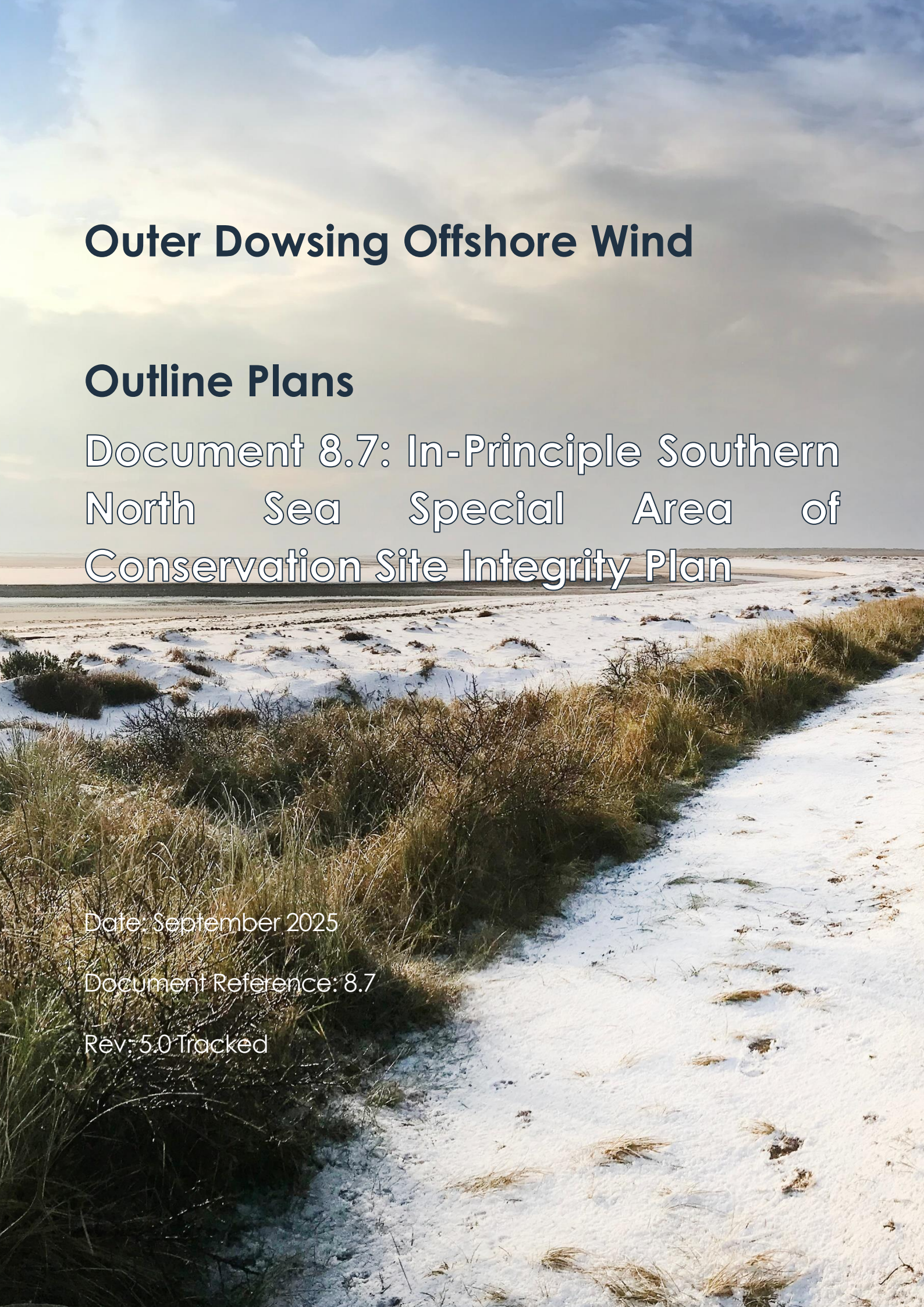

Outer Dowsing Offshore Wind

Outline Plans

Document 8.7: In-Principle Southern North Sea Special Area of Conservation Site Integrity Plan

Date: September 2025

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Company:		**Outer Dowsing Offshore Wind**		Asset:		**Whole Asset**
Project:		**Whole Wind Farm**		Sub Project/Package:		Whole Asset
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1.0	March 2024	DCO Application	GoBe	GoBe	Shepperd and Wedderburn	Outer Dowsing
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3.0	February 2025	Deadline 4	GoBe	Outer Dowsing	Shepherd & Wedderburn	Outer Dowsing
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5.0	September 2025	Request for Information Dated 12th August 2025	GoBe	Outer Dowsing	Shepherd & Wedderburn	Outer Dowsing

