



TotalEnergies E&P North Sea UK Ltd

Culzean - Floating Offshore Wind Turbine Pilot Project

Appendix G: Culzean Topsides Ornithology (Nesting Bird) Surveys

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ACRONYMS AND ABBREVIATIONS

ACRONYM / ABBREVIATIONS	DEFINITION
AON	Apparently Occupied Nests
CPF	Central Processing Facility
ERRV	Emergency Response and Rescue Vessel
EU	European Union
GBB	Great black backed
JNCC	Joint Nature Conservation Committee
LBB	Lesser black back
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
PNL	Potential Nest Locations
TEPNSUK	TotalEnergies E&P North Sea UK Ltd.
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
ULQ	Utilities Living Quarters
WHP	Wellhead Platform

EXECUTIVE SUMMARY

A bird census was undertaken on the Culzean platforms to identify which species currently utilise the asset. The purpose of the study was to locate potential nest sites or bird hotspots (areas of increased bird activity – identified by large amounts of guano, food remains and or roosting sites). Recognising signs of bird activity (particularly nesting), allows for a targeted response in remediation or deterrence. Such actions are important in maintaining safe walkways or working areas and reducing the risk of corrosion and damage caused by birds and their guano.

Each accessible deck was systematically studied over three days. No nesting birds or potential nest locations were observed during the walkaround surveys conducted on Culzean platforms. Five bird species were recorded with only one utilising the platform during the survey days. Of the five species of seabird recorded in the surrounding waters, only Kittiwakes have been recorded nesting on offshore platforms. It is unlikely that there will be any successful nesting activity initiated this far into the 2023 breeding period.





1 INTRODUCTION

This report summarises the findings of the Culzean Platform topsides survey undertaken in July 2023. This census was undertaken to assess the extent of birds (or evidence thereof), to record Potential Nest Locations (PNL) and to confirm the presence/absence of nests or birds displaying nesting behaviour on the three platforms. This was undertaken during the predicted seabird nesting period to identify any Apparently Occupied Nests (AON).

Offshore structures such as oil platforms in the North Sea create a manmade archipelago of islands that provide several opportunities to birds. Patterns of attraction vary across species and seasons (Tasker *et al.* 1986; Burke *et al.* 2005). Birds can be attracted to offshore installations for their foraging opportunity (Fowler *et al.* 2018) and as a refuge or roosting site (Ronconi *et al.* 2015). They may also get attracted to platforms by the illumination of either lighting or the flare (Wiese *et al.* 2001; Burke *et al.* 2005; van de Laar 2007). Certain species have recently been recorded nesting on North Sea assets. These structures present ideal nesting ledges akin to cliff ledges. The following sections describe in more detail the most likely opportunities that birds are exploiting.

A long-term bird monitoring programme in the North Sea (Norwegian waters), has recorded 159 different bird species utilising platforms. Over a nine-year data period, Gulls were the most common species group observed, comprising 79.9% of the observations (Table 1.1). Great black-backed gulls (*Larus marinus*) were the most common species observed (in total 35,003 individuals) (Christensen-Dalsgaard *et al.*, 2019a).

Table 1.1 - Distribution of species groups observed on offshore installations in the period 2010-2019.

Species	Gull	Fulmar	Passerine	Corvid	Falcon	Cormorant	Dove	Duck	Hawk	Swallow
Individuals	49,411	8,214	2,530	524	272	196	168	120	114	101

Species groups with less than 100 individuals are omitted from the table. (adapted from Dalsgaard *et al.*, 2019).

1.1 Foraging

Seabirds have evolved to exploit a range of food resources from seas and oceans and the diet of seabirds is reflected in their physiology and behaviour. Different species have evolved varying techniques for foraging in the marine habitat with the basic feeding strategies including surface feeding, diving and predation on higher vertebrates (Schreiber and Burger, 2001). The foraging ranges of seabirds is often different within and outside of the breeding season, with many species remaining close to the nest site during the breeding season but extending the distance they will travel for food outside of this period. It is likely that some species will forage in the vicinity of the platforms and could use the infrastructure to aid foraging (for example as a vantage point, resting point or point of refuge during poor weather). Small fish and zooplankton are sometimes attracted to the light in surface waters. Some species of gulls have been observed utilising the glare from lights and flares to aid foraging opportunities in the surface water (Burke *et al.* 2005). Fulmars and gull species also opportunistically forage in the waste streams from the platforms. The presence of passerines and other birds at the installation further attract birds of prey such as falcons, which use the platforms for hunting (Russell, 2005).

