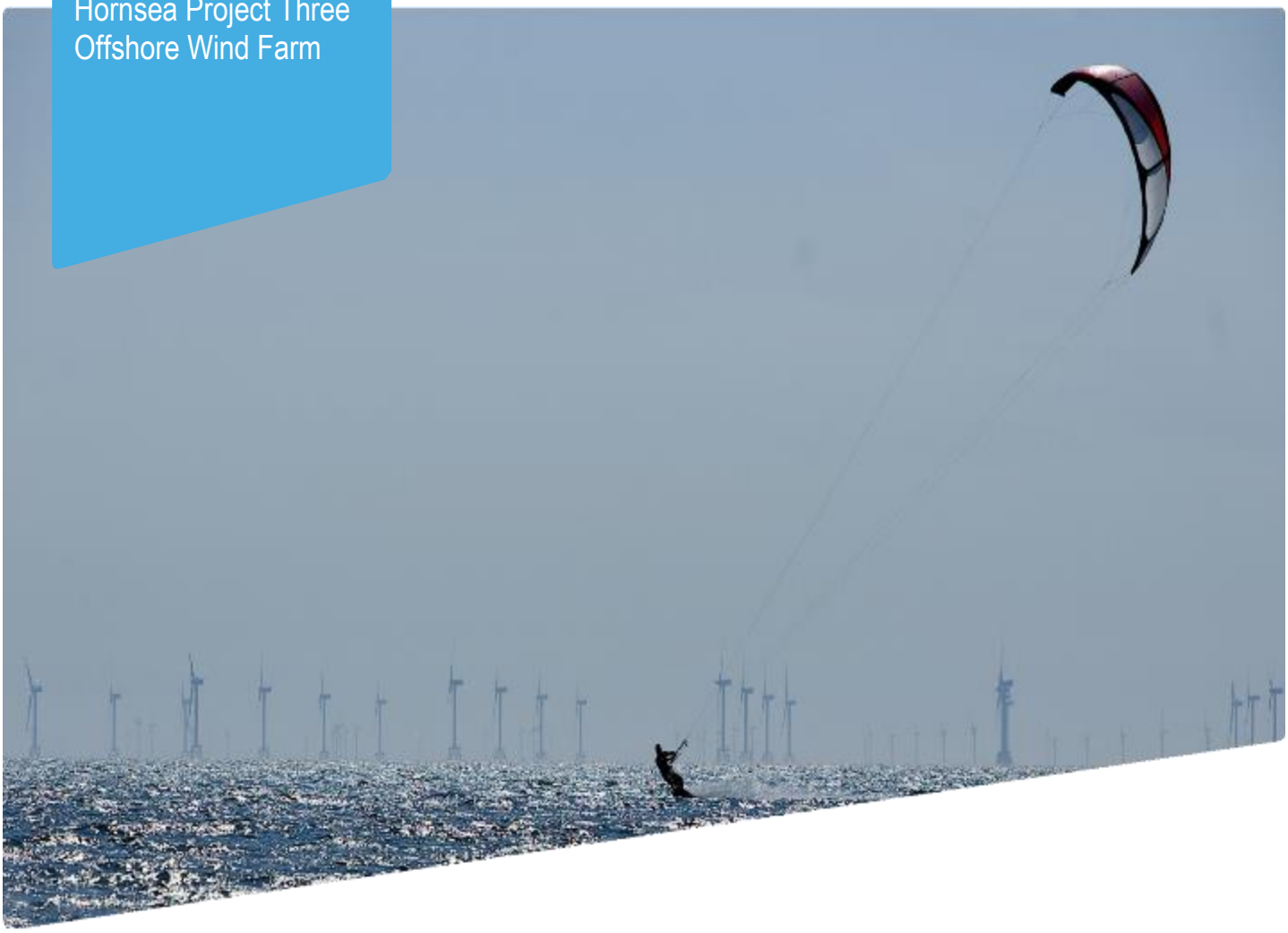
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Response to the Secretary of State's Consultation
Appendix 2B: Kittiwake Compensation Strategy

Date: February 2020

Hornsea 3
Offshore Wind Farm

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Response to the Secretary of State's Consultation

Appendix 2B: Kittiwake Compensation Strategy

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Front cover picture: Kite surfer near a UK offshore wind farm © Orsted Hornsea Project Three (UK) Ltd., 2020.