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Acronyms & Terminology

Abbreviations / Acronyms

Abbreviation / Acronym	Description
AEoI	Adverse Effect on Integrity
ANS	Artificial Nesting Structure
DAERA	Department of Agriculture, Environment and Rural Affairs
dB	Decibel
DCO	Development Consent Order
dML	Deemed Marine Licence
EIA	Environmental Impact Assessment
ETG	Expert Topic Group
ES	Environmental Statement
FCS	Favourable Conservation Status
HRA	Habitat Regulations Assessment
JNCC	Joint Nature Conservation Committee
km	Kilometre
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
NAS	Noise Abatement System
ODOW	Outer Dowsing Offshore Wind (The Project)
ORCP	Offshore Reactive Compensation Platform
OWF	Offshore Wind Farm
PULSE	Pile Under Limited Stress
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SIP	Site Integrity Plan
SNS	Southern North Sea
SNSOWF	Southern North Sea Offshore Wind Forum
SNCB	Statutory Nature Conservation Body
SoS	Secretary of State
UK	United Kingdom
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

Terminology

Term	Definition
Array Area	The area offshore within which the generating station (including wind turbine generators (WTGs) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling will be positioned, including the ORBA.
Deemed Marine Licence (dML)	A marine licence set out in a Schedule to the Development Consent Order and deemed to have been granted under Part 4 (marine licensing) of the Marine and Coastal Access Act 2009.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Effect	Term used to express the consequence of an impact. The significance of

Term	Definition
	an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
Embedded Mitigation	Mitigation that is embedded in the Project design.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Evidence Plan	A voluntary process of stakeholder consultation with appropriate Expert Topic Groups (ETGs) that discusses and, where possible, agrees the detailed approach to the Environmental Impact Assessment (EIA) and information to support Habitats Regulations Assessment (HRA) for those relevant topics included in the process, undertaken during the pre-application period.
Habitat Regulations Assessment (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites. The process consists of up to four stages of assessment: screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of over-riding public interest (IROPI) and compensatory measures.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Landfall	The location at the land-sea interface where the offshore export cables and fibre optic cables will come ashore.
Mitigation	Mitigation measures, or commitments, are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Offshore Reactive Compensation Platform (ORCP)	A structure attached to the seabed by means of a foundation, with one or more decks and a helicopter platform (including bird deterrents) housing electrical reactors and switchgear for the purpose of the efficient transfer of power in the course of High Voltage Alternating Current (HVAC) transmission by providing reactive compensation
Outer Dowsing Offshore Wind (ODOW)	The Project.
The Applicant	GTR4 Limited (a joint venture between Corio Generation (and its affiliates), TotalEnergies and Gulf Energy Development), trading as Outer Dowsing Offshore Wind
The Project	Outer Dowsing Offshore Wind including proposed onshore and offshore infrastructure.
Wind Turbine Generator (WTG)	A structure comprising a tower, rotor with three blades connected at the hub, nacelle and ancillary electrical and other equipment which may include J-tube(s), transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, helicopter landing facilities and other associated equipment, fixed to a foundation

Reference Documentation

Document Number	Title
6.1.3	Project Description
7.1	Habitat Regulations Assessment - Report to Inform Appropriate Assessment (RIAA)

