



# Hornsea Project Four: Derogation Information

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## Volume B2, Chapter 6: Compensation measures for FFC SPA: Overview

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## Glossary

Term	Definition
Compensation / Compensatory Measures	If an Adverse Effect on the Integrity on a designated site is determined during the Secretary of State's Appropriate Assessment, compensatory measures for the impacted site (and relevant features) will be required. The term compensatory measures is not defined in the Habitats Regulations. Compensatory measures are however, considered to comprise those measures which are independent of the project, including any associated mitigation measures, and are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the national site network is maintained.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Black-legged kittiwake biogeographic population	The east Atlantic breeding population of kittiwake which includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Northern gannet biogeographic population	The east Atlantic breeding population of gannet which includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Common guillemot biogeographic population	The north east Atlantic breeding population of guillemot which includes the <i>Uria aalge albionis</i> and <i>Uria aalge aalge</i> subspecies and includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Razorbill biogeographic population	The breeding population of razorbill which includes <i>Alca torda islandica</i> and includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.

## Acronyms

Term	Definition
DCO	Development Consent Order
FFC	Flamborough and Filey Coast
JNCC	Joint Nature Conservation Committee
MMO	Marine Management Organisation
RSPB	Royal Society for the Protection of Birds
SPA	Special Protection Area

## 1 Introduction

### 1.1 Background

1.1.1.1 Orsted Hornsea Project Four Limited (hereafter the 'Applicant') is proposing to develop Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four'). Hornsea Four will be located approximately 69 km offshore the East Riding of Yorkshire in the Southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and connection to the electricity transmission network.

1.1.1.2 This document provides an overview of the documents prepared by the Applicant in relation to its proposed compensation measures, which form part of its without prejudice derogation case. These proposals have been prepared by the Applicant in response to stakeholder consultation on the potential effects from Hornsea Four on certain ornithological features of the Flamborough and Filey Coast (FFC) Special Protection Area (SPA). The intention of this document is to introduce the proposed compensation measures (that would be implemented if deemed necessary by the Secretary of State) and to describe what other documents accompany the Development Consent Order (DCO) application that contain further details on the compensation proposals.

### 1.2 Flamborough and Filey Coast SPA

1.2.1.1 The Flamborough Head and Bempton Cliffs SPA was classified in August 1998. In August 2018, the site was extended and re-named the Flamborough and Filey Coast SPA. The site qualified under Article 4(2) of the Habitats Directive (92/43/EC) by supporting over 1% of the biogeographical populations of four regularly occurring migratory species and a breeding seabird assemblage of European importance (see [Table 1](#)).

**Table 1: Qualifying features of the FFC SPA**

Species	Count (period)	% of subspecies or population (pairs)
Black-legged kittiwake <i>Rissa tridactyla</i>	44,520 pairs (latest count <sup>1</sup> cites 51,535) 89,040 breeding adults (2008-2011)	2% North Atlantic
Northern gannet <i>Morus bassanus</i>	8,469 pairs (latest count cites 13,392) 16,938 breeding adults (2008-2012)	2.6% North Atlantic
Common guillemot <i>Uria aalge</i>	41,607 pairs (latest count 60,877) 83,214 breeding adults (2008-2011)	15.6% ( <i>Uria aalge albionis</i> )
Razorbill <i>Alca torda</i>	10,570 pairs (latest count 20,253) 21,140 breeding adults (2008-2011)	2.3% ( <i>Alca torda islandica</i> )
	<b>Count period</b>	<b>Average number of individuals</b>
Seabird assemblage	2008-2012	216.730

1.2.1.2 The site's conservation objectives apply to the site and the individual species and/or

<sup>1</sup> Latest colony census (2017) identified a population of 51,535 breeding pairs

assemblage of species for which the site has been classified. The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate and that the site contributes to achieving the aims of the Birds Directive<sup>23</sup>, by maintaining or restoring:

- the extent and distribution of the habitats of the qualifying features;
- the structure and function of the habitats of the qualifying features;
- the supporting processes on which the habitats of the qualifying features rely;
- the populations of each of the qualifying features; and
- the distribution of qualifying features within the site.