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Acronyms

Acronym	Description
BEIS	Department for Business, Energy and Industrial Strategy
DCO	Development Consent Order
FFC SPA	The Flamborough and Filey Coast Special Protection Area
JNCC	Joint Nature Conservation Committee
MMO	Marine Management Organisation
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area

1. Purpose

Introduction

1.1 This document sets out the black-legged kittiwake *Rissa trydactyla* (Kittiwake) Compensation Strategy for the Flamborough and Filey Coast (FFC) Special Protection Area (SPA). It has been developed in support of Hornsea Three in response to the Request for Information issued by the Secretary of State for the Department for Business, Energy and Industrial Strategy (BEIS) on 27 September 2019 on matters relating to the delivery of compensatory measures for the Hornsea Three Application. Specifically, this plan sets out how the preferred measures for compensation relating to in-combination effects on the kittiwake population designated at the FFC SPA would be secured and delivered under a scenario whereby the Secretary of State determines that compensation for an adverse effect on the kittiwake population of the FFC SPA is required.

1.2 In this scenario, a draft DCO requirement has been proposed that the Secretary of State could include in the final DCO for the delivery of the kittiwake compensation package (see Section 3).

1.3 The proposed wording of the DCO requirement is provided in Section 2 and would be supported by this Kittiwake Compensation Strategy.

1.4 Further details on the precise delivery methodology for the measures would be provided in a Kittiwake Compensation Plan submitted to the Secretary of State at least one year prior to the commencement of any wind turbine generator[1], to be approved by the Secretary of State in consultation with the MMO and Natural England prior to the commencement of any wind turbine generator.

Compensation package

1.5 The compensation measures developed by Hornsea Three for effects on kittiwake, in the event that the Secretary of State is unable to reach a conclusion of no adverse effect on the integrity of the FFC SPA, are summarised in Table 1.1.

1.6 The objective of this compensatory measure is to attain 100% removal of invasive mammalian predators for the chosen island or islands and to achieve an improvement in kittiwake productivity through predator eradication at the chosen colony or colonies.

[1] "commencement of any wind turbine generator" means the first day on which installation of any wind turbine generator foundation is programmed to be undertaken.

Table 1.1: Compensation Measures developed by Hornsea Three for Kittiwake

Compensation Measure	Summary
Invasive Mammalian Predator Eradication	Measures involve the initial identification of a suitable island kittiwake colony/colonies which also supports a population of invasive mammalian predators. Following a successful feasibility assessment, an eradication project would take place with subsequent monitoring for productivity of the kittiwake population, and to explore the response of the wider seabird species assemblage.
Biosecurity	Biosecurity is a key site management protocol to limit potential re-infestations following the eradication project. This would form stage 2 of the measures.

Ornithology Engagement Group

1.7 If the Secretary of State determines that compensation is required, following the Order being made, a Hornsea Three Offshore Ornithology Engagement Group would be established comprising the relevant SNCB(s), the RSPB and any delivery partner(s). The purpose of this group would be to help shape and inform the nature and delivery of the compensation post consent. The Ornithology Engagement Group would be consulted on the proposed Kittiwake Compensation Plan prior to submission to the Secretary of State and during the approval process as necessary.

1.8 The Applicant would engage with and report to the Ornithology Engagement Group at least annually in the establishment phase and as needed, and as documented in the Ornithology Compensation Plan throughout the monitoring period. Terms of Reference would be agreed between the parties. The Applicant would be the chair and convener of the Ornithology Engagement Group.

2. Draft DCO Requirement

2.1 If required, this Kittiwake Compensation Strategy would form a certified document and commit the Applicant to delivering a Kittiwake Compensation Plan a year before the commencement of any wind turbine generator[2] and in accordance with its principles as set out within the draft DCO (see Appendix 9/10 to the Applicant's Response to Secretary of State). This commitment is included at Article 44, Schedule 14 of the draft DCO, and is worded as follows:

Kittiwake Compensation Plan

***2**. —(1) No later than 12 months prior to the commencement of any wind turbine generator a Kittiwake Compensation Plan must be submitted to the Secretary of State for approval.*

(2) No wind turbine generator shall be commenced until the Kittiwake Compensation Plan has been approved in writing by the Secretary of State.

[2] "commencement of any wind turbine generator" means the first day on which installation of any wind turbine generator foundation is programmed to be undertaken.

(3) The Kittiwake Compensation Plan must accord with the principles set out in the Kittiwake Compensation Strategy relating to the authorised development's contribution to in–combination impacts on the Kittiwake feature at the Flamborough and Filey Coast SPA.

