RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Habitats Regulations Derogation: Provision of Evidence (Revision 5) (Clean)

Volume 6

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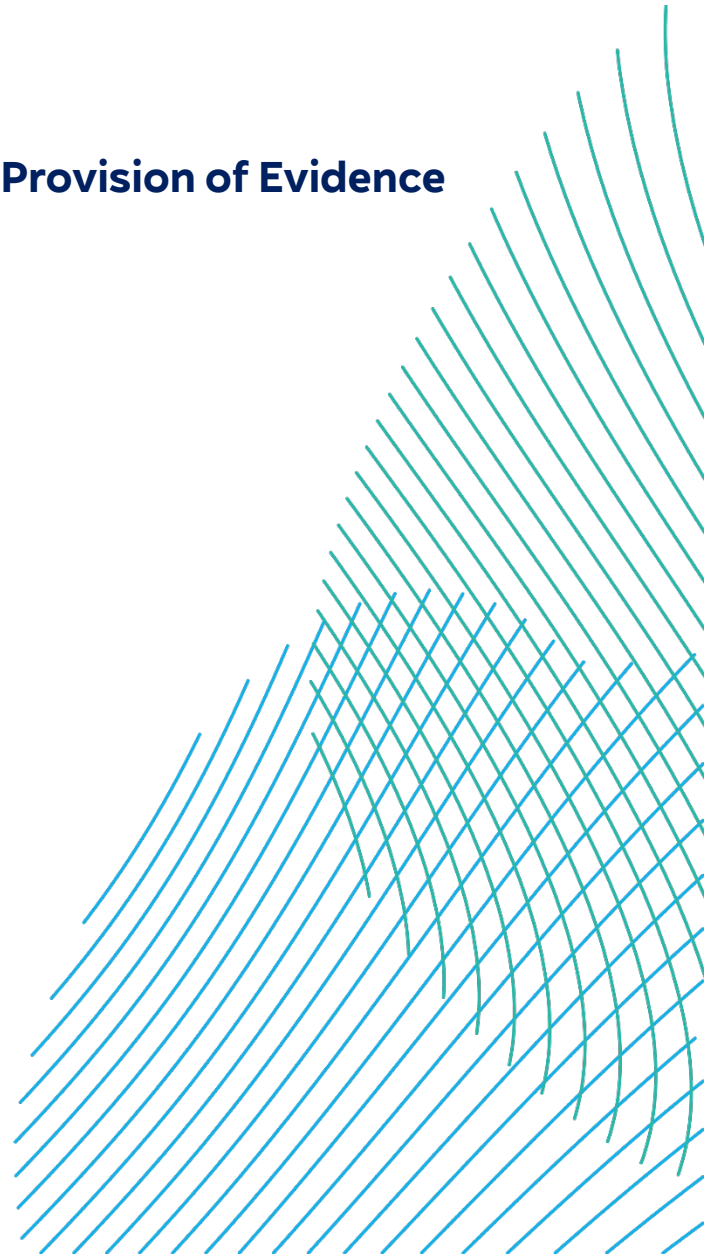

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Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
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01	February 2024	Draft for TCE Submission	RHDHV	RWE	RWE
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Revision Change Log			
Rev No.	**Page**	**Section**	**Description**
01	N/A	N/A	Draft for PINS / TCE submission
02	N/A	N/A	Final for DCO Application
03	10	1.1	Project background updated to reflect updated design parameters for the Projects.
03	41 - 46	4.3.2	Summary of the Assessment of Effects on Kittiwake, Guillemot and Razorbill updated to reflect latest numbers for displacement and mortality.
03	47	4.3.3.1.3	Updated text regarding 'direct 'physical damage' included.
03	49-50	4.3.4	Table 4-4 updated to reflect updated design parameters for the Projects and Table 4-5 added to include indicative 'direct 'physical damage' parameters for the Projects.
04	48 - 52	4.3.4	Without prejudice scenarios added for habitat loss from UXO clearance activities and jack-up footprint, and for estimated area of 'halo effects'.
04	47-48	4.3.3	Without prejudice case for guillemots at the Farne Islands SPA added.
05	54-55	4.3.5	Halo effects scenarios updated following Natural England comments at Deadline 9.

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Glossary

Term	Definition
Array Areas	The DBS East and DBS West offshore Array Areas, where the wind turbines, offshore platforms and array cables would be located. The Array Areas do not include the Offshore Export Cable Corridor or the Inter-Platform Cable Corridor within which no wind turbines are proposed. Each area is referred to separately as an Array Area.
Array cables	Offshore cables which link the wind turbines to the Offshore Converter Platform(s).
Design (or Rochdale) Envelope	A term derived from EIA case law which seeks to balance the need for flexibility for a development not fully defined with the ability to assess the likely significant effects of such a scheme upon the environment, and any necessary mitigation, and to set these out in an Environmental Statement.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Habitats Regulations Assessment (HRA)	The process that determines whether or not a plan or project may have an adverse effect on the integrity of a European Site or European Offshore Marine Site.
Inter-Platform Cable Corridor	The area where Inter-Platform Cables would route between platforms within the DBS East and DBS West Array Areas, should both Projects be constructed.
Inter-Platform Cables	Buried offshore cables which link offshore platforms.
Landfall	The point on the coastline at which the Offshore Export Cables are brought onshore, connecting to the onshore cables at the Transition Joint Bay (TJB) above mean high water.
Offshore Converter Platforms (OCPs)	The OCPs are fixed structures located within the Array Areas that collect the AC power generated by the wind turbines and convert the power to DC, before transmission through the Offshore Export Cables to the Project's Onshore Grid Connection Points.

Term	Definition
Offshore Export Cable Corridor	This is the area which will contain the offshore export cables (between the Offshore Converter Platforms and Transition Joint Bays at the landfall.
Offshore Export Cables	The cables which would bring electricity from the offshore platforms to the Transition Joint Bays (TJBs).
Onshore Converter Stations	A compound containing electrical equipment required to transform HVDC and stabilise electricity generated by the Projects so that it can be connected to the electricity transmission network as HVAC. There will be one Onshore Converter Station for each Project.
Onshore Export Cable Corridor	This is the area which includes cable trenches, haul roads, spoil storage areas, and limits of deviation for micro-siting. For assessment purposes, the cable corridor does not include the Onshore Converter Stations, Transition Joint Bays or temporary access routes; but includes Temporary Construction Compounds (purely for the cable route).
Onshore Export Cables	Onshore Export Cables take the electric from the Transition Joint Bay to the Onshore Converter Stations.
Onshore Grid Connection Points	The Onshore Grid Connection Points is the location where the electricity produced by the Projects would be transferred to the national grid. There are two Onshore Grid Connection Points, one for each Project, which will be located in the same place.
Project Change Request 1	The changes to the DCO application for the Projects set out in Project Change Request 1 - Offshore & Intertidal Works [AS-141] which was accepted into Examination on 21st January 2025.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).

Acronyms

Term	Definition
AA	Appropriate Assessment
AEoI	Adverse Effect on [Site] Integrity
BEIS	Department for Business, Energy and Industrial Strategy, now succeeded by the Department for Energy Security and Net Zero
CCC	Climate Change Committee
CCRA	Climate Change Risk Assessment
CNP	Critical National Priority
DBS	Dogger Bank South
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
EC	European Commission
ETG	Expert Topic Group
EU	European Union
FFC	Flamborough and Filey Coast
FTE	Full Time Equivalent
GVA	Gross Value Added
GW	Gigawatt
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternative Current
HVDC	High Voltage Direct Current

Term	Definition
IPCC	Intergovernmental Panel on Climate Change
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MCZ	Marine Conservation Zone
MGN	Maritime and Coastguard Agency's Marine Guidance Note
MPA	Marine Protected Area
MSL	Mean Sea Level
MW	Megawatt
NASA	National Aeronautics and Space Administration
NDC	Nationally Determined Contributions
NOAA	National Oceanographic and Atmospheric Administration
OCP	Offshore Converter Platforms
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
UK	United Kingdom
UNFCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization

1 Introduction

1.1 Project Background

1. RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited ('the Applicants') is applying for a Development Consent Order (DCO) for the Dogger Bank South (DBS) East and DBS West Offshore Wind Farms (hereafter 'the Projects'). When operational, the Projects would have the potential to generate renewable power for over 3 million United Kingdom (UK) homes from up to 200 wind turbines.

2. Electricity will flow from the wind turbines via array cables to offshore platforms. There will be up to two offshore converter platforms (OCPs)

3. Depending on the development scenario (see section 5.1.1 of **Volume 7, Chapter 5 Project Description (application ref: 7.5)**), the Array Areas will be connected to one another via inter-platform cables, with a maximum of three offshore platforms combined between both Projects. An Offshore Export Cable Corridor will connect the Array Areas with the landfall at Skipsea. This will consist of up to six individual cables, comprising a total of four electrical cables and two communications cables serving both Projects. In the worst case scenario, these circuits will be installed within up to two separate trenches offshore (with the Offshore Export Cables and a single communication cable bundled in a single trench), and up to four trenches nearshore and through the landfall zone. An Onshore Export Cable Corridor will link the landfall with the newly constructed Onshore Converter Stations before onward onshore cable routeing to a proposed new National Grid substation near Creyke Beck, to the south of Beverley.

1.2 Purpose of this Document

4. This document provides evidence to support Stage 3 (Derogation) of the Habitats Regulations Assessment (HRA) Process (**Plate 3-1**) in relation to the kittiwake, guillemot and razorbill features of the Flamborough and Filey Coast (FFC) Special Protection Area (SPA) and the 'sandbanks slightly covered by seawater all the time' feature of the Dogger Bank Special Area of Conservation (SAC).

5. This document is informed by **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** which concludes:

    - For the kittiwake feature of the FFC SPA, an adverse effect on site integrity cannot be ruled out due to in-combination collision risk;

- For the guillemot feature of the FFC SPA, an adverse effect on site integrity cannot be ruled out due to in-combination displacement effects; and
- For the 'sandbanks slightly covered by seawater all the time' feature of the Dogger Bank SAC, that an adverse effect on site integrity cannot be ruled out for Projects together and in-combination long term habitat loss.

6. **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** concludes that with regard to the Dogger Bank SAC, abrasion and disturbance of the sandbanks slightly covered by seawater all the time' feature does not contribute to any adverse effect on site integrity. However, Natural England have made representations during the examination and submitted that there is the potential for this effect to contribute to adverse effect on site integrity. The Applicants do not agree with this position and have provided evidence to support their position. A conclusion of adverse effect on integrity as a result of abrasion and disturbance would simply increase the footprint of the effect, significantly increasing the quantum of compensation that would be required to offset this impact. Despite the Applicants' position on this matter, this document has been updated to include this effect and implications for compensation on a 'without prejudice' basis, should the Secretary of State concur with Natural England's position.

7. **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** concludes that the displacement impacts predicted at DBS East and DBS West in-combination with other projects, will not adversely affect the integrity of the Farne Islands SPA. However, Natural England have made representations during the examination and submitted that an Adverse Effect in Integrity on guillemot at Farne Islands SPA cannot be ruled out. The Applicants disagree with this position. Given that no measurable increase in the Farne Islands SPA guillemot mortality is predicted as a result of DBS East and DBS West combined (e.g. with realistic displacement mortality of only 5 birds per year during operation), the Applicant's concluded that the Projects would not contribute to in-combination effects on this species, and note that more than half of the total impact estimated to the Farne Islands SPA population is attributable to one project (Berwick Bank; 55%), while the Projects contribute at most 5%. Despite the Applicants' position on this matter, this document has been updated to include guillemot from the Farne Islands SPA on a 'without prejudice' basis, should the Secretary of State concur with Natural England's position.

8. For all other sites and features assessed in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)**, a conclusion of no adverse effect on site integrity is reached.

9. In response to feedback from consultation undertaken during the pre-application period and discussions with the ornithology compensation Expert Topic Group (ETG), a derogation case has been provided with respect to the razorbill feature of the FFC SPA. **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** concludes no adverse effect on integrity for this feature, however, the Applicants recognise that the level of in-combination effect may be reaching a level where the Secretary of State may not be able to conclude that adverse effect on integrity of the FFC SPA can be ruled out for this feature. Therefore, this HRA derogation case and the associated compensatory measures are provided on a 'without prejudice' basis for this species. This approach is in accordance with the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Renewable Energy Infrastructure (EN-3) (section 2.2).

10. This document includes the Applicant's submission in relation to alternative solutions (section 4), Imperative Reasons of Overriding Public Interest (IROPI) (section 5) and proposed compensatory measures in respect of the FFC SPA and Dogger Bank SAC (section 6 and **Volume 6, Appendices 1, 2** and **3 (application ref: 6.2.1, 6.2.2** and **6.2.3)**). Sections 2 and 4.3 respectively provide the legislative context and information on the relevant designated sites and interest features.

2 Legislative And Policy Context

2.1 Legislation

2.1.1 The Habitats Directive and the Birds Directive

11. The European Union (EU) Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) (the Habitats Directive) provides a framework for the conservation and management of certain habitats and species in Europe. Its aim is to maintain or restore those habitats and species at a favourable conservation status and protect them from the potential adverse effects of plans and projects. The relevant provision of the Habitats Directive is the procedure for the protection of SACs (Article 6). SACs are identified and designated based on the presence of the natural habitat types listed in Annex I and populations of the species listed in Annex II.

12. The EU Directive on the Conservation of Wild Birds (2009/147/EC) (the Birds Directive) provides a framework for the conservation and management of certain wild birds in Europe and the identification and designation of SPAs.

13. The Habitats Directive and the Birds Directive provided the foundations for the UK Habitats Regulations (see section 2.1.2), although they no longer form part of UK legislation. In the UK, the Habitats Regulations have been amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, to reflect the UK's departure from the European Union. This has, among other changes, replaced the provisions which gave a role to the European Commission (EC) in relation to derogations in certain scenarios.

14. Article 6(3) of the Habitats Directive (see **Table 2-1**) sets out the approval procedure associated with a plan or project for which there is a Likely Significant Effect (LSE) on protected sites. Such plans or projects are subject to an Appropriate Assessment (AA) (see section 1 and the **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application reference 6.1)**). Article 6(4) of the Habitats Directive (see **Table 2-1**) provides the 'HRA derogation' procedure, where an adverse effect on the integrity of a Habitats site cannot be ruled out as a result of a plan or project. This document provides the evidence to support the derogation procedure.

Table 2-1 Relevant Articles

Article	Requirement
Habitats Directive Article 6(3)	*"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*
Habitats Directive Article 6(4)	*"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.* *Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."*

2.1.2 UK Legislation

15. In England and Wales, the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'), the Wildlife and Countryside Act 1981 and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations) (which applies outside of 12nm) transposed the Habitats Directive and Birds Directive into English and Welsh law.