1.2.1.3 It is important to note that all conservation objectives are 'subject to natural change', which 'recognises that there are European sites and their wildlife which will be influenced and modified by unforeseen or unpredictable natural forces, events or processes which cannot be effectively prevented, avoided or managed at an individual site-level' (Natural England, 2014<sup>4</sup>). Natural change includes natural physical change, effects of climate change, changes in economic factors and changes in social factors (Natural England, 2014). Additionally, this also includes interactions between habitats and species and their responses to these changes. The compensatory measures proposed should also be understood in this context.

1.2.1.4 The specific features of the FFC SPA that are of relevance to these without prejudice compensation measures, comprise:

- Kittiwake *Rissa tridactyla* (in relation to potential collision mortality);
- Gannet *Morus bassanus* (in relation to potential collision mortality and potential mortality as a consequence of displacement)<sup>5</sup>;
- Guillemot *Uria aalge* (in relation to potential mortality as a consequence of displacement); and
- Razorbill *Alca torda* (in relation to potential mortality as a consequence of displacement).

### 1.3 Potential for Adverse Effects from Hornsea Four

1.3.1.1 The Applicant's position, based on its ecological assessments, is that there will be no adverse effects on the integrity of the FFC SPA (or any other protected site) from Hornsea Four alone or in-combination with other plans and projects. Natural England has advised it is unable to conclude no Adverse Effect on Integrity (AEol) for Hornsea Four in-combination during operation as a result of collision risk to kittiwake, gannet (which is also sensitive to displacement impacts), and displacement of guillemot and razorbill.

<sup>2</sup> Directive 2009/147/EC

<sup>3</sup> The Habitats Directive requires Member States to nominate sites to be designated as Special Areas of Conservation (SACs) and the Birds Directive requires sites to be classified as Special Protection Areas (SPAs). Once a SAC has been designated or a SPA classified, such sites will be subject to the protection measures as set out in the Habitats Directive. (Articles 3 and 7 of the Habitats Directive extend its requirements to the Birds Directive).

<sup>4</sup> Natural England Standard (2014) Conservation Objectives for European Sites in England Strategic Standard

<sup>5</sup> Natural England are "minded to advise that AEol can be ruled out for the gannet feature of FFC SPA for Hornsea Four alone". Regarding in-combination impacts, agreement has not been reached as yet solely because of the inclusion of the Dudgeon and Sherringham extension projects in the in-combination assessments and the uncertainties associated with those projects. Natural England further acknowledge, in their most recent advice, a shared ambition to rule out an adverse effect subject to clarification on impacts from the latest iteration of the Hornsea Four array. Despite the Applicant's confidence that agreement will be reached with Natural England of no AEol in combination, Hornsea Four's DCO application will be accompanied by a derogation case (including compensatory measures) for gannet which will be provided on a "without prejudice basis".

1.3.1.2 The Applicant’s predicted impacts on these seabird species and relevant features of the FFC SPA from Hornsea Four are set out in **Table 2** along with the Applicant’s proposed required populations for compensation.

**Table 2: Summary of Hornsea Four predicted impacts on the relevant features of the FFC SPA**

Impact	Quantification of Effect	Impact on site	Population required per annum by measure(s)	Population required per annum with a 1:2 ratio applied
Project Collision Risk on kittiwake ( <b>B2.2 Report to Inform Appropriate Assessment</b> )	Project alone: 21.22 breeding adult individuals	The impact equates to a maximum of 0.021% of the current breeding population at FFC SPA (individuals).	56.7 pairs (artificial nesting)	113 pairs (artificial nesting)
Project Collision Risk and Displacement Effect on gannet ( <b>B2.2 Report to Inform Appropriate Assessment</b> )	Project alone: 11.77 - 12.85 breeding adult individuals	The impact equates to a maximum of 0.044-0.048% of the current breeding population at FFC SPA (individuals).	71.28 pairs (artificial nesting)	143 pairs (artificial nesting)
Project Displacement Effect on guillemot ( <b>B2.2 Report to Inform Appropriate Assessment</b> )	Project alone: 35.05 breeding adult individuals (based on 50% displacement and 1% mortality)	The impact equates to a maximum of 0.029% of the current breeding population at FFC SPA (individuals).	35 breeding adults	70 breeding adults
Project Displacement Effect on razorbill ( <b>B2.2 Report to Inform Appropriate Assessment</b> )	Project alone: 1.5 breeding adult individuals (based on 50% displacement and 1% mortality)	The impact equates to a maximum of 0.004% of the current breeding population at FFC SPA (individuals).	1.5 breeding adults	3 breeding adults