1 Introduction

1.1 Overview

1. GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop Outer Dowsing Offshore Wind ("the Project"). The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm) approximately 54km offshore of the Lincolnshire coast, export cables to landfall, Offshore Reactive Compensation Platforms (ORCPs), onshore cables, connection to the electricity transmission network, ancillary and associated development and areas for the delivery of up to two Artificial Nesting Structures (ANS) and the creation and recreation of a biogenic reef (if these compensation measures are deemed to be required by the Secretary of State) (see Volume 1, Chapter 3: Project Description (document reference 6.1.3) for full details).
2. Document 7.1: Habitat Regulations Assessment - Report to Inform Appropriate Assessment (RIAA) identified the need to address uncertainty regarding potential in-combination impacts from multiple projects, which may have a construction timetable which overlaps with the Project. Specifically, the uncertainty relates to harbour porpoise (*Phocoena phocoena)* and its habitat within the Southern North Sea Special Area of Conservation (SNS SAC) and the risk of an exceedance of the Statutory Nature Conservation Body's (SNCB) defined underwater noise disturbance thresholds (as per the Joint Nature Conservation Committee (JNCC) 2019 guidelines). The main source of uncertainty relates to the construction schedules of these other plans and projects, which could lead to a combined effect.
3. Therefore, in case driven or partly driven pile foundations are used, a Site Integrity Plan (SIP) has been committed to as a condition in the draft Deemed Marine Licences (dMLs) for the generation assets, transmission assets and ANSs which form schedules to the draft Development Consent Order (DCO). This In-Principle SIP aligns with the "Guidance for Assessing the Significance of Noise Disturbance Against Conservation Objectives of Harbour Porpoise SACs" (issued by JNCC, Natural England & the Northern Irish Department of Agriculture, Environment and Rural Affairs (DAERA) in 2020).
4. The SNS SAC's location is illustrated in relation to the Project in Figure 1.1.

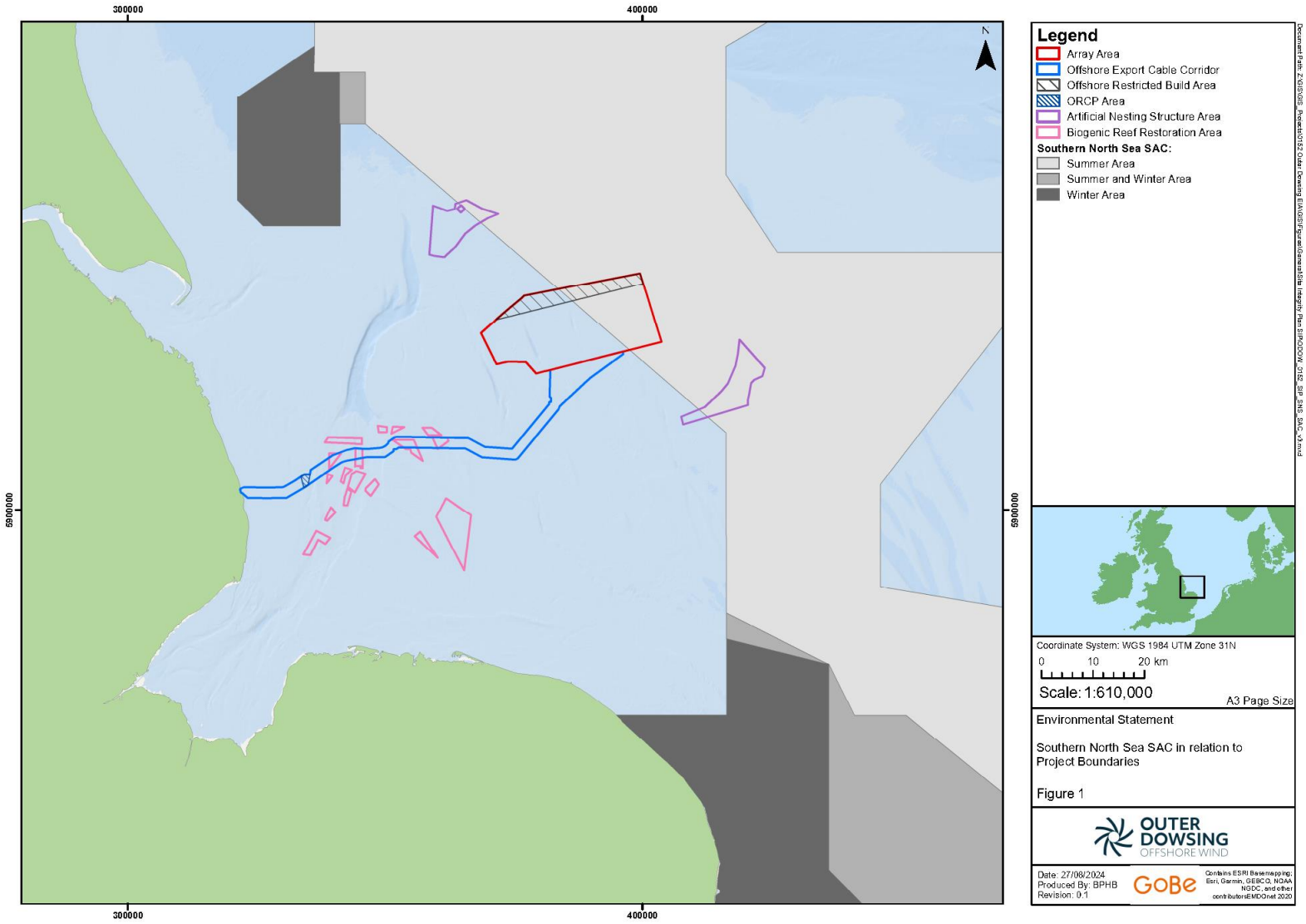

Figure 1.1: Southern North Sea Special Area of Conservation in relation to Project Boundaries

