Advice Note

Seabird Survey Methods for Offshore Installations:

Black-legged kittiwakes

Updated April 2025

Contents

Summary

The Conservation of Offshore Marine Habitats and Species Regulations 2017 transpose the 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 the 2017 Regulations 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.

Regulation 40 of the 2017 regulations highlights the offences:

> Protection of wild birds, their eggs and nests
>
> 40.–(1) Subject to regulations 41 and 55, a person who deliberately–
> (a) captures, injures, or kills any wild bird,
> (b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built, or
> (c) takes or destroys an egg of any wild bird,
> is guilty of an offence.
>
> The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)

There are instances where offshore oil and gas operations may be at risk of causing an offence with regards to wild birds. There is evidence that seabirds, particularly kittiwakes, nest on offshore installations. This may pose challenges for operational activities, including decommissioning and associated preparatory works such as well plug and abandonment activities. Offences will occur for example, where an installation which has nesting birds is removed from its location onto a heavy lift vessel (HLV). Nesting birds, eggs and chicks will either need to be removed prior to the lift if the nests are in anchor point locations for the lift, or if the nests are completely removed from the location along with the platform structure once it is shipped to shore on the heavy lift vessel. Adults will be unable to continue to build their nests or tend to the eggs and/or chicks. Therefore, this results in an offence under the above regulation 40.

The 2017 Regulations give the relevant administration the power to grant licences, in some limited and controlled circumstances, that allow actions to be carried out that would otherwise constitute an offence. The Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) is the competent authority, on behalf of the Department for Energy Security and Net Zero (DESNZ), for ensuring compliance with the requirements of the Wild Birds Directive for offshore oil and gas operations.

In order to establish whether birds are nesting on an installation, survey work may be required. 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 wild birds licence needs to be sought from OPRED.

The wild birds licence applications made to OPRED so far have related to black-legged kittiwakes and a small number of great black-backed gulls. This advice note updates the March 2021 advice note, due to industry and regulator experience of surveying nesting birds, mitigation methods, joint industry and regulator workshops, and discussions with JNCC and OPRED since 2021.

The advice note provides information on kittiwake identification, followed by a methodology to determine whether kittiwakes are breeding on an installation. It provides details of how to obtain an accurate estimate of the number of breeding birds and the likely fledging date of any chicks, to help inform decision-making regarding the scheduling of operations and/or progressing works under any wild birds licence issued by OPRED. There are currently 3 sign

posting documents on OPRED's webpage for kittiwake, great black backed gulls and herring gulls. These documents contain information and links to documents which can be used to apply for a wild birds licence.

1. Introduction

1.1. Regulatory landscape

The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) transpose the 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, whilst Regulation 42 prohibits certain methods of capturing or killing wild birds.

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 after the UK's exit from the European Union. The intention is to ensure habitat and species protection and standards as set out under the Nature Directives are implemented in the same way or an equivalent now that the UK has left the EU.

Article 9 of the Wild Birds Directive gave some limited reasons for derogation from the provisions of Article 5 to 8 providing there is no other satisfactory solution. These derogations are continued under Regulation 55 of the 2017 Regulations.

Under Regulation 55, the relevant administration has the power to grant licences in some limited and controlled circumstances that allow actions to be carried out that would otherwise constitute an offence. OPRED is the competent authority, on behalf of DESNZ, for ensuring compliance with the requirements of the Wild Birds Directive for offshore oil and gas operations. There are certain licensing tests that need to be met depending on which Regulation 55 licensing route is being considered. Licensing is most likely to be under 55(1)(a) & 55(2) or 55(3) & (4) in relation to offshore oil and gas operations, however the potential for wild birds licensing should be discussed with OPRED. OPRED will also take advice from JNCC in relation to any licence applications. JNCC is a statutory advisor to the UK Government and devolved administrations on issues relating to nature conservation in UK offshore waters (beyond the territorial limit).

The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended) (Regulation 3(1)) requires the Secretary of State and the North Sea Transition Authority (NSTA) to go beyond the 2017 Regulations in exercising their relevant functions, "*in such manner and to such extent as each shall consider necessary to secure that offshore oil and gas activities are carried out in a manner that is consistent with the requirements of the Directives*". The Directives refers to the Habitats Directive, and the Wild Birds Directive, and relevant function meaning any function exercisable by the Secretary of State or the NSTA in relation to or in connection with offshore oil and gas activities including functions exercisable under the Petroleum Act 1998 or any licence granted or having effect as if granted under that Act.

