

MachairWind Offshore Windfarm

Annex 11.2D Third-Party DAS Survey 15 (15 December 2021)





Aerial Digital Baseline Surveys of Clachan Dubh

CD Offshore Energy Limited

P00004825

Monthly Report: Survey 15 – December 2021

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1. Executive Summary

An aerial survey was conducted off the west coast of Scotland on the 3rd December 2021 using APEM's high-resolution camera system mounted on a twin-engine aircraft to capture digital still imagery. Images collected have been analysed and internally quality assured. The raw counts of birds and marine mammals recorded are presented here.

The aerial surveys are carried out to meet the aims and objectives of the work required by CD Offshore Energy Limited to assess the abundance and distribution of birds and marine mammals in the Clachan Dubh Lease Option Area and a 6 km buffer surrounding it (the Survey Area).

Overall, 3,995 birds were recorded in the Survey Area during December 2021. The most abundant species was guillemot / razorbill (n=1,902), followed by kittiwake (n=1,630), guillemot (n=306), herring gull (n=64), great black-backed gull (n=34), razorbill (n=28), fulmar (n=23), common gull (n=3), gannet (n=3), large gull species (n=1), and great northern diver (n=1).

A total of 26 marine mammals were recorded in this survey. These were recorded as common dolphin (n=21), grey seal (n=3), harbour porpoise (n=1), and dolphin / porpoise (n=1).

A total of 1,220 birds (31%) were recorded in flight during this survey. These were recorded as kittiwake (n=1,111), herring gull (n=35), guillemot / razorbill (n=24), fulmar (n=20), great black-backed gull (n=13), guillemot (n=12), common gull (n=3), large gull species (n=1), and gannet (n=1). There were 2,775 birds recorded as sitting (69%).

2. Introduction

CD Offshore Energy Limited requested APEM Ltd (APEM) to undertake two years of monthly aerial digital surveys of the Clachan Dubh Lease Option Area plus a 6 km buffer (1,193 km² total survey area; the Survey Area) for birds and marine mammals (**Figure 1**). The surveys commenced in October 2020 and continued until January 2022. The purpose of the surveys is to provide baseline information on the abundance, distribution, and behaviour of birds, marine mammals, and any other marine megafauna captured.

The Survey Area is located off the west coast of Scotland, west of the island of Colonsay in the Inner Hebrides (**Figure 1**). The survey method has been designed to optimise the data collection for marine megafauna using a grid-based survey design at 1.5 cm GSD (ground sampling distance) to achieve approximately 12% coverage. The report describes the results of the third survey for year two undertaken for December 2021. The surveys are carried out in order to meet the aims and objectives of the work required by CD Offshore Energy Limited to inform future environmental impact assessment work for this proposed wind farm development.

