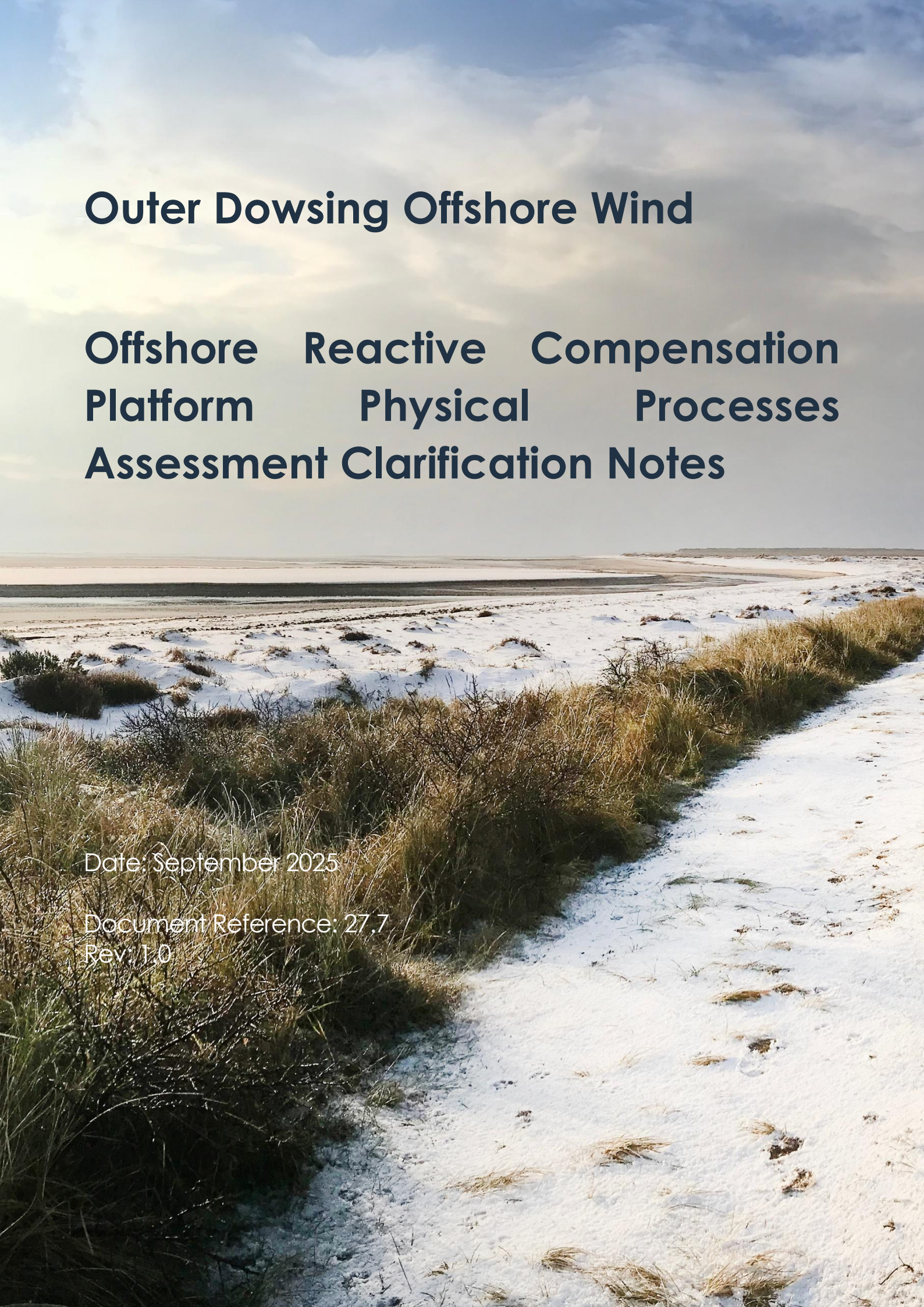
Outer Dowsing Offshore Wind

Offshore Reactive Compensation Platform Physical Processes Assessment Clarification Notes



Date: September 2025

Document Reference: 27.7
Rev: 1.0

Company:	**Outer Dowsing Offshore Wind**			Asset:		**Whole Asset**
Project:	**Whole Wind Farm**			Sub Project/Package:		Whole Asset
Document Title or Description:	27.7 Offshore Reactive Compensation Platform Physical Processes Assessment Clarification Note					
Internal Document Number:	PP1-ODOW-DEV-CS-REP-0293_01			3rd Party Doc No (If applicable):		N/A
Rev No.	**Date**	**Status / Reason for Issue**	**Author**	**Checked by**	**Reviewed by**	**Approved by**
1.0	September 2025	Request for Information Dated 12th August 2025	GoBe	Outer Dowsing	Shepherd & Wedderburn	Outer Dowsing

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1 Document Purpose

1. This document has been produced to provide the Secretary of State with the clarification notes that the Applicant has provided to Natural England since the close of Examination. The Applicant and Natural England have had ongoing engagement and discussions, with the aim to resolve the remaining HRA issues. Details of the engagement are provided in Appendix A of 27.2 The Applicant's Response to the Request for Information.
2. The notes were provided to collate the existing information and address Natural England's concerns. The first note was submitted to Natural England on the 19th May 2025 and is provided below in Section 2. This note addressed the concerns remaining at Deadline 6 and was produced to support discussions for a technical meeting on the 11th June 2025. Following this meeting, a second note was produced and sent to Natural England on the 4th July 2025 to further address Natural England's concerns. The second note is provided in Section 3.

2 ORCP Physical Processes Clarification Note 1 dated 19th May 2025

Executive Summary

GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop Outer Dowsing Offshore Wind Farm, hereafter referred to as 'the Project'. The Applicant submitted an application for a DCO ('the Application') for the Project to the Planning Inspectorate in March 2024, and was in Examination 10th October 2024 to 10th April 2025.

At the end of examination there were outstanding areas of disagreement between the Applicant and Natural England on the topic of Marine Physical Processes, specifically with regard to the Offshore Reactive Compensation Platforms (ORCPs). The Applicant has prepared this clarification note in an effort to resolve Natural England's concerns. The main concern was the potential impact of the ORCPs on the Inner Dowsing, Race Bank, North Ridge (IDRBNR) Special Area of Conservation (SAC) through modification of waves, hydrodynamics and sediment transport and in turn lead to morphological change to Annex I interest features within the SAC. The Applicant has collated all relevant information regarding the potential impact of the ORCPs on physical processes and provided further clarification of the assessments undertaken. This has the purpose of allowing Natural England to review all the information and then discuss with the view to reaching agreement at the meeting 11th June 2025.

Numerical modelling was undertaken at ES and subsequently updated following the removal of the northern ECC route. The modelling followed best-practice methods as agreed with stakeholders, incorporating high-resolution bathymetry data collected along the offshore ECC (GEOxyz, 2022). The modelling results informed the assessment provided in Chapter 7 (REP4a-029), which concluded that modifications to wave and tidal regimes, along with potential seabed morphology changes, would have at worst a minor adverse significance, which is not considered significant in Environmental Impact Assessment (EIA) terms.

Given the baseline conditions, there is therefore not a conceptual pathway of effect from tidal or wave blockage from the ORCPs towards the east, where the Inner Dowsing sandbank is located. This is supported by the numerical model results, which show change towards the north and south (for tidal currents) and towards the south-west (for waves), as well as the sediment mobility analysis provided in Chapter 7 (REP4a-029) Annex A. Localised current speed reductions of up to 0.14m/s may occur during high current conditions, however, these changes are limited in both spatial and temporal extent, and are not directed towards the sandbank to the east. Similarly, the results of the wave blockage modelling demonstrate that the wave shadow will not propagate eastward.

Due to the lack of conceptual pathway, supported by numerical model results carried out in line with best-practice methods, the Applicant does not believe that there is a requirement for the collection of more detailed bathymetric surveys or higher resolution wave and tidal modelling data. The Applicant considers that the assessments have been undertaken using robust data and best-practice methods, and have been made with due consideration of the proximity of the proposed ORCP area to the Inner Dowsing sandbank. The Applicant therefore maintains that there will be no Adverse Effect on Integrity (AEoI) on the IDRBNR SAC from wave and tidal blockage effects from the presence of the ORCPs.

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Acronyms & Definitions

Abbreviations / Acronyms

Abbreviation / Acronym	Description
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETG	Expert Topic Group
GBS	Gravity Base Structure
GT R4 Ltd	The Applicant. The special project vehicle created in partnership between Corio Generation (and its affiliates), Gulf Energy Development and TotalEnergies
HRA	Habitat Regulations Assessment
IDRBNR	Inner Dowsing, Race Bank and North Ridge
JNCC	Joint Nature Conservation Committee
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
ODOW	Outer Dowsing Offshore Wind (The Project)
ORBA	Offshore Restricted Build Area
ORCP	Offshore Reactive Compensation Station
SAC	Special Area of Conservation

Terminology

Term	Definition
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation (and its affiliates), Total Energies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation, TotalEnergies and GULF.
Array area	The area offshore within which the generating station (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling will be positioned, including the ORBA.
Baseline	The status of the environment at the time of assessment without the development in place.
Cumulative effects	The combined effect of the Project acting additively with the effects of other developments, on the same single receptor/resource.
Cumulative impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).

Term	Definition
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
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).
Export cables	High voltage cables which transmit power from the Offshore Substations (OSS) to the Onshore Substation (OnSS) via an Offshore Reactive Compensation Platform (ORCP) if required, which may include one or more auxiliary cables (normally fibre optic cables).
Habitats 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.
Maximum Design Scenario	The project design parameters, or a combination of project design parameters that are likely to result in the greatest potential for change in relation to each impact assessed
Offshore Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Order Limits within which the export cables running from the array to landfall will be situated.
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 HVAC transmission by providing reactive compensation
Offshore Restricted Build Area (ORBA)	The area within the array area, where no wind turbine generator, offshore transformer substation or offshore accommodation platform shall be erected.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Order Limits:	The area subject to the application for development consent, The limits shown on the works plans within which the Project may be carried out.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Pre-construction and post-construction	The phases of the Project before and after construction takes place.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.