16. Regulation 63 of the Habitats Regulations and Regulation 28 of the Offshore Habitats Regulations provide the requirement for AA and align with Article 6(3) of the Habitats Directive (discussed further in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application reference 6.2.1)**).

17. Regulations 64 and 68 of the Habitats Regulations and Regulations 29 and 36 of the Offshore Habitats Regulations provide the HRA derogation procedure and are aligned with the requirements of Article 6(4) of the Habitats Directive (**Table 2-2**).

Table 2-2 Relevant Regulations

Regulation	Requirement
Habitats Regulations Regulation 63	*(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—* *(a)is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and* *(b)is not directly connected with or necessary to the management of that site,* *must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.* *(2) A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an appropriate assessment is required.* *(3) The competent authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specifies.* *(4) It must also, if it considers it appropriate, take the opinion of the general public, and if it does so, it must take such steps for that purpose as it considers appropriate.* *(5) In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect*

Regulation	Requirement
	the integrity of the European site or the European offshore marine site (as the case may be). *(6) In considering whether a plan or project will adversely affect the integrity of the site, the competent authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it proposes that the consent, permission or other authorisation should be given.* *(7) This regulation does not apply in relation to—* *(a)a site which is a European site by reason of regulation 8(1)(c);* *(b)a site which is a European offshore marine site by reason of regulation 18(c) of the Offshore Marine Conservation Regulations; or* *(c)a plan or project to which any of the following apply—* *(i)the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001(1) (in so far as this regulation is not disapplied by regulation 4 (plans or projects relating to offshore marine area or offshore marine installations) in relation to plans or projects to which those Regulations apply);* *(ii)the Environmental Impact Assessment (Agriculture) (England) (No. 2) Regulations 2006(2);* *(iii)the Environmental Impact Assessment (Agriculture) (Wales) Regulations 2017(3); or* *(iv)the Merchant Shipping (Ship-to-Ship Transfers) Regulations 2010(4).* *(8) Where a plan or project requires an appropriate assessment both under this regulation and under the Offshore Marine Conservation Regulations, the assessment required by this regulation need not identify those effects of the plan or project that are specifically attributable to that part of it that is to be carried out in the United Kingdom, provided that an assessment made for the purpose of this regulation and the Offshore Marine Conservation Regulations assesses the effects of the plan or project as a whole.* *(9) In paragraph (1) the reference to the competent authority deciding to undertake a plan or project includes the competent authority deciding to vary any plan or project undertaken or to be undertaken.*
Habitats Regulations	*"(1) If the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for*

Regulation	Requirement
Regulation 64	*imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site or the European offshore marine site (as the case may be).* *(2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either—* *(a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or* *(b) any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.* *(3) Where a competent authority other than the Secretary of State or the Welsh Ministers desires to obtain the opinion of the appropriate authority as to whether reasons are to be considered imperative reasons of overriding public interest, it may submit a written request to the appropriate authority—* *(a) identifying the matter on which an opinion is sought; and* *(b) accompanied by any documents or information which may be required.* *(4) In giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the appropriate authority must have regard to the national interest, and provide its opinion to the competent authority.* *(4A) Before giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the appropriate authority must consult the following, and have regard to their opinion—* *(a) the Joint Nature Conservation Committee;* *(b) where the appropriate authority is the Secretary of State, the devolved administrations;* *(c) where the appropriate authority is the Welsh Ministers, the Secretary of State, and the other devolved administrations; and* *(d) any other person the appropriate authority considers appropriate.*

Regulation	Requirement
	(5) Where a competent authority other than the Secretary of State or the Welsh Ministers proposes to agree to a plan or project under this regulation notwithstanding a negative assessment of the implications for the site concerned— *(a) it must notify the appropriate authority; and* *(b) it must not agree to the plan or project before the end of the period of 21 days beginning with the day notified by the appropriate authority as that on which its notification was received, unless the appropriate authority notifies it that it may do so.* *(6) Without prejudice to any other power, the appropriate authority may give directions to the competent authority in any such case prohibiting it from agreeing to the plan or project, either indefinitely or during such period as may be specified in the direction."*
Habitats Regulations Regulation 68	*"Where in accordance with regulation 64—* *(a) a plan or project is agreed to, notwithstanding a negative assessment of the implications for a European site or a European offshore marine site, or* *(b) a decision, or a consent, permission or other authorisation, is affirmed on review, notwithstanding such an assessment,* *the appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected."*
Offshore Habitats Regulations Regulation 28	*1) Before deciding to undertake, or give any consent, permission or other authorisation for, a relevant plan or project, a competent authority must make an appropriate assessment of the implications of the plan or project for the site in view of that site's conservation objectives.* *(2) In paragraph (1), a "relevant plan or project" is a plan or project which—* *(a)is to be carried out on or in any part of the waters or on or in any part of the seabed or subsoil comprising the offshore marine area, or on or in relation to an offshore marine installation;* *(b)is likely to have a significant effect on a European offshore marine site or a European site (either alone or in combination with other plans or projects); and*

Regulation	Requirement
	(c)is not directly connected with or necessary to the management of the site. *(3) A person applying to a competent authority for any consent, permission or other authorisation for a plan or project in the offshore marine area must provide such information as the competent authority may reasonably require—* *(a)to enable it to determine whether an assessment under paragraph (1) is required; or* *(b)for the purposes of an assessment under paragraph (1).* *(4) The competent authority must for the purposes of the assessment—* *(a)where it relates to a European offshore marine site, consult the Joint Committee;* *(b)where it relates to a European site in England, consult Natural England;* *(c)where it relates to a European site in Wales, consult the Natural Resources Body for Wales;* *(d)where it relates to a European site in Scotland, consult Scottish Natural Heritage;* *(e)where it relates to a European site in Northern Ireland, consult the DAERA; and* *(f)if it considers it appropriate, take the opinion of the general public and if it does so, take such steps for that purpose as it considers appropriate.* *(5) In the light of the conclusions of the assessment, and subject to regulation 29, the competent authority may agree to the plan or project only if it has ascertained that it will not adversely affect the integrity of the European offshore marine site or European site (as the case may be).* *(6) In considering whether a plan or project will adversely affect the integrity of a site, the competent authority must have regard to the manner in which it is proposed to be carried out and to any conditions or restrictions subject to which the competent authority proposes that the consent, permission or other authorisation should be given.*

Regulation	Requirement
	(7) This regulation does not apply in relation to— *(a)a site which is a European offshore marine site by reason of regulation 18(c);* *(b)a site which is a European site by reason of regulation 27(1)(c);* *(c)the granting by the Secretary of State of any Petroleum Act approval, Petroleum Act authorisation, Petroleum or Energy Act consent, Petroleum Act licence, or Energy Act licence.* *(8) Where a plan or project requires an appropriate assessment both under this regulation and under the Conservation Regulations, the assessment so far as relating to that part of it that is to be carried out in the offshore marine area need not identify the extent to which the effects of the plan or project are specifically attributable to that part, provided that an assessment made for the purposes of this regulation and the Conservation Regulations assesses the effects of the plan or project as a whole.* *(9) In paragraph (8) "the Conservation Regulations" means the 1994 Regulations or the 2017 Regulations (as the case may be).* *(10) In this regulation—* *"England" includes so much of the internal waters and territorial sea of the United Kingdom as are not part of Northern Ireland, Scotland or Wales; and"Northern Ireland" has the same meaning as in the Northern Ireland Act 1998(1).*
Offshore Habitats Regulations Regulation 29	*"(1) If it is satisfied that, there being no alternative solutions, the plan or project referred to in regulation 28(1) must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), the competent authority may agree to the plan or project notwithstanding a negative assessment of the implications for the site.* *(2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either—* *(a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or* *(b) any other imperative reasons of overriding public interest.* *(3) A competent authority other than the relevant administration may not agree to a plan or project under paragraph (1) for any*

Regulation	Requirement
	reason referred to in paragraph (2)(b) unless it has had due regard to the opinion of the relevant administration in satisfying itself that there are such reasons. *(4) Where a competent authority other than the relevant administration desires to obtain the opinion of the relevant administration as to whether reasons are to be considered imperative reasons of overriding public interest, it must submit a request to the relevant administration —* *(a) identifying the matter on which an opinion is sought; and* *(b) accompanied by any documents or information that may be required.* *(5) In giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the relevant administration must have regard to the national interest, and provide its opinion to the competent authority.* *(6) Before giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the relevant administration must consult the following, and have regard to their opinion—* *(a) the Joint Nature Conservation Committee;* *(b) where the relevant administration is the Secretary of State, the devolved administrations;* *(c) where the relevant administration is a devolved administration, the Secretary of State and the other devolved administrations; and* *(d) any other person the relevant administration considers appropriate.* *(7) In this regulation, "the relevant administration" means—* *(a) in relation to a plan or project relating to an activity other than one specified in regulation 55(16)—* *(i) where the plan or project is to be carried out in the Scottish offshore region, the Scottish Ministers; and* *(ii) where the plan or project is to be carried out in the Welsh offshore region, the Welsh Ministers; and* *(b) in relation to a plan or project relating to an activity specified in regulation 55(16), or in any case not falling within sub-paragraph (a)(i) or (ii), the Secretary of State."*

Regulation	Requirement
Offshore Habitats Regulations Regulation 36	*"(1) This regulation applies where, notwithstanding a negative assessment of the implications for a European offshore marine site or European site—* *(a) a plan or project is agreed to in accordance with regulation 29; or* *(b)a decision, or a consent, permission or other authorisation, is affirmed on review in accordance with regulations 29 and 34(3).* *(2) The appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected."*

18. It is noted that in May 2021 the Environment Secretary signalled the Government's intention to reform the Habitats Regulations to ensure that legislation supports the Government's nature recovery targets. The Government convened an HRA working group and released a summary of its findings in 2022 (Defra, 2022a). Additionally, the Nature Recovery Green Paper: Protected Sites and Species (Defra, 2022b) which outlines the recommendations of the HRA working group and proposes changes to existing legislation, was consulted upon from March – May 2022.

19. The Applicants have prepared the Application for the Projects based upon legislation in place at the time of the DCO application submission.

2.2 Policy

20. The Overarching National Policy Statement for Energy (NPS EN-1) (DESNZ, 2023a) and National Policy Statement for Renewable Energy (NPS EN-3) (DESNZ, 2023b) outline the requirements for Applicants to provide evidence to support an HRA derogation case at the application stage, where the Statutory Nature Conservation Body (SNCB) has advised that it may not be possible to rule out an adverse effect on site integrity (**Table 2-3**).

Table 2-3 Relevant Policies of the NPS EN-1, and NPS EN-3

Paragraph	Policy
NPS EN-1 paragraph 4.2.11	*"Applicants must apply the mitigation hierarchy and demonstrate that it has been applied. They should also seek the advice of the appropriate SNCB or other relevant statutory body when undertaking this process. Applicants should demonstrate that all residual impacts are those that cannot be avoided, reduced or mitigated."*

Paragraph	Policy
NPS EN-1 paragraph 4.2.12	*"Applicants should set out how residual impacts will be compensated for as far as possible. Applicants should also set out how any mitigation or compensation measures will be monitored and reporting agreed to ensure success and that action is taken. Changes to measures may be needed e.g. adaptive management. The cumulative impacts of multiple developments with residual impacts should also be considered."*
NPS EN-1 paragraph 4.2.13	*"Where residual impacts relate to HRA or MCZ sites then the Applicant must provide a derogation case, if required, in the normal way in compliance with the relevant legislation and guidance."*
NPS EN-1 paragraph 4.2.19	*"Where, following Appropriate Assessment, CNP [Critical National Priority] Infrastructure has residual adverse impacts on the integrity of sites forming part of the UK national site network, either alone or in combination with other plans or projects, the Secretary of State will consider making a derogation under the Habitats Regulations."*
NPS EN-1 paragraph 4.2.21 and Figure 3	*"...the Secretary of State will consider the particular circumstances of any plan or project, but starting from the position that energy security and decarbonising the power sector to combat climate change:* • *requires a significant number of deliverable locations for CNP Infrastructure and for each location to maximise its capacity. This NPS imposes no limit on the number of CNP infrastructure projects that may be consented. Therefore, the fact that there are other potential plans or projects deliverable in different locations to meet the need for CNP Infrastructure is unlikely to be treated as an alternative solution. Further, the existence of another way of developing the proposed plan or project which results in a significantly lower generation capacity is unlikely to meet the objectives and therefore be treated as an alternative solution; and* • *are capable of amounting to imperative reasons of overriding public interest (IROPI) for HRAs, and, for MCZ assessments, the benefit to the public is capable of outweighing the risk of environmental damage, for CNP Infrastructure."*
NPS EN-1 paragraph 4.2.22	*"For HRAs, where an applicant has shown there are no deliverable alternative solutions, and that there are IROPI, compensatory measures must be secured by the Secretary of State as the competent authority, to offset the adverse effects to site integrity as part of a derogation."*

Paragraph	Policy
NPS EN-1 paragraph 5.4.26	*"If, during the pre-application stage, the SNCB indicate that the proposed development is likely to adversely impact the integrity of habitat sites, the applicant must include with their application such information as may reasonably be required to assess a potential derogation under the Habitats Regulations."*
NPS EN-1 paragraph 5.4.27	*"If the SNCB gives such an indication at a later stage in the development consent process, the applicant must provide this information as soon as is reasonably possible and before the close of the examination. This information must include assessment of alternative solutions, a case for Imperative Reasons of Overriding Public Interest (IROPI) and appropriate environmental compensation."*
NPS EN-1 paragraph 5.4.28	*"Provision of such information will not be taken as an acceptance of adverse impacts and if an applicant disputes the likelihood of adverse impacts, it can provide this information as part of its application 'without prejudice' to the Secretary of State's final decision on the impacts of the potential development. If, in these circumstances, an applicant does not supply information required for the assessment of a potential derogation, there will be no expectation that the Secretary of State will allow the applicant the opportunity to provide such information following the examination."*
NPS EN-1 paragraph 5.4.29	*"It is vital that applicants consider the need for compensation as early as possible in the design process as 'retrofitting' compensatory measures will introduce delays and uncertainty to the consenting process."*
NPS EN-1 paragraph 5.4.30	*"Applicants should work closely at an early stage in the pre-application process with SNCB and Defra/Welsh Government to develop a compensation plan for all protected sites adversely affected by the development. Applicants should engage with the relevant Local Planning Authority at an early stage regarding the proposed location of compensatory measures. Applicants should also take account of any strategic plan level compensation plans in developing project level compensation plans."*
NPS EN-1 paragraph 5.4.31	*"Before submitting an application, applicants should seek the views of the SNCB and Defra/Welsh Government as to the suitability, securability and effectiveness of the compensation plan to ensure the development will not hinder the achievement of the conservation objectives for the protected site. In cases where such views are provided, the applicant should include a copy of this information with*