1.2 Migration

Many bird species are known to make long migration journeys, on these long journeys occasional stop overs are made to recoup energy (Schreiber and Burger, 2001). It is possible that some species may use the platforms as a roost or refuge, along a migration route. During autumn and spring, birds migrate across and along the North Sea (Figure 1.1). Several non-seabird species may pass in the vicinity of the Culzean platform during migration; this includes passerines (perching birds), which perform long-distance migrations through the wider area. Often however this can be counterproductive as the lack of food and water mean that birds continue to utilise reserves whilst resting. Instances of mortality can often be caused by starvation.

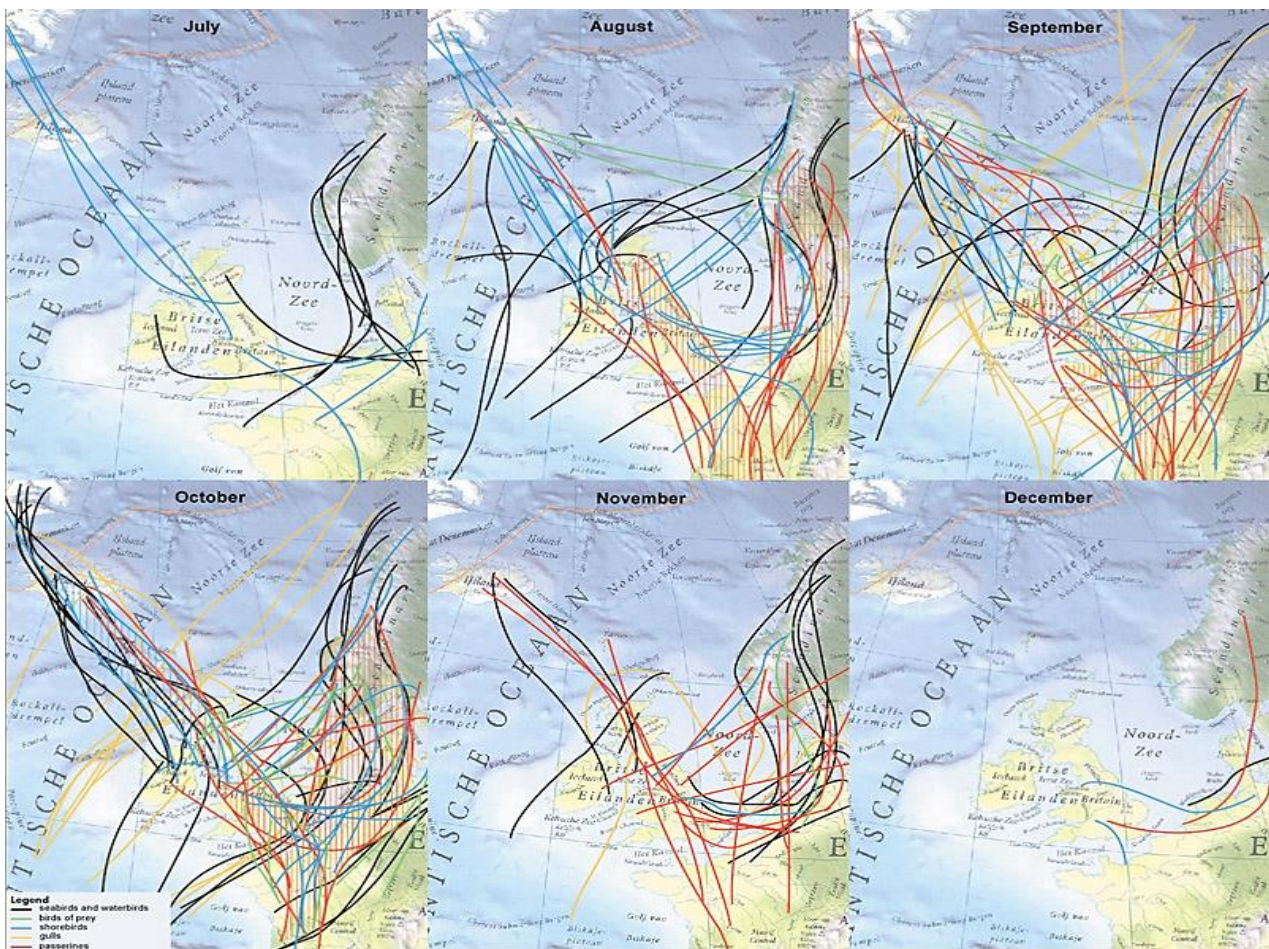


Figure 1.1 - Migration Routes of bird groups through and around the North Sea area.

The following groups are distinguished: seabirds and waterbirds (black lines), raptors (green lines), shorebirds (blue lines), gulls and terns (orange lines), and songbirds (red lines). From top left to bottom right, maps are for July, August, September, October, November, and December. (Poot et al., 2008).

1.3 Disorientation and Vagrancy

Many of the birds recorded on platforms are there unintentionally. During high winds or inclement weather, birds may utilise the platform as a refuge to rest. Storm bound birds and those blown off course can be considered as accidental records and are not considered further.

Attraction to the platforms artificial lighting has been shown to cause negative modifications to the behaviour of many bird species. Disorientation of migrating species can lead to circling around the light source, as artificial lights interfere with the birds' ability to orient themselves (Poot et al., 2008, Evans Ogden 1996). Many nocturnally migrating birds die or lose a large amount of their energy reserves during migration as a result of encountering artificial light sources. Vulnerability to artificial lighting varies between different species and age classes and according to the influence of season, lunar phase and weather conditions. In general, young birds are more likely to become disorientated by man-made light sources. Most collisions occur in poor weather, when the moon is new or during periods of peak migration (Montevecchi 2006).

1.4 Roosting and Residency