Term	Definition
Study Area	Area(s) within which environmental impact may occur – to be defined on a receptor-by-receptor basis by the relevant technical specialist.

Reference Documentation

Document Number	Title	Most Recent Examination Reference
6.1.3	Chapter 3: Project Description	REP5-009
6.1.7	Chapter 7: Marine Physical Processes	REP4a-142
6.3.7.1	Appendix 7.1: Physical Processes Technical Baseline	AS-003
6.3.7.2	Appendix 7.2: Physical Processes Numerical Modelling Report	APP-151
6.3.7.3	Appendix 7.3: Seabed Mobility Report	APP-152
15.9	Environmental Report for the Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor	PD1-081
15.9A	Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix A Figures Part 1	PD1-082
15.9B	Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix B Blockage Modelling Results	PD1-084
6.2.7	Chapter 7: Marine Physical Processes Figures Part 1 of 2	REP4a-041
6.2.7	Chapter 7: Marine Physical Processes Figures Part 2 of 2	REP4a-042
20.15	Sandwave Levelling Study	REP3-047
24.2	The Applicant's Comments on Deadline 5 Submissions	REP6-110
n/a	Appendix B5 to the Natural England Deadline 6 Submissions: Natural England's comments on Marine Processes regarding the proposed ORCP Area	N/A

1 Introduction and Document Purpose

1. GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Applicant submitted an application for a DCO ('the Application') for the Project to the Planning Inspectorate in March 2024, which was accepted for Examination in April 2024.
2. This note has been prepared to provide clarifications to address the comments from Natural England in their formal statutory response to the Outer Dowsing Offshore Windfarm (ODOW) Examination Deadline 6 on the topic of Marine Physical Processes, specifically with regard to the presence of the Offshore Reactive Compensation Platforms (ORCPs).
3. Natural England have outlined the following concerns within Appendix B5 – Natural England's Advice on Marine Processes regarding the Proposed ORCP Area at Deadline 6:
   - That the presence of the ORCPs adjacent to the Inner Dowsing, Race Bank and North Ridge (IDRBNR) Special Area of Conservation (SAC) and Inner Dowsing sandbank could modify waves, hydrodynamics and sediment transport and in turn lead to morphological change to Annex I interest features within the SAC;
   - That more detailed information is needed to support the Applicant's conclusions;
   - That all mitigation options should be explored, following update to the bedform migration assessment, and these options could include (but not exclusively) consideration for siting the ORCPs as far to the west of their ORCP area (thereby increasing their distance from the SAC/sandbanks to the east); and
   - That currently indirect impacts which could hinder the conservation objectives of IDRBNR SAC cannot be excluded; and without further evidence Natural England are unable to advise further on the scale and significance of these impacts.
4. This is in addition to the final NE position outlined in Appendix J6 – Natural England's Risk and Issues Log Deadline 6 (REP6-154), which refers both to Appendix B5 and Appendix B3 (REP5-163) and advises that more detailed bathymetric and modelling data is needed for the ORCP/SAC area to adequately demonstrate the scale and extent of potential changes to the wave, tidal current and sediment transport regimes due to the presence of the ORCPs over the lifetime of the Project.
5. This clarification note has been prepared to collate all information provided regarding the potential impact of the ORCPs on Marine Physical Processes throughout the Examination to date, and to provide further clarification of the assessments undertaken. This is intended to support the discussion of outstanding issues with Natural England during the Natural England and ODOW Post Examination Meeting (Benthic and Intertidal Ecology and Marine and Coastal Processes) to be held on Wednesday 11th June, 2025.

2 Project Context

6. As part of the Project Design Envelope (PDE) outlined for the DCO Application (Chapter 3: Project Description (APP-058[1])), up to two ORCPs may be required along the export cable corridor, located within the ORCP area identified within the offshore ECC. At the point of Application, optionality was retained along a section of the offshore ECC, with two ORCP areas identified (northern and southern). These areas were characterised within the baseline presented in Appendix 7.1: Physical Processes Technical Baseline (AS-003) and assessed within Chapter 7: Marine Physical Processes (APP-062). As part of this assessment, two ORCP structures were included within the wave and tidal blockage modelling presented within Chapter 7 (APP-062), with one in each ORCP area identified.
7. Following the Procedural Deadline (19th September 2024), two changes were made to the Project. This included the introduction of an Offshore Restricted Build Area (ORBA) over the northern section of the array area and the removal of the northern section of the offshore ECC (and consequently the northern ORCP area). Revised numerical wave and tidal blockage modelling was undertaken to account for this change, the results of which were initially submitted within the Environmental Report for the Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor (PD1-081), PD1-082 and PD1-084. These results were subsequently presented within the updated Chapter 7: Marine Physical Processes (REP4a-029), submitted at Deadline 4a.
8. This numerical modelling follows the approach previously outlined in Chapter 7 (APP-062), with details of the numerical modelling assumptions including the parameters, data sources and calibration/validation details provided in Appendix 7.1: Physical Processes Technical Baseline (AS-003) Annex B – Determination of Marine Processes Realistic Worst-Case and Appendix 7.2: Physical Processes Numerical Modelling Report (APP-151). The numerical modelling was carried out using best-practice methods as agreed with Natural England and other stakeholders prior to submission (as outlined in Table 7.2 of Chapter 7 (REP4a-029)).
9. These modelling results have informed the assessment provided in Chapter 7 (REP4a-029). The effects arisings from modification to the wave and tidal regime and associated potential impacts to seabed morphology resulting from the presence of the ORCPs have been identified as of minor adverse significance (at worst) which is not significant in EIA terms (Section 7.12.2.1 (Impact 4) of Chapter 7 (REP4a-029)). Furthermore, the Applicant submitted a Change Notification (AS-032) on the 20th February 2025 to remove the GBS option for the ORCPs, meaning that the modelling results presented in REP4a-029 represent a conservative modelling scenario.

[1] Superseded by REP5-009 at Deadline 5

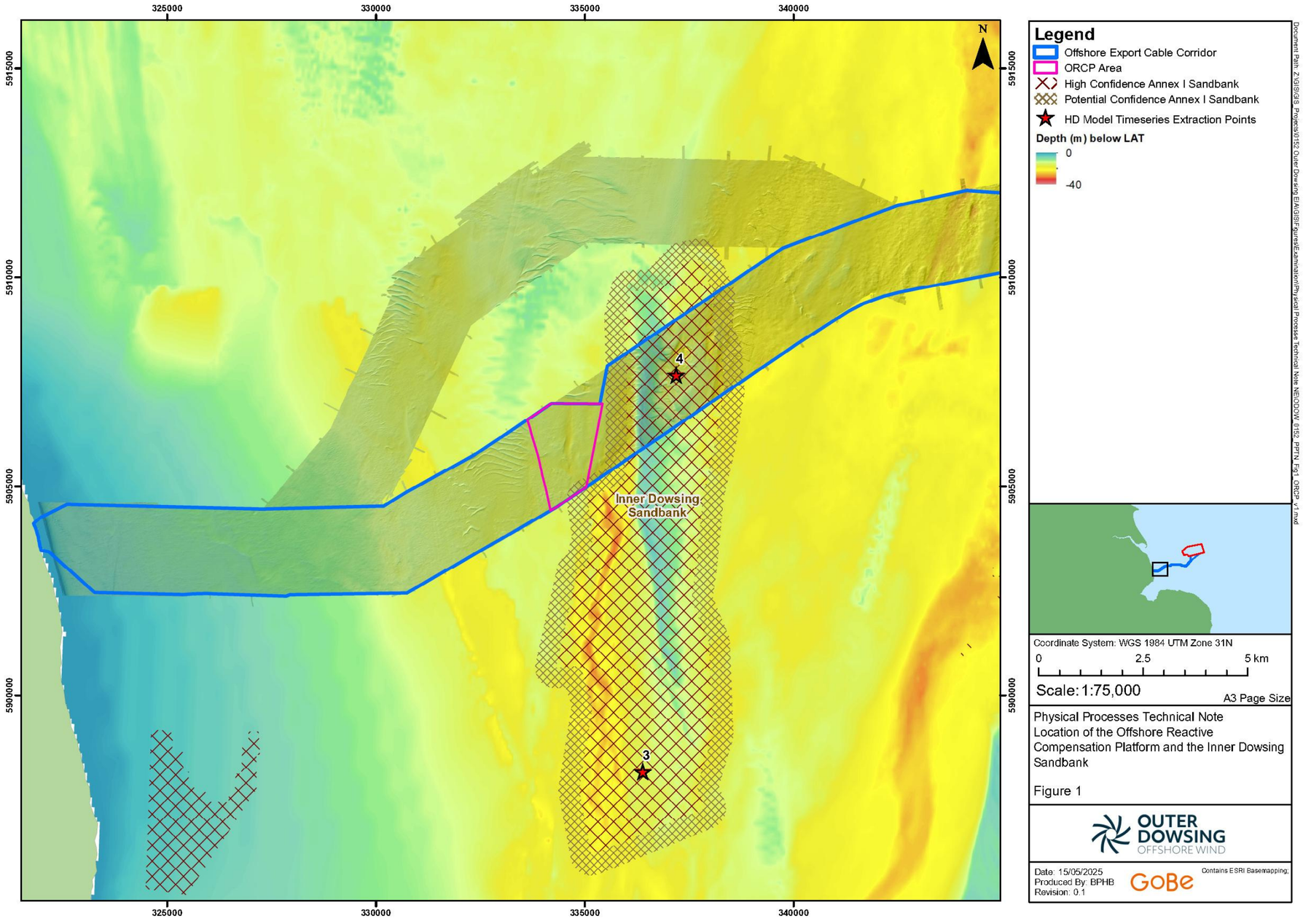

Figure 1 Location of the Offshore Reactive Compensation Platform and the Inner Dowsing Sandbank