Regulation 55 (1), (2), (3) and (4) is shown in the table below:

55.—(1) Regulations 40, 42 and 43 do not apply to anything done under and in accordance with the terms of a licence granted by the relevant administration under this paragraph, and— (a) in the interests of preserving public health, public safety or air safety; (b) for the purpose of preventing serious damage to fisheries; (c) for the purpose of protecting flora or fauna; (d) for scientific or educational purposes; or (e) for the purposes of the re-population of an area with, or the re-introduction into an area of, wild birds (including any breeding necessary for those purposes). (2) The relevant administration must not grant a licence for any purpose mentioned in paragraph (1) unless satisfied that, as regards that purpose, there is no other satisfactory solution. (3) The relevant administration may grant a licence to permit the capture, keeping or other judicious use of certain wild birds notwithstanding that the licence is not for a purpose within paragraph (1). (4) The relevant administration must not grant a licence under paragraph (3) unless satisfied that— (a) there is no other satisfactory solution than granting the licence; and (b) the grant of the licence would be consistent with the restrictions in Article 9(1)(c) of the Wild Birds Directive (namely “under strictly supervised conditions and on a selective basis” and in respect of a small number of birds). … The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)

1.2. Kittiwake conservation status

At the time of the last breeding seabird census (Seabirds Count, 2015-2021), the UK was home to around 4.6 million breeding pairs (Burnell et al., 2024), which traditionally nest in natural sites such as remote islands, moorland and coastal cliffs. One species, the black-legged kittiwake (*Rissa tridactyla*), hereafter referred to as kittiwake, nests on small ledges on coastal cliffs around the UK. There are estimated to be 241,321 breeding pairs within the UK, comprising 6% of the world’s breeding population of kittiwakes (Burnell et al., 2024). However, evidence shows that our colonies have declined by around 42% since 2000 (Burnell et al., 2024), and are red-listed as a species of conservation concern (Stanbury et al., 2024).

1.3. Kittiwakes and offshore installations

Despite their cliff-nesting habits, kittiwakes are also known to nest on artificial structures. Over 1,200 pairs nest on urban buildings, bridges and lamp posts along the River Tyne in England (Burnell et al., 2024) and there are documented cases in the North Sea of kittiwakes nesting on offshore installations, such as platforms and large shipping vessels (FPSOs) (Christensen-Dalsgaard et al., 2019; SMP, 2024). This can pose challenges when it comes to decommissioning such structures, as there may be a risk of an offence to wild birds (Section 1.1).

Offshore installations may be left unattended for several years between cessation of production and dismantlement (including preparatory works for dismantlement such as well plug and abandonment (P&A)). During this time there is none or limited human presence and observation of the platforms other than for essential maintenance. Operators may therefore be unaware if seabirds are nesting on the installations during this period and the presence of nesting birds at the initiation of installation removal or well P&A may be unexpected.

This advice note aims to assist operators with assessing whether kittiwakes are nesting on offshore installations and to determine the number of nesting birds prior to planning or scheduling or starting any works. 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, as a last resort, a wild birds licence needs to be sought from OPRED.

The advice contained in this note has been developed based on guidance from and experience with the Seabird Monitoring Programme, alongside incorporating experience from relevant decommissioning cases to date and through discussions with OPRED on their applicability offshore. This document has been reviewed in 2024/2025, and will continue to be reviewed and updated, as necessary, following any feedback to JNCC (and OPRED) from the use of the advised survey methods.

2. Kittiwake identification

Kittiwakes are medium-sized gulls, with chicks, immatures and breeding adults all exhibiting different plumages. Figures 1 to 4 display the different plumage features of each life stage and detail the key diagnostic features to enable identification. Note that not all features will always be visible when viewing or surveying birds.

Figure 1. An adult kittiwake in summer – diagnostic features include yellow bill, red mouth, black legs, black wing tips, light grey back and wings, white tail and white head and lower body. Photo © Danni Thompson

Figure 2. An adult kittiwake in flight in summer – diagnostic features include yellow bill, red mouth, black legs, black wing tips, light grey back and wings, white tail and white head and lower body. Photo © Mark Lewis

Figure 3. Immature kittiwake – diagnostic features include black tip to tail, dark 'M' markings across the wings, a dark neck band, a dark smudge behind the eye and black legs. Bill may also show some dark markings. Lower body and head are white. The bird shown in the photo fledged in the previous summer. Recently fledged juveniles will have a black neck band (as opposed to the grey shown in the photo), the dark 'M' wing markings will be black (as opposed to brown shown in the photo) and the bill will be fully black with no yellow. Photo © Mark Lewis