## 1.4 Consultation

1.4.1.1 The Applicant has undertaken further consultation specifically in relation to the Compensation Measures with statutory consultees who may have an interest in the proposed Compensation Measures, and certain stakeholders located in the vicinity of the land potentially affected by the measures. This targeted consultation ran from 5th August to 6th September 2021. All responses and comments are presented in [B2.9 Record of Consultation](#) alongside the regard the Applicant has had to these consultation responses.

## 2 Overarching compensation documents

2.1.1.1 Alongside this overview document, there are a number of key documents which contain the Applicant's without prejudice proposals for compensation measures. Those documents set out the criteria applied to the selection of the measure, a detailed description of each measure, and consideration of its deliverability and locations for delivery (see [Table 4](#)). The Applicant also provides details of proposals relating to wider workstreams being undertaken by the Applicant in relation to seabird prey resource, which whilst do not form part of the specific proposal, support the Applicant's submission. Further detail on these submissions is set out in [Table 3](#).

**Table 3: Overarching Compensation Documents**

Document Reference	Document Title	Detail
B2.6	Compensation measures for FFC SPA Overview	Document summarising the submission documents on the without prejudice compensation measure proposals
B2.6.1	Compensation measures for FFC SPA: Compensation Criteria	The criteria that have been applied in identifying, evaluating and ultimately, selecting potential compensation measure options
B2.6.2	Compensation measures for FFC SPA: Prey Resource Evidence	Detail of evidence linking seabird populations, prey availability and commercial fishing activity in the North Sea, and consideration of mechanisms to control or influence fishing.
B2.6.2.1	Ørsted's Strategic Compensation Approach	Detail of the funding proposed by the Applicant to demonstrate the financial commitment made to ensure the Secretary of State can have certainty that the research fund will be delivered, therefore not requiring securement within the DCO (only required if Article 6(4) is engaged).

## 3 Prey Resource

3.1.1.1 The offshore wind sector has been engaging with key stakeholders (Natural England, JNCC and RSPB) on matters relating to seabird compensation for a number of years, and it is evident through this engagement that there is a view that tackling the pressure on seabird prey resource is an avenue that merits discussion. This has been reflected within the examination / determination phase submissions by interested parties on Hornsea Three, Norfolk Vanguard & Boreas and East Anglia ONE North and TWO. Similarly, it has been raised during consultations held by Hornsea Four with key stakeholders.



3.1.1.2 The Applicant has therefore, explored the evidence linking kittiwake, guillemot and razorbill (and to a lesser degree gannet) to prey species and identified gaps in knowledge (**B2.6.2 Compensation measures for FFC SPA: Prey Resource Evidence**). The report firstly provides an overview of the evidence linking prey resource of key species (namely kittiwake, guillemot and razorbill (and to a lesser degree gannet)) with commercial fishing activity in the North Sea. Aspects that are considered in detail comprise:

- a review of the role of forage fish species in the North Sea;
- an evidence review of kittiwake, guillemot and razorbill feeding strategy;
- an evidence review of prey dynamics, including interactions with commercial fisheries;
- an overview of existing fisheries management; and
- a summary of relevant evidence gaps.

3.1.1.3 The report then goes on to consider the mechanisms by which fishing practices within UK waters can be controlled and or influenced, with specific regard to:

- Fisheries management;
- Spatial management;
- Fishing restriction order or byelaw;
- Quota management;
- Rights acquisition; and
- Commercial agreement.

3.1.1.4 The report identifies that whilst there is a clear link between seabird populations, prey resource and commercial fishing activity, there remains to be significant challenges for proportionate control measures to be developed at a project level.

3.1.1.5 All measures identified within the report (**B2.6.2 Compensation measures for FFC SPA: Prey Resource Evidence**) have high level of technical difficulty and most have a measure of political challenge associated with them. All measures, apart from a commercial agreement, would need significant support from Defra, MMO, JNCC, Natural England and in some cases the Danish Government, as well as significant engagement and interaction with the Danish sandeel fishing industry.