Predictably, there are a number of seabird species regularly observed utilising offshore platforms for roosting. Numerous seabird species actively utilise the platforms as a roosting opportunity between foraging trips. Loafing (non-roosting sedentary behaviours) is also observed particularly in gull species, with family groups and small mixed flocks of immature and adult birds taking up semi-permanent residence.

There is now growing evidence of non-seabird species utilising platforms on a regular basis too. In the Central North Sea and Northern North Sea Carrion Crows (*Corvus corone*) and Jackdaws (*Corvus monedula*) have been recorded as resident. These birds would fly between platforms when foraging, often exploiting infield vessel movements. They have been observed eating a diet of fish regurgitate from Gulls, handouts from offshore crew, food scraps from waste skips on both the platform and on the supply vessel and preying on live passerines that stop to rest on the platform. Opportunistic residency of non-seabird species is more likely to be observed in predatory species such as raptors and/or omnivorous and adaptive species such as Corvids.

1.5 Nesting

Seabirds nest in single or mixed-species colonies of varying densities, typically on offshore islands devoid of terrestrial predators (Schreiber and Burger, 2001) and on remote mainland cliffs. Seabirds will be the most prevalent users of the area and the platforms; as such, they will be the species which will have the greatest potential to nest. However it should be noted that, Carrion Crows have been observed on one platform for over a decade and have nested for at least two years. The large well-constructed nests comprised of any suitable detritus that the crows find on the platform including discarded tie wraps, ear buds, wire mesh and safety spectacles.

For each family of seabird known to regularly breed in the United Kingdom (UK), an assessment of nesting likelihood on Culzean has been carried out. Likelihoods defined are presented in Table 1.2.

In UK waters the only species thus far recorded nesting on offshore installations are Kittiwake (*Rissa tridactyla*), Lesser black back (LBB) Gull (*Larus fuscus*), Herring Gull (*Larus argentatus*) and Carrion Crow (see Table 1.2). Of the few species that have been reported to use man-made infrastructure (coastal and offshore) for nesting, a summary of their nesting behaviour and periodicity is presented in Table 1.3. This data has been collated to ensure that the nesting behaviours and timeline for any species recorded nesting on the platforms are fully understood.