Figure 4. Large kittiwake chicks in the nest – diagnostic features include black tip to tail, dark markings across the wings, a black neck band and a black bill. You can also see the white head and body and light grey wings and back. Younger chicks are uniformly grey, lacking the dark plumage features and have a downier appearance. Once fledged, juvenile kittiwakes retain the black plumage features until their second year (Figure 3). Photo © Danni Thompson

3. Breeding season

At onshore colonies, kittiwakes typically return to the UK to breed in April, with peak attendance during May – July (Table 1). There is emerging evidence at some sites that the breeding season offshore is slightly different to that of the onshore colonies e.g. nest building and fledging occurring later in the year. However, until further site specific evidence is gathered at the relevant installation, it should initially be assumed both onshore and offshore breeding seasons are similar. Nest building tends to take place around three weeks before egg laying (Coulson, 2011). Laying and fledging dates will vary for each colony based on their location (colonies further north tend to lay later) and also between years due to variables including, but not limited to, weather (before and during the breeding season), disturbance and food supply. As a result, some colonies may start breeding up to a few weeks earlier or later than expected.

Table 1. Description of the nesting status of kittiwakes at a colony throughout the year.

Time of year	Nesting status
January to March	Any remaining nests from the previous breeding season are likely to be washed away by winter storms. Kittiwakes may start returning to a colony during the day to establish territories and find a partner but will not remain overnight.
April	Birds will return to the colony during the day and will begin holding territories. Pairs will re-establish and begin nest building.
May	Nest building will continue. Once nests are complete birds will lay eggs. Birds will remain at the colony overnight to ensure eggs are always attended by an incubating adult.
June to July	Chicks will hatch. Parents will take it in turns to look after the chicks whilst the other is on foraging trips. As the chicks become older, they may be left unattended for short periods of time. Nests will become compressed and trampled as the chicks grow.
July to August	Chicks begin to fly and may depart the colony for up to 24-hours but will return to the nest to roost and be fed by their parents. Chicks will begin to fledge and depart the colony without return. Adults with fledged chicks may depart the colony.
September	Final chicks will fledge. Adults will depart the colony and not return until the following year.
October to December	No birds present. Any remaining nests are likely to be washed away by winter storms.

Note: The dates shown above are indicative of general trends, and these dates can vary between sites, especially at offshore installations.

Kittiwakes raise only one brood each season. If a clutch is lost early in the season, some pairs may re-lay, but the likelihood of this decreases as the season goes on. First time breeders tend to lay later than experienced pairs (Coulson, 2011), so it is possible that there may be both eggs and chicks present within a colony at the same time.

Kittiwakes will attend onshore colonies during the day in the run up to the breeding season, with birds coming and going throughout daylight hours, but none will remain overnight. It is not known whether the same is true for offshore colonies. Only when they begin to lay eggs, usually from late April to the end of May, will the adults remain on the nest overnight. Once

eggs have been laid, a parent bird remains at the nest for most of the time, with the pair alternating nest attendance. When chicks are older, both adults may leave the nest unattended for short periods. Adults are, however, unlikely to leave their chicks unattended during the first two weeks after hatching and some pairs may never leave their nest unattended.

4. Nesting or roosting

4.1. Roosting

Roosting is when birds settle to preen, rest or sleep at any point during the day. They may do this individually or they may gather in flocks. Roosting kittiwakes will be on surfaces away from the nest site (Figure 5). On offshore platforms, this is likely to be on the installation structure/surfaces. Roosts can be ephemeral and may consist of both non-breeding and breeding birds. If birds are only roosting on an installation, then there will be no evidence of nests. Areas used by birds for roosting only are not legally protected and an offence, such as killing or injuring a bird, is unlikely to be caused. A wild birds licence for offshore projects is not required if birds are only roosting on an installation.

Figure 5. Kittiwakes roosting on a rocky ledge. Photo © Daisy Burnell.

4.2. Nesting biology

Kittiwakes build substantial nests (Figure 6) in which they lay one to three eggs. Their nests are usually made from seaweed and vegetation and may also include man-made materials such as plastics and fibres, all stuck together with mud. Offshore, nests may be constructed more simply from just seaweed and debris (Christensen-Dalsgaard et al., 2019). As chicks grow, nests get trampled down so kittiwakes tend to build a new nest every year.

Nests are typically around 30cm diameter (Coulson, 2011) and may be made on any flat surface large enough to accommodate them, often with parts of the nest hanging over the edge. The nests are typically constructed above the splash zone, with a vertical surface at the back of the ledge, and ideally with a surface above the nest to shield from weather and predation.