3 Impact Assessment

3.1 Methodology

10. Full details of the numerical modelling assumptions including the parameters, data sources and calibration/validation details are provided in Appendix 7.1 (AS-003) Annex B and Appendix 7.2 (APP-151). Numerical wave and tidal blockage modelling was informed by a range of data sources including pre-construction geophysical survey data covering the Offshore ECC (GEOxyz, 2022), as shown in Figure 1, which provided bathymetric data with a resolution of 0.25m.
11. The numerical modelling was carried out using best-practice methods as agreed with Natural England and other stakeholders prior to submission (as outlined in Table 7.2 of Chapter 7 (REP4a-029), with details provided in Consultation Report Appendix 15 Evidence Plan Processes Consultation (APP-052)). These methods, as well as the resolution of the hydrodynamic model, are in line with those used on other offshore wind DCO applications including East Anglia One (North) and East Anglia Two, Five Estuaries, Dogger Bank South, Mona, and Morgan. The relevant guidance documents used to inform the assessment methodologies are outlined in Paragraph 10 of Chapter 7 (REP4a-029), and include (although are not limited to) the following:
    - Coastal Process Modelling for Offshore Windfarm (OWF) Environmental Impact Assessment: Best Practice Guide (Lambkin *et al.*, 2009); and
    - National Resources Wales (NRW) Monitoring Evidence Report No: 243 Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to inform EIA of Major Development Projects (Brooks *et al.*, 2018); and
12. A copy of Appendix 7.2 (APP-151; outlining modelling parameters, data sources, and calibration details) was submitted as part of the Preliminary Environmental Assessment Report (PEIR). Following the receipt of advice from Natural England (and other stakeholders) within the Section 42 Consultation Response (20th July 2023), proposed updates to the numerical modelling were discussed at the Expert Topic Group (ETG) meeting held on the 8th of November 2023, with no comments from stakeholders.
13. The Maximum Design Scenario (MDS) for wave and tidal blockage has been outlined in Table 7.3 of Chapter 7 (REP4a-042). This included two slab-based ORCP foundations located within the ORCP area (Figure 1) with a minimum separation distance of 90m apart. It should be noted that this modelling represents a conservative scenario for the ORCPs, for which the GBS option has been removed as of Examination Deadline 4a. Suction bucket jacket foundations (now the proposed design option for the ORCPs) have a smaller surface area in the water column than GBS foundations and therefore provide less interruption to hydrodynamic flows (ICF, 2020). This is demonstrated by the comparison of normalised blockage factors presented within Appendix 7.1 (AS-003) Annex B.

14. Modelled current time-series data from the numerical modelling outputs have been used to estimate the potential sediment mobility across the study area before and after the installation of Project infrastructure, with results shown in Chapter 7 (REP4a-029) Annex A. Potential sediment mobility across a spring and neap tidal cycle are presented at 27 points, the locations of which are shown in Figure 7.8 of Chapter 7 Marine Physical Processes Figures Part 1 of 2 (REP4a-041). The bed shear stress and corresponding critical depth-averaged current speed values required for the transportation of different sediment grain sizes present have been calculated using standard methods described by Soulsby (1997).

3.2 Baseline Conditions

15. The ORCP area is located along the offshore ECC to the west of the Inner Dowsing sandbank, as shown on Figure 1, in water depths of between 10m and 20m (Lowest Astronomical Tide (LAT)). The Inner Dowsing sandbank is located within the IDRBNR SAC, and is understood to be a relict feature with a veneer of sand bedforms maintained by tidal currents (JNCC, 2010). Evidence provided in Centrica (2007) suggests that although the Inner Dowsing bank has experienced some changes in crest level, as indicated by changing contour lines between successive historic charts, it remains broadly in the same position and alignment. This is further corroborated by the classification of Inner Dowsing as "Moribund/Relict"[2] within Natural England Commissioned Report NECR550 (Reach *et al*., 2025).
16. Tidal flows at the ORCP location are aligned from north to south, as shown in modelled regional tidal ellipses presented in Figure 7.4 (AS-003) available from the UK Atlas of Marine Renewable Energy Resources (ABPmer *et al.*, 2008). This is corroborated by the modelled hydrodynamic velocity vectors shown in Figure 2. At this location, waves predominantly occur from the north-northeast and northeast, as demonstrated by observational wave records from the Chapel Point Directional Waverider Buoy (Environment Agency, 2021; shown in Figure 7.2 of Appendix 7.1 (AS-003)).

3.3 Results

3.3.1 Tidal blockage

[2] This classification refers to features no longer associated with active coastal physical processes. These features are effectively dissociated from active sediment supply and are discrete self-supporting physical seabed features (Stride, 1982; Reach *et al*., 2025).

17. The interaction between the tidal regime and the foundations of the windfarm infrastructure will result in a general reduction in current speed and an increase in levels of turbulence in a narrow, localised wake due to frictional drag effects. For smaller structures such as the windfarm foundations, the wake signature is expected to naturally dissipate within a distance in the order of ten to twenty obstacle diameters downstream (Li *et al.*, 2014; Cazaneve *et al.*, 2016; Rogan *et al*., 2016). Based on the maximum design parameters for a GBS foundation type Offshore Platform (OP) presented in Table 6.5, Chapter 3: Project Description (REP5-009) this would be equivalent to between, approximately, 720m and 1,440m from the foundation. This would take place in the downstream direction, which at the ORCP locations is oriented directly towards the north (on the ebb tide) and the south (on the flood tide).
18. The results of hydrodynamic blockage modelling for the ORCP locations are shown in Figure 1 (with full results shown in Figure 7.24 of Chapter 7 Marine Physical Processes Figures Part 2 of 2 (REP4a-042). In the immediate near-field, within approximately 500m of the ORCP foundations, there may be localised reductions in current speed of over 0.1m/s during high current conditions, leading to localised reductions in seabed mobility. However, although this change is measurable, it is restricted in both spatial and temporal extent, with localised variation throughout the tidal cycle. This conclusion is further supported by the results of the sediment mobility analysis carried out at the locations identified on Figure 1.
19. The results, presented in Chapter 7 (REP4a-029) Annex A, indicate that estimated changes in sediment mobility after the installation of Project infrastructure do not exceed 1% (of total time that sediment is mobile) for any sediment size class present. Although the ORCP area is adjacent to the Inner Dowsing sandbank, tidal flows at this location are aligned north to south and as such there is limited pathway of effect from the ORCPs to the SAC (as shown in Figure 2). This is supported by the sediment mobility results presented in Chapter 7 (REP4a-029) Annex A, with the locations of the extraction points shown in Figure 1. Installation of Project infrastructure is predicted to result in an increase of 1% (of total time that sediment is mobile) for very fine sand during neap tides at Point 4 (located at the northern end of the Inner Dowsing sandbank), with no changes in sediment mobility estimated at Point 3 (located to the southern end of the Inner Dowsing sandbank). No changes in sediment mobility for other sizes present are predicted. The scale of this change is within the natural variability of the site, and given that it only affects fine-grained sediment, is unlikely to represent a controlling influence on sandbank form. The Inner Dowsing, Race Bank and North Ridge SAC is therefore considered to have a high capacity to accommodate the predicted potential change to the tidal regime from the ORCPs.