(4) Before approving the Kittiwake Compensation Plan the Secretary of State must consult the MMO and Natural England.

(5) The Kittiwake Compensation Plan must contain an implementation timetable and must be carried out as approved.

Consultation

***5.** Prior to the submission of the Kittiwake Compensation Plan, the Sandbanks Compensation Plan and the MEEB Plan to the Secretary of State for approval, the undertaker must carry out pre-application consultation in accordance with that set out in the Kittiwake Compensation Strategy, Sandbanks Compensation Strategy, and the In principle MEEB Plan respectively.*

Amendments to approved details

***6.** The Kittiwake Compensation Plan, the Sandbanks Compensation Plan and the MEEB Plan approved under this Schedule, include any amendments that may subsequently be approved in writing by the Secretary of State.*

***7.** Any amendments to or variations from the approved Kittiwake Compensation Plan, the Sandbanks Compensation Plan and the MEEB Plan must be in accordance with the principles and assessments set out in the Kittiwake Compensation Strategy, Sandbanks Compensation Strategy, and the In principle MEEB Plan, (as applicable) and may only be approved in relation to immaterial changes where it has been demonstrated to the satisfaction of the Secretary of State that it is unlikely to give rise to any materially new or materially different environmental effects from those assessed in those strategies.*

3. Kittiwake Compensation Strategy

Introduction

3.1 This Compensation Strategy would only take effect if the Secretary of State determines that Hornsea Three would have an adverse effect on the integrity of the FFC SPA kittiwake population and imposes a DCO requirement for the provision of compensation. The level of compensation required would be established by the worst case footprint as defined in the Appropriate Assessment (by the Secretary of State) and any relevant refinements to that footprint based on the final project design taken forward into construction.

3.2 It is well evidenced that the key cause of kittiwake population decline at colonies throughout the UK is a reduction in prey availability, as a result of climate change affecting key prey species and over fishing of sandeel (which kittiwake are heavily reliant on during the breeding season) (Daunt *et al.* 2008, Frederiksen *et al.* 2004). However, additional pressure from predation of eggs, chicks and in some cases adult birds has also been linked to decreased breeding success and colony declines. Kittiwake predation by invasive mammalian predators including American mink, brown rat and feral cat have been documented (Thompson *et al.* 1999, Walsh *et al.* 1995, Mavor *et al.* 2002, Furness *et al*. 2013) and may be a local restraining factor of breeding success and population growth where these species are present (Furness *et al.* 2013, Lundy Management Forum, 2017).

3.3 This compensatory measure, therefore, would seek to address the occurrence of invasive mammalian predators at kittiwake colonies in the UK via the initiation of an island eradication project. The upper scale of compensation required would be defined in the Secretary of State's Appropriate Assessment based on the predicted worst-case envelope, it would then be refined based on the final envelope of the design to be taken forward into construction and, therefore, be proportional to the adverse effect predicted to occur.

Site Selection

Introduction

3.4 The following sections describe the site selection process that would be used to identify candidate islands suitable for the eradication project, with worked examples presented where relevant. This would primarily be a screening process which uses key criteria deemed important in identifying factors related to not just kittiwake breeding success, but also other species likely to benefit from predator eradication (i.e. razorbill, puffin and Manx shearwater). Each criterion is presented and described below (in no particular order of influence).

Objective and Scale

3.5 The objective of this compensatory measure is to attain 100% removal of invasive mammalian predators for the chosen island or islands and to achieve an improvement in kittiwake productivity at the chosen colony or colonies. Following restoration (predator eradication), if monitoring demonstrates that the island meets the qualifying criteria for an SPA, Hornsea Three would work with relevant stakeholders to provide evidence for designation.

3.6 While the final location(s) and, therefore, scale of this measure would be agreed post-ground truthing, a cap of up to three islands with a total, in combination, area of up to approximately 500ha is proposed. An adaptive management approach will be taken in order to ensure that there is sufficient flexibility and that the required compensation is delivered.

Delivery Process

Presence of breeding kittiwake

3.7 The UK has nearly 10,000 islands with only a small number likely to provide the suitable habitat required for breeding kittiwake. The JNCC Seabird Monitoring Programme (SMP) website provides record counts of breeding kittiwake at UK islands and a review of this would be undertaken to identify a number of potential restoration sites, based on the evidence / likelihood of kittiwake being present as a breeding species (some records are historic due to remoteness and thus difficulty of regularly counting breeding seabirds).