Kittiwakes are colonial and social breeders, which means they need to nest near other kittiwakes in order to breed successfully. As a result, it is unusual to see single nests scattered around an onshore colony, and instead are more likely to find multiple birds

nesting in suitable areas. This situation occurs on offshore installations too and has been seen in the many known cases to date (> 300 nests in some cases) in the seas around the UK. There are, however, always exceptions and if a colony is newly established then there may only be a small number of nests in an area.

4.3. How to identify nests

The recommended unit for surveying and monitoring kittiwakes is the apparently occupied nest (AON), defined as a well-built nest capable of containing eggs, with at least one adult present (Figure 6). Poorly built 'trace' nests (Figure 7) with adults in attendance are more likely to be made by birds that won't go on to breed ('non-breeding birds'); however a high proportion of trace nests observed in a survey may indicate a late breeding season (Walsh et al., 1995) .

Figure 6. Each year, kittiwakes build substantial nests of vegetation which may degrade over the course of the breeding season. An older chick with dark markings is in the left nest (top middle of photo) whilst a younger, downy chick is just visible in the right nest (far right of the photo). Photo © Danni Thompson

Figure 7. Example of a trace nest with two adults in attendance. An attempt to gather vegetation has been made but the nest is incomplete and incapable of holding eggs. Photo © Danni Thompson

5. Surveying for nesting kittiwakes

Surveys should be carried out during the breeding season to assess whether there are any birds nesting on the installation, and if so, how many. In addition, surveys are vital to identify when nesting behaviour begins at the installation and when the chicks fledge. The method and extent of surveying will vary depending on the aims of the survey. Different survey aims, or scenarios, are highlighted in Section 5.2 with reference to the relevant principles outlined in the survey methodology (Section 5.3) needing to be carried out to achieve the aims of each scenario.

Surveys prior to mid-April may find kittiwakes present but will not enable an assessment of whether those birds will attempt to breed or are just roosting. Surveys carried out during autumn or winter are also of limited use as kittiwakes will not be present and conclusions cannot be drawn from the presence or absence of nesting material during this time.

5.1. Unmanned aerial vehicles (UAVs)

Technology, such as UAVs, may become an increasingly useful tool in monitoring wildlife, particularly in remote and otherwise inaccessible areas, and can potentially reduce interference in comparison to some foot-based colony surveys. They do however, pose a real risk of distress to wildlife. If flown in close proximity to birds, they can cause them to panic and ‘flush’ (Bishop et al, 2022; Brisson-Curadeau et al, 2017; Rebolo-Ifrán et al., 2019; Vas et al, 2015; Weston et al, 2020), wasting energy (particularly important during breeding, migrating and moulting periods), and exposing any eggs or young to the weather and/or predators.

The use of UAVs to monitor breeding seabirds is a relatively new method and, as such, guidance on their use and information on disturbance rates for a range of species is limited. Sensitivities to UAVs are species specific and, to date, most documented trials of UAVs to survey breeding seabirds have been at ground-nesting colonies. There are few documented instances of UAVs being used to survey cliff-nesting colonies, and as such, no onshore guidance currently exists on the sensitivities of kittiwakes to UAVs or best practice in how to survey them using this method. Consequently, at present, we are not able to advise on best practice for surveying kittiwakes using this method.

JNCC and OPRED are however aware that UAVs have been used for bird surveys around platforms which are unmanned, have been prepared for decommissioning and are cold stacked. Studies into the behavioural response of birds to UAVs frequently recommend that UAVs are not flown within 100m of any bird (Bishop et al, 2022; Vas et al, 2015; Weston et al, 2020). It is advised that if an operator proposes to use a UAV as part of a survey, to discuss this proposal as a matter of good practice with OPRED and JNCC.

It has also been suggested to fly a UAV as a deterrent around an installation to deter nesting birds. Experience from other similar deterrent methods, such as falconry, is that for this method to be effective, a near constant presence of the deterrent is required. Any periods of time where this cannot be attained, such as bad weather, increases the risk of birds returning. There is also a risk that birds may habituate to the deterrent, and that flying a drone in close proximity to birds risks an offence of killing or injuring being committed should the drone collide with a bird. As with the advice above, the use of UAVs are to be treated with caution, and it is recommended to discuss their use and reason for use with OPRED and JNCC.

5.2. Survey scenarios

The methods and extent of surveying required will vary depending on the aims of the survey. Here we present a selection of different scenarios and the relevant steps of the survey methodology outlined in Section 5.3 below that are required for each scenario.