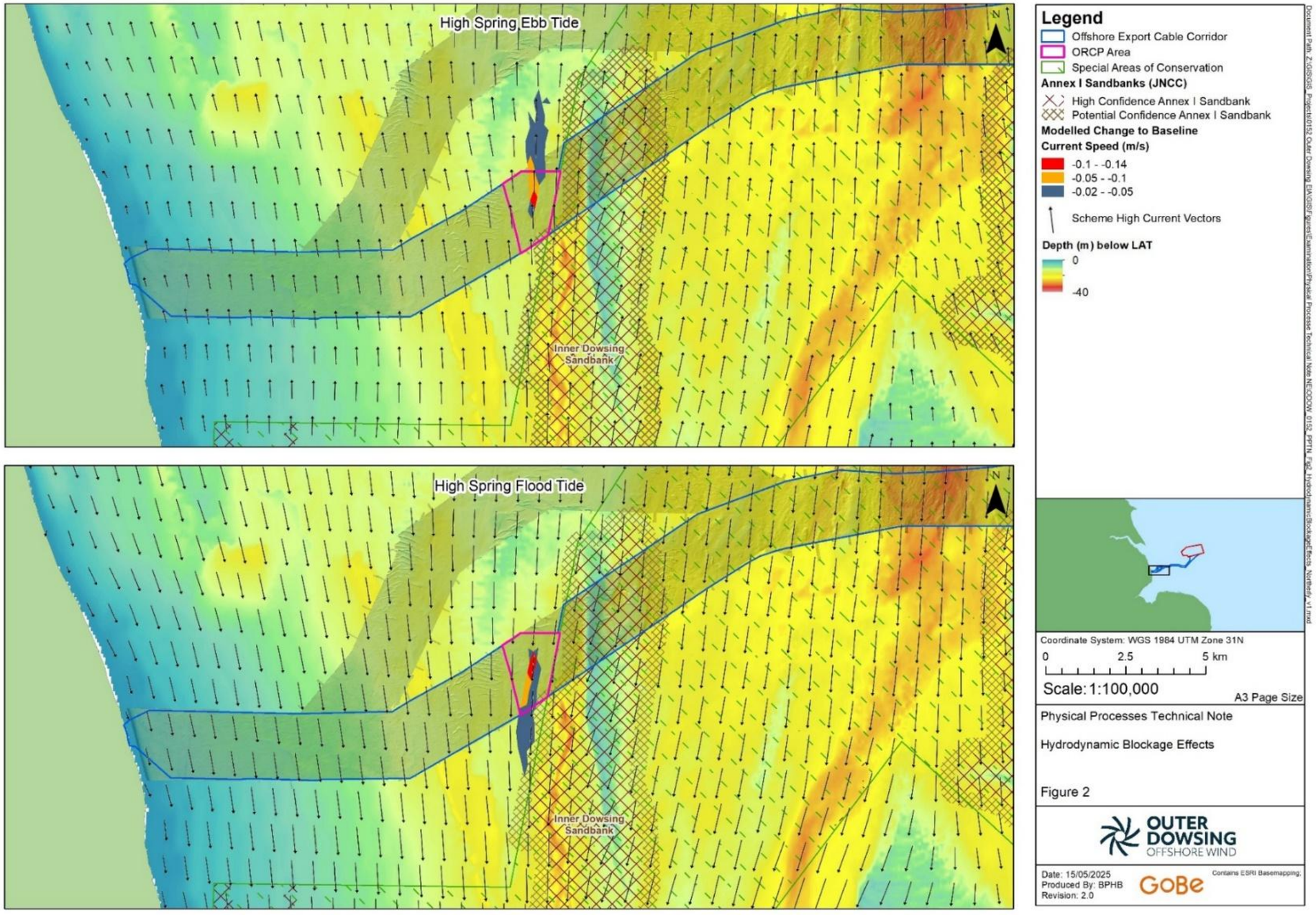

Figure 2 Hydrodynamic Blockage Effects

3.3.2 Wave blockage

20. Although the ORCP area is adjacent to the IDRBNR SAC, it is located to the west of the Inner Dowsing sandbank (as shown in Figure 1). At this location waves predominantly occur from the north-northeast and northeast, as demonstrated by observational wave records from the Chapel Point Directional Waverider Buoy (Environment Agency, 2021; shown in Figure 7.2 of Appendix 7.1 (AS-003)). This means that any blockage impacts from the ORCPs will not propagate towards the east, and therefore there is limited pathway of effect on the Inner Dowsing sandbank or the wider SAC. This is demonstrated by the results shown in Figure 3. Furthermore, given the importance of tidal currents in maintaining the form of the sandbanks (Centrica, 2007) the IDRBNR SAC therefore has a high capacity to accommodate change to the wave regime.

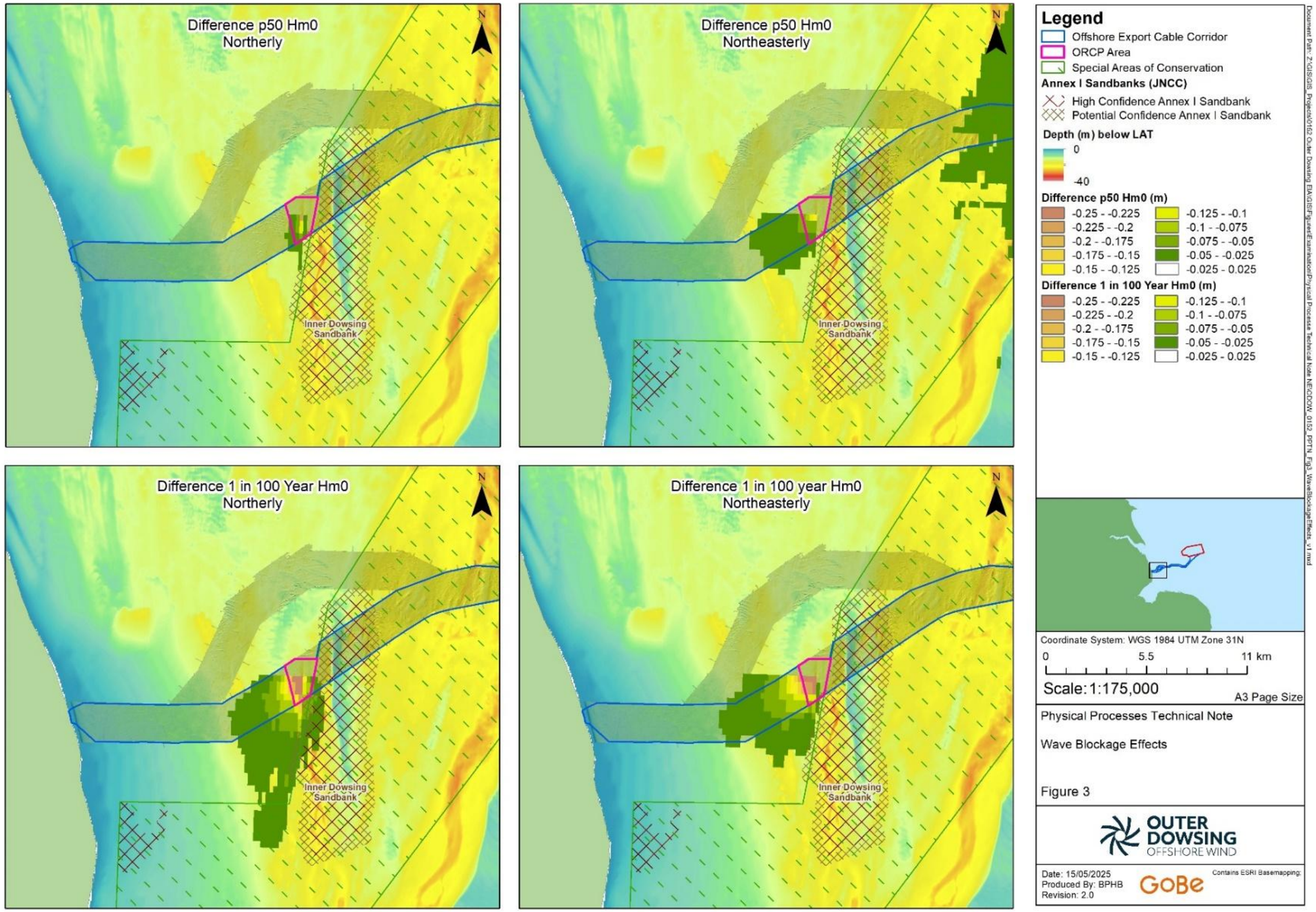

Figure 3 Wave Blockage Effects

4 Conclusions

21. As demonstrated above, the baseline characterisation and impact assessment have been undertaken using an evidence-based approach, supported by Project-specific surveys and numerical modelling as appropriate. As stated in Paragraph 70 of Chapter 7 (REP4a-029), the availability of robust data for the characterisation and assessment of Marine Physical Processes is such that, despite some data limitations, it is considered that a thorough and meaningful characterisation for the purposes of EIA can be undertaken. The numerical modelling was carried out using best-practice methods including those referenced in Paragraph 10 of Chapter 7 (REP4a-029), and as agreed with Natural England and other stakeholders prior to submission.
22. These modelling results have informed the assessment provided in Chapter 7 (REP4a-029). The evidence base for hydrodynamic blockage effects demonstrates that reductions in current speeds will take place primarily downstream of the foundation structure (Li *et al.*, 2016; Cazaneve *et al.*, 2016). Similarly, for wave blockage, the presence of the foundation will cause a small modification to the waves as they pass, generally resulting in a wave shadow effect in the lee of the structure. Given the baseline conditions, there is therefore not a conceptual pathway of effect from tidal or wave blockage from the ORCPs towards the east, where the Inner Dowsing sandbank is located. This is supported by the model results shown in Figure 2 and Figure 3, which show change towards the north and south (for tidal currents) and towards the south-west (for waves), as well as the sediment mobility analysis provided in Chapter 7 (REP4a-029) Annex A.
23. Due to the lack of conceptual pathway, supported by numerical model results carried out in line with best-practice methods, the Applicant does not believe that there is a requirement for the collection of more detailed bathymetric surveys or higher resolution wave and tidal modelling data to support the DCO application. The effects arisings from modification to the wave and tidal regime and associated potential impacts to seabed morphology resulting from the presence of the ORCPs have been identified as of minor adverse significance, which is not significant in EIA terms (Section 7.12.2.1 (Impact 4) of Chapter 7 (REP4a-029)). This assessment of minor adverse significance has been made with due consideration of the proximity of the proposed ORCP area to the Inner Dowsing sandbank.
24. As such, the Applicant believes that all the necessary information required to reach a conclusion of no significant effect on the IDRBNR SAC (specifically from wave and tidal blockage effects on the Inner Dowsing sandbank due to the presence of the ORCPs) has been included in the submitted documentation to date. The removal of the GBS option for the ORCPs further reduces the wave and hydrodynamic blockage impacts beyond that presented in the updated Chapter 7 Marine Physical Processes (REP4a-029).
25. Responses are provided in Table 1 to the concerns outlined in Appendix B5 – Natural England's Advice on Marine Processes regarding the Proposed ORCP Area at Deadline 6.

Table 1: The Applicant's Response to Appendix B5 – Natural England's Advice on Marine Processes regarding the Proposed ORCP Area at Deadline 6.