Presence of invasive mammalian predators

3.8 Key invasive mammalian predators at UK islands which are known to have a negative impact on breeding seabirds include brown rat *Rattus norvegicus*, black rat *Rattus rattus*, and American mink *Neovison vison* as the most common and widespread species, with other rodents and mustelids also likely depending on area. Data relating to invasive mammalian predator presence on each island would be accessed from a number of sources including JNCC Seabird Reports, other published and grey literature, the National Biodiversity Network, expert opinion and for some islands, Table 3 of Stanbury *et al.* (2019). Where information cannot be found for a particular island, an assumption based on distance to other islands (which may harbour invasive predators) would be made.

Current or planned offshore wind development

3.9 Kittiwake are known to be at risk of potential collision with offshore wind farms (Bradbury *et al.* 2014). To reduce potential connectivity of kittiwake breeding colonies and development, islands a suitable distance from areas of current or planned development would be favoured. Information of offshore wind farm development would be gathered from 4C Global Offshore Renewable Map[3].

Island designation status

3.10 Many island SPAs designated for breeding seabirds already have eradication and biosecurity measures within site management plans. In order to bolster the SPA network for breeding kittiwake, a search of island colonies outside of existing SPA Natura 2000 Network boundaries would be made to complement existing SPA management. Non-SPA islands in proximity to SPA breeding colonies would be preferred during the screening exercise. In the event that a suitable non-SPA island cannot be identified, consideration would be given to SPAs where current eradication of invasive mammalian predators is not being initiated. This would be approached in consultation with relevant stakeholders. If a non-SPA island is selected as the location of kittiwake compensation delivery, it could then subsequently be eligible for designation as an SPA, providing that it meets the qualification requirements.

[3] Accessed at: https://www.4coffshore.com/offshorewind/

Great skua SPA proximity

3.11 Great skua *Stercorarius skua* have been known to heavily predate kittiwake (Mitchell *et al.* 2004).

3.12 Votier *et al.* (2008) identified a negative correlation between breeding success and the number of great skuas breeding within a range of 25 km from focal kittiwake colony. Therefore, the screening criteria would focus on a 25 km distance from SPA where great skua is a designated feature.

Kittiwake and prey resource overlap

3.13 Kittiwake feed primarily on sandeels while breeding and, as a result, their breeding success and survival rate are strongly influenced by sandeel availability and stock size, and fishing pressure by industrial sandeel fisheries (Furness and Tasker 2000, Oro and Furness 2002, Mitchell et al. 2004 and Frederiksen et al. 2004). Declines in kittiwake numbers have largely been attributed to prey availability as a result of sandeel stock crash and sustained sandeel fishing pressure.

3.14 In an attempt to limit the influence of prey availability on the feasibility or success of an island eradication project, predictions of future predator-prey relationships would be used to focus initial island screening. Sadykova et al. 2019 used advanced statistical modelling to predict the future spatial density distributions of kittiwake and sandeels in UK waters in the form of common spatial trends.

3.15 In summary, the most significant declines in common spatial trends were predicted to be found in the North Sea and around the Northern Isles, particularly in inshore waters. Less dramatic changes were predicted in waters off the west coast of Scotland and potential increases in common spatial trends were predicted in some regions of the Irish and Celtic Seas (Sadykova et al. 2019).

3.16 Island screening, therefore, would be focused away from the areas of most significant decline in common spatial trend associated with climate change.

Additional considerations

3.17 There is additional biosecurity risk from human populations on islands (the larger the population the greater the risk of invasive species arriving), and therefore preference would be given to uninhabited islands or islands with a low human population.

3.18 Islands where kittiwake populations have historically been larger will be considered to have proven capacity for increased productivity.

3.19 The FFC SPA is designated for a number of breeding seabird species including (in addition to kittiwake): gannet, razorbill, guillemot and a breeding seabird assemblage consisting of fulmar, puffin, herring gull, shag and cormorant. Those species nesting in burrows (such as puffin) or on the ground/in accessible areas (such as razorbill, shag and cormorant) have increased vulnerability to predation from invasive mammalian predators when compared to cliff nesting species. Burrow nesting species are known to benefit from predator eradication projects, with multiple reports of increased breeding success following the removal of key predators. It is, therefore, likely that numerous species would benefit from eradication projects in addition to the reduced predation pressure on just a single target seabird species (Ratcliffe *et al*. 2019). In order to ascertain the assemblage of other seabird species breeding at each island, the JNCC SMP would also be used to explore other breeding seabird species.