5.2.1. Confirming nesting or roosting

A single survey during late-April or, more preferably, May should be sufficient to confirm whether kittiwakes are nesting or roosting on the installation. See Section 4 for further information on identifying roosting and nesting birds.

If birds are nesting, a wild birds licence will need to be sought if works are to be completed during the breeding season. If birds are only roosting with no nests or if works are to commence outside of the breeding season, then no licence is required (see Section 5.2.2. below).

Surveys in this scenario should follow principles 1 to 11 in Section 5.3 below.

5.2.2. Planning future operations to be carried out OUTSIDE the breeding season

The kittiwake breeding season is outlined in Section 3. If kittiwakes are believed or known to be nesting on the installation, a survey during late August/early September will confirm whether the birds have fledged and left the colony. See Section 5.1 to determine whether adult birds are nesting or just roosting.

Surveys in this scenario should follow principles 1 to 11 in Section 5.3 below. If works are to be carried out during late-September to March then no survey is required as birds will likely not be nesting during this period. Therefore, works during this period will not likely require a wild birds licence as there should be no risk of offence.

5.2.3. Planning future operations to be carried out WITHIN the breeding season

Surveys for future operations should be carried out in the breeding season as a minimum, one year before operations are planned. More accurate and up to date information can be obtained if surveys are carried out for two or more consecutive years prior to planned works. If works are to be planned for within the breeding season, it is important to obtain an estimate on the number of AONs and their locations on the installation. Further information on the start and end of the breeding season can help to inform and potentially minimise any risk of offence during planning of works. It is important to note however, that timing of the breeding season can vary between years (see Section 3), therefore monitoring will still need to be undertaken during future works in spring and late summer.

Surveys in this scenario should follow principles 1 to 14 in Section 5.3 below.

Surveys will determine whether kittiwakes are nesting on the installation and if so, how many nests are present and where are they located. To determine quantity and location of nests only, a single survey carried out during late-May will be sufficient.

If information is required on when the breeding season commences and finishes, an early survey could be carried out in April to document when birds have returned, and nest building is underway. Further surveys could be carried out in late July – early September to document whether adults have departed, and chicks have fledged, and if not, how many remain. This will help to determine the end of the breeding season on the installation and could therefore identify suitable windows during the late summer when the risk of offence is minimised.

If more than one survey is carried out within a year or over multiple years, it is important to make sure the methodology is standardised to allow for both within- and between-year comparisons.

5.2.4. Waiting on site to commence operations

If waiting on site to commence works, regular surveys should be carried out to determine the age of chicks and therefore the likely fledging dates, and finally confirmation that the birds have fledged and departed the colony before works can commence. A survey carried out in mid-June should allow for quantification of nests, ageing of chicks and subsequent fledging dates.

Surveys in this scenario should follow principles 1 to 19 in Section 5.3 below.

5.2.5. Surveying during works under a wild birds licence

Works under a wild birds licence may require that activities are supervised and/or monitored by an experienced ornithologist. The methods for doing this may be different to those outlined in this document which are for collecting baseline data, but information to be documented as part of the conditions of the wild birds licence could include a summary of the activity being carried out (for example, removal of active nests to allow for decommissioning activities to take place), time taken for operation to be completed, , number of nests, birds, eggs and chicks affected, and any injury or mortality to birds, eggs and chicks. The conditions of the wild bird licence will specify the species, and the number of nests, eggs and chicks that can be removed from the installation (using the example above), or the numbers of nests, eggs and chicks that will be affected as a result of the installation being removed from location (via HLV for example).

5.2.6. Bird management plan to prevent and deter nesting birds (non-lethal)

Any measures to prevent and deter birds from nesting on the platform need to be in place before the breeding season commences in April. Birds may return to the UK and start prospecting nesting sites from early spring, so measures need to be put in place during March at the latest. If deterrents are used or deployed early in the season, surveys following principles 1 to 11 should still be carried out to determine whether nesting birds are present and the deterrents were effective.

Please note that if netting is being proposed as a mitigation measure, it must be done so with caution and monitored regularly as birds may get entangled and die. Due to potential difficulties in accessing ledges to install netting and to remove any entangled birds, JNCC do not recommend this measure. It is however acknowledged that netting has been used to deter birds from nesting offshore, and OPRED and JNCC would advise any operator who proposes to use netting, to discuss this measure with both parties as early as possible.