1.2 Purpose of the In-Principle SNS SAC SIP

5. The purpose of this In-Principle SNS SAC SIP is to provide confidence to the Secretary of State and stakeholders measures exist that will ensure that the conclusion of no Adverse Effect on Integrity (AEoI) from underwater noise disturbance affecting harbour porpoise within the SNS SAC will remain valid at the point of construction for the Project, despite the uncertainty regarding other plans and projects which may be affecting the area at the same time.

6. This In-Principle SNS SAC SIP identifies a series of potential mitigation measures which could be utilised by the Project (if required) to ensure that AEoI will be avoided with respect to significant disturbance to harbour porpoise, thus aligning with the conservation objectives of the SNS SAC. This approach ensures that the conclusion of no AEoI on the SNS SAC from the Project remains valid.

7. Available mitigation measures and details of the relative efficacy of each measure are provided in Section 4 below. The choice of mitigation measure(s) (if indeed any are required) will be determined prior to the Project's construction depending on the final construction methods and schedules of individual plans and projects known at that time, including the Project.

8. This In-Principle SNS SAC SIP provides a framework for further consultation and discussion between the Applicant, the Marine Management Organisation (MMO) and Natural England on the final details of any required project related mitigation measures. The Final SNS SAC SIP(s) will be produced closer to the time of the Project's construction following revision and consultation of mitigation measures, as outlined in Section 4. The requirement for development of a SNS SAC SIP is provided for within each of the draft dMLs for the generation assets, transmission assets and the ANSs.

1.3 Consultation

9. The refinement of the In-Principle SNS SAC SIP will be a dynamic process continuing from the Project's application phase, through the examination phase and following the project's determination. The Applicant will maintain active engagement with the MMO and their advisors, namely Natural England, with the aim of addressing any concerns related to the SNS SAC SIP.

10. The final SNS SAC SIP(s) will include detail of the consultation undertaken.

2 The Southern North Sea SAC

2.1 Introduction

11. The SNS SAC is the largest of the UK designated sites for the conservation of harbour porpoise. The only qualifying species of the site is harbour porpoise (Annex II species). The SNS SAC boundary is based on a modelling prediction of harbour porpoise habitat (Heinänen and Skov 2015), and harbour porpoise densities are linked to this modelled suitable habitat. JNCC (2015) have also defined seasonal (summer and winter) areas of the SAC reflecting how the importance of the site to harbour porpoise varies during the year (Figure 1.1).

2.2 Conservation Objectives

12. The Conservation Objectives for the SNS SAC1 are designed to ensure that the obligation of the Habitats Directive can be met. Article 6(2) of the Directive requires that there should be no deterioration or significant disturbance to the qualifying species or to the habitats upon which they rely. The SNS SAC SIP will set out how the project will identify, agree and implement suitable and appropriate measures to ensure that the Conservation Objectives are upheld.

13. The Conservation Objectives2 of the site are as follows:

"To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters

- *In the context of natural change, this will be achieved by ensuring that:*
- *Harbour porpoise is a viable component of the site;*
- *There is no significant disturbance of the species; and*
- *The condition of supporting habitats and processes, and the availability of prey is maintained*."

14. These Conservation Objectives are a set of specified objectives that must be met to ensure that the site contributes in the best possible way to maintain FCS of the designated site feature(s) at the national and biogeographic level.

[1] As set out in https://data.jncc.gov.uk/data/206f2222-5c2b-4312-99ba-d59dfd1dec1d/SouthernNorthSea-conservation-advice.pdf

[2] Please note that the official wording of the Conservation Objectives differs from that presented in 'Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland)' June 2020. Within the guidance document, it states that the Conservation Objectives are 'To ensure that the integrity of the site is maintained and that it makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters'.

15. This In-Principle SNS SAC SIP is concerned solely with the second of these objectives, that of significant disturbance since that is where uncertainty has been identified within the RIAA (document reference 7.1).