3.20 Unassisted re-invasion of islands by invasive mammalian predators is a potential threat to islands previously eradicated which are within swimming distance of infested islands or the mainland (Tabak *et al.* 2015). Protocols to limit potential re-invasions would be instated at islands following the eradication programme and are further detailed in the biosecurity measure section below (paragraph 3.42 *et seq*.).

Site Ground Truthing

Stakeholder Engagement

3.21 Hornsea Three would continue to work with all necessary stakeholders (e.g. the relevant SNCB(s) and RSPB) throughout this process to ensure suitable islands are identified and that any work is reflective of current best practice.

3.22 Islands identified in other UK countries may require engagement from respective country conservation bodies (both statutory and non-statutory).

3.23 The eradication project would be undertaken by a suitably qualified contractor.

Ground Truthing Method and Timeframe

3.24 Following the site identification stage, potential islands would need to undergo a ground truthing exercise to ensure suitability for the eradication project. This stage would involve a survey of the islands in question in line with the following measures:

Ground Truthing Survey – Invasive Mammalian Predators

3.25 Data used to ascertain the presence of invasive mammalian predators is largely gathered from historic literature or previous records. While it is unlikely that islands have become naturally predator free, it is vital that an eradication project gathers current data on the presence of invasive mammalian predators, species and potential abundance before baiting or trapping begins.

3.26 It is likely that this initial survey would be conducted by eradication specialists to allow realistic abundance estimates to be made and a prediction of the effort required to achieve their eradication or the most effective methods (Roy *et al*. 2015). Previous methods used in the UK have included the use of chewsticks (wooden spatulas saturated with margarine or lard that are chewed and bitten by rats) which were set around the island and checked or replaced daily during a period of 6 months (during winter when populations are likely to be lowest) (Zonfrillo, 2001). Additionally, cage traps can be used in allow first-hand identification of species (Roy *et al*. 2015).

3.27 This pre-baiting or trapping survey would be undertaken as soon as probable islands have been identified. Undertaking the survey during the winter would avoid disturbance to breeding seabirds but may limit access to islands during periods of severe weather. These surveys would be maintained during the eradication project to monitor the abundance of invasive mammalian predators.

Ground Truthing Survey – Breeding Seabirds

3.28 Up-to-date population data on all breeding seabird species would be gathered prior to the initiation of the eradication project. Previous colony counts for the shortlisted islands can be found on the JNCC SMP database and may provide recent counts for most if not all seabird species (along with counts of species which may have been lost as a breeding species from the island). Ground truthing surveys would inform population viability assessments for the islands identified through the above process, which will be part of the decision-making process for final location(s) and will form the baseline for future population and productivity assessment if the island is included in the eradication project. Long term seabird monitoring is described in the sections below.

Eradication Programme

Method

3.29 The approach taken to the delivery of predator eradication would be discussed and where possible agreed with the RSPB and relevant SNCBs as part of the development of the Kittiwake Compensation Plan, taking into account the UK Rodent Eradication Best Practice Toolkit (2018), and any relevant additional consideration of location specific issues.

3.30 The eradication project would be undertaken by a suitably qualified contractor.

Timeframe

3.31 Such a measure could be delivered relatively quickly (over the course of 6 – 12 months, depending on the population of target species and size of island) and, from the point which it is undertaken, be effective in the following breeding season. Productivity monitoring for kittiwake would be evaluated over a number of breeding seasons and will be detailed in the Kittiwake Compensation Plan. Hence this measure could be implemented prior to the project impact (collision of a kittiwake with an operational turbine) arising.

Success and Monitoring

3.32 A monitoring package would be designed with the delivery partner and the Ornithology Engagement Group. Monitoring would focus on the progress and confirmation of eradication, and kittiwake productivity at the island colony.

3.33 Demographic parameters, including productivity, are factors which determine population size and would be monitored prior to and following the eradication of invasive mammalian predators. As the objective of this compensatory measure is to achieve an improvement in kittiwake productivity at the chosen locations, monitoring would be designed to ascertain this.

3.34 As far as possible the Applicant has controlled multiple external factors through island selection in order to maximise the changes of success. However, there is still a risk of confounding factors beyond the Applicant's control (such as climate change related impacts on kittiwake prey availability and severe weather events), which may have a negative impact on kittiwake productivity notwithstanding this compensatory measure.