Paragraph	Policy
	the compensation plan in their application for further consideration by the Examining Authority."
NPS EN-3 paragraph 2.8.265	*"With increasing deployment of offshore wind farms and offshore transmission, environmental impacts upon SACs SPAs, and Ramsar sites and MCZs (individually and as part of a network) may not be addressed by avoidance, reduction, or mitigation alone, therefore compensatory measures (through derogation for SACs SPAs, Ramsar sites, and MCZs) may be required at a plan or project level where adverse effects on site integrity and/or on conservation objectives cannot be ruled out."*
NPS EN-3 paragraph 2.8.266	*"For many receptors, the scale of offshore wind and offshore transmission developments, and potential in-combination effects, means compensation could be required and applicants must refer to the latest Defra compensation guidance when making their assessments."*
NPS EN-3 paragraph 2.8.267	*"If, during the pre-application stage, SNCBs indicate that the proposed development is likely adversely to impact a protected site, the applicant should include with their application such information as may reasonably be required to assess potential derogations under the Habitats Regulations or the Marine and Coastal Access Act 2009."*
NPS EN-3 paragraph 2.8.268	*"Where such an indication is given later in the development consent process, the applicant should share this information as soon as reasonably practical."*
NPS EN-3 paragraph 2.8.269	*"This information includes:* • *assessment of alternative solutions, showing the relevant tests on alternatives have been met;* • *a case showing that the relevant tests for IROPI or Measures of Equivalent Environmental Benefit have been met; and* • *appropriate securable environmental compensation, which will ensure no net loss to the MPA network and help ensure that the MPA target (including any interim target) set under the Environment Act 2021 targets can be met."*
NPS EN-3 paragraph 2.8.270	*"Provision of such information will not be taken as an acceptance of adverse impacts, and if applicants dispute the likelihood of adverse effects they can provide this information as part of their application,*

Paragraph	Policy
	'without prejudice' to the Secretary of State's final decision on the impacts of the potential development."
NPS EN-3 paragraph 2.8.271	*"If, in these circumstances, an applicant does not supply information required for the assessment of a potential derogation, consent may be refused as there will be no expectation that the Secretary of State will allow the applicant the opportunity to provide such information following the examination."*
NPS EN-3 paragraph 2.8.272	*"It is vital that applicants consider the need for compensation as early as possible in the design process, as 'retrofitting' compensatory measures will introduce delays and uncertainty to the consenting process. Applicants are encouraged to include all compensatory measures considered, with reasoning for why they have been discounted."*
NPS EN-3 paragraph 2.8.273	*"Applicants should work closely at an early stage in the pre-application process with SNCBs, and Defra, in conjunction with the relevant regulators, Local Planning Authorities, National Park Authorities, landowners and other relevant stakeholders to develop a compensation plan for all protected sites adversely affected by the development."*
NPS EN-3 paragraph 2.8.274	*"Before submitting an application, applicants should seek the views of the SNCB and Defra, as to the suitability, securability and effectiveness of the compensation plan to ensure that the overall coherence of the National Site Network for the impacted SAC/SPA/MCZ feature is protected. Consultation should also take place throughout the pre-application phase with key stakeholders (e.g. via the evidence plan process and use of expert topic groups)."*
NPS EN-3 paragraph 2.8.275	*"In cases where such views are provided, the applicant should include a copy of this information with the compensation plan in their application for further consideration by the Examining Authority and Secretary of State."*
NPS EN-3 paragraph 2.8.276	*"The British Energy Security Strategy contains a commitment to introduce mechanisms to support strategic compensatory measures, to compensate for environmental impacts and reduce delays to individual projects."*
NPS EN-3 paragraph 2.8.277	*"Strategic compensation is defined as a measure or a series of measures that can be delivered at scale and/or extended timeframes, which cannot be delivered by individual offshore wind and/ or offshore transmission project developers in isolation. Any measure(s)*

Paragraph	Policy
	would usually be led and delivered by a range of organisations, including Government, industry and relevant stakeholders. Strategic compensation measures would normally be identified at a plan level and applied across multiple offshore wind projects to provide ecologically meaningful compensation to designated site habitats and species adversely impacted, ensuring the coherence of the MPA network."
NPS EN-3 paragraph 2.8.278	*"This may include central coordination for measures delivered across a series of projects or biogeographic region."*
NPS EN-3 paragraph 2.8.279	*"Applicants will be able to access tools and mechanisms to support identification of suitable compensation, and facilitate delivery of strategic compensation measures where appropriate."*
NPS EN-3 paragraph 2.8.280	*"The government is still developing its policies on strategic compensation through the COWSC programme, and guidance will be published in due course."*
NPS EN-3 paragraph 2.8.281	*"The government will work collaboratively with industry and stakeholders to develop strategic compensation for projects currently in the consenting process (where possible) as well as for future developments."*
NPS EN-3 paragraph 2.8.282	*"Not every impact for every project will initially fall within the strategic compensation proposals, so applicants should continue to discuss with SNCBs and Defra the need for site specific or strategic compensation at the earliest opportunity."*
NPS EN-3 paragraph 2.8.283	*"Applicants should also coordinate with other marine industry sectors, e.g. oil and gas, who might also need to find compensatory measures. This will ensure compensatory measures are complementary and/or take advantage of opportunities to join together to deliver strategic compensation. Applicants should demonstrate they have consulted with those industries/stakeholders who are affected by any proposed compensation measures."*

3 Habitats Regulations Assessment Process

21. Under the Habitats Regulations and the Offshore Habitats Regulations, the relevant competent authority must consider whether a plan or project has the potential to have an adverse effect on site integrity of a Habitats site. HRA derogation under Article 6(4) and the associated Regulations (see **Table 2-2**) can only apply after the AA has concluded that an adverse effect on site integrity cannot be ruled out.

22. The following UK Guidance addresses Article 6(4):

- Department for Environment, Food & Rural Affairs (Defra) *et al.* (2021) Habitats Regulations Assessments: protecting a European site, published February 2021; and
- Defra (2021a) Best practice guidance for developing compensatory measures in relation to Marine Protected Areas. Draft for consultation[1].

23. **Plate 3-1** provides an outline of the sequential HRA process. This HRA derogation document provides information only relating to Stage 3. **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** is provided with the DCO application, which supports Stages 1 and 2 of the HRA process. A summary of the conclusions of the **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** is provided in section 4.3.

[1] Noting that Defra undertook a "Consultation on policies to inform updated guidance for Marine Protected Area assessments" which closed on 22nd March 2024, with an update to the 2021 Guidance intended for Summer 2024. Where relevant, elements of this latest consultation are referenced in this document.

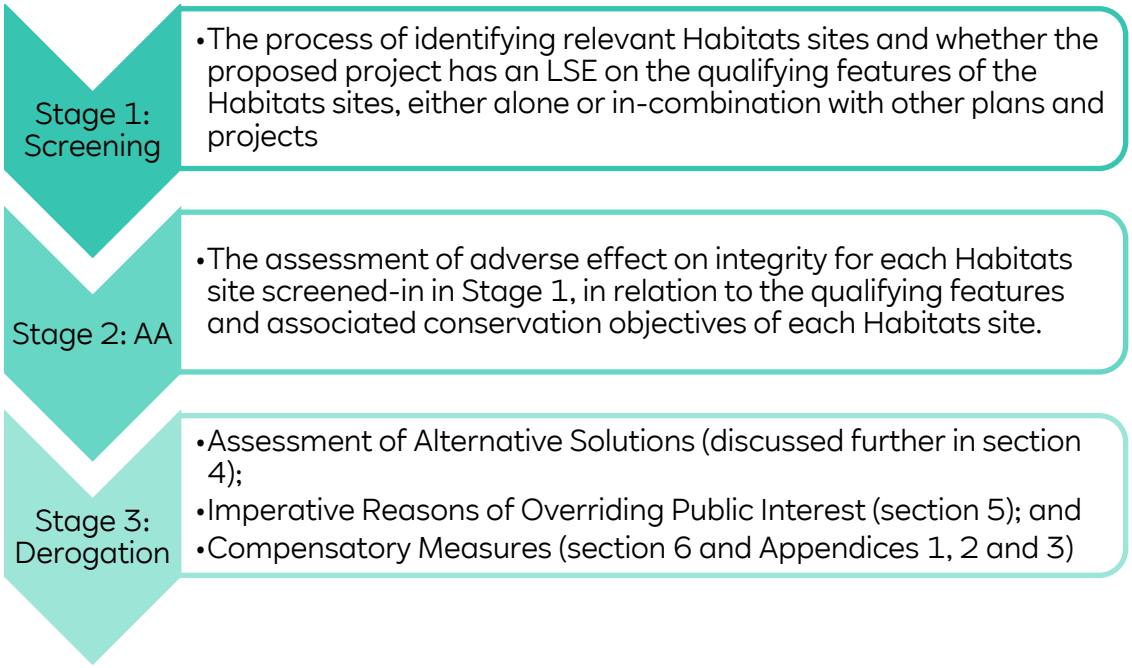

Plate 3-1 HRA Process

4 Assessment of Alternative Solutions

4.1 Approach

24. Defra *et al.* (2021) provides guidance on the approach to the consideration of alternative solutions under the HRA derogation tests. Of relevance to an offshore wind farm, the guidance states that the assessment of alternative solutions must consider:

- Alternative locations;
- Alternative scale/size;
- Alternative design;
- Alternative method; and
- Alternative timing.

25. In order to assess the alternative solutions, Defra *et al.* (2021) states:

"*An alternative solution is acceptable if it:*

- *achieves the same overall objective as the original proposal.*
- *is financially, legally and technically feasible.*
- *is less damaging to the European site and does not have an adverse effect on the integrity of this or any other European site".*

26. Defra *et al.* (2021) establishes that the consideration of alternative solutions need not go beyond the form of energy generation proposed, in order to deliver the objectives of renewable energy production:

"*Examples of alternatives that may not meet the original objective include a proposal that:*

- *offers nuclear instead of offshore wind energy".*

27. In accordance with the Defra guidance (Defra *et al.*, 2021), only offshore wind farms (and not other forms of energy provision) are considered in this assessment of alternative solutions.

28. Defra (2021a) compensatory measures guidance advises that a "do nothing" option should be considered. However, as discussed in section 2.2, NPS EN-1 defines the starting point for the HRA derogation case of Critical National Policy infrastructure, such as offshore wind farms, stating:

"*...the Secretary of State will consider the particular circumstances of any plan or project, but starting from the position that energy security and decarbonising the power sector to combat climate change:*

- *requires a significant number of deliverable locations for CNP Infrastructure and for each location to maximise its capacity. This NPS imposes no limit on the number of CNP infrastructure projects that may be consented. Therefore, the fact that there are other potential plans or projects deliverable in different locations to meet the need for CNP Infrastructure is unlikely to be treated as an alternative solution. Further, the existence of another way of developing the proposed plan or project which results in a significantly lower generation capacity is unlikely to meet the objectives and therefore be treated as an alternative solution; and*
- *are capable of amounting to imperative reasons of overriding public interest (IROPI) for HRAs, and, for MCZ assessments, the benefit to the public is capable of outweighing the risk of environmental damage, for CNP Infrastructure.*" (NPS EN-1, paragraph 4.2.21).

29. The methodology adopted to assess alternative solutions has been developed based on former and current guidance from a range of sources, including:

- Defra (2021a) Best practice guidance for developing compensatory measures in relation to Marine Protected Areas. Draft for consultation;
- Defra, *et al.* (2021). Habitats regulations assessments: protecting a European site; How a competent authority must decide if a plan or project proposal that affects a European site can go ahead;
- Defra (2021b) Policy paper Changes to the Habitats Regulations 2017; and
- The Planning Inspectorate (2017). Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects.

30. The approach to this derogation case has also been developed through consideration of UK precedents, namely the HRA produced by the Secretary of State for the following consented offshore wind farms:

- Hornsea Project Three (BEIS, 2020a);
- Norfolk Boreas (BEIS, 2021a);
- East Anglia ONE North and East Anglia TWO (BEIS, 2022a; 2022b);
- Norfolk Vanguard (BEIS 2022c); and
- Hornsea Project Four (DESNZ, 2023c).

31. The methodology adopted herein follows the below steps, each of which is detailed and evidenced within the following subsections of this document:

- Step 1 – summarise the Project need and objectives in order to allow the assessment (Step 3) to determine whether the alternative solution(s) achieve the same overall objective(s);
- Step 2 – identify the risk of harm to the integrity of the relevant Habitats site, caused by the Project, in order to allow the assessment (Step 5) to determine whether the alternative solution(s) is less damaging to the Habitats site;
- Step 3 – produce a long list of potential alternative solutions and screen these in terms of whether they meet the objectives of the Project, to produce a short list of alternative solutions that meet the project objectives;
- Step 4 – consider whether any short-listed potential alternative solutions identified in Step 3 are feasible (financially, legally and technically); and
- Step 5 – consider whether any feasible alternative solutions identified in Step 4 would have a lesser effect on the integrity of the national site network.

4.2 Step 1: Project Need and Objectives

4.2.1 The Need for the Projects

32. The need for the Projects is underpinned by various Government targets, policy and legislation. This is reflected in the relevant NPS, with NPS EN-3 (DESNZ, 2023b) stating:

> *"Electricity generation from renewable sources is an essential element of the transition to net zero and meeting our statutory targets for the sixth carbon budget (CB6). Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables.*
>
> *In the Net Zero Strategy, published in October 2021, government committed to action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, whilst meeting a 40-60% increase in demand."*

33. The key drivers underpinning the need for offshore wind power projects are:

- The need to reduce greenhouse gas emissions;
- The need for energy security; and
- The urgency of the need for low carbon electricity capacity.

34. Recognising the importance of reducing greenhouse gas emissions and increasing energy security, NPS EN-1 and EN-3 have introduced a category of CNP infrastructure which includes offshore wind farms:

"*As stated in section 4.2 of EN-1, to support the urgent need for new low carbon infrastructure, all onshore and offshore electricity generation covered in this NPS that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion and other plants that convert residual waste into energy, including combustion, provided they meet existing definitions of low carbon) are considered to be Critical National Priority (CNP) infrastructure.*" (paragraph 2.1.7, NPS EN-3).

35. The international and UK legislation that has been put in place to secure a reduction in emissions is further outlined in **Volume 7, Chapter 2 Policy and Legislative Context (application reference 7.2)**.

