

MachairWind Offshore Windfarm

Annex 11.2B Third-Party DAS Survey 5 (01 plus 04 March 2021)





Aerial Digital Baseline Surveys of Clachan Dubh

CD Offshore Energy Limited

P00004825

Monthly Report: Survey 06 – March 2021

Matthew Arundale, Simon Warford, and Laura Jervis

Client: CD Offshore Energy Limited

Address: c/o Everoze Partners
5th Floor
30 Queen Charlotte Street
Bristol
BS1 4HJ

Project reference: P00004825

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Project Director: Stephanie McGovern

Project Manager: Laura Jarvis

Other: Simon Warford and Matthew Arundale

APEM Ltd
Aviation Park
Hawarden Airport
Flint Road
Saltney Ferry
Chester
CH4 0GZ

Tel: 01244 520 460

Fax: 01244 533 741

Registered in England No. 2530851

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1. Executive Summary

An aerial survey was conducted off the west coast of Scotland on the 21st March 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, 4,567 birds were recorded in the Survey Area during the survey undertaken for March 2021. The most abundant species was guillemot / razorbill (n=1,716), followed by guillemot (n=1,555), razorbill (n=902), Manx shearwater (n=164), kittiwake (n=122), unidentified auk species (n=76), fulmar (n=16), puffin (n=5), gannet (n=3), unidentified diver species (n=2) and unidentified large gull species (n=2), and great northern diver (n=1), unidentified small gull species (n=1), great black-backed gull (n=1), and unclassified gull species (n=1). A total of 89 marine mammals were recorded in this survey, these were recorded as common dolphin (n=59), harbour porpoise (n=17), unidentified dolphin / porpoise species (n=9), grey seal (n=3), and unidentified seal species (n=1).

A total of 263 birds (6%) were recorded in flight during this survey. These were recorded as kittiwake (n=87), guillemot (n=75), guillemot / razorbill (n=34), Manx shearwater (n=32), razorbill (n=15), fulmar (n=11), unidentified auk species (n=6), gannet (n=2), and great black-backed gull (n=1). There were 4,304 birds recorded as sitting (94%).

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 are currently planned to continue until September 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 sixth survey for year one undertaken for March 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.