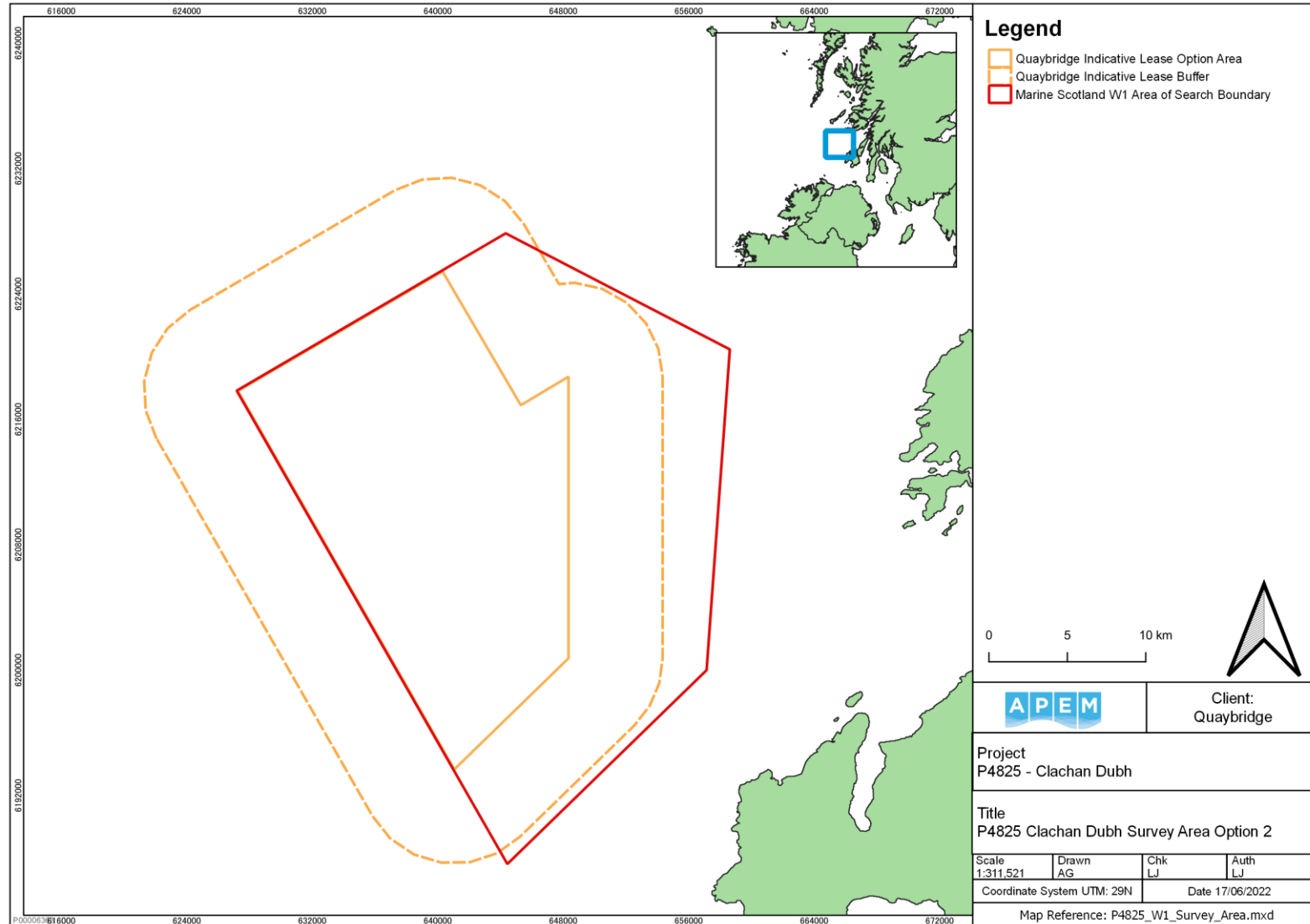


Figure 1

Location of the Clachan Dubh Lease Option Area and 6 km buffer area

3. Summary of Survey

The survey was undertaken on the 3rd December 2021 using a Vulcanair P68 C twin-engine survey aircraft. The number and dates of the surveys undertaken so far are provided in **Table 1**. Further detailed survey information is provided in Appendix I.

Table 1 Surveys of Clachan Dubh Lease Option Area completed to date.

Survey No.	Date of Survey	Start Time (UTC)	End Time (UTC)	First Transect Line
Survey 01	01/10/2020	08:36	14:07	1
Survey 02	19/11/2020	09:51	12:51	16
Survey 03	07/12/2020	10:21	13:08	16
Survey 04	07/02/2021	11:21	14:08	16
Survey 05	01/03/2021	11:47	12:44	1
		16:06	17:23	7
	04/03/2021	14:26	15:10	13
Survey 06	21/03/2021	10:06	13:01	1
Survey 07	03/04/2021	08:44	11:34	1
Survey 08	01/05/2021	10:25	12:51	16
Survey 09	01/06/2021	11:10	13:49	16
Survey 10	06/07/2021	13:42	16:31	16
Survey 11	15/08/2021	13:18	16:00	1
Survey 12	01/09/2021	14:17	17:01	16
Survey 13	11/10/2021	11:23	14:00	1
Survey 14	15/11/2021	10:22	12:56	16
Survey 15	03/12/2021	10:27	13:04	16

The survey involved high-resolution digital still image collection using a GPS-linked flight management system to ensure the tracks were flown with a high degree of accuracy.

The aerial survey captured data along 16 transects with nodes spaced 2 km apart within the Survey Area. The analysed images form a grid-based survey design with coverage calculated to be approximately 14% generated from 3,514 image nodes.