1.6 Legislative Context

TotalEnergies E&P North Sea UK Ltd. (TEPNSUK) are fully aware of their responsibilities under the following legislative expectations and requirements. The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) transpose the European Union (EU) Wild Birds Directive and secure protection of wild birds, their eggs and nests in the offshore marine area, including offshore marine installations. It is an offence under Regulation 40 to deliberately injure, kill or disturb any wild bird or take, damage or destroy the nest whilst in use or being built or take or destroy an egg.

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amend the 2017 Regulations to ensure that the transposition of the Wild Birds Directive (and Habitats Directive) continues to be operable upon the UK's exit from the European Union. The transposition note for the 2017 Regulations indicates that it was intended that regulation 40 would transpose Article 5 of the Wild Birds Directive so despite deliberate disturbance not being specified it is intended it should be included (JNCC, 2021).

1.7 Guidance Recommendations

Recent decommissioning operations in the United Kingdom Continental Shelf (UKCS) have reported significant numbers of Kittiwake nests on the cardinal faces and undersides of certain platforms. They are colonial nesters and readily utilise offshore platforms as an artificial cliff habitat. (Christensen-Dalsgaard *et al.*, 2019a and 2019b; Xodus, 2020).

Current advice from Joint Nature Conservation Committee (JNCC) requests that all platforms that will have significant decommissioning operations planned within the following years breeding period, should have a survey undertaken to assess the extent of Kittiwakes nesting on the platform. The survey methodology however is applicable to all potential nesting seabirds offshore.

An awareness of the birds utilising the platform will allow the operator the opportunity to implement a deterrence strategy, and/or apply for a licence to disturb if operations will lead to disturbance of nests that cannot be mitigated against. The survey data can be used in order to inform the planning and scheduling of works in order to avoid the risk of an offence and/or to determine whether a disturbance licence needs to be sought from Offshore Petroleum Regulator for Environment and Decommissioning (OPRED).

Table 1.2 - Likelihood of UK breeding birds using platforms for nesting

Behaviour	Highly unlikely	Unlikely	Possible	Likely
Nesting	Species do not nest on offshore structures. Nesting strategy precludes platform use.	Species not known to nest on offshore infrastructure.	Species is known to nest on remote infrastructure	This habitat is the preferred/only nesting habitat.

Species	Likelihood	Description
Kittiwake	Likely	Kittiwakes regularly nest on offshore platforms in all areas of the UKCS. Nesting has been recorded in the Northern, Central and Southern North Sea regions and in the Morecombe Bay area. The Southern North Sea has the highest concentration of offshore breeding stations. Note: colonies are denoted by a group of related individuals (Coulson, 2011). Kittiwakes favour ledges on the outer edges of the platforms with easy access to the sea.
Herring Gull LBB Gull Great black backed Gull (GBB Gull) (Larus marinus)	Possible	Gull species from the family Laridae require material to construct nests. This often takes the form of branches and grass, but they may use man-made materials. Given the number of such birds that are expected to be present in the area, it is more likely that species from this group will nest on platforms than any other species group. However, it is still considered to be a rare event. Herring Gulls have been recorded nesting on offshore platforms.
Carrion Crow	Possible	Carrion crows are highly adaptive and use a wide variety of habitats. They typically nest in open country, preferably with at least scattered trees and typically nest in the crown of tall trees. However, in more open habitats, cliff edges on exposed coasts may be used and man-made structures such as electricity pylons are used. Nests are based on sticks and twigs; however they are recorded using man-made materials (Madge, 2009). Crows have been recorded on offshore platforms.
Northern Fulmar (Fulmarus glacialis)	Unlikely	Nest on wide ledges on cliff tops but will also nest on more gently sloping land and under boulders (JNCC, 2021a). Require soft nesting material.
Guillemot (Uria aalge) Razorbill (Alca torda) Black Guillemot (Cepphus grille) Puffin (Fratercula arctica)	Unlikely	Most auk species breed and nest in coastal areas on cliffs (DECC, 2004), whilst puffins are known for excavating burrows. Species in this group do not always require material to construct a nest.