3.1.1.6 Given the findings of the report (**B2.6.2 Compensation measures for FFC SPA: Prey Resource Evidence**), the Applicant advocate the need for a science-led and ecosystem-based assessment of predicted mortality to understand the predation rate needed to feed into the maximum sustainable yield calculation. Therefore, a government-led approach to sustainable management of forage fish fisheries seems the only feasible proposition for long-term measure addressing prey availability.

3.1.1.7 The Applicant will contribute to a fund (£100,000 per year for 5 years) to develop further research to support evidence gathering, such as the research lead by the Offshore Wind Strategic Monitoring and Research Forum (OWSMRF) (see **B2.10 Without Prejudice Derogation Funding Statement** and **B2.6.2 Appendix A Ørsted's Strategic Compensation Approach**). Extensions to this research may include:

- Guillemot and razorbill diets during the breeding season, and the relationship between prey availability and productivity; and
- Assessing the current and future condition of alternative fish prey populations for guillemot and razorbill.

3.1.1.8 The Applicant will work in collaboration with Hornsea Project Three to build upon the growing evidence base so as to avoid any unnecessary duplication of research effort and fund availability (e.g predominantly for kittiwake benefit from diet studies and prey availability monitoring using mobile echo sounders).

## 4 Gannet & Kittiwake compensation proposals

4.1.1.1 The Applicant has developed two options in relation to kittiwake compensation (which will also support gannet compensation) and a further supporting measure that seeks to provide additional resilience to seabirds, including gannet and kittiwake. The two options Hornsea Four are considering comprise the provision of either an offshore or onshore artificial nesting structure with a preference for an offshore repurposed artificial nesting structure. These proposals have been developed following on from experience gained on Hornsea Project Three (Hornsea Three), which was consented on the basis of delivering sufficient onshore artificial nesting structures to support the production of a specific number of breeding kittiwake. Hornsea Three undertook extensive evaluation of potential kittiwake compensation options, and through that process and subsequent determination from the Secretary of State, it is has been firmly established that the provision of artificial nesting structures forms a viable and deliverable mechanism for compensating potential impacts on the species.

4.1.1.2 Further detail on these submissions is set out in [Table 4](#).

**Table 4: Gannet and Kittiwake Compensation Documents**

Document Reference	Document Title	Detail
B2.7	FFC SPA: Gannet and Kittiwake Compensation Plan	Document setting out the without prejudice compensation measure proposals for the delivery of artificial nesting structures (for both offshore and onshore options) and fish habitat enhancement measures (gannet bycatch is considered in the FFC SPA: Gannet, Guillemot and Razorbill Compensation Plan). Specifically, the document includes detail of Stakeholder Engagement, the DCO Requirement, the guidance that underpins the measure and, how the measure links to the sites Conservation Objectives. It then summarises the Evidence base to support the measures, provides an outline roadmap for further work required in the delivery of the measure, an outline of the monitoring approach and adaptive management measures and, the success criteria by which the measure can be evaluated. It will also provide detail on the site selection and consideration of alternatives, the design and construction of any structures, and their location, and any planning considerations. The plan then

Document Reference	Document Title	Detail
		sets out an indicative outline programme for the delivery of the measure and finally, provides evidence as to how the measure will be funded and secured.
B2.7.1	Compensation measures for FFC SPA: Offshore Artificial Nesting: Ecological Evidence	A document setting out the ecological evidence base to demonstrate that offshore artificial nesting structures can provide a robust compensation measure option for kittiwake and gannet.
B2.7.1.	Appendix F: Population modelling of black-legged kittiwake on the English east coast to identify the population of first time breeders available to recruit to new colonies	A report detailing the PVA modelling to consider the resultant effect of reducing fishing pressure on kittiwake populations, inclusive of evidence on key foraging areas and prey resource around offshore platforms.
B2.7.2	Compensation measures for FFC SPA: Offshore Artificial Nesting Roadmap	A roadmap setting out the steps that will be undertaken by the Applicant between the point of DCO application and the commissioning of the wind farm, by which point the compensation measure will have been implemented.
B2.7.3	Compensation measures for FFC SPA: Offshore Artificial Nesting: Site Selection and Design	A document providing initial design concepts and site selection for the offshore structures.
B2.7.4	Compensation measures for FFC SPA: Onshore Artificial Nesting: Ecological Evidence	A document setting out the ecological evidence base to demonstrate that onshore artificial nesting structures can provide a robust compensation measure option for kittiwake and gannet.
B2.7.5	Compensation measures for FFC SPA: Onshore Artificial Nesting Roadmap	A roadmap setting out the steps that will be undertaken by the Applicant between the point of DCO application and the commissioning of the wind farm, by which point the compensation measure will have been implemented.
B2.7.6	Outline Gannet and Kittiwake Compensation Implementation and Monitoring Plan	A high level document that will set out the structure of the Gannet and Kittiwake Compensation, Implementation and Monitoring Plan, which will serve as the template for the pivotal document that will be secured via the DCO and developed post consent and which will set out the full delivery proposals for the compensatory measure(s) (including fish habitat enhancement as a resilience measure).