5.3. Survey methodology

Survey design, data collection and subsequent assessment of photographs, including species identification, population estimates, and ageing of chicks must be carried out by experienced ornithologists. The ornithologist(s) and their company should be named on information sent to OPRED, along with evidence of their experience and any qualifications or accreditations (e.g. ESAS). Surveys should be systematic and repeatable and should adhere to the following principles:

1. Standard reporting should include as a minimum: annotated diagrams of the platform as used in the survey; recording forms (see Section 5.6); and a summary of the survey results i.e. number of nests, trace nests, eggs, chicks within each age bracket and estimated fledging dates.

2. Counts of AONs can be made from a boat away from the installation (vessels visiting the installation for other purposes may be used if appropriate). A distance of at least 100m must be maintained from the edge of the platform to avoid potential disturbance to the birds. Surveys can be undertaken at any time during daylight hours providing there is adequate visibility (see Principle 4). Surveys can also be made from the installation itself if it is feasible to do so and if there is a sufficient view of potential nesting locations.

3. Ideally the surveyor would view the section of the installation being surveyed from directly opposite and at the same height or from slightly above (Figure 8). The surveyor can use different vantage points on the vessel to achieve an optimum viewing position, or the survey vessel may have to reposition in order to achieve this. Surveying ledges from below e.g. from a small boat at water level, is not recommended as birds or nests are likely to be obscured from view by the ledge itself.

4. The vessel should slowly move around the installation, stopping to allow the surveyor time to observe and record at each face of the installation. Should each face of the installation cover a large area, the surveyor should divide the survey area according to distinguishing features to enable each section to be surveyed accurately and repeatably.

5. When surveying a section, use optical equipment such as binoculars or a telescope with a suitable specification. Also take photographs of all sections of the installation in a systematic, repeatable manner. Ensure that sections are surveyed, and photographs are taken from directly opposite the colony, rather than at an oblique angle (Figure 8). Photographs need to be of high-quality to enable identification of any birds and nests, if present. Take multiple photos of each section on each survey to ensure that at least one photo of each section will be of adequate quality to identify any birds and count any nests. If visibility is compromised by glare/poor lighting on any sides of the installation, survey at a different time of day to ensure high-quality observations and photos can be taken. Even if no birds are observed, photographs should still be taken of the sections surveyed.

6. On a map or diagram of the installation, ensure sections of the installation are labelled so it is clear where any birds are, and ensure North is marked on the diagram.

7. Clearly mark on the diagram any areas of the installation which are not visible or accessible during the survey.

8. If no birds or nests are present, or if birds are only seen roosting (see Section 4.1), the operator should discuss a forward plan with OPRED.

9. If there are nesting birds or trace nests, then there is a risk of an offence from works carried out during the breeding season. If works are to be carried out when nesting birds are present, a wild birds licence must be applied for. Information on the quantity of nests present will be required by OPRED for such an application.

10. If nesting birds are present, on a map or diagram of the installation, mark where each individual nest is on the installation. Where possible, do this during the survey, however the photographs can also be used to validate and update any findings once the survey has been completed. On the diagram, identify:
    a. nests with birds apparently incubating
    b. other complete attended nests

c. any unattended well-built nests (empty or otherwise)
d. trace nests with adults present
e. unattended trace nests

11. If kittiwakes or nests are later observed during operational works in areas that could not be surveyed, mark their location(s) on the installation diagram. This will assist with building up a picture of where kittiwakes are likely to nest on installations.

12. Identifying individual nests allows changes in occupancy or quantity over the survey period to be observed. Using the annotated diagram and recording forms (Appendix 1 and 2), number each nest sequentially and note the status of each nest on the form using the following codes:
    a) I = adult sitting tight, apparently incubating adult
    b) c/1, c/2, c/3 = number of eggs present (clutch size)
    c) c/0 = empty well-built nest with adult in attendance
    d) c/x = adult standing at well-built nest, contents unknown
    e) b/1, b/2, b/3 = number of chicks present (brood size), with age
    f) /1, /2 = trace of nest, with one or two adults present.

13. To enable accurate repeat counts, survey methods must be standardised as much as possible i.e. surveys conducted from the same vessel or height above sea level (vessels visiting the installation for other purposes may be used if appropriate); using the same photographic and optic equipment; the same distance from the installation; the same observers; and most importantly, photographs taken of the same parts of the installation to allow comparisons between surveys.

14. During repeat surveys, ensure that all nests identified in previous surveys are re-checked and their contents noted. Add any additional nests or trace nests that have appeared since the first survey to the diagram.

15. Where any chicks are noted, the ornithologist should estimate their age using the ageing guidance in Section 5.5.

16. Note that not all diagnostic features will be evident for identification and ageing of each bird, and nest contents will not always be visible, particularly during incubation and when chicks are young.