4.2.1.1 The Need to Reduce Greenhouse Gas Emissions

36. Commitments made by the UK and international governments at the United Nations Conference of the Parties 21 (COP21) to the Framework Convention on Climate Change in Paris in 2015 (the Paris Agreement) were to limit global temperature increase to below 2°C (preferably 1.5°C). On a global scale, the world is currently not on track to meet the Paris Agreement commitments. The latest Intergovernmental Panel on Climate Change (IPCC) report shows that the planned Nationally Determined Contributions (NDC) up to 2030 (announced prior to COP26 and considering no further increased ambitions) result in median global warming projections of 2.8°C by 2100 (IPCC, 2023). The same report informs that when considering the policies implemented by 2020 with no further action strengthening, projections indicate a median global warming of 3.2°C by 2100 (IPCC, 2023).

37. Under the Climate Change Act 2008, the UK Government is required to publish a Climate Change Risk Assessment (CCRA) every five years. The latest CCRA3, identifies sixty-one climate change risks distributed into 5 categories: natural environment and assets; infrastructure, health, communities and the built environment, business and industry and international dimensions. The report assesses the urgency of further action regarding each of the identified risks based on global warming scenarios of 2°C and 4°C. CCRA3 concludes that thirty-four of sixty-one risks are ranked as 'more action needed', meaning that new stronger or different government action is required in the next five years over and above those already planned. Considering a global warming pathway of 2°C scenario, eight identified risks are considered as of 'very high' impact by 2050s (HM Government, 2022).

38. Independent assessment by a consortium of experts led by the University of Exeter was completed in 2021 to inform the CCRA process (Sustainability West Midlands (2021)). This assessment identified the following high magnitude climate risks for England, which require further action to be addressed:

- Impacts of climate change on the natural environment, including terrestrial, freshwater, coastal and marine species, forests and agriculture;
- An increase in the range, quantities and consequences of pests, pathogens and invasive species, negatively affecting terrestrial, freshwater and marine priority habitats species, forestry and agriculture;
- More frequent flooding and coastal erosion, causing damage to our infrastructure services, including energy, transport, water and information and communication technologies;
- A reduction in public water supplies due to increasing periods of water scarcity;
- The impact of extreme temperatures, high winds and lightning on the transport network;
- The impact of increasing high temperatures on people's health and wellbeing and changes in household energy demand due to seasonal temperature changes;
- Increased severity and frequency of flooding of homes, communities and businesses;
- The viability of coastal communities and the impact on coastal businesses due to sea level rise, coastal flooding and erosion;

- Disruption to the delivery of health and social care services due to a greater frequency of extreme weather;
- Damage to our cultural heritage assets as a result of temperature, precipitation, groundwater and landscape changes; and
- Impacts internationally that may affect the UK, such as risks to food availability, safety and security, risks to international law and governance from climate change that will affect the UK, international trade routes, public health and the multiplication of risks across systems and geographies.

39. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 amended the UK's carbon emission target, previously set at 80% reduction, to a 100% reduction by 2050 relative to the 1990 baseline, legally committing the UK to reaching 'net zero' by 2050. In order to achieve net zero an interim target of fully decarbonising the UK power system by 2035 has been set. Furthermore, the Climate Change Committee advice report (CCC, 2023a) regarding the UK's sixth Carbon Budget, proposes a target of 78% reduction on 1990 baseline by 2035.

40. In the NDC to the United Nations Framework Convention on Climate Change (UNFCCC), submitted in December 2020, the UK committed to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels (BEIS, 2022e).

41. In 2022, the total UK greenhouse gas emissions were provisionally estimated to be 48.7% lower than in 1990 (DESNZ, 2023e). This has been mainly associated to a reduction in fuel usage for buildings heating due to 2022 being considerably warmer than 2021, and higher energy prices may also have been a factor, particularly towards the end of the year (DESNZ, 2023e). The CCC Progress Report highlights that 2022 was the UK's warmest recorded year with its first ever 40°C day, and one of the six warmest years on record globally (CCC, 2023b).

42. Despite the UK having achieved and surpassed its first (2008-2012) and second (2013-2017) emission reductions targets and, being on track to meet the third one (2018-2022) (HM Government, 2023), the latest CCC progress report (CCC, 2023b) states that the emissions reduction rate will need to increase significantly for the UK to meet its 2030 NDC and the Sixth Carbon Budget.

43. The Projects will have an indicative export capacity of 3 GW and will therefore contribute to meeting the UK Government's ambitious target of net zero by 2050, including the interim target of fully decarbonising the UK power system by 2035 (DESNZ, 2021). This will help to alleviate the risks associated with climate change such as flooding, water supply shortages and risks to health, food security and productivity and trade.

4.2.1.2 The Need for Energy Security

44. Energy security is about ensuring secure, reliable, uninterrupted supplies to consumers, and having a system that can effectively and efficiently respond and adapt to changes and shocks. It is made up of three characteristics: flexibility, adequacy and resilience (BEIS, 2017). Reliance on global markets for imported energy leaves the UK vulnerable to spikes in world energy market prices, political pressure, and potentially physical supply disruptions and the knock-on effects of supply challenges in other countries.

45. The British Energy Security Strategy (BEIS, 2022d) provides a target of 50GW of operational offshore wind farms by 2030 and recognises the need to fast track the consenting process in order to achieve this target and improve the UK's energy security. In addition, the Strategy involves an "*approach to reduce global reliance on Russian fossil fuels whilst pivoting towards clean, affordable energy*", in light of the invasion of Ukraine and concerns around reliance in Europe on Russian fuel imports, the constraining of which has led to significant global price rises for consumers. The strategy was rapidly deployed, with House of Commons Library research finding in August 2022 (House of Commons, 2022) that:

    "*In 2021 imports from Russia made up 4% of gas used in the UK, 9% of oil and 27% of coal. In 2021, imports of gas, oil and coal from Russian to the UK were worth a combined £4.5 billion. According to Eurostat, in 2020, imports from Russia made up 39% of the gas used in the EU, 23% of oil imports and 46% of coal imports. In June 2022, the fourth full month since the invasion, according to UK trade statistics, the UK Imported no oil, gas or coal from Russia. This was the third month in a row with no Russian gas imports, but the first month (since 2000 when this data is available back to) with no gas, oil or coal imports from Russia*".

46. In a global market, this reduction in supply from Russia continues the upward pressure on prices for energy in the UK and wider Europe, even when the UK's supplies are more diversified.

47. Total UK generating capacity has fallen from 85GW in 2009 to 76.7GW in 2022 (DESNZ, 2023c). In addition, electricity demand is projected to increase. NPS EN-1 (DESNZ, 2023a) is focussed on delivering secure, reliable, affordable, and low carbon energy in the UK. Meeting these objectives necessitates a significant amount of energy infrastructure, both large and small-scale:

"*Decarbonisation means we are likely to become more dependent on some forms of energy compared to others. Using electrification to reduce emissions in large parts of transport, heating and industry could lead to more than half of final energy demand being met by electricity in 2050, up from 17 per cent in 2019, representing a doubling in demand for electricity. Low carbon hydrogen is also likely to play an increasingly significant role.*" (paragraph 2.3.7, NPS EN-1).

"*Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar. As part of delivering this, UK government announced in the British Energy Security Strategy an ambition to deliver up to 50 gigawatts (GW) of offshore wind by 2030, including up to 5GW of floating wind, and the requirement in the Energy White Paper for sustained growth in the capacity of onshore wind and solar in the next decade.*" (paragraphs 3.3.20 and 3.3.21, NPS EN-1).

48. These represent ambitious targets, with only 13.8GW of offshore wind capacity installed in the UK by 2023 (HM Government, 2023).

49. Energy security is also critical in achieving the targets related to reducing greenhouse gas emissions (section 4.2.1.1), with NPS EN-1 stating that targets, such as all electricity coming from low carbon sources by 2035 in order to achieve the Net Zero Strategy, are "*subject to security of supply*".

50. A review by the CCC shows that achieving 2030 and 2035 targets requires a significant increase in the pace of deployment. The 50GW target for offshore wind by 2030 implies annual build rates around 40% higher than emerging data on the 2022 peak (CCC, 2023c).

51. The Crown Estate's 'Record of Habitats Regulations Assessments' for offshore wind leasing Round 4 (The Crown Estate, 2022) has as one of its objectives to support the UK's long-term plans for energy security and to increase domestic energy generation.

52. The Projects would make a significant contribution to reducing the UK's reliance on imported energy and to improve energy security, generating enough clean renewable energy to power over three million typical UK households per year.

4.2.1.3 The urgency of the need for low carbon electricity capacity

53. There is an urgent need for low carbon capacity to meet the need to reduce greenhouse gas emissions (for the reasons discussed in section 4.2.1.1) and the need for energy security of both energy (for the reasons discussed in section 4.2.1.2). NPS EN-1 highlights this urgency:

"*Given the urgent need for new electricity infrastructure and the time it takes for electricity NSIPs to move from design conception to operation, there is an urgent need for new (and particularly low carbon) electricity NSIPs to be brought forward as soon as possible, given the crucial role of electricity as the UK decarbonises its economy.*" (paragraph 3.3.58, NPS EN-1).

"*The need for all these types of infrastructure is established by this NPS and a combination of many or all of them is urgently required for both energy security and Net Zero*" (paragraph 3.3.61, NPS EN-1).

4.2.1.4 Summary of the Need for the Project

54. There is a clear and urgent need for the development of the Projects to help meet the UK Government target of net zero emissions by 2050.

55. The Projects will provide secure, reliable, renewable energy in the UK for over three million homes. The Projects will make a substantial contribution to meeting the UK Government's ambitious target of net zero by 2050, including the interim target of fully decarbonising the UK power system by 2035 (DESNZ, 2021). Further detail on the need for the Projects is provided in **Volume 7, Chapter 2 Need for the Projects (application ref: 7.2)**.

4.2.2 Project Objectives

Table 4-1 Project Objectives

ID	Objective	Basis for the Objective
1	**Decarbonisation**: To deliver greater volumes of low carbon electricity to the National Grid and facilitate the delivery of new offshore wind generation capacity in a timely manner to help meet UK Government targets to cut greenhouse gas emissions to Net Zero by 2050.	The UK Government has committed to reducing its greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. This commitment is made through the Climate Change Act 2008 (2050 Target Amendment) Order 2019 which was brought into force in June 2019 in response to recommendations by the CCC (CCC, 2019). The UK independent Climate Change Committee states that 75GW of offshore wind could be required to reach net zero by 2050 (CCC, 2019). The British Energy Security Strategy (BEIS, 2022d) includes a target of delivering up to 50 gigawatts (GW) of offshore wind by 2030. In addition, NPS EN-3 (DESNZ, 2023b) states: "*Electricity generation from renewable sources is an essential element of the transition to net zero and meeting our statutory targets for the sixth carbon budget (CB6). Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables.* *In the Net Zero Strategy, published in October 2021, government committed to action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, whilst meeting a 40-60% increase in demand.*" The Projects will together make a substantial contribution to meeting UK Government objectives and policy of delivering sustainable development to enable decarbonisation.

ID	Objective	Basis for the Objective
2	**Security of supply:** To support the UK's long-term plans for energy security and to increase domestic energy generation.	Part 2 of NPS EN-1 notes that: *"Our objectives for the energy system are to ensure our supply of energy always remains secure, reliable, affordable, and consistent with meeting our target to cut GHG emissions to net zero by 2050, including through delivery of our carbon budgets and Nationally Determined Contribution. This will require a step change in the decarbonisation of our energy system."* This is reinforced by the British Energy Security Strategy (BEIS, 2022d), one of whose key purposes is to improve security from diverse sources of energy, with offshore wind playing a leading role.
3	**Safety:** We take care of each other and the environment	The Projects will be developed in accordance with health and safety legislation and in a manner which ensures effects on other people and the environment are acceptable by stopping unsafe work and striving to find safer ways of working, including other sea users.
4	**Cost of energy:** To reduce the cost of energy to the consumer.	The Projects will aid in reducing the reliance on imported fossil fuels and the creation of self-sufficient energy markets that may be less impacted by wholesale energy price increases.

4.3 Step 2: Define the Potential for Harm

4.3.1 Overview

56. **Table 4-2** lists the sites and features relevant to this derogation case and considered within this assessment of alternatives. Further information on the quantification of these effects is provided in the following sections. As discussed in section 1.2, in relation to razorbill this derogation case is provided without prejudice to the conclusions in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)**.

Table 4-2 Relevant Effects

Site	Feature	Effect
FFC SPA	Kittiwake	In-combination collision risk
	Guillemot	In-combination displacement
	Razorbill	In-combination displacement (RIAA concludes no adverse effect on integrity, see section 1.2)
Farnes Islands SPA	Guillemot	In-combination displacement (RIAA concludes no adverse effect on integrity, see section 1.2)
Dogger Bank SAC	Sandbanks which are slightly covered by seawater all the time	Alone and in-combination permanent habitat loss Alone and in -combination abrasion and disturbance (RIAA concludes no adverse effect on integrity, see section 1.2)

4.3.2 Flamborough and Filey Coast Special Protection Area – Kittiwake, Guillemot and Razorbill

4.3.2.1 Overview of the Flamborough and Filey Coast Special Protection Area

57. The FFC SPA was designated in 2018, as a geographical extension to the former Flamborough Head and Bempton Cliffs SPA, which was designated in 1993 (Natural England, 2018).

58. The SPA is located on the Yorkshire coast between Bridlington and Scarborough and is composed of two sections. The northern section runs from Cunstone Nab to Filey Brigg, and the southern section from Speeton, around Flamborough Head, to South Landing. The seaward boundary extends 2km offshore and applies to both sections of the SPA.

59. The predominantly chalk cliffs of Flamborough Head rise to 135m and have been eroded into a series of bays, arches, pinnacles and gullies. The cliffs from Filey Brigg to Cunstone Nab are formed from various sedimentary rocks including shales and sandstones. The adjacent sea out to 2km off Flamborough Head as well as Filey Brigg to Cunstone Nab is characterised by reefs supporting kelp forest communities in the shallow subtidal, and faunal turf communities in deeper water. The southern side of Filey Brigg shelves off gently from the rocks to the sandy bottom of Filey Bay. This site does not support any priority habitats or species (Natural England, 2018).

60. The coastal areas of the SPA cover cliffs supporting internationally important breeding populations of seabirds, the marine extension includes areas close to the colony used by seabirds for maintenance behaviours (loafing, preening etc).

61. None of the qualifying features of the SPA are priority species. The qualifying species screened into the AA are breeding gannet, breeding kittiwake, breeding guillemot, and breeding razorbill. Only kittiwake, guillemot and razorbill are considered within this derogation case.

4.3.2.2 Conservation Objectives

62. The site's conservation 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, 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.