Natural England's Comments	The Applicant's Response
Summary	
Natural England has raised concerns that the presence of the Outer Dowsing Offshore Windfarm (ODOW) Offshore Reactive Compensation Platforms (ORCPs) adjacent to Inner Dowsing, Race Bank and North Ridge (IDRBNR) Special Area of Conservation (SAC) and Inner Dowsing sandbank could modify waves, hydrodynamics and sediment transport and in turn lead to morphological change to Annex I interest features within the SAC. We continue to advise that more detailed information is needed to support the Applicant's conclusions.	The Applicant consider that the relevant evidence to support the conclusion of no significant effect on the IDRBNR SAC have been provided within the Application documents as signposted in Section 3. The Applicant considers that the assessments have been undertaken using robust data and best-practice modelling methods, as outlined in Section 3.1. Due to the lack of conceptual pathway, aligned with a source-pathway-receptor approach, supported by numerical model results carried out in line with best-practice methods, the Applicant does not believe that there is a requirement for the collection of more detailed bathymetric surveys or higher resolution wave and tidal modelling data.
Natural England advises all mitigation options should be explored, following updates to the bedform migration assessment, and these options could include, but not exclusively consideration for siting the ORCPs as far to the west of their ORCP area (thereby increasing their distance from the SAC/sandbanks to the east). However, we highlight that this should not be to the detriment of protected habitats and species.	This is noted by the Applicant.
Natural England advises that currently indirect impacts which could hinder the conservation objectives of IDRBNR SAC cannot be excluded; and without further evidence we are unable to advise further on the scale and significance of these impacts.	The Applicant consider that the relevant evidence to support the conclusion of no significant effect on the IDRBNR SAC have been provided within the Application documents as signposted in Section 3.The Applicant therefore maintain that there will be no Adverse Effect on Integrity (AEoI) on the IDRBNR SAC from wave and tidal blockage effects from the presence of the ORCPs.

Effects from the modification to the wave and tidal regime	
We note that the position of the ORCPs relative to the SAC western boundary and Inner Dowsing sandbank's western edge, will be defined post-consent during the detailed design stage. However, the ORCP area is currently located adjacent to the IDRBNR SAC i.e. the distance between the ORCP area and the SAC is 0.0km.	The Applicant can confirm that this is correct.
The Applicant has assessed the effects from modification to the wave and tidal regime to be of minor adverse significance. However, given the proximity of the ORCP area to the SAC (and Inner Dowsing sandbank) we do not believe that there is sufficient detailed bathymetric and modelling data for the ORCP/SAC area to support the Applicant's conclusions and adequately demonstrate the scale and extent of potential changes to the wave, tidal current and sediment transport regimes due to the presence of the ORCPs over the lifetime of the Project.	The Applicant considers that the assessments have been undertaken using robust data and best-practice modelling methods, as outlined in Section 3.1. The methods used, as well as the resolution of the hydrodynamic model, are in line with those used on other offshore wind DCO applications including East Anglia One (North) and East Anglia Two, Five Estuaries, Dogger Bank South, Mona, and Morgan. Furthermore, there is no conceptual pathway identified due to the baseline conditions at the site, which is corroborated by the numerical modelling results available. The Applicant therefore does not believe that there is a requirement for the collection of more detailed bathymetric surveys or higher resolution wave and tidal modelling data.
Cumulative impacts	
We also advise that potential impacts to the SAC seabed morphology, due to the presence of the ORCPs, should not be considered in isolation. It is important to consider the potential for cumulative impacts, such as changes to physical processes and seabed morphology, due to the presence of the ORCPs and other nearby developments or activities (e.g. the Lincs Offshore Wind Farm (OWF)). Post-construction surveys from Lincs OWF, for example, revealed the presence of a large quantity of trench features and/or cable exposures which highlighted the risk of cable exposure in this highly dynamic environment. These impacts were greatly underestimated in the Environmental Statement (ES) assessment for the Lincs OFW. Whilst natural variation cannot be ruled out as a driver, it is possible that localised interruption of sediment transport and changes to seabed	As outlined, the Applicant does not consider that there is a pathway of effect on the SAC from the presence of the ORCPs. If there is no pathway of effect to the SAC, then the presence of the ORCP cannot contribute cumulatively towards a measurable effect on the SAC. The Lincs Offshore Windfarm Post Construction Geophysical Survey 2016 (EGS, 2016) states that "the scale of any wind-farm induced changes (i.e. scour pits) are localised in nature and within the predictions of the original ES". While cable exposures and freespans have been identified, the Applicant consider this to primarily be an asset integrity issue for Lincs Offshore Windfarm. The potential for scour processes at the ORCP will be mitigated by the use of scour protection

morphology occurred due to the construction and ongoing presence of the windfarm infrastructure. This, combined with uncertainties regarding the mobile bed layer thickness, scour potential, and seabed mobility, raises concerns for in-combination impacts to the SAC seabed morphology and changes to the physical processes operating in/around the ORCP/SAC area.	where appropriate. The Applicant therefore do not consider there to be a pathway for a cumulative impact on the Inner Dowsing sandbank.
Sandbank-sandwave migration	
Evidence provided by the Applicant in [APP-152] demonstrates that the sandbanks in the west of IDRBNR SAC i.e. Inner Dowsing (but including those outside of the boundary of the site) are advancing to the west and therefore towards the proposed ORCP locations. Sandbank migration rate at this SAC/ORCP area has been estimated as ranging from 10-60m during construction, 100-490m during an initial operational period of 25 years and 170-840m during an extended operational period of 45 years. Therefore, Natural England advises that further consideration needs to be given to the potential effect of sandbank migration, and significant seabed elevation changes at the ORCP area in terms of asset integrity. Conversely, consideration also needs to be given to the potential effect of the ORCP structures interacting with the migrating sandbank-sandwave system. More detailed modelling and bathymetric analysis may enable refinement or validation of the estimates of sandbank-sandwave migration rates.	The Seabed Mobility Report (APP-152) was prepared as a preliminary study to inform engineering and design requirements, and it was not intended either as a comprehensive baseline characterisation of the physical environment, or as an assessment of the environmental effects. The baseline understanding of the marine physical processes within the study area has been developed through consideration of a range of project-specific and existing data sources as outlined in Section 7.4.2 of REP4a-029 and AS-003. As outlined in Section 3.2, the Inner Dowsing sandbank is understood to be a relict feature with a veneer of sand bedforms maintained by tidal currents (JNCC, 2010). This is further corroborated by the classification of Inner Dowsing as “Moribund/Relict” within Natural England Commissioned Report NECR550 (Reach *et al.*, 2025). Given this classification, the Applicant consider the migration of the Inner Dowsing sandbank outwith the SAC boundaries to be highly unlikely, and that the assessment provided is appropriate.

26. Based on the reasoning and further information provided within this Clarification Note, the Applicant believes that all the necessary information required to achieve a robust EIA assessment has been included in the documentation submitted with the DCO application and during Examination. The Applicant considers that the assessments have been undertaken using robust data and best-practice methods, and have been made with due consideration of the proximity of the proposed ORCP area to the Inner Dowsing sandbank. There is not a conceptual pathway of effect from tidal or wave blockage from the ORCPs on the Inner Dowsing sandbank due to the baseline conditions at the site (i.e. the direction of tidal flows and waves), which is corroborated by the numerical modelling results. The effects arisings from modification to the wave and tidal regime and associated potential impacts to seabed morphology resulting from the presence of the ORCPs have therefore been identified as of minor adverse significance, with due regard given to the proximity of the Inner Dowsing sandbank. The Applicant therefore maintain that there will be no Adverse Effect on Integrity (AEoI) on the IDRBNR SAC from wave and tidal blockage effects from the presence of the ORCPs, as there is no impact pathway which would act to prevent the achievement of the site's conservation objectives, including the maintenance or restoration of the structure, function, and supporting processes of the qualifying habitats and species.

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3 ORCP Physical Processes Clarification Note 2 dated 4th July 2025

Executive Summary

This note provides further assurance to Natural England that the presence of the Offshore Reactive Compensation Platform (ORCP) will not result in an Adverse Effect on Integrity (AEoI) on the features of the Inner Dowsing, North Ridge and Race Bank (IDRBNR) Special Area of Conservation (SAC).

In the meeting held on 11 June 2025, Natural England highlighted the following remaining concerns relating to the presence of the ORCPs:

- the presence of the ORCPs adjacent to the IDRBNR SAC and Inner Dowsing sandbank could modify waves, hydrodynamics and sediment transport and in turn lead to morphological change within the SAC;
- that all mitigation options should be explored, following update to the bedform migration assessment, and these options could include (but not exclusively) consideration for siting the ORCPs as far to the west of their ORCP area (thereby increasing their distance from the SAC/sandbanks to the east); and
- that currently indirect impacts which could hinder the conservation objectives of IDRBNR SAC cannot be excluded; and without further evidence Natural England are unable to advise further on the scale and significance of these impacts.

Section 2 of the note provides an overview of the impact assessment. The conclusions were that there is no conceptual pathway of effect resulting from tidal or wave blockage from the ORCPs on features of the IDRBNR SAC, including the Inner Dowsing sandbank. This is based on understanding of baseline conditions and is further supported by numerical modelling using best practise methods, which shows that any change to the regime parameters occurs towards the north and south (for tidal currents; Figure 2) and towards the south-west (for waves; Figure 3). To address Natural England's concerns during the examination the Applicant also committed to not using gravity-based structures (GBS) for the ORCP to reduce potential impacts. As the modelling used to inform Chapter 7: Marine Physical Processes (REP4a-029) is still based on a worst case scenario of using GBS for the ORCP, the modelling and results of the assessment are now even more conservative .

Section 2.3 provides response to issues raised by Natural England relating to sandbank migration. Whilst the Applicant maintains that there is no pathway for effect to the SAC, the Applicant acknowledges Natural England's concerns and, in response, has proposed the implementation of a 500m ORCP Restriction Area (see Figure 1). Natural England explained that the Seabed Mobility Study suggests sandbank migration. However, as detailed in Section 2.3, this study is not appropriate for environmental impact considerations as the highly conservative values used have informed early stage design from an engineering perspective and are not based on site-specific data. The Applicant considers the estimates of sandbank migration should be approached with caution when considered alongside existing, regulatory, publications (JNCC, 2010; Reach *et al*., 2025) which are more appropriate. Based on these rates, the Applicant considers that the ORCP Restriction Area is suitable mitigation to any potential sandbank migration, and the conclusion of no AEoI remains.