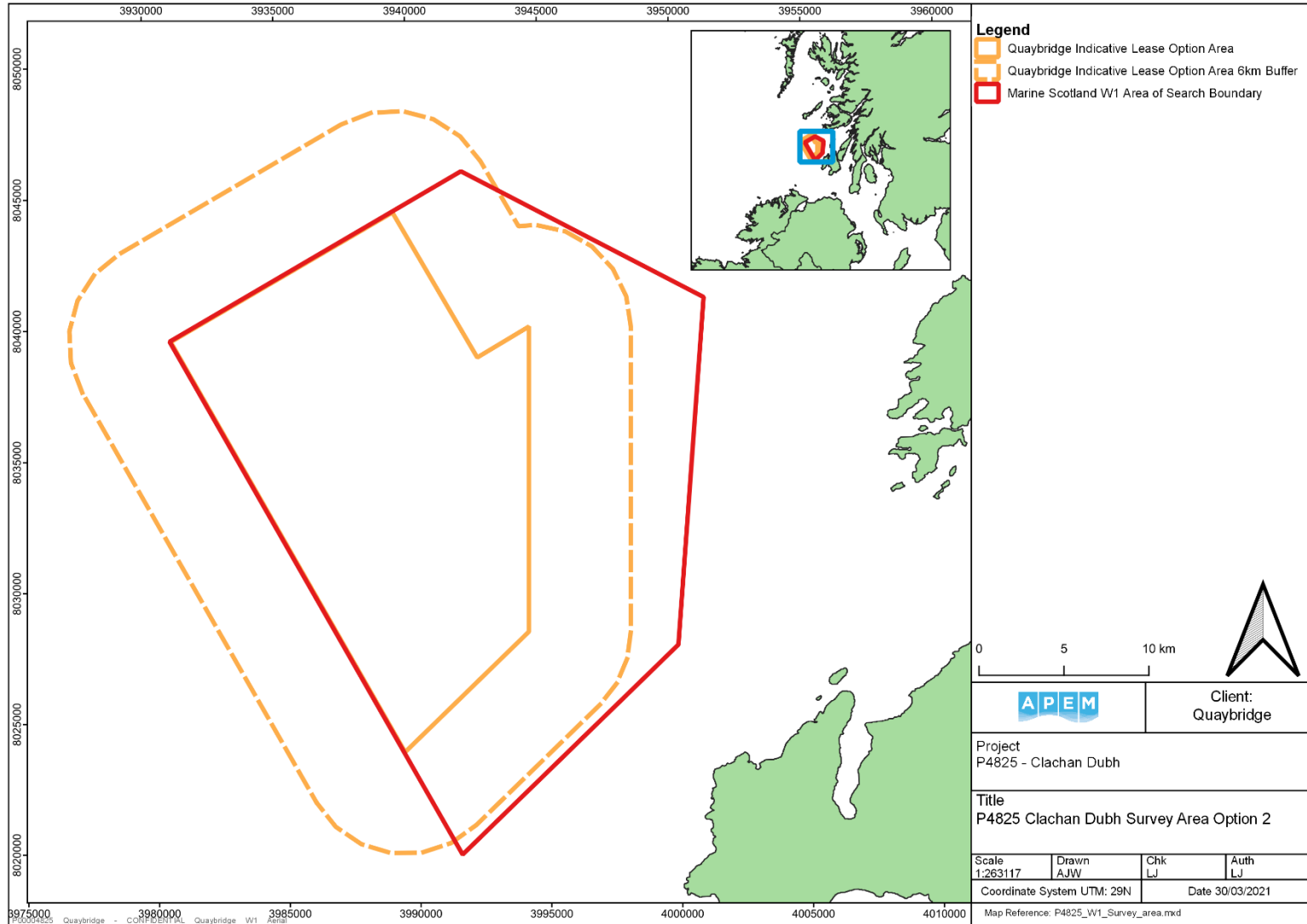


Figure 1 Location of the Clachan Dubh Lease Option Area and 8 km buffer area

3. Summary of Survey

The survey was undertaken on the 21st March 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 |

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 12% generated from 1,403 image nodes.

On the 21st March cloud cover was few (1-10% cloud cover) and visibility remained greater than 10 km throughout the survey. Wind speed was recorded as 11 knots and blew from a north-westerly direction. The sea state was recorded as 1 (calm / rippled). The outside temperature was 0°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 4,567 birds were recorded in the Survey Area on 21st March 2021. Of those birds recorded, 4,304 were observed sitting on the water and 263 birds were flying (Table 2).

A total of 89 marine mammals were recorded during the survey (Table 3).

Table 2 Total number of individuals of birds recorded during the March 2021 survey of the Clachan Dubh plus 6 km buffer Survey Area

| Species | Flying | Sitting | Total |
|-------------------------|------------|--------------|--------------|
| Great Northern Diver | 0 | 1 | 1 |
| Diver species | 0 | 2 | 2 |
| Fulmar | 11 | 5 | 16 |
| Manx Shearwater | 32 | 132 | 164 |
| Gannet | 2 | 1 | 3 |
| Kittiwake | 87 | 35 | 122 |
| Small Gull species | 0 | 1 | 1 |
| Great Black-backed Gull | 1 | 0 | 1 |
| Large Gull species | 0 | 2 | 2 |
| Gull species | 0 | 1 | 1 |
| Guillemot | 75 | 1,480 | 1,555 |
| Razorbill | 15 | 887 | 902 |
| Guillemot / Razorbill | 34 | 1,682 | 1,716 |
| Puffin | 0 | 5 | 5 |
| Auk species | 6 | 70 | 76 |
| Total Birds | 263 | 4,304 | 4,567 |