4.3.2.3 Summary of the Assessment of Effects on Kittiwake

4.3.2.1.3 Projects Together

63. For the DBS East and DBS West Projects together the predicted annual (breeding, autumn migration and spring migration periods combined) impacts from the Projects alone on the breeding kittiwake population is 104.2 (52.1 to 204.9, assuming 53% adults) to 191.0 (95.8 to 376.7, assuming 100% adults) birds per annum (see **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1]. These result in predicted changes in adult mortality rate of 0.80% to 1.47% which at the upper end of the range exceeds the 1% threshold for detectability. After further consideration of this effect via population viability analysis (PVA) it was concluded this this does not represent an adverse effect on integrity of the FFC SPA.

4.3.2.2.3 In-Combination with Other Offshore Wind Farm Projects

64. The estimated total number of kittiwakes at risk of collision from all offshore wind farms within the UK North Sea BDMPS combined is 3,981 of which between 374 and 461 are estimated to be breeding adults from Flamborough and Filey Coast SPA (see **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1]. The predicted annual in-combination collision mortality would result in a predicted change in adult mortality rate of 2.9 – 4.5%. PVA undertaken by the Applicants concludes that the collision impacts predicted at DBS East and DBS West in-combination with other projects, will not adversely affect the integrity of the FFC SPA.

65. Notwithstanding the above conclusion, the Applicants acknowledge that previous decisions on offshore wind farms by the Secretary of State have concluded that an Adverse Effect on [Site] Integrity (AEoI) for kittiwake at the Flamborough and Filey Coast SPA could not be ruled out for in-combination collision risk (e.g. Hornsea Project Three, Norfolk Vanguard, Norfolk Boreas). The Plan Level HRA conducted by The Crown Estate also concluded that an AEoI could not be ruled out. Given this, it is the Applicants assumption that the Secretary of State will conclude AEoI in this case also. Therefore, the Applicants do not consider it worthwhile to contest this point and on this basis **concede AEoI on the Flamborough and Filey Coast SPA.**

4.3.2.4 Summary of the Assessment of Effects on Guillemot

66. The displacement mortality from the Projects together (i.e. DBS West and East) is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1] for two combinations of displacement effect and mortality. One combination was based on the guidance from SNCBs applying a highly precautionary rate of 70% displacement and 10% mortality of displaced birds. The second combination, based more closely on evidence, applied a 50% displacement rate combined with 1% mortality. Based on advice from Natural England, displacement impacts on offshore ornithological interests during construction have been assessed for the duration of construction (taken here as construction of foundations and installation of turbines) on the basis these on average represent 50% of the impact for the constructed wind farm.

67. To calculate the adult proportion for each species screened into assessment, demographic rates were taken from Horswill and Robinson (2015) and entered into a matrix population model. For SPAs with breeding season connectivity to the Projects, as well as the demographic rate based estimate of the adult proportion, a precautionary '100% adult' apportioning was applied. This followed advice from Natural England (at the ETG of 6th February 2024) that, in the absence of evidence to the contrary, this was their preferred option.

4.3.2.1.4 Projects Together

68. For construction the displacement mortality from the Projects together is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1] for two combinations of displacement effect and mortality. Using Natural England's precautionary rates of displacement (35%) and mortality (10%) the estimated mortality is 878.3 (55.2% adults) to 1163.5 (100% adults). Evidence-based estimates assuming a 25% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 79.5 (55.2% adults) to 105.3 (100% adults) individuals. Using Natural England's precautionary rates this would represent an adverse effect on integrity of the FFC SPA (increase in background mortality of between 9.6 – 12.7%). Using evidenced- based estimates this would be a maximum increase in mortality of 0.9 – 01.1%.

69. For operation the displacement mortality from the Project together is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1] for two combinations of displacement effect and mortality. Using Natural England's precautionary rates of displacement (70%) and mortality (10%) the estimated mortality is 1,720.7 (55.2% adults) to 2,279.3 (100% adults). Evidence-based estimates assuming a 50% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 122.9 (55.2% adults) to 162.8 (100% adults) individuals. Using Natural England's precautionary rates this would represent an adverse effect on integrity of the FFC SPA (increase in background mortality of between 18.8 -24.9%). Using evidenced- based estimates this would be a maximum increase in mortality of 1.34 – 1.78%.

70. After further consideration of this effect via PVA it was concluded that even based upon the worst case prediction (using 70% displacement and 10% mortality) this displacement does not represent an adverse effect on integrity of the FFC SPA.

4.3.2.2.4 In-Combination with Other Offshore Wind Farm Projects

71. The estimated total number of guillemots at risk of displacement from all offshore wind farms within the UK North Sea BDMPS combined is 632,968. The estimated number of these that are adults from FFC SPA is 110,102, of which 33,012 are at projects for which compensation has been agreed (Hornsea 4, Dudgeon and Sheringham Extensions)(see **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1]). Using displacement rates of 30% to 70% and a mortality rate of 1% to 10% for displaced birds, the number of Flamborough and Filey Coast SPA birds predicted to die each year would be between 551 and 1,541.

72. After further consideration of this effect via PVA it was concluded that even based upon the worst case prediction (using 70% displacement and 10% mortality) this displacement does not represent an adverse effect on integrity of the FFC SPA.

73. Notwithstanding the above conclusion, the Applicants acknowledge that previous decisions on offshore wind farms by the Secretary of State have concluded that an AEoI for guillemot at the Flamborough and Filey Coast SPA could not be ruled out for in-combination displacement risk (e.g. Hornsea Project Four). Given this, it is the Applicants assumption that the Secretary of State will conclude AEoI in this case also. Therefore, the Applicants do not consider it worthwhile to contest this point and on this basis concede AEoI on the Flamborough and Filey Coast SPA.

4.3.2.5 Summary of the Assessment of Effects on Razorbill

74. Displacement mortalities and adult apportionment for razorbill followed the methodology discussed in section 4.3.2.4.

4.3.2.1.5 Projects Together

75. For construction displacement mortality from the Projects together is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1] for two combinations of displacement effect and mortality. Using Natural England's precautionary rates of displacement (35%) and mortality (10%) the estimated mortality is 319.2 (63.1% adults) to 358.4 (100% adults). Evidence-based estimates assuming a 25% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 28.9 (63.1% adults) to 32.4 (100% adults) individuals. Using Natural England's precautionary rates this would represent an adverse effect on integrity of the FFC SPA (increase in background mortality of 4.9 – 5.6%). Using evidenced - based estimates this would be a maximum increase in mortality of 0.44 – 0.50%.

76. For operation displacement mortality from the Projects together is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1] for two combinations of displacement effect and mortality. Using Natural England's precautionary rates of displacement (70%) and mortality (10%) the estimated mortality is 625.3 (63.1% adults) to 702.1 (100% adults). Evidence-based estimates assuming a 50% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 44.7 (63.1% adults) to 50.2 (100% adults) individuals. Using Natural England's precautionary rates this would represent an adverse effect on integrity of the FFC SPA (increase in background mortality of 9.7 – 10.9%). Using evidenced- based estimates this would be a maximum increase in mortality of 0.69 – 0.78%.

77. After further consideration of this effect via PVA it was concluded that even based upon the worst case prediction (using 70% displacement and 10% mortality) this displacement does not represent an adverse effect on integrity of the FFC SPA.

4.3.2.2.5 In-Combination with Other Offshore Wind Farm Projects

78. The Round 4 RIAA (NIRAS, 2022) states that the Round 4 projects (which include the Project) would not 'make an appreciable difference to any in combination impact'.

79. The Applicants' assessment is presented in **RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 4)** [document reference: 6.1]. The estimated total number of razorbills at risk of displacement from all offshore wind farms within the UK North Sea BDMPS combined is 209,286 of which 24,512 are estimated to be breeding adults from Flamborough and Filey Coast SPA. Using displacement rates of 30% to 70% and a mortality rate of 1% to 10% for displaced birds, the number of Flamborough and Filey Coast SPA birds predicted to die each year would be between 123 and 343. The predicted annual in-combination mortality on the breeding razorbill population would result in a predicted change in adult mortality rate of between 1.9% and 5.3%.

80. After further consideration of this effect via PVA it was concluded that even based upon the worst case prediction (using 70% displacement and 10% mortality) this displacement this does not represent an adverse effect on integrity of the FFC SPA.

81. Recognising that in-combination displacement may lead the Secretary of State to conclude AEoI for the Flamborough and Filey Coast SPA, the Applicants have therefore proposed compensation measures for razorbill on a without prejudice basis.

4.3.3 Farne Islands Special Protection Area – Guillemot

4.3.3.1 Overview of Farne Islands Special Protection Area

82. The Farne Islands are a group of low-lying islands situated between 2km and 6km off the coast of Northumberland in northeast England. The islands are important nesting areas for a range of seabirds, especially terns, gulls and auks. Seabirds breeding at the SPA feed outside it in nearby waters, as well as more distantly in the North Sea.

4.3.3.2 Conservation Objectives

83. The SPA's over-arching conservation 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 Wild Birds Directive, 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.

4.3.3.3 Summary of the Assessment of Effects on Guillemot

4.3.3.1.3 Projects Together

84. For construction the displacement mortality from the Projects together is presented in **Volume 6, RIAA Part 4 of 4 (Revision 5) (document reference 6.1)**. Using precautionary rates of displacement (35%) and mortality (2%) the estimated mortality is 6.6 (100% adults). The Applicants' preferred estimates assuming a 25% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 3.0 (100% adults) individuals. This would represent an increase in mortality rate of 0.08% – 0.17%, below the 1% threshold for further assessment.

85. For operation the displacement mortality from the Projects together is presented in **Volume 6, RIAA Part 4 of 4 (Revision 5) (document reference 6.1)**. Using the precautionary rates of displacement (70%) and mortality (2%) the estimated mortality is 13.0 (100% adults). The Applicants' preferred estimates assuming a 50% displacement rate (APEM, 2022) and 1% mortality of displaced birds reduces the predicted impact to 4.6 (100% adults) individuals. This would represent an increase in mortality rate of 0.12% – 0.33%, below the 1% threshold for further assessment.

86. It is concluded that predicted guillemot mortality due to construction and operational phase disturbance and displacement impacts at the DBS Projects alone would not adversely affect the integrity of the Farne Islands SPA.

4.3.3.2.3 In-Combination with Other Offshore Wind Farm Projects

87. The other offshore wind farms considered in combination with the DBS Projects are detailed in the **Volume 6, RIAA Part 4 of 4 (Revision 5) (document reference 6.1).**

88. The annual total number of guillemot from the Farne Islands SPA estimated to be at risk of displacement from other wind farms in combination with the DBS Projects is 31,050. Using displacement rates of 50% to 70% and a mortality rate of 1% to 2% for displaced birds, the number of Farne Islands SPA birds predicted to die each year would be between 155 and 435 which represents an increase in mortality of between 3.9% and 11.1%.

89. After further consideration of this effect via PVA it was concluded this displacement does not represent an adverse effect on integrity of the Farne Islands SPA.

90. Notwithstanding the above conclusion, the Applicants acknowledge that Natural England have advised that they are unable to conclude no AEoI on guillemot at the Farne Islands SPA in combination with other offshore wind farms. Recognising that in-combination displacement may lead the SoS to conclude AEoI for the Farne Islands SPA, the Applicants have therefore proposed compensation measures for guillemot at the Farne Islands SPA on a without prejudice basis.

4.3.4 Dogger Bank Special Area of Conservation

4.3.4.1 Overview of Dogger Bank Special Area of Conservation

91. The Dogger Bank SAC is the largest continuous shallow sandbank in UK waters. It was shaped by glaciers and later submerged due to rising sea levels. Situated in the Southern North Sea, about 150km northeast of the Humber Estuary, it spans depths from 13m to 58m (JNCC, 2023). The SAC covers 12,331km^2 and the entire area is recognised as an Annex I sandbank.

4.3.4.2 Conservation Objectives

92. The Conservation Objectives for the Dogger Bank SAC provided in JNCC (2022) are:

- For the feature to be in favourable condition thus ensuring site integrity in the long term and contribution to Favourable Conservation Status of Annex I Sandbanks which are slightly covered by seawater all the time.
- This contribution would be achieved by maintaining or restoring, subject to natural change:
  - The extent and distribution of the qualifying habitat in the site;
  - The structure and function of the qualifying habitat in the site; and
  - The supporting processes on which the qualifying habitat relies.

93. As described in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)**, JNCC's supplementary advice on conservation objectives have a restore objective with respect to the 'extent and distribution' and 'structure and function' attributes, because of activities from, and the presence of, large scale and widespread infrastructure within the SAC.

4.3.4.3 Summary of Assessment of Effects

4.3.4.1.3 Projects Together

94. The Round 4 RIAA (NIRAS, 2022) concluded that "*an adverse effect on integrity due to habitat loss/gain and direct physical damage cannot be excluded beyond reasonable scientific doubt as it is not possible to state with certainty that the impacts would not lead to a significant change in the extent and distribution, ecological function and / or the supporting processes of the sandbanks feature*". This conclusion relates to the existing unfavourable condition of the sandbank feature and "the potential for existing plans and projects to act in combination with the proposed Round 4 Plan, and specifically Preferred Projects 1 and 2 to prevent or impede the achievement of the conservation objectives".

95. The Applicants original assessment in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** concludes that for the Projects together, 'abrasion / disturbance of the seabed' (which equate to 'direct physical damage' in the Round 4 RIAA (NIRAS, 2022)) does not represent a permanent effect and in line with previous decisions (DECC, 2015, BEIS, 2020) does not contribute to adverse effect on integrity.

96. The Applicants have maintained this position through the examination phase of the Projects, providing further site-specific evidence to support this conclusion in the **Review of evidence on recovery of sandbank habitat following habitat damage (Revision 2)** [REP3-022].

97. Recognising that 'abrasion / disturbance of the seabed' may lead the Secretary of State to conclude adverse effect on the integrity of the Dogger Bank SAC, the Applicants have therefore proposed compensation measures for this effect on a 'without prejudice' basis. As such, the potential footprint of 'abrasion / disturbance of the seabed' effects have been provided in Scenario 3 of **Table 4-4**.

98. With regard to 'Physical change (to another seabed/sediment type)' (which equates to habitat loss in the Round 4 RIAA (NIRAS, 2022)) the Applicants conclude that given that the 'restore objectives' were in place from the designation of the Dogger Bank SAC (i.e. before any wind farms were present) and that the objectives apply at the fine scale it is clear that *any* permanent footprint would be considered to hinder the restore objectives no matter how small. The worst-case area of habitat loss within the SAC from the presence of infrastructure for the Projects together is estimated to be 1.82km² (see Scenario 1 of **Table 4-4**). This area represents 0.01% of the Dogger Bank SAC's overall extent of 12,331km².

99. Therefore, the Applicants conclude that for 'physical change (to another seabed / sediment type)' (or habitats loss) from the Projects together, adverse effect on the integrity of the Dogger Bank SAC cannot be ruled out.