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Acronyms & Definitions

Abbreviations / Acronyms

Abbreviation / Acronym	Description
AEoI	Adverse Effect on Integrity
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
GBS	Gravity Based Solutions
GT	The Applicant. The special project vehicle created in partnership between Corio Generation (and its affiliates), Gulf Energy Development and TotalEnergies
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
IDRBNR	Inner Dowsing, Race Bank and North Ridge
ODOW	Outer Dowsing Offshore Wind (The Project)
ORCP	Offshore Reactive Compensation Platform
OWF	Offshore Wind Farm
PDE	Project Design Envelope
SAC	Special Area of Conservation

Terminology

Term	Definition
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation (and its affiliates), Total Energies and Gulf Development (GULF)), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation, TotalEnergies and GULF.
Baseline	The status of the environment at the time of assessment without the development in place.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
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.

Term	Definition
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.
Export cables	High voltage cables which transmit power from the Offshore Substations (OSS) to the Onshore Substation (OnSS) via an Offshore Reactive Compensation Platform (ORCP) if required, which may include one or more auxiliary cables (normally fibre optic cables).
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Maximum Design Scenario	The project design parameters, or a combination of project design parameters that are likely to result in the greatest potential for change in relation to each impact assessed
Mitigation	Mitigation measures 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 Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Order Limits within which the export cables running from the array to landfall will be situated.
Offshore Reactive Compensation Platform (ORCP)	A structure attached to the seabed by means of a foundation, with one or more decks (including bird deterrents) housing electrical reactors and switchgear for the purpose of the efficient transfer of power in the course of HVAC transmission by providing reactive compensation
Offshore Reactive Compensation Platform Area Restriction Area	The Area within the Offshore Reactive Compensation Platform Area, where no Offshore Reactive Compensation Platforms can be erected
Outer Dowsing Offshore Wind (ODOW)	The Project.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Project design envelope	A description of the range of possible elements that make up the Project's design options under consideration, as set out in detail in the project description. This envelope is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
Study Area	Area(s) within which environmental impact may occur – to be defined on a receptor-by-receptor basis by the relevant technical specialist.

1 Introduction and Document Purpose

1 GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Applicant submitted an application for a DCO ('the Application') for the Project to the Planning Inspectorate in March 2024, which was accepted for Examination in April 2024. The Examination ran from 10 October 2024 to the 10 April 2025.

2 As part of the Project Design Envelope (PDE) outlined for the DCO Application (Chapter 3: Project Description (REP5-009)), up to two ORCPs may be required along the export cable corridor, located within the ORCP area identified within the Offshore ECC. At the point of Application, optionality was retained along a section of the Offshore ECC, with two ORCP areas identified (northern and southern). These areas were characterised within the baseline presented in Appendix 7.1: Physical Processes Technical Baseline (AS-003) and assessed within Chapter 7: Marine Physical Processes (REP4a-029). The northern ORCP option was removed shortly after the submission of the Environmental Statement, due to the northern option being occupied by an aggregate extraction licence area and therefore not available to the Applicant.

3 The Applicant submitted a Change Notification (AS-032) on the 20th February 2025 to remove the GBS option for the ORCPs. The Examining Authority (ExA) confirmed that this amendment did not require a formal Change Request (PD-024). The Draft DCO (AS-042) was updated to remove the GBS option for the ORCPs and therefore this change forms part of the Project proposals. Modelling used to inform Chapter 7: Marine Physical Processes (REP4a-029) remained based on a worst-case scenario of using GBS for the ORCP. Therefore, the modelling results presented in Chapter 7 (REP4a-029) represent a highly conservative modelling scenario.

4 This note has been prepared to provide clarifications to address the comments from Natural England in their formal statutory response to the Outer Dowsing Offshore Windfarm (ODOW) Examination Deadline 6 on the topic of Marine Physical Processes, specifically with regard to the potential impacts of the Offshore Reactive Compensation Platform(s) (ORCP) on the Inner Dowsing, Race Bank and North Ridge (IDRBNR) Special Area of Conservation (SAC). The position and extent of the proposed ORCP Area relative to the IDRBNR SAC is shown in Figure 1, with the ORCP Area being 0.36% of the size of the IDRBNR SAC (ORCP area approximately 3km^2 and IDRBNR SAC area 845km^2).

5 Natural England have outlined the following concerns within Appendix B5 – Natural England's Advice on Marine Processes regarding the Proposed ORCP Area (REP6-159) at Deadline 6:

- That the presence of the ORCPs adjacent to the Inner Dowsing, Race Bank and North Ridge (IDRBNR) Special Area of Conservation (SAC) and Inner Dowsing sandbank could modify waves, hydrodynamics and sediment transport and in turn lead to morphological change to Annex I interest features within the SAC;
- That more information is needed to support the Applicant's conclusions;

- That all mitigation options should be explored, following update to the bedform migration assessment, and these options could include (but not exclusively) consideration for siting the ORCPs as far to the west of their ORCP area (thereby increasing their distance from the SAC/sandbanks to the east);
- That currently indirect impacts which could hinder the conservation objectives of IDRBNR SAC cannot be excluded; and without further evidence Natural England are unable to advise further on the scale and significance of these impacts;
- That the potential cumulative impacts to the SAC seabed morphology, due to the the presence of the ORCPs and other nearby developments or activities (e.g. the Lincs Offshore Wind Farm (OWF)), should be considered; and
- That further consideration needs to be given to the potential effect of sandbank migration (due to evidence of sandbank migration provided in the Seabed Mobility Study (APP-152)) and resulting interactions between the ORCP structures and the migrating sandbank-sandwave system.

6 NE also submitted Appendix J6 – Natural England's Risk and Issues Log at Deadline 6 (REP6-154), which refers both to Appendix B5 and Appendix B3 (REP5-163) and advises that more detailed bathymetric and modelling data is needed for the ORCP/SAC area to adequately demonstrate the scale and extent of potential changes to the wave, tidal current and sediment transport regimes due to the presence of the ORCPs over the lifetime of the Project.

7 This clarification note has been prepared to collate the information provided to date regarding the potential impact of the ORCPs, and to provide further clarification of the assessments undertaken, to provide evidence to enable Natural England to conclude no AEoI for the IDRBNR SAC.

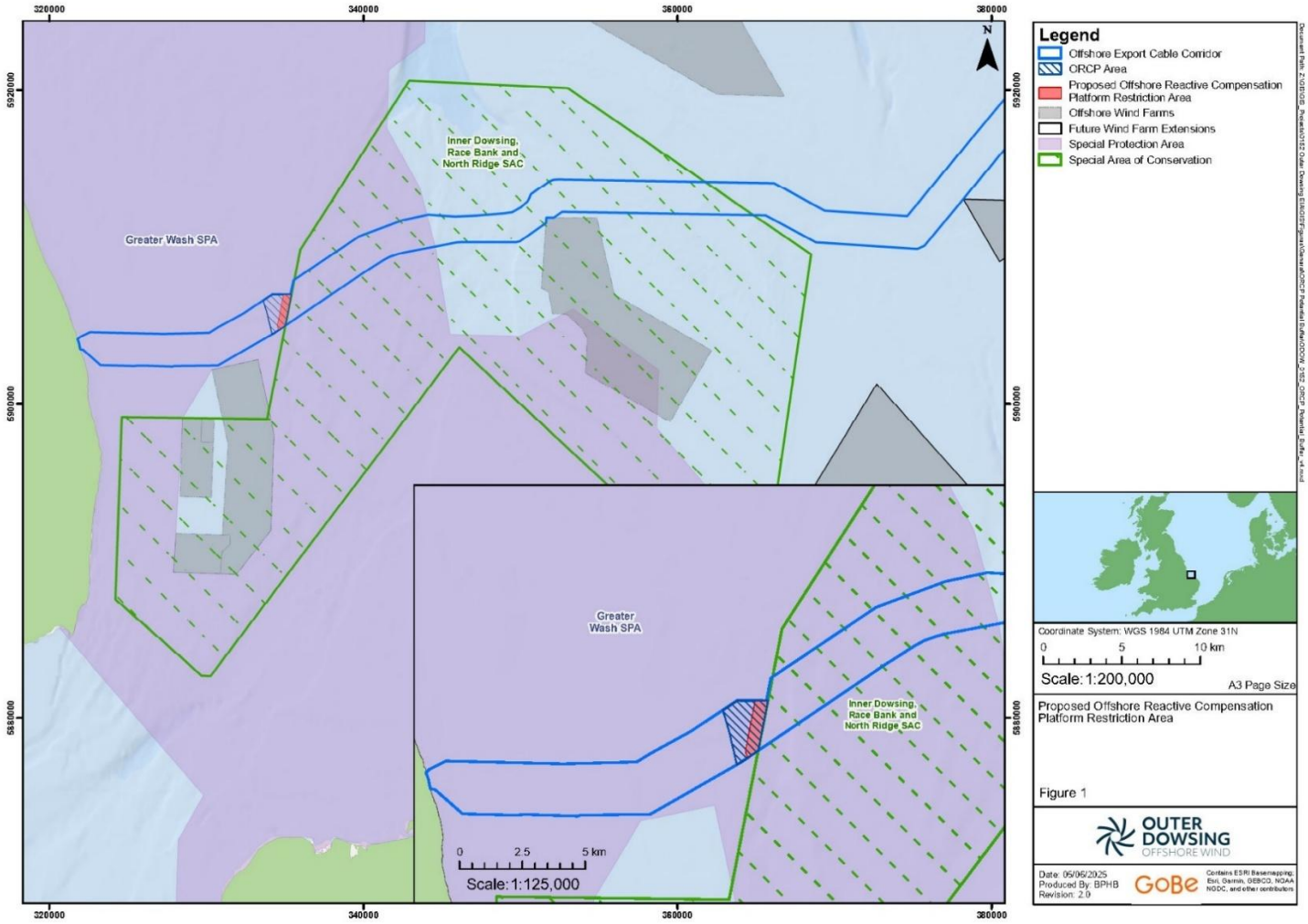

Figure 1 Location of the proposed Offshore Reactive Compensation Platform Restriction Area

2 Impact Assessment

2.1 Modification to Wave and Tidal Regime

8 Numerical modelling was undertaken for the Environmental Statement and updated following the removal of the northern Offshore ECC route. Numerical wave and tidal blockage modelling was informed by a range of data sources including high-resolution bathymetry data collected along the offshore ECC (GEOxyz, 2022). The numerical modelling was carried out using best-practice methods as agreed with Natural England and other stakeholders prior to submission (as outlined in Table 7.2 of Chapter 7 (REP4a-029), with details provided in Consultation Report Appendix 15 Evidence Plan Processes Consultation (APP-052)). These methods, as well as the resolution of the hydrodynamic model, are in line with those used on other recent offshore wind DCO applications including East Anglia One (North) and East Anglia Two, Five Estuaries, Dogger Bank South, Mona, and Morgan.