## 5 Gannet, Guillemot & Razorbill compensation proposals

5.1.1.1 The Applicant has developed a package of compensation measures in relation to guillemot and razorbill (which will also support gannet) compensation and a further supporting measure that seeks to provide additional resilience to seabirds, including gannet, guillemot and razorbill. The compensation measure being proposed by the Applicant are relative to the numbers being compensated for in **Table 2** and comprise bycatch reduction measures (to benefit gannet, gannet and razorbill) predator eradication and/ or control at specific locations (to benefit guillemot and razorbill). These proposals have been developed

following extensive discussions with the key stakeholder organisations (namely Natural England, JNCC and RSPB) as well as the wider scientific community.

5.1.1.2 The compensation measures proposed for guillemot and razorbill are both feasible and scalable for both species. It is important to note that if the Secretary of State deems compensation necessary for only one of the species, or for both species at a number greater than presented in [Table 2](#) then the scale of the compensation measure implemented would be altered appropriately in relation to the level of impact predicted (see [B2.8 RP Volume B2 Chapter 8 FFC SPA Gannet, Guillemot and Razorbill Compensation Plan](#)).

5.1.1.3 Further detail on these submissions is set out in [Table 5](#).

**Table 5: Gannet, Guillemot & Razorbill Compensation Documents**

Document Reference	Document Title	Detail
B2.8	FFC SPA: Gannet, Guillemot & Razorbill Compensation Plan	Document setting out the without prejudice compensation measure proposals for the delivery of the predator eradication and/ or control, bycatch reduction and fish habitat enhancement measures. Specifically, the document will include detail of Stakeholder Engagement, the DCO Requirement, the guidance that underpins the measures and, how the measures link to the sites Conservation Objectives. It then summarises the Evidence base to support the measures, provides an outline roadmap for further work required in the delivery of the measure, an outline of the monitoring approach and adaptive management measures and, the success criteria by which the measure can be evaluated. It will also provide detail on the proposed locations of the measures, the considerations of alternative measures, and information on the potential bycatch reduction measures to be trialled (for bycatch reduction). The plan then sets out an indicative outline programme for the delivery of the measures and finally, provides evidence as to how the measures will be funded and secured.
B2.8.1	Compensation measures for FFC SPA: Bycatch: Ecological Evidence	A document setting out the evidence base for bycatch being a pressure on gannet, guillemot and razorbill, how bycatch mitigation could benefit gannet, guillemot and razorbill and the locations where such measures may be viable for these species, along with evidence to support the connectivity of birds at these locations to those of the national site network.
B2.8.2	Compensation measures for FFC SPA: Bycatch Roadmap	A roadmap setting out the steps that will be undertaken by the Applicant between the point of DCO application and the commissioning of the wind farm, by which point the compensation measure will have been implemented (and continuing for the lifespan of the project).
B2.8.3	Compensation measures for FFC SPA: Predator	A document setting out the evidence base for predation of guillemot and razorbill, for predator eradication and/ or control

Document Reference	Document Title	Detail
	eradication: Ecological Evidence	to benefit guillemot and razorbill and the locations where such measures may be viable for these species.
B2.8.4	Compensation measures for FFC SPA: Predator Eradication Roadmap	A roadmap setting out the steps that will be undertaken by the Applicant between the point of application and the commissioning of the wind farm, by which point the compensation measure will have been implemented (with biosecurity being continued for the lifespan of the project).
B2.8.7	Outline Guillemot & Razorbill Compensation Implementation and Monitoring Plan	A high level document that will set out the structure of the Guillemot & Razorbill Compensation, Implementation and Monitoring Plan, which will serve as the template for the pivotal document that will be secured via the DCO and developed post consent and which will set out the full delivery proposals for the compensatory measure(s) (including fish habitat enhancement as a resilience measure ).