Monitoring of outcomes – Invasive Mammalian Predators

3.35 Invasive mammalian predator monitoring would commence following the baiting or trapping campaign and would follow the established methods outlined by the eradication contractor. It is anticipated that this monitoring would last at least two years to ensure 100% removal of target species from the island.

3.36 Monitoring for re-infestation on the island would continue for the operation phase of the project, at a frequency to be approved with the relevant approval authority. This would be included with the biosecurity compensatory measures.

Breeding Seabird Monitoring

3.37 In order to monitor the productivity of kittiwake and explore the response of other species of seabird on the island or islands to the removal of invasive mammalian predators, a breeding seabird census project would be initiated to collect population data. Details of seabird monitoring would be determined after initial ground truthing surveys have been completed.

3.38 Monitoring would continue for the operational phase of the project, at a frequency to be detailed in the Kittiwake Compensation Plan (approved by the Secretary of State in consultation with the MMO and Natural England). It is envisaged that the ornithological project partner would lead the monitoring component of this measure.

Adaptive management

3.39 If monitoring indicates that eradication attempts prove unsuccessful and the long-term biosecurity risk proves too high at the initial islands, another location may be chosen for eradication in consultation with key stakeholders (SNCB(s) and RSPB).

Reporting

3.40 Initial ground truthing reports would be produced to provide a characterisation of the island(s). Annual reports would be produced throughout the eradication process, with subsequent seabird monitoring reports being delivered every two years in line with colony census timescales.

Outline Timeline

3.41 The activities required to carry out the Kittiwake Compensation Strategy are well understood due to previous UK experience of island restoration. While Hornsea Three will seek to develop the measures as soon as possible following a legally secure consent decision, material resource commitments (such as field surveys and eradication works) would take place following a Financial Investment Decision (see Table 3.1). The proposed DCO wording commits the Applicant to submitting a Kittiwake Compensation Plan to the Secretary of State at least one year before the commencement of any wind turbine construction, and that this plan must be approved by the Secretary of State in consultation with Natural England and the MMO before the commencement of any wind turbine generator.

Table 3.1: Indicative project phases at which compensation activities would commence

Indicative Project Stage	Actions
Post-consent and pre- FID	• Production and agreement of the Kittiwake Compensation Plan • Series of meetings with Natural England, the RSPB and other stakeholders as necessary to seek to agree: • a short list of islands to carry out ground-truthing survey work; • survey methodology and outline timings (including identification of survey/delivery partner); • the scope of eradication and seabird assemblage monitoring; and • the criteria for success. • Landowner agreements may be progressed following agreement of the short list.
Post-FID	• Initiation of field survey work on the short list of islands (summer for seabird population, winter for mammalian predators). • Review of evidence in consultation with stakeholders (including Natural England and RSPB). • Agreement of final location(s) for restoration. • Landowner agreements secured. • Initiation of restoration work and associated short term monitoring – regular updates from project team to stakeholders. • Confirmation of eradication (no evidence of mammalian predator for two consecutive years). • Initiation of long-term eradication monitoring programme. • Seabird assemblage monitoring. • Publication of any agreed research.

Biosecurity

3.42 Following the eradication of invasive mammalian predators from the chosen island or islands, biosecurity measures would be put in place to prevent re-infestation. Biosecurity measures would be in-line with the current RSPB Biosecurity for LIFE project which was initiated to safeguard the UK's internationally important seabird islands (European Commission, 2019). The RSPB project aims to improve biosecurity measures across all of the UKs 41 seabird island SPAs and establish response plans when invasive species are reported at island SPAs (RSPB, 2019).

3.43 The biosecurity measures would aim to replicate the RSPB Biosecurity for LIFE project in conjunction with key stakeholders including the RSPB who have significant experience in island biosecurity.

Kittiwake Compensation Plan

3.44 Prior to commencing works on predator eradication, Hornsea Three would prepare in consultation with RSPB and the relevant SNCB(s) a Kittiwake Compensation Plan. The Kittiwake Compensation Plan would be prepared in accordance with the principles of this Compensation Strategy. The Kittiwake Compensation Plan would draw on best practice guidance and the advice of specialists as appropriate.

3.45 The Kittiwake Compensation Plan would set out, where relevant:

- Objectives (in accordance with the above objective).
- Works details (including specific locations, timing etc.).
- A schedule of works and working methods.
- Monitoring, reporting and adaptive management.

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