100. Natural England have previously stated that the creation of depressions from UXO clearance or jack-up operations in areas of coarse or mixed sediments should be considered as permanent habitat change/loss rather than temporary disturbance/damage (see REP5-055:C3 of **The Applicants' Responses to Deadline 5 Documents** [REP6-052]. While the Applicants maintain these pressures do not constitute permanent habitat loss (see response to RIES Q17 in **The Applicants' Comments on the RIES** [document reference 17.3], the Applicants have provided a potential footprint of permanent habitat loss from infrastructure, UXO clearance activities and jack-up footprint on a without prejudice basis in Scenario 2 of **Table 4-4** below.

101. Natural England have previously stated (Appendix C [RR-039]) that the cumulation of a benthic 'ecological halo effect' following the placement of structures on the seabed has not been suitably considered by the Applicants. The Applicants consider that there is no evidence to substantiate that there could be AEoI from 'halo effects' in habitats such as those found within the Dogger Bank. Notwithstanding this however, the Applicants have provided a potential footprint of permanent habitat loss, including an estimation of the 'halo effect' and disturbance on a without prejudice basis in Scenario 5 of **Table 4-4** below.

4.3.4.2.3 In-combination

102. The Applicants assessment in **Volume 6, Report to Inform Appropriate Assessment Habitats Regulations Assessment (application ref: 6.1)** considers in-combination effects, with the conclusions aligning with those for the Projects together. Notwithstanding the additional potential 'abrasion / disturbance of the seabed' (which equate to 'direct physical damage' in the Round 4 RIAA (NIRAS, 2022)) from the proposed Dogger Bank D project, this effect is still considered temporary in line with previous decisions (DECC, 2015, BEIS, 2020). Adverse effects therefore only result from that 'physical change (to another seabed / sediment type)' (or habitats loss). Therefore, the Applicants conclude that for 'physical change (to another seabed / sediment type)' (or habitats loss) from the Projects together and in-combination with other projects adverse effect on the integrity of the Dogger Bank SAC cannot be ruled out.

103. Recognising that in-combination 'abrasion / disturbance of the seabed' may lead the Secretary of State to conclude adverse effect on the integrity of the Dogger Bank SAC, the Applicants have proposed compensation measures for this effect on a 'without prejudice' basis. As such, the potential footprint of 'abrasion / disturbance of the seabed' effects have been provided in Scenario 4 of **Table 4-4.**

4.3.5 Relevant Design Parameters

104. The Projects' design parameters that are of relevance to the effects on the FFC SPA and Dogger Bank SAC which could therefore be considered in the assessment of alternatives are detailed in **Table 4-3** and **Table 4-4**, respectively. Following the submission and subsequent acceptance of **Project Change Request 1 - Offshore & Intertidal Works** [AS-141] in January 2025, and the Applicants commitment to the bundling of Offshore Export Cables in pairs (secured within the **Cable Statement (Revision 4)** [document reference: 8.20], the design parameters relevant to habitat loss within the Dogger Bank SAC have been reduced. These updated parameters are detailed in **Table 4-4**.

105. Changes (i.e. alternatives) to these parameters are considered in sections 4.4 and 4.5. Any other element of the Projects' design parameters would have no bearing on collision or displacement risk or habitat loss for these features and cannot be alternative solutions.

Table 4-3 Design Parameters Relevant to Offshore Ornithology Displacement and Collision Risk

Parameter	**Value**		
	DBS East	**DBS West**	**Combined**
Collision risk parameters			
Number of wind turbines	57-100	57-100	113-200
Maximum rotor diameter (m)	259-344		
Maximum rotor swept area (km^2)	5.263	5.263	10.526
Minimum clearance (air gap) to Mean Sea Level (MSL) (m)	34		
Displacement parameters			

Parameter	Value		
	DBS East	DBS West	Combined
Wind farm array area (km^2)	349	355	704
Distance from FFC SPA (km)	125	103	103
Anticipated design life (years)	30	30	30 (32 if sequential build)

Table 4-4 Scenarios for Consideration Regarding Habitat Loss, Disturbance and Inclusion of Estimated Halo Effects in the Dogger Bank SAC

Parameter	Scenario 1 – Habitat Loss from Infrastructure Only	Scenario 2 - Habitat loss from infrastructure, UXO clearance activities and jack-up footprint	Scenario 3 – Halo Effect (Encompassing Scenario 1 - Habitat Loss from Infrastructure Only)	Scenario 4 –Disturbance (Encompassing Habitat Loss)	Scenario 5 –Halo Effect + Disturbance (Encompassing Habitat Loss)
Foundations (turbines + offshore platforms)	**639,682m²** The constituent parts of this value include: 623,449m² small turbine foundation area 16,233m² offshore platform foundation area.	**1,977,002m²** The constituent parts of this value include: 623,449m² small turbine foundation area 16,233m² offshore platform foundation area 820m² for UXO clearance activities 1,320,000m² jack-up footprint for turbines 16,500m² jack-up footprint for offshore platforms	**4,252,906.73m²** Area of turbine/platform foundations and 50m halo Note that all foundations are within the halo effect footprint therefore this is not additional footprint	**2,543,914m²** The constituent parts of this value include: 716,966m² seabed preparation area for 200 small turbines 18,668m² seabed preparation area for three offshore platforms 820m² for UXO clearance activities 1,320,000m² jack-up footprint for turbines 16,500m² jack-up footprint for offshore platforms 470,960m² anchoring footprint for turbine and offshore platform installation. Note that all foundations are within the disturbance footprint therefore is not additional footprint	**4,252,906.73m²** The constituent parts of this value include: 4,173,989.90m² area of turbine / offshore platform foundations and 50m halo 78,916.83m² area of offshore platform foundations and 50m halo Note that all foundations and disturbance are within the halo effect footprint therefore is not additional footprint

Parameter	Scenario 1 – Habitat Loss from Infrastructure Only	Scenario 2 - Habitat loss from infrastructure, UXO clearance activities and jack-up footprint	Scenario 3 – Halo Effect (Encompassing Scenario 1 - Habitat Loss from Infrastructure Only)	Scenario 4 –Disturbance (Encompassing Habitat Loss)	Scenario 5 –Halo Effect + Disturbance (Encompassing Habitat Loss)
Cable Protection + Cable Crossings (Array, Inter-Platform and Offshore Export Cables)	**966,654m²** The constituent parts of this value include: 420,000m² array cable protection 247,760m² inter-platform cable protection 87,278m² offshore export cable protection 175,040m² array / inter-platform cable crossing material 36,576m² cable crossing material	**966,654m²** The constituent parts of this value include: 420,000m² array cable protection 247,760m² inter-platform cable protection 87,278m² offshore export cable protection 175,040m² array / inter-platform cable crossing material 36,576m² cable crossing material	**5,592,334.4m²** Estimated Offshore Export Cable & Inter Platform protection length of 22,042m x 55.2m Cable Protection & Halo Effect Width = 1,216,718.4m² Estimated Array Cable protection length of 70,000m x 46m Cable Protection + Halo Effect Width = 3,220,000m² Estimated Offshore Export Cable Crossing Length of 2,400m x 55.24m Cable Crossing + Halo Effect Width = 132,576m² Estimated Inter-Platform Cable Crossing Length of 5,200m x 55.2m Cable Crossing + Halo Effect Width – 287,040m² Estimated Array Cable Crossing Length of 16,000m x 46m Cable Crossing + Halo Effect Width – 736,000m² Note that all foundations are within the halo effect footprint therefore this is not additional footprint	**22,474,610m²** The constituent parts of this value include: 14,000,000m² array cable trench area 3,220,000m² inter-platform cable trench area 1,148,400m² offshore export cable trench area 2,152,500m² sandwave levelling area for array and inter-platform cables 1,946,205m² sandwave levelling area for offshore export cables 7,505m² anchoring footprint for offshore export cable installation. Note that all cable protection is within the disturbance footprint therefore is not additional footprint	**25,819,483.4m²** The constituent parts of this value include: 5,592,334.4m² area of cable protection / crossing material and 20m halo 20,227,149m² disturbance area for array, inter-platform and offshore export cable installation works Note that where cable protection is required, and a 20m halo applied, this encompasses the disturbance footprint. Therefore, the residual disturbance footprint relates only to the buried cable extent (i.e. 90% of the total 22,474,600m² disturbance area estimated for array, inter-platform and offshore export cable installation works).
Total	**1,606,336m²**	**2,943,656 m²**	**9,845,241.13m²**	**25,018,254m²**	**30,072,390.13m²**

4.4 Step 3: Long List of Alternative Solutions

4.4.1 Do Nothing Scenario

106. While the Defra (2021a) compensatory measures guidance advised that the "do nothing" option should be considered, it acknowledges this would rarely be a true alternative:

"*It is unlikely in most cases that the 'do nothing' option (i.e. no proposed activity) would be an acceptable alternative as it would not deliver the same overall objective as 'the activity'. However, it is useful to provide a comparison for other alternatives and to act as a baseline against which public benefits can be assessed. Where it is most likely to be an option is where no or limited tangible public benefit can be demonstrated.*"

107. The "do nothing" option is also considered and ruled out in the Round 4 plan-level HRA (The Crown Estate, 2022):

"*The do nothing alternative solution would fail to meet the objectives of the Round 4 Plan and would erode the ability of the UK government to meet its 50GW by 2030 target, achieve its ambition that over half our renewable generation capacity will be from wind by 2030 and decarbonise power generation and reduce greenhouse gas emissions by 78% by 2035.*"

108. Given the need for the Projects, as set out in section 4.2.1 and expanded in the IROPI case (section 5), the alternative of not developing an offshore wind farm would clearly not satisfy any of the project objectives outlined in section 4.2.2 (and by extension the legal and policy targets of which they are based) and would not comply with precedents set by other recent offshore wind farm decisions (Hornsea Project Three, Norfolk Boreas, Norfolk Vanguard, East Anglia ONE North, East Anglia TWO and Hornsea Project Four). The "do nothing" scenario is therefore not considered further.

4.4.2 Alternative Offshore Wind Farm locations

109. In accordance with NPS EN-1 (DESNZ, 2023a), decarbonising the power sector by 2035 requires a significant number of deliverable locations for CNP infrastructure and for each location to maximise its capacity: "*the fact that there are other potential plans or projects deliverable in different locations to meet the need for CNP Infrastructure is unlikely to be treated as an alternative solution*".

110. A thorough site selection process was undertaken as part of The Crown Estate's Leasing Round 4 and was informed by a plan-level HRA, which included a derogation case. With regards to the consideration of alternative locations during Round 4, the plan-level HRA states:

"T*he Round 4 leasing process does not allow for the award of rights in any additional areas of seabed or for the offering of new areas of seabed to Preferred Bidders and to run Offshore Wind Leasing Round 4 again would result in significant delays and result in the failure to meet Objective 3*[2]*. This would also result in delayed lead-in times for Preferred Bidders hindering the deployment offshore wind generation at scale (50 GW) before 2030 to help the UK meet its commitments. There would be implications in delaying and would result in undermining The Crown Estates reputation for timely leasing. Therefore this alternative solution has a similar outcome to do nothing alternative solution and would fail to meet the objectives of the Round 4 Plan. In the event that alternative areas of seabed could have been offered to Preferred Bidders this does not take into account the detailed and rigorous site identification Preferred Projects took in order to participate in the Round 4. This included assessment of project locations in all Bidding Areas with the express intent to secure the maximum available capacity as a key component of offshore wind growth strategy.*" (The Crown Estate, 2022)

111. This alternative solution is therefore not considered further.

4.4.3 Alternative Scale

112. In accordance with the approach outlined in section 4.1, an assessment of alternative scale / size of development is considered. This could include:

- Deployment of fewer turbines to reduce collision risk and / or minimise habitat loss / disturbance (section 4.4.3.1); and
- Smaller wind farm array areas to increase distance from the FFC SPA and minimise overlap with the Dogger Bank SAC.

4.4.3.1 Fewer Turbines

113. NPS EN-1 states "*the existence of another way of developing the proposed plan or project which results in a significantly lower generation capacity is unlikely to meet the objectives and therefore be treated as an alternative solution*".

114. Fewer turbines, resulting in a lower capacity would limit the ability of the Projects to contribute to the decarbonising of the power sector by 2035 to meet net zero by 2050.

[2] To facilitate the delivery of new offshore wind generation capacity in a timely manner to help meet UK government targets to cut greenhouse gas emissions to net zero by 2050.

115. Reducing the number of turbines whilst maintaining the project capacity would require increasing the minimum turbine capacity, however the project design envelope includes a range of turbines; from those that are currently available on the market, to the largest capacity turbines which the Applicants predict could, in theory, develop prior to construction of the Projects. It is critical that the design envelope includes turbines available on the market, due to uncertainty over whether larger turbines will become available within the timescales required to meet the urgent need for offshore wind farm capacity. It is therefore not appropriate to increase the minimum turbine capacity.

116. This alternative scale therefore does not meet the project objectives and is not considered further.

4.4.3.2 Smaller Array Areas

117. More condensed, smaller array areas to increase the distance from the FFC SPA could potentially achieve the project objectives whilst having a lesser effect on guillemot and razorbill displacement. In addition, this could reduce the overlap with the Dogger Bank SAC whilst still potentially meeting the project objectives. The feasibility of this alternative solution is therefore discussed in section 4.5.1.

4.4.4 Alternative Design and Method

118. In accordance with the approach outlined in section 4.1, an assessment of alternative design options, in relation to the relevant parameters outlined in section 4.3.5 is provided in the following sections. Alternative design options include:

- Smaller rotors / swept area to reduce collision risk (section 4.4.4.1);
- Increased air gap to reduce collision risk (section 4.4.4.2);
- Reduced long term permanent loss (section 4.4.4.3).

4.4.4.1 Smaller Rotors / Swept Area

119. Smaller rotors for the same number of turbines would lower the capacity of the Projects. As discussed in section 4.4.3, this would not be in accordance with NPS EN-1 or the UK Governments Net Zero targets and therefore does not meet the project objectives and is therefore not considered further.

4.4.4.2 Increased Air Gap

120. An increased air gap could potentially achieve the project objectives whilst having a lesser effect on kittiwake collision risk. The feasibility of this alternative solution is therefore discussed in section 4.5.2.

4.4.4.3 Reduced permanent habitat loss.

121. **Table 4-5** provides an assessment of alternative solutions relating to habitat loss in the Dogger Bank SAC, as a result of the Projects. In summary, there are no alternative solutions to the project design or methods that would meet the project objectives.