Table 3 Total number of individuals of marine fauna recorded during the March 2021 survey of the Clachan Dubh plus 6 km buffer Survey Area

| Species | Submerged | Surfacing | Total |
|----------------------------|-----------|-----------|-----------|
| Common Dolphin | 57 | 2 | 59 |
| Harbour Porpoise | 14 | 3 | 17 |
| Dolphin / Porpoise species | 6 | 3 | 9 |
| Grey Seal | 3 | 0 | 3 |
| Seal species | 0 | 1 | 1 |
| Total Mammals | 80 | 9 | 89 |

4.2 Spatial Distribution

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

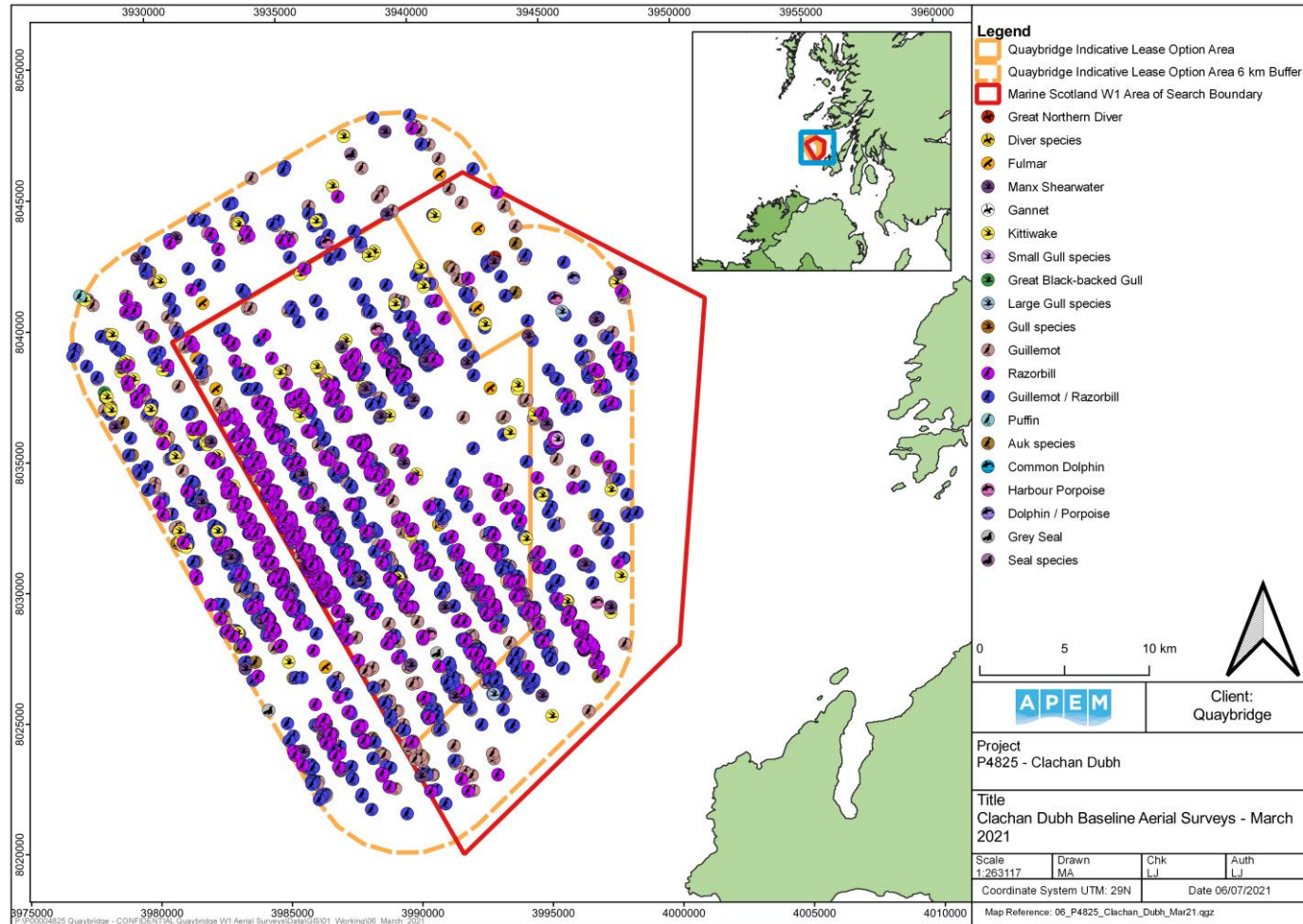


Figure 2 Distribution of all birds and marine mammals recorded in the March 2021 survey of the Clachan Dubh Lease Option Area plus 6 km buffer

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

5. Anecdotal Information

No vessels were recorded visually from the aircraft or in the imagery from the 21st March 2021.