3 Final Design Plan

16. The Final SNS SAC SIP(s) will detail the final design parameters of the Project and identify the potential for any noisy activities which may contribute to the thresholds associated with the management of the SNS SAC.

17. The clearance of Unexploded Ordnance (UXO) before offshore construction is not covered by the DCO application. Instead, it will require a separate Marine Licence application once surveys determine the quantity and type of UXO that need to be cleared. This separate application will consider the SNS SAC, including the potential need for an SNS SAC SIP specifically related to UXO clearance options.

18. The Final SNS SAC SIP(s) will determine which plans and projects coincide with the Project's construction schedule and therefore need to be considered in the in-combination assessment.

4 In Principle Mitigation and Management Measures

4.1 Overview

19. The consideration of specific mitigation options in this In-Principle SNS SAC SIP is limited to addressing potential disturbance to harbour porpoise from other plans, projects and activities in-combination with the Project.

20. This In-Principle SNS SAC SIP is intended to identify the currently available mitigation and management measures that could be brought forward during the development of the Final SNS SAC SIP(s) prior to the construction of the Project, to ensure that a conclusion of no AEoI can be maintained under all scenarios.

21. While potential measures are outlined in this section of the In-Principle SNS SAC SIP, it should be noted that the confirmation of any measures to be implemented cannot occur until the project design parameters have been finalised.

22. Table 2 in JNCC's Advice on Activities for the SNS SAC (2019) summarises piling-related mitigation options for disturbance and displacement effects. Primary mitigation includes adjusting piling schedules to minimise harbour porpoise exclusion when multiple developments occur simultaneously. Secondary mitigation involves using sound dampers, sound transfer barriers (e.g., bubble curtains), and alternative foundation types (e.g., gravity foundations, suction foundations, floating turbines, drilling).

23. JNCC, Natural England & DAERA (2020) recommend allowing sufficient time between assessment and construction to implement additional mitigation measures if necessary. These measures may involve spatial planning and phasing of noisy activities, using alternative foundations (e.g., suction buckets, gravity bases), employing quieter installation methods, and using technology to reduce sound levels and propagation.

24. Outline potential mitigation measures which have been either used on other extant projects or noted as possible options by stakeholders are provided in Section 4.2.

4.2 Primary Mitigation – Management of Activities

25. In the hierarchy of mitigation options, JNCC advice (2019) recommends evaluating whether project-level commitments (management measures) can ensure no AEoI. These measures may involve limiting daily and seasonal project activities or specifying the timing and location of works and activity separation.

26. These management measures could be considered, for example, under the following scenarios:

    - For individual days when risk of threshold exceedance is driven by activity undertaken by projects in-combination (i.e., the Project itself does not lead to exceedance of the thresholds, but acting in-combination with other plans/projects, a risk of AEoI remains) (e.g., limiting where or when project level activities take place relative to the SNS SAC boundary); and

- Where a risk of exceeding the seasonal threshold is identified (in-combination), by applying a limit on the project level activity sufficient to avoid the exceedance of the seasonal threshold.

27. This measure has been used successfully for offshore wind projects, including piling campaigns and UXO clearance campaigns, to manage noisy activities across industries through coordination of activities. Therefore, confidence can be high that this measure is successful.

28. In preparation of the final SNS SAC SIP engagement will be undertaken with other relevant offshore wind farms in the SNS through bi-lateral engagement and industry groups such as the Southern North Sea Offshore Wind Forum (SNSOWF) and its Underwater Noise Forum subgroup.

29. As set out in section 4.3 below, the Applicant will deploy primary and/or secondary noise reduction methods (Noise Abatement Systems) to deliver noise reductions in the first instance~~, unless otherwise agreed with the MMO~~.

4.3 Secondary Mitigation Options

30. The Policy Paper: Reducing Marine Noise (Defra, 2025) states:

From January 2025, given the expected increase in noise levels over the coming years, and the above outlined policy commitments, we expect that all offshore wind pile driving activity across all English waters will be required to demonstrate that they have utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise reduction methods in the first instance.

31. The Applicant will deploy primary and/or secondary noise reduction methods (Noise Abatement Systems) for pile driving~~, unless otherwise agreed with the MMO~~. The Applicant considers that the commitment it has made is above and beyond what is required by the Defra (2025) policy. The precise technique will be confirmed within the final SIP.