Table 4-5 Alternative design solutions related to long term habitat loss

Parameter	Alternative solutions
Turbine foundations and scour protection	The seabed disturbance footprint associated with each wind turbine and platform foundation reflects a range of foundations which could accommodate the range of wind turbines and platforms included (see section 4.4.3.1). The envelope has therefore been refined as far as possible. As discussed above, reducing the number of wind turbines and platforms (and their associated foundations) has also been ruled out.
Platform foundations and scour protection	
Cable protection	There are certain situations where the use of external cable protection would be essential. These are: • Where an adequate degree of protection has not been achieved from the burial process. This may be as a result of challenging ground conditions; • Where the array cables approach the wind turbines and platforms; • At cable and pipeline crossings; and • In the event that cables become unburied as a result of seabed mobility during the operation of the wind farms or (where necessary) in the event of making a cable repair. In all cases, the amount of external cable protection will be minimised as far as is practical, whilst ensuring the safety of other sea users and therefore there is no alternative solution which meets the project objectives.

4.4.5 Alternative Timing

122. In accordance with the approach outlined in section 4.1, alternative timing options are considered.

123. Since displacement effects on guillemot and razorbill may be caused by the physical presence of the wind farm infrastructure, any operational timing restrictions are unlikely to have a lesser effect on distribution and are therefore not considered further.

124. In addition, whilst not all kittiwake at risk of potential collision are predicted to be migrating, it is noted that the NPS EN-3 (DESNZ, 2023b) states:

"*[3.8.260] The exact timing of peak migration events is inherently uncertain although research is ongoing into estimates for peak migration periods for a number of bird species and detection technologies (e.g. using radar and integrated sensors) are improving.*

[3.8.261] Currently, shutting down turbines within migration routes during estimated peak migration periods is unlikely to offer suitable mitigation, but this might be a possibility in the future."

125. Reducing the timing of the operation of the turbines e.g. through seasonal restrictions and / or reducing the operational life would limit the ability of the Projects to generate low carbon electricity and export electricity to the National Grid. This alternative solution would therefore not satisfy the project objectives (section 4.2.2) and is not considered further.

126. With regards to the Annex I 'Sandbanks slightly covered by seawater all the time', there is no significant seasonal consideration regarding temporary physical disturbance during construction that would reduce the effect on the integrity of the Dogger Bank SAC.

127. With regards to long term habitat loss in the SAC, the Projects' infrastructure will be decommissioned, where practicable, in accordance with relevant legislation at the time of decommissioning and therefore there are no feasible alternatives and this is not considered further.

4.5 Step 4: Feasibility of Alternative Solutions

128. The following sections outline the feasibility of the alternative solutions identified in Step 3.

4.5.1 Smaller / Alternative Wind Farm Sites

129. **Volume 7, Chapter 4 Site Selection and Assessment of Alternatives (application reference 7.4)** describes the robust approach taken to define the boundaries of the Array Areas. This approach took account of the original Crown Estate application criteria as well as environmental, technical and other sea user constraints to determine the optimum configuration for the Array Areas.

130. The overall size of the array areas has primarily been driven by the aim for Round 4 projects to deliver 7GW of new offshore wind power.

131. Capacity density (i.e. MW installed per km^2) requirements stipulated by The Crown Estate as part of the Agreement for Lease application process will ensure the array areas are as small as practicable. The feasible density is constrained by:

- the wake effects of the turbines and the minimum spacing required to avoid interference and maximise efficiency of the Projects; and
- the requirement to avoid other constraints within the Projects' Array Areas and to comply with the Maritime and Coastguard Agency's Marine Guidance Note (MGN) 654 (Maritime and Coastguard Agency, 2021).

132. Selection of the final Array Areas will be subject to detailed design, post consent and therefore some flexibility is required in the design envelope, whilst also ensuring that the development would not occupy more seabed than is necessary to develop the Projects.

133. Any reduction in the size of the Array Areas leading to a decrease in turbine numbers would reduce overall generating capacity and limit the ability of the Projects to contribute to net zero targets and therefore satisfy the project objectives.

134. Thus, reducing the size of the wind farm Array Areas is not considered to be a feasible alternative solution.

4.5.2 Increased Air Gap

135. The minimum clearance between the rotor blades and sea surface (i.e. air gap) included in the design envelope is 34m above MSL. Increasing the minimum air gap avoids peak bird densities at lower heights and thus reduces potential collision risk impacts.

136. A review of the minimum blade tip clearance above water level has been undertaken to determine whether this could feasibly be increased beyond 34m above MSL. Feasibility has been assessed based on the resulting hub heights, foundation and wind turbine dimensions as well as an appraisal of the positive and negative impacts that would arise from increasing air gap further and how these might be considered in the overall planning balance.

137. Whilst an air gap of 34m above MSL could be technically achievable, it does not support the commercial viability of the Projects due to impact upon the foundation and wind turbine tower design. Importantly it also leads to a reliance on a small number of vessels that would be capable of installing at the resulting hub heights or blade lengths, most of which are not yet available on the market. Whilst further developments in installation vessels available on the market could be expected, there is no guarantee of the timeline for their availability or suitability for operating at the specific site conditions found within the Projects' array areas. Therefore, any further increase to the minimum air gap beyond 34m above MSL is considered to present a significant risk to the overall project feasibility and ability to meet the project objectives.

4.6 Step 5: Assessment of Effects of Feasible Alternative Solutions

138. Step 5 is not applicable, as there are no feasible alternative solutions.

4.7 Assessment of Alternative Solutions Conclusion

139. The information presented in this document demonstrates the robust assessment of alternative solutions that has been undertaken by the Applicants. The assessment followed available guidance and included a 'do nothing scenario', and alternative locations, scale, design, methodology and timing. No feasible alternative solutions which could host comparable scale offshore wind farms and meet the Project Need and Objectives were identified. This conclusion aligns with The Crown Estate's Round 4 Plan Level HRA (The Crown Estate, 2022) assessment of alternatives.

5 Imperative Reasons of Overriding Public Interest

5.1 Introduction

140. In order to define the IROPI case for a plan or project, Defra *et al.* (2021) provides the following definitions:

- *"imperative - it's essential that it proceeds for public interest reasons*
- *in the public interest - it has benefits for the public, not just benefits for private interests*
- *overriding - the public interest outweighs the harm, or risk of harm, to the integrity of the European site that's predicted by the appropriate assessment"*

141. Furthermore, DESNZ (2023c) summarises the key principles (as set out in guidance) in defining the IROPI case for Hornsea Project Four:

- Imperative: Urgency and importance: There would usually be urgency to the objective(s) and it must be considered "indispensable" or "essential" (i.e. imperative). In practical terms, this can be evidenced where the objective falls within a framework for one or more of the following:
  - Actions or policies aiming to protect fundamental values for citizens' life (health, safety, environment);
  - Fundamental policies for the State and the Society; or
  - Activities of an economic or social nature, fulfilling specific obligations of public service.
- Public interest: The interest must be a public rather than a solely private interest (although a private interest can coincide with delivery of a public objective);
- Long-term: The interest would generally be long-term; short-term interests are unlikely to be regarded as overriding because the conservation objectives of the Habitats and Birds Directives are long term interests; and
- Overriding: The public interest of development must outweigh the harm, or risk of harm, to the integrity of the protected site that's predicted by the AA.

142. It should be noted that there are no priority habitats or species listed under Article 1(d) and Article 1(h) of the Habitats Directive present within the FFC SPA and Dogger Bank SAC. As stipulated by the Habitats Directive (Article 6(4)), Habitats Regulations (Regulation 64) and Offshore Habitats Regulations (Regulation 29), where no priority habitats and species are present, the IROPI case may consider reasons of socio-economic nature.

5.2 Imperative

143. As discussed in section 4.2.1, there is an urgent need to establish a secure, diverse, affordable and resilient energy supply and meet decarbonisation targets. This provides a clear and urgent need for the development of the Projects to help meet the UK Government commitment to net zero by 2050. The Projects will provide up to 3GW of renewable energy capacity. The Projects will make a substantial contribution to the achievement of national renewable energy targets towards net zero and to the UK's contribution to global efforts to reduce the effects of climate change, which are fundamental policies for the state and the society of the UK.

5.3 Public Interest

144. The following sections outline the essential public benefits of the Projects.

5.3.1 Climate Change Benefits

145. UNEP-CCC (2021) states a global temperature increase of around 2.7°C by 2050 is expected. DECC (2011) predicted that a continuation of global emission trends could lead average global temperatures to rise by up to 6°C by the end of this century. The potential impacts associated with such a global temperature rise include impacts on human health and safety.

146. BEIS (2019) outlines the following potential health risks resulting from climate change:

- Existing health problems become worse as temperatures increase;
- Malnutrition could become more widespread as crop yields are affected by increased drought conditions in some regions, leading to reduced food production;
- Warmer temperatures could increase the range over which disease-carrying insects are able to survive and thrive;
- Vulnerable people will be at risk of increased heat exposure and the number of deaths due to temperature extremes is expected to increase in the future (although in the long term there will likely be fewer health problems related to cold temperatures); and

- Decreasing food production, an increase in health issues associated with climate change, and more extreme weather, will slow economic growth, making it increasingly difficult to reduce poverty.

147. The World Meteorological Organization (WMO) reported that between 2001 and 2010 extreme weather events caused more than 370,000 deaths worldwide (including a large increase in heatwave deaths from 6,000 to 136,000) – 20% higher than the previous decade (BEIS, 2019).

148. In the UK, floods and droughts have had significant health impacts, including fatalities in recent years. In addition, health impacts as a result of climate change are likely to be more far-reaching than the immediate dangers of flooding. Climate change effects such as flooding have potential to impact on mental health and provide other indirect impacts as a result of disruption to critical supplies of utilities such as electricity and water (Health Protection Agency, 2012).

149. The CCC Progress Report highlights that 2022 was the UK's warmest recorded year with its first ever 40°C day (CCC, 2023d). Since records began in 1884, the warmest years in the UK were (in order) 2022, 2023, and 2020, and the ten warmest years have all occurred since 2003 (Met Office, 2024).

150. Globally, 2023 was the hottest year on record. Each month from June to December in 2023 was warmer than the corresponding month in any previous year, and every day exceeded 1°C above the 1850-1900 pre-industrial level which is the first time this has ever occurred (European Centre for Medium-Range Weather Forecasts, 2023).

151. Increasing global temperatures is predicted to increase the frequency of extreme weather events such as floods and drought, whilst also reducing food supplies.

152. The frequency and extent of extreme weather events are increasing around the world and have been seen in the UK, with heat waves becoming more frequent and longer lasting, as well as an increase in intense, heavy rainfall causing flood events.

153. Should global temperatures rise by 2°C above the pre-industrial average, the UK could see a 30% decrease in river flows during 'dry' periods and a 5-20% increase in river flows during 'wet' periods. In addition, between 700 and 1,000 more heat-related deaths are predicted per year in South-East England (BEIS, 2019).

154. Climate change has been greatly affecting coastal areas in the UK in recent years. This includes the Humber region, where coastal erosion in certain locations has become a greater problem now compared to previous years, due to a combination of increasing storm frequency and the already sensitive nature of the coast in this region to such erosion.

155. Increased temperatures, changes to rainfall patterns, increased prevalence of agricultural pests and an increased risk of extreme weather events is also predicted to reduce the production of major food crops. This would result in an increasing gap between food demand and supply. Since trade networks are increasingly global, the effects of extreme weather events in one part of the world will affect food supply in another. For example, floods or droughts that damage crops in Eastern Europe or the US can directly affect the cost and availability of food in the UK (DECC, 2019).

156. Generating and harnessing energy from low carbon, renewable sources, such as offshore wind, is one of the solutions available to substantially reduce carbon emissions and thereby mitigate all the above climate impacts. The Projects would make a significant contribution both to the achievement of UK decarbonisation targets and to global commitments to mitigating climate change.

157. The switch to renewable sources of energy has both air quality and associated human health and safety benefits. A recent study has demonstrated the huge beneficial impacts on human health from decarbonisation, stating that "*Our estimates suggest that overall around 3.5 million or so premature deaths from air pollution worldwide could be prevented annually from phasing out fossil fuels at today's population. If all sources of air pollution from human activities could be eliminated, our estimates show that more than five million premature deaths from air pollution would be prevented annually.*" (LSHTM, 2019).

158. The Projects will make a significant contribution to the achievement of both the national renewable energy targets and to the UK's contribution to global efforts to reduce the effects of climate change. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 sets a UK target for at least a 100% reduction of greenhouse gas emissions (compared to 1990 levels) by 2050. This ambitious 'net zero' target will only be met by the crucial contribution from the offshore wind industry.

159. The Projects have a design life of approximately 30 years, after which they may be repowered (subject to the necessary approvals). The Projects would contribute to reaching national targets on CO2 reduction to net zero greenhouse gas emissions by 2050 and renewable energy production growth, with the potential to deliver up to 3GW of clean, renewable energy.

5.3.2 Public Electricity Supply Benefits

160. In addition to their contribution to offsetting carbon emissions, the Projects have the potential to power over three million UK homes per annum with clean, renewable and low cost electricity.

161. As discussed in section 4.2.1.2, decarbonisation of the UK energy supply chain and increasing electricity demand results in a significant deficit in UK electricity supply compared with demand, and therefore there is a clear public benefit inherent in the creation of new electricity supply capacity, such as will be provided by the Projects.

162. In order to help meet the targets described in the sections above, renewable energy needs to be affordable. The UK has a world leading offshore wind sector and is well placed to benefit from further investment in renewables innovation to accelerate cost reduction. The Government, in partnership with the Research Councils and Innovate UK, expects to invest around £177 million to further reduce the cost of renewables, including innovation in offshore wind turbine blade technology and foundations.

163. Through offshore wind developer-led innovation there has been a significant reduction in the levelized cost of energy in recent years. The Clean Growth Strategy (BEIS, 2017) indicates that the costs of offshore wind have decreased significantly (50% fall between 2015 and 2022) which will help to fight fuel poverty (ORE Catapult, 2017b). The UK offshore wind industry achieved a 'strike price' (the minimum price developers will be paid for electricity) as low as £37.35/MWh in the Government's CfD auction in 2022. That price is 6% lower than the third CfD auction in 2019 and 30% lower than the lowest strike price seen in the second CfD auction in 2017. However, the CfD auction in September 2023 did not attract any bids by offshore wind farm developers, indicating that the strike price of £44/MWh was set too low for developers to be confident in achieving a return on their investment following the significant price increases being experienced by developers in late 2022 and throughout 2023. In March 2024, the UK Government confirmed an increase in the maximum price that projects can receive in the next CfD auction. For fixed-bottom projects the price has increased by 66% from £44/MWh to £73/MWh.