Species	Likelihood	Description
Cormorant <i>(Phalacrocorax carbo)</i> European Shag <i>(Phalacrocorax aristotelis)</i>	Unlikely	Cormorants are flexible and adaptive in their nest building locations but normally build on rocky cliffs or islets. However, this species is known to build in trees and manmade structures such as abandoned platforms, piers and masts (European Commission, 2016). A European shag’s nest is constructed of marine vegetation and flotsam, from above high-water level to 100 m high on ledges, in crevices on cliffs. (Birdlife International, 2023).
Gannet <i>(Morus bassanus)</i>	Unlikely	Usually nest in large colonies on cliffs and offshore islands, but also sometimes on the mainland (Birdlife International, 2023). This species requires soft nesting material such as grass to construct nests.
Great Skua <i>(Stercorarius skua)</i> Arctic Skua <i>(Stercorarius parasiticus)</i>	Unlikely	In Scotland, Arctic skua mostly nest in moorland colonies close to aggregations of auk (JNCC, 2021d). Great skua breed on islands on flat ground with some vegetation cover. Most birds breed within 1 km of their birthplace (Birdlife International, 2023).
Common Gull <i>(Larus canus)</i> Black-headed Gull <i>(Chroicocephalus ridibundus)</i>	Unlikely	Common Gull and Black headed Gull are habitually inland nesters.
Manx Shearwater <i>(Puffinus puffinus)</i> Storm Petrel <i>(Hydrobates pelagicus)</i>	Highly unlikely	Nest on remote islands under boulders and typically in burrows below ground (JNCC, 2021b; JNCC, 2021c).
Sandwich Tern <i>(Thalasseus sandvicensis)</i> Common Tern <i>(Sterna hirundo)</i> Arctic Tern <i>(Sterna paradisaea)</i> Little Tern <i>(Sternula albifrons)</i>	Highly unlikely	Terns most often breed on open sandy or stone strewn areas on coasts and islands (Burger and Gochfield, 1996).



Table 1.3 Nesting data for UK bird species recorded utilising man-made structures. *Birds in bold are the only species recorded nesting on offshore platforms. Note: Data provided is based on best available information. Several factors such as weather conditions, resource availability and geographical location can affect the timings of events.

Species	Site fidelity	Return/ Arrival	Courtship, pair bonding	Nest Building Activity	1st Egg period	Incubation period	No of days incubating	Fledgling rearing period	Rearing period duration	Nest Abandoned	Source	
Kittiwake*	Yes	Mar	Mar	Mid-Apr	May	Jun	25-32	Jul	35-54	Aug-Sep	1,10	
Herring Gull*	Yes	Mar	Mar	Late Apr	Mid-May	Jun	28-30	Jul	35-40	1st week Aug	1,11	
LBB Gull*	Yes	Early Apr	Early Apr	Mid-May	Jun	Jun	24-27	Jul	30-40	Aug	1,11	
GBB Gull	Yes	Mar	Mar	Mid-Apr	Jun	Jun	27-28	Jul	50-55	Mid-Aug	1,11	
Carrion Crow*	Occasional	-	Early Feb	Feb-Mar	Mar Apr	-	Apr-May	18-20	May - Jun	22-35	Jun - Jul	12
Fulmar	Yes	Winter	Apr	Apr	May Jun	-	May – Jun	52-53	Jun – Aug	46-51	Aug	1,2,3,4
Black Guillemot	Yes	Mar- Apr	Apr	-	Mid-May	Jun	23-40	Jul - Aug	31-51	Aug	1,2,5,6,7	
Cormorant	Yes	Feb - Mar	Mar - Apr	Apr	Apr	Apr – Jun	28-31	Jun – Aug	48-52	Aug – Sep	1,4	
Shag	Yes	Feb - Mar	Mar	Apr – Jun	Jun	Apr – Jun	30-31	Jun – Aug	48-58	Aug – Sep	1,2,8,9	

References: 1. Robinson, R.A. (2005); 2. Miles, W., & Mellor, M. (2018); 3. Edward *et al.* (2013); 4. AAB (2021); 5. Greenwood, J. G. (2007); 6. JNCC (2020); 7. Wanless, *et al.* (2008); 8. Grist *et al.* (2014); 9. RSPB (2021); 10. Coulson, J. C. (2011) 11. Coulson, J. C. (2019); 12. Joys, A. C. & Crick, H. Q. P. (2004).