32. These measures encompass various technical options which when applied either individually or in-combination, can reduce noise emissions during the Project's construction, consequently reducing the contribution of the Project to the thresholds.

33. There are two main approaches to reduce noise levels caused by piling installation: "at source" and "barrier systems".

4.3.1 At-source mitigations

34. At source options can comprise:

- avoiding the use of hydraulic piling through the use of alternative installation methods; or
- changing the nature of the emitted sound source, through modifying the standard piling method or using modifications to the hammer.

35. The options for modifying the standard piling method are limited but broadly comprise: drilling, vibro-piling and BLUE-piling3. Each of these options still generates noise, however, drilling and vibro-piling do not have Effective Deterrence Ranges (EDRs) associated with them in the guidance (JNCC, DAERA and Natural England, 2020) and therefore are not considered likely to contribute to underwater noise thresholds. The BLUE-piling technique uses the weight of water to drive a pile into the ground. As this method is currently untested on an offshore windfarm, and therefore no in-situ data are available, any potential reduction in the EDR for piling would need to be agreed in consultation with SNCBs.

36. Modifications to the standard piling methods are typically focussed on reducing the potential for injurious effects to marine mammals, rather than on disturbance. If evidence becomes available to demonstrate these methods are also effective to reduce disturbance, the reduction in any EDR would be discussed and agreed with the SNCBs.

37. The only commercially available methods to alter the noise emitted from the pile during hydraulic piling are the Pile Under Limited Stress (PULSE) system from IHC IQIP and the Menck Noise Reduction Unit (MNRU) from Menck. Both these systems work in a similar way by softening each hammer blow to the pile by using an intermediate muffling material in the hammer set-up, which also slightly extends the duration of the strike, minimising any loss of drivability of the pile. The developers of these options estimate that these systems can deliver up to 12dB reductions in source levels4. The Applicant is not currently aware of any studies of the delivered noise reductions from these systems on constructed offshore windfarms. Once this evidence is available, the associated reduction in EDRs from these systems can be discussed and agreed with SNCBs.

4.3.2 Barrier systems

38. Barrier systems can comprise:

- *Air Bubble Curtains:* These curtains reduce noise by reflecting acoustic waves when they encounter the air bubble cloud and by damping the waves as they pass through the cloud. The effectiveness of this method depends on the frequency of the emitted sound cloud.
- *Pile Casings:* Noise reduction is achieved through wave reflection. The casing encloses the pile and minimises noise propagation.

39. *Resonator-Based Noise Mitigation Systems:* These systems convert the energy carried by acoustic waves into vibrations within their own resonator units, essentially absorbing the noise. These resonators can take the form of wither a fishing net of encapsulated bubbles and foam elements or Helmholtz-type resonators.

[redacted]

[redacted]

40. Barrier systems such as bubble curtains are typically referred to as noise abatement systems (NAS). As identified above, there are currently three main types, each with its own specific implications for piling activities. Bubble curtains are typically placed away from the pile and require a secondary vessel to lay and operate the curtain. Casings and resonators are typically attached to the hammer (or associated equipment) and fit around the pile. These systems must be specifically designed for each installation site.

41. These systems have been widely used for offshore windfarm piling in Europe to enable projects to meet the stringent noise limits in place in countries such as Germany and the Netherlands. As such, there are extensive data on the noise reductions available from these methods (up to 18dB) and, importantly, the associated reduction in disturbance to harbour porpoise.

42. If a barrier system were to be implemented for the Project, following the guidance (JNCC, DAERA and Natural England, 2020), this would enable a reduction in the EDR from 26km for unabated hammer driven monopiling to 15km, with the associated reduction in contribution to the SAC thresholds.

4.4 Re-visiting the In-combination Assessment Against Up-To-Date Information

43. As noted above, only those plans, projects or activities which may impact on the relevant seasons for the SNS SAC during which the Project would be undertaking noisy activities would be considered in the SIP(s). This includes any plans, projects activities identified within the RIAA (document reference 7.1) but also any which may come forward in the intervening period.

4.5 Currently Unforeseen Future and Emergent Technologies

44. Given the time gap between offshore windfarm consent and construction commencement, coupled with rapid technological advancements, new measures may become available. The final SIP will not be limited to measures existing at the time of consent if emerging measures remain within the Project design enveloped of the consent. The associated reduction in EDRs from these systems would be discussed and agreed with SNCBs if relevant.

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