164. In the Clean Growth Strategy (BEIS, 2017), the UK Government set out a plan to decarbonise all sectors of the UK economy through the 2020s including innovation in the power sector and renewables. Additionally, in March 2019 the UK offshore wind sector committed to an Offshore Wind Sector Deal (BEIS, 2020b) which reinforces the aims of the UK for clean growth. The UK has a world leading offshore wind sector and is well placed to benefit from further investment in renewables innovation to accelerate cost reduction.

165. Despite current challenges, developers are continuing to drive relative cost reductions through technology development and new work processes. The development of the Projects will contribute to this process. In addition, there are specific potential cost efficiencies from the combined development of the Projects (for example the commitment for a shared Onshore Convertor Station location and shared export cable routes, which optimises overall design and cost), as well as synergies with the existing Sofia project, particularly once all projects are operational. The Projects will continue to drive technology and development costs down.

166. Unless renewable capacity is enhanced through the build out of projects including the DBS Projects it will not be possible for regulators or Government to pass on the public benefit of generation cost reductions to consumers in the form of price cuts which are ultimately necessary in the face of the cost of living crisis.

5.3.3 Socio-Economic Benefit

167. The UK Clean Growth Strategy (BEIS, 2017) recognises that actions and investments will be needed to meet the Paris Agreement commitments and that the shift to clean growth will be at the forefront of policy and economic decisions made by governments and businesses in the coming decades. This creates enormous potential economic opportunity – an estimated $13.5 trillion of public and private investment in the global energy sector alone will be required between 2015 and 2030, if the signatories to the Paris Agreement are to meet their national targets (BEIS, 2017).

168. In 2017, ORE Catapult undertook analysis of the UK offshore wind supply chain and estimated the current and future potential UK content of offshore wind projects as: 32% in 2017; 50% by 2020; and 65% by 2030. In the UK, the Gross Value Added (GVA) to the UK per GW installed, assuming 32% UK content, has been estimated as £1.8bn and is projected to increase to £2.9bn by 2030 – if 65% UK content can be achieved (assuming that 19GW installed capacity is reached) (ORE Catapult, 2017a). It is estimated that the total (domestic and export) market for UK-provided offshore wind could exceed £10.5bn by 2050 and reach £4.9bn annually by 2030 and £8.9bn by 2050 (under a high scenario) (ORE Catapult, 2018).

169. According to RenewableUK's Offshore Wind Industry Investment in the UK report (RenewableUK, 2017), 48% of the total expenditure associated with UK offshore wind farms was spent in the UK in 2015. The UK content of expenditure during the development stage and operation of offshore wind projects was 73% and 75% respectively in 2015, whereas during manufacturing and construction the UK content was 29% (RenewableUK, 2017).

170. The UK is positioned to continue the growth of the offshore wind sector, maximising domestic energy resources and utilising the vast offshore wind resource which the UK holds. The UK also has a strong supply chain that continues to expand to support the growth in offshore wind.

171. The Green Paper: Building our Industrial Strategy (HM Government, 2017) focusses on delivering affordable energy and green growth in the UK. A key commitment within the Green Paper is for the UK to become a leader in delivering clean energy technology and to support innovation in renewable energy. The aim is for:

"the UK to be a global leader in innovation, science and research and our Industrial Strategy will help us to deliver our ambitious CO_2 reduction targets while, creating jobs and opportunities for people across the country".

172. The energy sector in the UK plays a central role in the economy. Renewable energy can play a major part in boosting the economy and providing new jobs and skills.

173. The offshore wind industry in the UK provides important employment opportunities. The importance of maximising opportunities for the involvement of local businesses and communities in offshore wind has been highlighted as a key success factor for the wind energy sector in the UK (The Crown Estate, 2014). Low carbon businesses and their supply chain have created over 430,000 skilled jobs in the UK with 7,200 jobs directly in offshore wind (BEIS, 2020b).

174. RenewableUK (2017) states: "*Offshore wind has become a key part of the UK economy, creating much needed jobs not only in coastal communities like Hull, Grimsby and Great Yarmouth, but also across the country in the ever-expanding supply chain. A huge number of British companies are heavily involved in building the UK's world-leading offshore wind sector.*"

175. The UK Government's Industrial Strategy (HM Government, 2017) sets out a plan to transform offshore wind generation, making it an integral part of a low-cost, low-carbon, flexible grid system and boost the productivity and competitiveness of the UK supply chain. These are to be realised through an industry investment into the Offshore Wind Growth Partnership of up to £250m to support better, high-paying jobs right across the UK (BEIS, 2020b).

176. The Offshore Wind Sector Deal builds on the UK's global leadership in offshore wind, maximising the advantages for UK industry from the global shift to clean growth (BEIS, 2020b). The UK Government Ten Point Plan supports the industry's target to achieve 60% UK content by 2030. The offshore wind commitments will enable the offshore wind sector to support up to 30,000 direct jobs and 30,000 indirect jobs in ports, factories and the supply chains by 2030.

177. In a letter to then Prime Minister Boris Johnson, the CCC stressed that after the COVID-19 crisis actions towards net zero emissions and to limit the damages from climate change will help rebuild the UK with a stronger economy and increased resilience (CCC, 2020). The CCC has advised the UK Government that reducing greenhouse gas emissions and adapting to climate change should be integral to any recovery package.

178. The Projects will provide a valuable contribution to employment. During the construction of the Projects it is estimated up to 1,520 full-time equivalent (FTE) jobs could be created. During the operation phase it is expected that the Projects could employ 1,120 FTE jobs, assuming that all direct operation and maintenance employment would be directly employed by the Projects and based in the UK for the lifetime of the Projects. The Projects will also contribute to development of the supply chain and skilled workforce and the associated economic benefits. The indirect effects from employment and expenditure such as from the workforce will contribute to the local economy.

179. There will also be significant expenditure in manufacturing, services, materials and equipment. The Projects have an estimated overall construction cost of £6.9 billion. Operation and Maintenance amounts to approximately £177 million per annum. In total, the GVA of the Projects over the Projects lifetime (30 years per Project) is estimated to be up to approximately £1 billion making a significant contribution to the UK economy at the national level.

180. Details of the anticipated expenditure and employment from the construction and operation of the Projects (direct and indirect) are discussed further in **Volume 7, Chapter 28 Socio-Economics (application reference 7.28)**.

5.4 Long Term

181. Offshore wind has a critical role in delivering long term, cost effective, UK-based low carbon electricity, as well as contributing to minimising the long term impacts of climate change. The Projects will be capable of producing low cost, clean electricity generation for the national grid throughout their 30 year operational life, therefore providing long term benefits.

5.5 Overriding

182. The relevant public interests relating to the Projects must be set against the weight of the conservation interest protected by the Habitats Regulations and the Offshore Habitats Regulations, having regard to the nature and extent of the harm identified to the relevant Habitats sites features. The effects upon the Habitats sites features of concern are as follows:

- Kittiwake collision risk (section 4.3.2.3);
- Guillemot (and potentially razorbill) displacement (sections 4.3.2.4 and 4.3.2.5 respectively); and
- Permanent loss of 'sandbanks slightly covered by seawater all the time' (section 4.3.3.3).

183. In weighing up the public interests delivered by the Projects with these conservation interests, account needs to be taken of the fact that the benefits of the Projects include conservation benefits for the species and habitats concerned. The Projects' contribution to reducing the effects of climate change will have ecological benefits which outweigh/override the effects outlined above by contributing to a reduction in carbon emissions, a slowing of climate change and the securing of habitable environments for the longer term for a range of species including kittiwake and guillemot (and potentially razorbill).

184. Global warming places many species at risk of loss of suitable habitat and/or prey due to changing conditions. Species may shift their geographical ranges to areas where conditions remain suitable (e.g. marine species moving further north in the UK to cooler climates), however, depending on the extent of suitable habitats / prey there may be increased competition.

185. The overriding nature of the public interests engaged in this case should be evident from the suite of legislation and policy documentation which has been outlined in this document. The Projects would deliver benefits relating to human health, public safety and beneficial consequences of primary importance for the environment. It is also clear, as discussed below, that without achieving the overriding objective of reducing carbon emissions there is likely to be very significant species loss, including of wild birds and their prey.

186. It is recognised that IROPI is considered against the risk to a designated feature(s), having regard to the nature and extent of the harm identified to relevant Habitats sites. In its contribution to reaching net zero and the associated action against climate change, the Projects will provide considerable long-term environment benefits, including benefits to the individual bird species within the SPAs.

187. Key drivers of seabird population size in western Europe are climate change (Sandvik *et al.*, 2012; Frederiksen *et al.*, 2004, 2013; Burthe *et al.*, 2014; Macdonald *et al.*, 2015; Furness 2016; JNCC 2016), and fisheries (Tasker *et al.*, 2000; Frederiksen *et al.*, 2004; Ratcliffe 2004; Carroll *et al.*, 2017; Sydeman *et al.*, 2017). Pollutants (including oil, persistent organic pollutants, plastics), alien mammal predators at colonies, disease, and loss of nesting habitat also impact on seabird populations but are generally much less important and often more local factors (Ratcliffe 2004; Votier *et al.*, 2005, 2008; JNCC 2016).

188. Trends in seabird numbers in breeding populations are better known, and better understood than trends in numbers at sea within particular areas. Breeding numbers are regularly monitored at many colonies (JNCC 2016), and in the British Isles there have been three comprehensive censuses of breeding seabirds in 1969-70, 1985-88 and 1998-2002 (Mitchell *et al.*, 2004), and a fourth census completed in 2022 (JNCC 2022b). In contrast, the European Seabirds at Sea database is incomplete, and few data have been added since 2000, so that current trends in numbers at sea in areas of the North Sea are not so easy to assess.

189. Breeding numbers of many seabird species in the British Isles are declining, especially in the northern North Sea (Foster and Marrs 2012; Macdonald *et al.*, 2015; JNCC 2016). The most striking exception is gannet, which continues to increase, although the rate of increase has been slowing (Murray *et al.*, 2015). In the context of these ongoing declines, the emergence of avian influenza in UK breeding seabird populations in 2022 is a key concern, particularly with outbreaks affecting two species for which the UK hosts more than 50% of the global breeding populations: gannet and great skua. There have been further outbreaks in 2023 including on species and colonies not affected in 2022. It is too early to quantify effects on populations; and monitoring activities at some seabird colonies have been suspended to reduce risks of spreading avian flu. However, there are indications that some species have suffered very high levels of adult mortality as well as declines in fledged chicks (BTO 2022, RSPB, 2022, Natural History Museum 2022).

190. Nevertheless, climate change is likely to still be the strongest influence on seabird populations in coming years and decades, with anticipated deterioration in conditions for breeding and survival for most species of seabirds (Burthe *et al.*, 2014; Macdonald *et al.*, 2015; Capuzzo *et al.*, 2018) and therefore further declines in numbers are anticipated. It is therefore highly likely that, without interventions being made, breeding numbers of most of our seabird species will continue to decline under a scenario with continuing climate change due to increasing levels of greenhouse gases.

191. Future decreases in kittiwake breeding numbers are likely to be particularly pronounced, as kittiwakes are very sensitive to climate change (Frederiksen *et al.*, 2013; Carroll *et al.*, 2015). Climate change has been linked with an 87% decline in breeding kittiwakes on Orkney and Shetland, and by 96% at St Kilda since 2007 (RSPB, 2017).

192. Climate change has been identified as the strongest influence on future seabird population trends. The recent EU funded SEANSE project has assessed the impact of climate change on four key seabird species (Rijkswaterstaat Zee & Delta 2020). **The research concluded that prey availability effects due to climate change is the pressure / pathway that currently has the largest impact on seabird populations** at the wider North Sea level, and is likely to be responsible for a substantially greater effect than impacts resulting from any of the other activities (including collision risk or displacement from offshore wind). The report states:

"*it is concluded that prey availability effects due to climate change is the pressure/pathway that in the present day appears to have the largest impact on kittiwake, guillemot and lesser black-backed gull at the wider North Sea level, and is likely to be responsible for a substantially greater effect than impacts resulting from any of the other activities. For all seabirds it is largely expected that climate change impacts will become more severe in the future as both temperatures, and possibly the rate of increase, become greater, and extreme weather events become more frequent.*"

193. In considering the overriding nature of climate change effects compared with the effects of the Projects, the following key points should be borne in mind:

- There is an absence of any priority habitats or species which are particularly rare or endangered in the FFC SPA and Dogger Bank SAC; and
- The scale of the impacts predicted from the Projects are minimal and the impact prediction is based on highly precautionary assessments.

194. The overriding ecological benefits of the Projects' contribution to tackling climate change are compounded by the public benefits described in Section 5.2 to provide clear overriding benefits of the Project.

5.6 Imperative Reasons of Overriding Public Interest Summary

195. This section demonstrates the case that the Projects must be carried out for imperative reasons of overriding public interest.

196. The environmental and social benefits to the UK from increasing the generation of low carbon energy are clear, with the Projects providing a critical contribution. The Projects contribute to the UK's legally binding climate change targets by helping to decarbonise the UK's energy supply, whilst contributing to the essential tasks of ensuring security of supply and providing low cost energy for consumers in line with the UK Government's national policies.

197. The Applicants consider that there is a demonstrable overriding public interest in delivering the Projects and the policy objectives it would serve, which outweighs the risk of adverse effects on the kittiwake, guillemot (and potentially razorbill) features of the FFC SPA (sections 4.3.2.3, 4.3.2.4 and 4.3.2.5, respectively)) and the 'sandbanks slightly covered by seawater all the time' feature of the Dogger Bank SAC (section 4.3.4.3).

6 Compensatory Measures

198. This document contains within its appendices and annexes the following suite of compensatory measures documents in **Volume 6**:

- **Appendix 1 - Project Level Kittiwake Compensation Plan (application ref: 6.2.1)**;
- **Appendix 2 - Guillemot [and Razorbill] Compensation Plan (application ref: 6.2.2)**; and
- **Appendix 3 - Project Level Dogger Bank Compensation Plan (application ref: 6.2.3)**.

199. Schedule 18 of **Volume 3, Draft Development Consent Order (application ref: 3.1)** secures the implementation of the proposed compensatory measures.

200. Further details on the compensatory measures proposed for each species / habitat, are provided in the relevant compensation documents outlined above.

7 Conclusion

201. The evidence presented in this document clearly demonstrates that there are no alternative solutions (section 4) which could deliver the project objectives (section 4.2.2), in accordance with the need for the Projects (section 4.2.1).

202. In addition, there is a clear case for IROPI underpinned by International and national policy and legislation, as outlined in section 5.

203. **Volume 6, Appendices 1** to **3 (application ref: 6.2.1 – 6.2.3)** which are listed in section 6 describe the proposed compensatory measures which are deliverable post consent and can be secured by the proposed DCO conditions provided in Schedule 18 of **Volume 3, Draft Development Consent Order (application ref: 3.1)**.

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