## 5.2 Fish Habitat Enhancement

- 5.2.1.1 The Applicant has engaged with key stakeholders (namely Natural England, JNCC and RSPB) on the merits of developing a resilience measure linked to the enhancement of prey habitat, noting that prey resource has the potential to be a limiting factor for the success of seabird populations (Davies, 2012; Hjernquist and Hjernquist, 2010; Thaxter et al., 2013; Unsworth and Butterworth, 2021). The Applicant has engaged the leading seagrass experts in the UK (namely, Swansea University) to provide advice on the ecological benefits of seagrass restoration, the practicality of undertaking restoration projects, and potentially suitable locations for such restoration work within the UK. Furthermore, the Applicant has been engaging with numerous organisations involved in seagrass restoration to explore opportunities and potential collaborators for a seagrass restoration project.
- 5.2.1.2 The work undertaken by Swansea University has identified that seagrass beds have the potential to significantly increase biodiversity and act as a refuge for juvenile fish species including species such as Ammodytidae, Clupeidae and Gadidae. These species of fish are common prey resource for the seabird species targeted by the principal compensation measure proposals (namely kittiwake, guillemot and razorbill). Engagement with Natural England, JNCC and RSPB has established that there is merit in the Applicant pursuing the restoration of seagrass beds. It has been acknowledged by the Applicant and SNCB, that the merit of the measure has the potential to be further enhanced via implementation in regions where the principal compensation measures are also being applied as part of a wider resilience programme, though its merit is not limited in being delivered as such.
- 5.2.1.3 The Applicant has therefore, taken steps to explore the potential to support the delivery of seagrass bed restoration projects in two strategic areas (the North East and the South West) to align with the geographical focus of the gannet, guillemot, razorbill and kittiwake distributions and compensation proposals. In support of this work Hornsea Four has developed a number of documents as set out in [Table 6](#).
- 5.2.1.4 It is important to note that this proposed seagrass restoration work is not put forward as a

compensation measure in its own right, but rather is proposed as a resilience measure to supplement the compensation measures described above and below for gannet, guillemot, razorbill and kittiwake.

**Table 6: Seagrass Habitat Restoration Compensation Documents**

<b>Document Reference</b>	<b>Document Title</b>	<b>Detail</b>
B2.8.5	Fish Habitat Enhancement: Ecological Evidence	A document setting out the evidence base for the importance of seagrass habitats in terms of biodiversity enhancement, its ability to support prey resource of target seabird species, and the ability to restore such habitats in UK waters.
B2.8.6	Fish Habitat Enhancement: Roadmap	A document setting out the steps undertaken by the Applicant to date and planned in the future for the delivery of seagrass habitat restoration projects at specific locations within the UK.

## 6 References

Davies, R.D. (2012). Foraging behaviour and population dynamics of northern gannets over a period of environmental change. University of Leeds.

Hjernquist, B. and Hjernquist, M.B. (2010) The effects of quantity and quality of prey on population fluctuations in three seabird species. *Bird Study*, 57(1), 19-25.

Stroud, D.A., Bainbridge, I.P., Maddock, A., Anthony, S., Baker, H., Buxton, N., Chambers, D., Enlander, I., Hearn, R.D., Jennings, K.R, Mavor, R., Whitehead, S. & Wilson, J.D. – on behalf of the UK SPA & Ramsar Scientific Working Group (eds). 2016. The status of UK SPAs in the 2000s: the Third Network Review. JNCC, Peterborough.

Thaxter, C.B., Daunt, F., Gremillet, D., Harris, M.P., Benvenuti, S., Watanuki, Y., Hamer, K.C. and Wanless, S. (2013). Modelling the effects of prey size and distribution on prey capture rates of two sympatric marine predators. *PLoS One*, 8(11), e79915.

Unsworth, R.K. and Butterworth, E. (2021). Potential sites for seagrass restoration to benefit target seabird species. Project Seagrass.