17. It is advised that there are at least 2 (preferably 3) surveys undertaken during one breeding season. The initial survey is to establish the presence of nesting birds, and the timing of when the birds arrived at the platform and started nesting. A survey mid-season is advised to understand the maximum number of nests, eggs, and chicks. This is likely to occur between June and July (see table 1 for stages of the breeding season), though we note that this may vary annually, at different locations, and may be different offshore compared to onshore. An end of season survey is also advised to determine when the chicks have left the platform, which can inform for example, operations to be undertaken outside of the breeding season.

18. By the final survey, ages of all observed chicks should be able to be estimated, and, therefore, their likely fledging dates (Section 5.5, Table 1).

19. If there are still chicks remaining during the final survey, estimate their fledging dates using the ageing guidance and previous survey data.

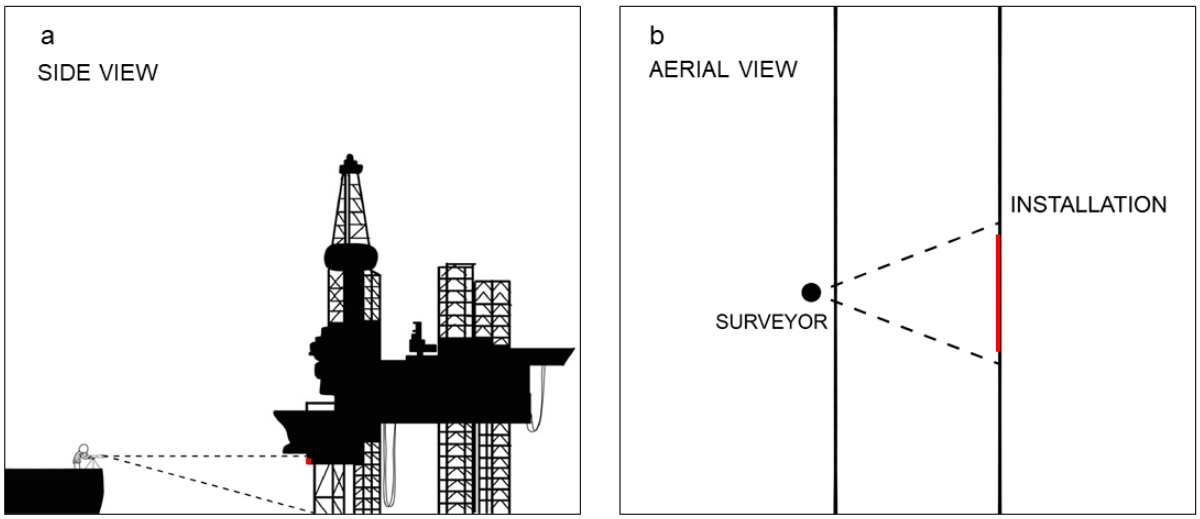

Figure 8. Correct positioning for a surveyor to observe and record nests on an installation from a vessel. The colony is marked in red. a) Side view - surveyor should be at the same level or slightly above nesting sites, b) aerial view – surveyor should be directly opposite the section being surveyed.

5.4. Where nests are likely to be on an installation

Known areas, to date, where kittiwakes have nested on offshore installations include the cellar deck and inner beam, as well as on the top of the shafts, and on suitable ledges on the main construction and the side of FPSOs (Christensen-Dalsgaard et al., 2019). However, there is the potential for birds to be nesting in any suitable area of the installation. This may include any flat surfaces large enough to hold a nest, sheltered areas and those with less human disturbance.

It is important to note that not all areas of an installation will be visible or accessible for surveying, so there is always the potential that there may be unobserved kittiwakes nesting in these areas, such as the inner beam. Birds may be seen flying into or out of these areas that otherwise can't be surveyed. Given the size of the installation and the likelihood of multiple entry points, it is not possible to estimate the quantity of potential nests in these areas by counting birds coming and going. However, it is important to document on the survey recording forms and installation diagram if there is any reason to believe there may be hidden nests anywhere on the installation and where such observations are made.

5.5. Guide to ageing chicks

Kittiwake chicks are able to fly before they become independent (fledge) and will depart the nest at intervals during the day, but they will still be reliant on the nest for roosting and to be fed by their parents who return to the nest to feed them. The kittiwake fledging period begins around 41.5 days after hatching, and chicks finally leave the colony on average 10 days after their first flight (age 51.5 days), though some may still return to the colony up to 61 days after hatching (Coulson, 2011). It is therefore recommended to use a minimum of 51.5 days after hatching as an estimated fledging date. See Table 2 for a guide to estimated kittiwake chick ages.