Appendix I Survey Information

| Run | Line No. | Bearing (Degrees) | Groundspeed (knots) | Time on Line (UTC) | Time off Line (UTC) |
|-----|----------|-------------------|---------------------|--------------------|---------------------|
| 1 | 1 | 331 | 112 | 10:06 | 10:07 |
| 2 | 2 | 151 | 125 | 10:10 | 10:12 |
| 3 | 3 | 331 | 111 | 10:15 | 10:22 |
| 4 | 4 | 151 | 124 | 10:24 | 10:31 |
| 5 | 5 | 331 | 107 | 10:34 | 10:44 |
| 6 | 6 | 151 | 124 | 10:46 | 10:55 |
| 7 | 7 | 331 | 100 | 10:58 | 11:09 |
| 8 | 8 | 151 | 125 | 11:10 | 11:20 |
| 9 | 9 | 331 | 110 | 11:23 | 11:34 |
| 10 | 10 | 151 | 127 | 11:36 | 11:46 |
| 11 | 11 | 331 | 107 | 11:48 | 11:59 |
| 12 | 12 | 151 | 121 | 12:01 | 12:12 |
| 13 | 13 | 331 | 104 | 12:14 | 12:26 |
| 14 | 14 | 151 | 124 | 12:27 | 12:38 |
| 15 | 15 | 331 | 107 | 12:40 | 12:50 |
| 16 | 16 | 151 | 119 | 12:52 | 13:01 |

Appendix II Scientific Names of Birds

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

Appendix III JNCC Bird and Marine Mammal Groups

| JNCC Code | Grouping | Species Code | Species |
|-----------|---------------------------------------|--------------|--------------------------|
| 95018 | Scoter species | 2130 | Common scoter |
| | | 2150 | Velvet scoter |
| 95003 | Diver species | 20 | Red-throated diver |
| | | 30 | Black-throated diver |
| | | 40 | Great northern diver |
| 220 | Fulmar | 220 | Fulmar |
| 710 | Gannet | 710 | Gannet |
| 95009 | Cormorant / shag | 720 | Cormorant |
| | | 800 | Shag |
| 95032 | Skua species | 5660 | Pomarine skua |
| | | 5670 | Arctic skua |
| | | 5680 | Long-tailed skua |
| | | 5690 | Great skua |
| 94003 | Small gull species | 5780 | Little gull |
| | | 5820 | Black-headed gull |
| | | 5900 | Common gull |
| | | 6020 | Kittiwake |
| 95034 | Large gull species | 5920 | Herring gull |
| | | 5910 | Lesser black-backed gull |
| | | 6000 | Great black-backed gull |
| 95037 | Tern species | 6110 | Sandwich tern |
| | | 6150 | Common tern |
| | | 6160 | Arctic tern |
| | | 6240 | Little tern |
| 95038 | 'Commic' tern (common or Arctic tern) | 6150 | Common tern |
| | | 6160 | Arctic tern |
| 95040 | Auk species | 6340 | Guillemot |
| | | 6360 | Razorbill |
| | | 6540 | Puffin |
| 8000 | Porpoise species | 82410 | Harbour porpoise |
| 82000 | Dolphin species | 82510 | Bottlenose dolphin |
| | | 82520 | White-beaked dolphin |
| | | 82530 | White-sided dolphin |
| | | 82540 | Common dolphin |
| 70000 | Seal species | 70010 | Grey seal |
| | | 70020 | Common (harbour) seal |