On the 3rd December, cloud cover was broken (70-95% cloud cover) and visibility remained greater than 10 km throughout the survey. Wind speed was recorded as 18-21 knots and blew from a north-westerly direction. The sea state was recorded as 3-4 (slightly moderate - moderate). The outside temperature was 6°C.

No health and safety issues were reported during the survey.

The images were analysed to enumerate bird and marine mammals to species level, where possible. Internal quality assurance was undertaken to check for missed animals and to ensure the correct species were identified. Birds and marine mammals identified from the images were 'snagged' (i.e. located within the images) and categorised normally to species (Appendix II), but sometimes to the standard Joint Nature Conservation Committee (JNCC) categories (Appendix III).

Data reported are raw counts of animals that have not yet been subject to extrapolation for abundance estimates.

4. Abundance and Distribution

4.1 Abundance

A total of 3,995 birds were recorded in the Survey Area on 3rd December 2021. Of those birds recorded, 2,775 were observed sitting on the water, and 1,220 birds were flying (Table 2).

A total of 26 marine mammals were recorded during the survey (Table 3).

Table 2 Total number of individual birds recorded during the December 2021 survey of the Clachan Dubh Lease Option Area plus 6 km buffer

Species	Flying	Sitting	Total
Kittiwake	1,111	519	1,630
Common Gull	3	-	3
Great Black-backed Gull	13	21	34
Herring Gull	35	29	64
Large Gull species	1	-	1
Guillemot	12	294	306
Razorbill	-	28	28
Guillemot/Razorbill	24	1,878	1,902
Great Northern Diver	-	1	1
Fulmar	20	3	23
Gannet	1	2	3
Total Birds	1,220	2,775	<u>3,995</u>

Table 3 Total number of individual marine megafauna recorded during the December 2021 survey of the Clachan Dubh Lease Option Area plus 6 km buffer

Species	Submerged	Surfacing	Total
Grey Seal	3	-	3
Common Dolphin	10	11	21
Harbour Porpoise	1	-	1
Dolphin/Porpoise	1	-	1
Total Megafauna	15	11	<u>26</u>

4.2 Spatial Distribution

Figure 2 shows the location of birds and marine megafauna recorded in the Survey Area. Birds were distributed across the Survey Area with a denser concentration towards the north and west.