9 The baseline conditions (as detailed in Appendix 7.1: Physical Processes Technical Baseline (AS-003) are such that there is not a conceptual pathway of effect resulting from tidal or wave blockage from the ORCPs towards the east, where the Inner Dowsing sandbank is located. Tidal flows at the ORCP location are aligned from north to south, as shown in modelled regional tidal ellipses presented in Figure 7.4 (AS-003) (ABPmer *et al.*, 2008) and corroborated by the modelled hydrodynamic velocity vectors shown in Figure 2. At this location, waves predominantly occur from the north-northeast and north-east, as demonstrated by observational wave records (Environment Agency, 2021).

10 The evidence base for hydrodynamic blockage effects demonstrates that reductions in current speeds will take place primarily downstream of the foundation structures (Li *et al.*, 2016; Cazaneve *et al.*, 2016). Similarly, for the wave blockage, the presence of the foundation will cause a small modification to the wave as they pass, generally resulting in a wave shadow effect in the lee of the structure.

11 This is supported by the numerical model results, which show that any change to the regime parameters occurs towards the north and south (for tidal currents; Figure 2) and towards the south-west (for waves; Figure 3), as well as the sediment mobility analysis provided in Chapter 7 (REP4a-029) Annex A. Localised current speed reductions of up to 0.14m/s may occur during high current conditions. However, these changes are limited in both spatial and temporal extent, and are not directed towards the sandbank to the east. Similarly, the results of the wave blockage modelling demonstrate that the wave shadow will not propagate eastward.

12 Furthermore, this modelling represents a conservative scenario due to the representation of slab-based Gravity Base Structure (GBS) foundations for the ORCPs, which are no longer an option within the projects design envelope as of Examination Deadline 4a (see paragraph 3). Suction bucket jacket foundations (now the worst-case scenario which could actually be utilised for ORCPs in terms of potential blockage effects) have a smaller surface area in the water column than GBS foundations and therefore provide less interruption to hydrodynamic flows (ICF, 2020). This is demonstrated by the comparison of normalised blockage factor[1] presented within Appendix 7.1 (AS-003) Annex B. The MDS foundation typehas a blockage factor approximately 50% lower than that represented in the modelling.

13 Due to the lack of conceptual pathway, supported by numerical model results carried out in line with best-practice methods, the Applicant does not consider that there is a requirement for the collection of more detailed bathymetric surveys or higher resolution wave and tidal modelling data. The assessments have been undertaken using robust data and best-practice methods and have been made with due consideration of the proximity of the proposed ORCP area to the Inner Dowsing sandbank. The Applicant therefore maintains that there will be no Adverse Effect on Integrity (AEoI) on the IDRBNR SAC from wave and tidal blockage effects from the presence of the ORCPs.

2.2 Cumulative Impacts

14 As part of their position at Deadline 6 (REP6-159), Natural England advised that potential impacts to the SAC seabed morphology due to the presence of the ORCPs should not be considered in isolation, and that the potential for cumulative impacts with other nearby developments or activities should be considered. As outlined previously, the assessments carried out as part of the Environmental Statement demonstrate that any changes to the wave and tidal regime will be restricted in both spatial and temporal extent, with no conceptual pathway towards the east. Consequently, these changes will not affect the form and function of the Inner Dowsing sandbank. This is also the case for the Lincs OWF, which is similarly located to the west of the Inner Dowsing sandbank in an area of north-south directed tidal currents (ABPmer *et al*. 2008).

[1] The blockage factor is a measure of the fraction of the total cross-sectional area of the water column that is occupied by the wind turbines and their foundations.