2 METHODOLOGY

2.1 Survey Methodology

A bird census was undertaken by a trained ornithologist on the Culzean platforms to identify which bird species utilise the asset and to locate potential bird hotspots (areas of increased bird activity – identified by large amounts of guano, food remains and or roosting sites). Recognising early signs of potential issues relating to nesting and hotspots, allows for a targeted response in remediation or deterrence. Each accessible deck was systematically studied over three days. The following information (where available) was collated:

- Species diversity, abundance, sex and bird behaviour
- PNL/AON detection, monitoring and protection
- Identifying early signs bird activity hotspots

2.2 PNL/Nest assessment

The platforms were catalogued for presence/absence of PNL or nest evidence and if found, AON. If found these would be recorded digitally, and a location marked. Any nests recorded would be photographed/assessed for nesting stage, and more detailed close-up digital information collated for further assessment onshore. Any nests recorded would be mapped, referenced, and photographed. PNLs or observable evidence can include the following:

- concretions of guano, build up or staining
- evidence of perching, loafing and roosting guano deposits
- evidence of nest material, detritus and debris
- evidence of corrosion, scaling or surface bleaching caused by nesting activity
- evidence of flaking/loss of grime layers and paint through mechanical disturbance
- evidence of algal growth caused by nutrient build up
- evidence of foraging/food detritus/feathers/carcasses

2.3 AON Assessment

The following section summarises the planned methodology that would have been employed in accordance with JNCC recommendations. Any AON recorded would be numbered sequentially and photographed. The status of each would be referenced based on the following codes:

- I = adult sitting tight, apparently incubating adult
- c/1, c/2, c/3 = number of eggs present (clutch size)
- c/0 = empty well-built nest with adult in attendance
- c/x = adult standing at well-built nest, contents unknown
- b/1, b/2, b/3 = number of chicks present (brood size), with age
- /1, /2 = trace of nest, with one or two adults present.

2.4 Kittiwake Fledgling Assessment

Should any Kittiwake nests be recorded, and fledglings observed, the following assessment of age would be made based on the Kittiwake fledgling guide (Harris, 1987; Maunder and Threlfall, 1972). Days are averages. Any other species recorded with fledglings will be assessed based on available scientific literature as required.

- Black tips to feathers of neck just visible - 9 days
- Tail feathers erupt - 10 days
- Black tips to upper wing visible - 11 days
- Black tips to vanes of tail feathers - 16 days
- Most down lost but still some on top of head and back - 25-30 days
- Wing tips equal length of tail - 30 days
- Wing tips 1-2 cm longer than tail - 36 days
- Wing tips 3-4 cm longer than tail - 40-45 days

2.5 Digital Image Assessment

All digital records and opportunistic images taken offshore during 2023 underwent an additional round of analysis onshore. Each image was catalogued then assessed for the presence/absence of PNL or other bird activity.

3 TOPSIDES SURVEY RESULTS 2023

The following section summarises the bird activity recorded on the Culzean. Table 3.1 to Table 3.3 summarise the results from the survey for each platform.

Survey Dates: 18/07/2023, 19/07/2023, 20/07/2023.

Platform: Culzean Utilities Living Quarters (ULQ), Central Processing Facility (CPF), Wellhead Platform (WHP) (Figure 3.1).

Visibility: Good/Moderate



Figure 3.1 - Culzean Platform. From left to right – ULQ, CPF, WHP.

Table 3.1 - ULQ survey results

Aspect	AON/PNL	Evidence of bird activity	18/07/2023	19/07/2023	20/07/2023
ULQ NW Face	No	No	-	-	-
ULQ NE Face	No	No	-	-	-
ULQ SE Face	No	No	Unidentified passerine (1)	-	-
ULQ SW Face	No	No	-	-	-
ULQ Undersides & Cellar Deck	No	No	-	GBB Gull (1 adult, 1 immature)	GBB Gull (1 adult, 2 immature)
ULQ Topsides	No	No	-	-	-
ULQ Cranes	No	No	-	-	-
ULQ Helideck	No	Evidence of deterrence	-	-	-
ULQ Vicinity - 500 m zone	N/A	No	Fulmar (2), Kittiwake (3 adult), Guillemot (1)	Fulmar (2), Kittiwake (3 adult, 1 immature), Guillemot (1),	Fulmar (1), Kittiwake (2 adult), Guillemot (2)