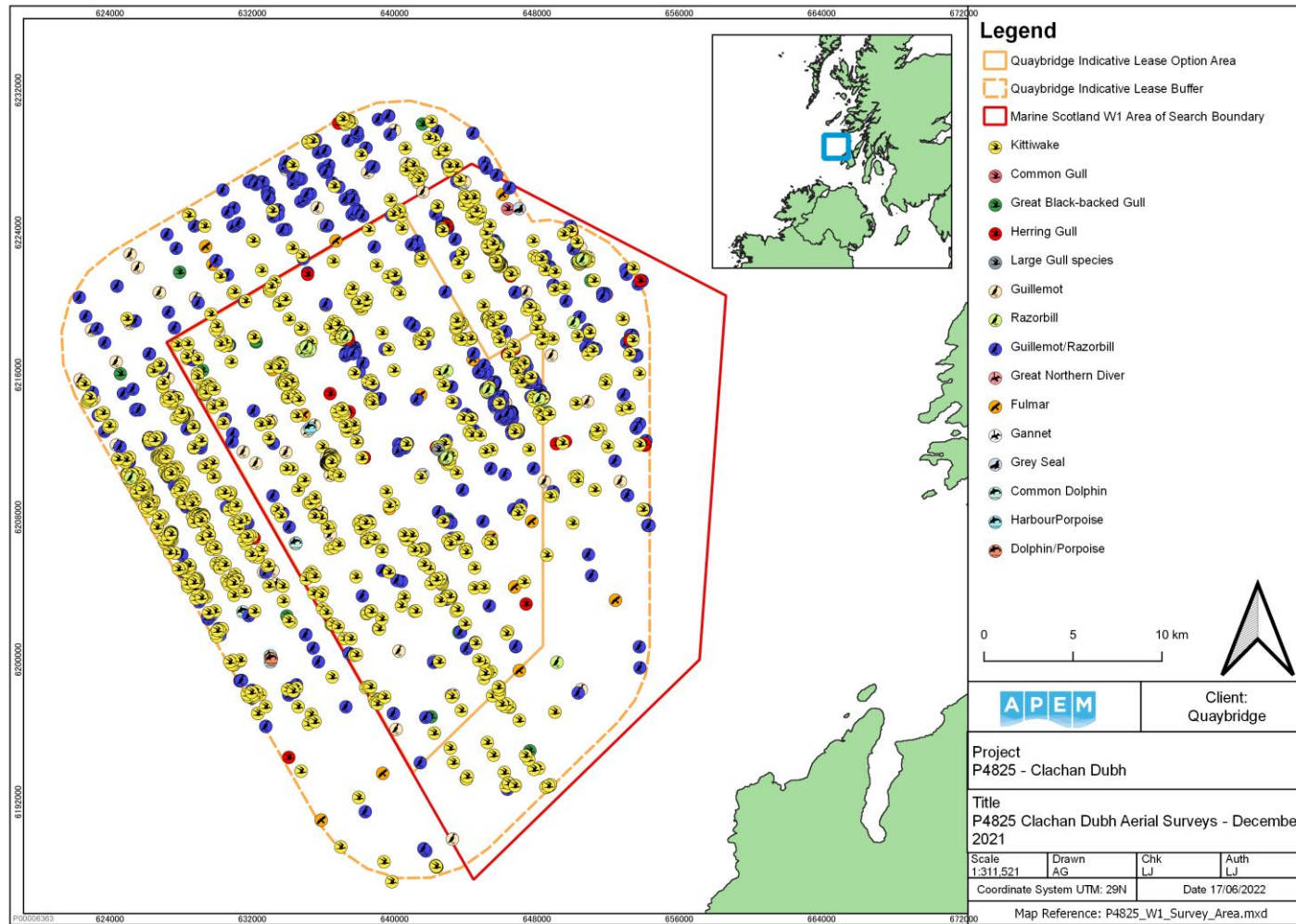


Figure 2 Distribution of all birds and marine megafauna recorded in the December 2021 survey of the Clachan Dubh Lease Option Area plus 6 km buffer

Figure Note: Individuals may appear to overlap if they are in close proximity to each other.

5. Anecdotal Information

One vessel was identified visually from the aircraft during the December 2021 survey and was recorded as a small fishing vessel. No vessels or anthropogenic objects were identified in the aerial imagery during the December 2021 survey.

Appendix I Survey Information

Run	Line No.	Bearing (Degrees)	Groundspeed (knots)	Time on Line (UTC)	Time off Line (UTC)
1	16	331	116	10:27	10:36
2	15	151	120	10:38	10:48
3	14	331	118	10:50	11:01
4	13	151	122	11:02	11:13
5	12	331	117	11:14	11:24
6	11	151	128	11:26	11:36
7	10	331	118	11:38	11:48
8	9	151	121	11:49	11:59
9	8	331	120	12:00	12:10
10	7	151	122	12:11	12:21
11	6	331	120	12:22	12:32
12	5	151	119	12:33	12:41
13	4	331	121	12:43	12:51
14	3	151	122	12:52	12:58
15	2	331	120	12:59	13:02
16	1	151	118	13:04	13:04

Appendix II Scientific Names of Birds and Megafauna

Common Name	Scientific Name
Kittiwake	<i>Rissa tridactyla</i>
Common Gull	<i>Larus canus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Herring Gull	<i>Larus argentatus</i>
Guillemot	<i>Uria aalge</i>
Razorbill	<i>Alca torda</i>
Great Northern Diver	<i>Gavia immer</i>
Fulmar	<i>Fulmarus glacialis</i>
Gannet	<i>Morus bassanus</i>
Grey Seal	<i>Halichoerus grypus</i>
Common Dolphin	<i>Delphinus delphis</i>
Harbour Porpoise	<i>Phocoena phocoena</i>

Appendix III JNCC Bird and Marine Megafauna Groups

JNCC Code	Grouping	Species Code	Species
220	Fulmar	220	Fulmar
710	Gannet	710	Gannet
94003	Small gull species	5900	Common Gull
		6020	Kittiwake
95003	Diver species	40	Great Northern Diver
95034	Large gull species	6000	Great Black-backed Gull
		5920	Herring Gull
95040	Auk species	6340	Guillemot
		6360	Razorbill
8000	Porpoise species	82410	Harbour porpoise
82000	Dolphin species	82540	Common dolphin
70000	Seal species	70010	Grey seal