A chick's first absence from the colony can last for more than 24-hours (Mulard and Danchin, 2008), so only when no juveniles are seen using the nests for three consecutive days can the nests be determined as inactive and fledging deemed complete.

Table 2. Guide to assessing age of kittiwake chicks (Harris, 1987; Maunder and Threlfall, 1972).

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

5.6. Recording forms

There are two suggested recording forms (Appendix 1 & 2) to be used together alongside annotated diagrams of all relevant installations. Example data has been provided in red italics and can be removed before use. The forms provided are similar to those used for seabird monitoring both onshore and offshore (Seabird Monitoring Programme and European Seabirds at Sea) and capture the minimum amount of data needed for assessing presence and ageing of nesting kittiwakes.

Recording Form 1 (Appendix 1) records practical and environmental information relating to each survey. Any behaviours or observations e.g. flocks of birds leaving/arriving at the installation should be noted in the comments/observations column.

Recording Form 2 (Appendix 2) records the survey data and records which area of the installation the nests are located, such as east side, north side etc.

Data collected using these survey methods should be included in any licence application in an appropriate manner, i.e. adequately detailed in the EA justification, and JNCC recommends that the survey report including survey seabird recording forms that the application relies on, are included as an Appendix.

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Appendix 1. Offshore installation seabird recording form 1

a) Cloud cover: eighths
b) Sea state: Beaufort scale (Appendix 3)
c) Swell: low = less than 2m, moderate = 2 to 4m, and high = >4m
d) Sun strength: none, weak, moderate or strong
e) Rain: 1 = none, 2 = discontinuous light, 3 = discontinuous heavy, 4 = continuous light, 5 = continuous heavy
f) Wind speed and direction: Beaufort scale (Appendix 3) and cardinal points
g) Visibility: excellent = ≥10km, good = >5km, moderate = 1 – 5km, poor = <1km.

Location/ installation	Date of survey	Survey vessel	Name of surveyor	Cloud cover	Sea state	Swell	Sun	Rain	Wind (Beaufort & direction)	Visibility	Start time	End time	Comments/observations
Installation 1	22/4/21	Boat 1	A.B. Smith	7/8	3	low	weak	2	2 NW	Good	09:05	10:15	Birds seen flying to and from the installation throughout survey, including areas not surveyed (highlighted on map).

Appendix 2. Offshore installation seabird recording form 2

Area of installation	Nest no./Date	22/4/21	6/5/21	20/5/21	3/6/21		Comments
East	1	c/0	c/1	I	I		
East	2	c/0	c/2	c/x	b/1 <9days		
North	1	I	I	b/1 <9 days	I		
North	2	/2	/1	c/x	I		

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

Appendix 3. Wind speed and sea state

The detail in the table below is that used in the VSAS survey methods manual.

Beaufort Wind Force	Wind speed	Sea height	Sea description
0	< 1km/h	0	Sea like a mirror
1	1.1 - 5.5km/h	0.1m	Appearance of scales, but without foam crests
2	5.6 - 11km/h	0.2 - 0.3m	Crests have glassy appearance and do not break
3	12 - 19km/h	0.4 - 1m	Crests begin to break. Any foam has glassy appearance, scattered whitecaps
4	20 - 28km/h	1 - 2m	Small waves becoming longer, fairly frequent white horses
5	29 - 38km/h	2 - 2.5m	Moderate waves taking more pronounced long form. Many white horses, chance of some spray
6	39 - 49km/h	2.5 - 4m	Larger waves begin to form. Spray is present. White foam crests are everywhere
7	50 - 61km/h	4 - 5.5m	Sea heaps up. White foam from breaking waves blown in streaks with the wind
8	62 - 74km/h	5.5 - 7.5m	Moderately high waves of greater length. Edges of crests begin to break into spindrift. Well-marked foam streaks
9	75 - 88km/h	7.5 - 10m	High waves, dense streaks of foam, wave crests begin to topple, spray may affect visibility
10	89 - 102km/h	10 - 12.5m	Very high waves with long overhanging crests. Large patches of foam blown in dense white streaks. Sea surface takes white appearance, tumbling of sea is heavy and shock-like
11	103 - 117km/h	12.5 - 16m	Exceptionally high waves, small to medium sized ships being lost to view behind waves. Sea covered with long white patches of foam. Edges of wave crests blown to froth
12	118km/h +	16m +	Sea completely white with driving spray, visibility seriously affected as the air is filled with foam and spray.