey.

#### **4. Anecdotal Observations**

No anecdotal observations were made in the July – September 2024 seasonal survey.

## 5. Appendices

**Table 3 Explanation of weather conditions**

Wind (Beaufort Scale)			Douglas Sea State			Cloud cover (%)		Turbidity	
Scale	Description	Mean wind speed (knots)	Scale	Description	Wave height	% Cover	Description	Scale	Description
0	Calm	0	0	Calm (glass)	No wave	0	Clear	0	Clear
1	Light air	2	1	Calm (rippled)	0 – 0.10 m	1-10	Few	1	Slightly Turbid
2	Light breeze	5	2	Smooth	0.10 – 0.50 m	11-50	Scattered	2	Moderately Turbid
3	Gentle breeze	9	3	Slightly Moderate	0.50 – 1.25 m	51-95	Broken	3	Highly Turbid
4	Moderate breeze	13	<i>Surveys not typically flown at sea states &gt; 3.</i>			96-100	Overcast		
5	Fresh breeze	19	4	Moderate	1.25 – 2.50 m				
6	Strong breeze	24							
7	Near gale	30							
8	Gale	37							