Table 3.2 - CPF survey results

Aspect	AON/PNL	Evidence of bird activity	18/07/2023	19/07/2023	20/07/2023
CPF NW Face	No	Evidence of gull deterrence – zip ties	-	-	-
CPF NE Face	No	Guano on exposed pipes	-	-	-
CPF SE Face	No	No	-	-	-
CPF SW Face	No	No	-	-	-
CPF Undersides & Cellar Deck	No	No	-	GBB Gull (1 adult, 1 immature)	GBB Gull (1 adult, 1 immature)
CPF Topsides	No	No	-	-	-
CPF Cranes	No	No	-	-	-
CPF Flare Boom	No	Evidence of guano and bird activity	-	-	-
CPF Vicinity - 500 m zone	N/A	No	Fulmar (1), GBB Gull (1 adult)	Fulmar (1), Guillemot (2), Gannet (1 immature)	Fulmar (3), Guillemot (1), Kittiwake (2 adults)

Table 3.3 - WHP survey results

Aspect	AON/PNL	Evidence of bird activity	18/07/2023	19/07/2023	20/07/2023
WHP NW Face	No	No	-	-	-
WHP NE Face	No	Guano on equipment and infrastructure. Guano on lifeboat and davit	-	-	-
WHP SE Face	No	No	-	-	-
WHP SW Face	No	No	-	-	-
WHP Undersides & Cellar Deck	No	Significant amounts of guano on jacket structure below cellar deck	GBB Gull (11 immature, 2 adult)	GBB Gull (15 immature, 1 adult)	GBB Gull (7 immature)
WHP Weatherdeck	No	No	-	-	-
WHP Crane	No	No	-	-	-
WHP Vicinity - 500 m zone	N/A	No	Fulmar (5)	Fulmar (1), Gannet (1 adult)	GBB Gull (4 immature, 1 adult), Grey Seal (1), Fulmar (9)
Emergency Response and Rescue Vessel (ERRV) / Supply Vessel	N/A	No	-	-	-

4 CULZEAN IN SUMMARY

No nesting birds were observed during the surveys conducted on Culzean. It is unlikely that there will be any successful nesting activity initiated during the 2023 breeding season.

Nest Activity: None recorded.

Seabirds: There is a resident flock of GBB Gulls that are utilising the Culzean platform (Figure 4.1). Primarily utilising the helideck and the jacket and spider deck areas of the WHP. The majority of the guano recorded across all three platforms is attributable to these birds. There is currently no evidence that they are nesting anywhere on the platforms.

Other species: None recorded during survey period. One passerine was noted but not identified due to distance. It is not expected that migrant birds would be present on the platforms at this point in the year.

Surrounding waters: The following species were recorded in and around the 500m zone during the survey period: Fulmar, GBB Gull, Gannet, Kittiwake, Guillemot.

Marine mammals: Grey Seal (Figure 4.1)

Areas of high bird activity: No significant areas of concern are currently noted on Culzean.

- ULQ: Helideck has had historical issues with roosting/loafing GBB Gulls. However there are temporary deterrence measures in place to manage this including tape which blows in the wind acting as a visual deterrent (Figure 4.2).
- CPF: The only area with accumulations of guano is the exposed pipes on the NE face (Figure 4.3). Historical deterrence (zip ties) was noted on the NW face suggesting ongoing issues with GBB gulls roosting in that corner (Figure 4.3).
- WHP: Significant amounts of guano on jacket structure below cellar deck which is expected to be mainly due to limited human disturbance on the WHP (Figure 4.3).



Figure 4.1 - Species observed utilising the Culzean platform. Top – GBB Gulls, Bottom – Grey Seal



Figure 4.2 - Historical evidence of deterrence highlight areas of heavy bird use. Left – CPF walkway, Right – Helideck on ULQ



Figure 4.3 - Areas of guano build up due to roosting/loafing GBB Gulls. Top – WHP Jacket, Bottom Left – CPF NE face pipework, Bottom right – Lifeboat and davit on WHP

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