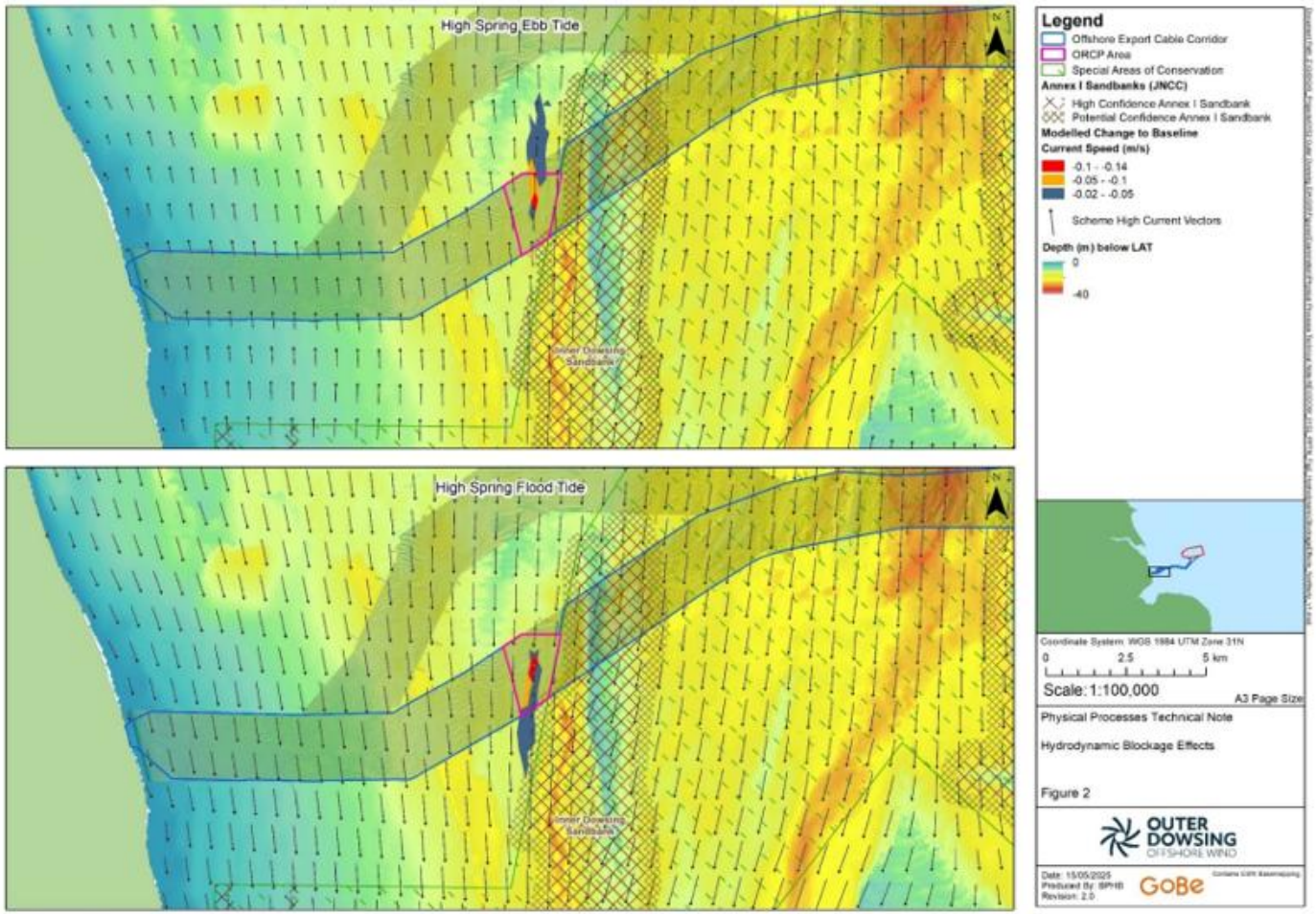

Figure 2 Hydrodynamic Blockage Effects

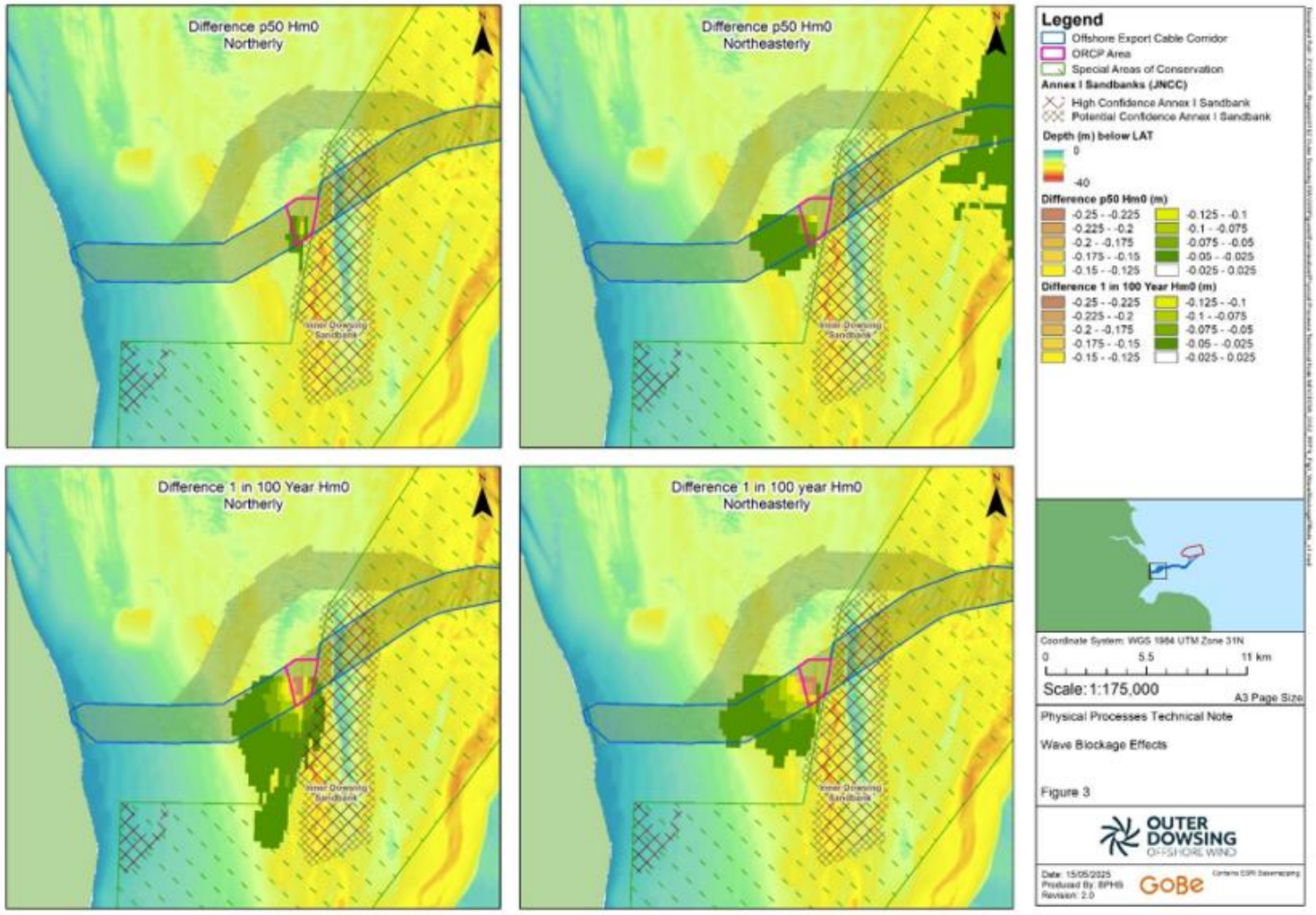

Figure 3 Wave Blockage Effects

2.3 Sandbank Migration

15 Following the close of Examination, the Applicant met with Natural England on the 11 June 2025 to discuss the remaining concerns. Whilst the Applicant maintains that there is no pathway for effect to the SAC, Natural England's concerns are acknowledged. In response to Natural England's advice that all mitigation options should be explored including the siting of the ORCPs further west within the ORCP area, the Applicant proposed the implementation of an ORCP Restriction Area. This area establishes a 500m zone between the ORCPs and the IDRBNR SAC boundary within which no ORCPs can be constructed (see Figure 1). This reduces the ORCP Area from 3.00km^2 to 1.92km^2.

16 Natural England agreed that the proposed ORCP Restriction Area provides suitable confidence that there would be no AEoI on the IDRBNR SAC over the project's operational lifetime. However, they raised concerns regarding potential impacts beyond the operational lifetime, particularly in relation to the possible westward migration of the sandbank feature. This reflects submissions made within Appendix B5 – Natural England's Advice on Marine Processes regarding the Proposed ORCP Area (REP6-159) at Deadline 6, where Natural England highlight estimates of potential sandbank migration presented in the Seabed Mobility Report (Table 6.1) and advise further consideration of the potential effect of sandbank migration.

17 As outlined in previous submissions, the Seabed Mobility Report was prepared as a preliminary study to inform engineering and design requirements, and it was not intended either as a comprehensive baseline characterisation of the physical environment, or as an assessment of the environmental effects. The baseline understanding of the marine physical processes within the study area has been developed through consideration of a range of project-specific and existing data sources as outlined in Section 7.4.2 of REP4a-029 and AS-003.

18 The morphological status of the Inner Dowsing sandbank is documented in the following regulatory publications:

- Inner Dowsing, Race Bank and North Ridge SAC Selection Assessment document (JNCC, 2010): "*relict feature with a veneer of sand bedforms" (from ENTEC UK Ltd, 2008)*; and
- Seabed Infrastructure in Marine Protected Areas with Designated Subtidal Sandbanks (Natural England Commissioned Report NECR550 (Reach *et al.*, 2025), published April 2025): *classified as "Moribund/Relict"* (within Table 5).

19 Both the JNCC (2010) and Reach *et al*. (2025) publications state that the Inner Dowsing sandbank is a relict feature, as does the supplementary conservation advice provided by Natural England. Given the classification within these documents, the Applicant considers that the migration of the Inner Dowsing sandbank outwith the SAC boundaries to be highly unlikely. As stated in the Applicant's Responses to Relevant Representations (PD1-071), evidence provided in Centrica (2007) suggests that although the Inner Dowsing bank has experienced some changes in crest level, it remains broadly in the same position and alignment. This understanding has informed the assessments and conclusions adopted in the Environmental Statement and RIAA, that no AEoI would occur on the IDRBNR SAC from the presence of the ORCP.

20 During the 11 June meeting, Natural England highlighted that the NECR550 report (Reach *et al*., 2025) was based on the best available evidence. Natural England also highlighted that the Seabed Mobility Report, published in April 2024, contains data suggesting potential sandbank migration, and that this should be considered as the most recent information on the site. The Applicant do not consider this to be appropriate, based both on the purpose of Seabed Mobility Report itself as well as the specific sandbank migration figures highlighted by Natural England.

21 As outlined, the Seabed Mobility Report was developed as a preliminary engineering assessment. When using this report to inform environmental assessments or baseline characterisation, several limitations must be considered. These include:

- Those limitations (concerning data and methodology) presented in Section 2.2.1.3, Section 2.2.2.1, Section 3.1.3, and Section 3.3.4 (noting that limitations are presented in relation to the document's purpose as an engineering assessment), which include (but are not limited to):
  - Bedform crest mapping was conducted using only two epochs, which is considered the absolute minimum data needed to identify a change; and
  - Data acquisition was primarily undertaken in winter and early spring, a period of typically higher metocean activity, meaning that rates of movement in this period may not be representative of typical averaged annual migration of sedimentary features.
- That worst-case scenarios for engineering purposes are designed with different objectives than those for environmental assessments.

22 Engineering scenarios focus on structural integrity under extreme conditions which are unlikely to occur in practice and are not appropriate for environmental impact considerations. This is demonstrated by the level of precaution which has been applied in Table 6.1 of the Seabed Mobility Report (referred to by Natural England), which presents indicative sandbank migration distances for low (3.5m/yr), medium (7.5m/yr) and maximum (17.5m/yr) migration scenarios.

23 The maximum migration rate of 17.5m/yr results in a total of 840m of potential migration over the extended operational period of 45 years. As explained within Seabed Mobility Report (in the paragraphs above Table 6.1), this indicative maximum rate of migration is based on sandbank migration documented elsewhere in the Southern North Sea in previous commissions by the survey provider and as such is neither specific to the Project nor located within the IDRBNR SAC. The Applicant therefore do not consider these estimates to be reflective of conditions at the Inner Dowsing sandbank. Subsequently, it is reasonable to treat these estimates of sandbank migration with caution when considered alongside existing, regulatory, publications (JNCC, 2010; Reach *et al*., 2025) which are also data-driven. Although the Applicant is fully cognisant of the need to apply precaution as part of the environmental assessments, the maximum migration scenario set out in the Seabed Mobility Report is not supported by other evidence or data from the site itself, and would not constitute the best available evidence for the purposes of environmental assessment.

24 Notwithstanding the information presented in the preceding paragraphs, the Applicant has acknowledged Natural England concerns and proposed an ORCP restriction area of 500m between the ORCP(s) and the IDRBNR SAC. As presented in Figure 4, the restriction area/buffer inherently includes the following distances:

- 1,086m between the ORCP(s) and the High Confidence Sandbank Habitat area defined by JNCC (2019); and
- 1,250m between the ORCP(s) and the sandbank location, as defined by survey results from GEOxyz. (2022c)

25 Therefore, the ORCP Restriction Area allows for the potential migration[2] of the sandbank from these locations over a possible extended operation period[3], defined, using the maximum migration rate[4], as 840m. When the medium migration rate of 7.5m/yr is applied (which is based on comparison of data collected at the site as opposed to regionally), the total sandbank migration is predicted as 360m over the extended operational lifetime. This migration, if it were to occur, would not exceed the westward boundary of the ORCP Restriction Area, meaning that it is unlikely there would be any interaction between the sandbank and the ORCP.

[2] Albeit with low confidence, as presented in Paragraph 16.
[3] Defined as 45 years.
[4] Rate defined as 17.5 m/yr based upon on sandbank migration documented elsewhere in the Southern North Sea in previous commissions by the survey provider and as such is neither specific to the Project nor located within the IDRBNR SAC. The value should therefore be considered highly conservative given that the observed Project and IDRBNR values presented within the Seabed Mobility Report range between 2.7 m/yr and 7.5 m/yr.

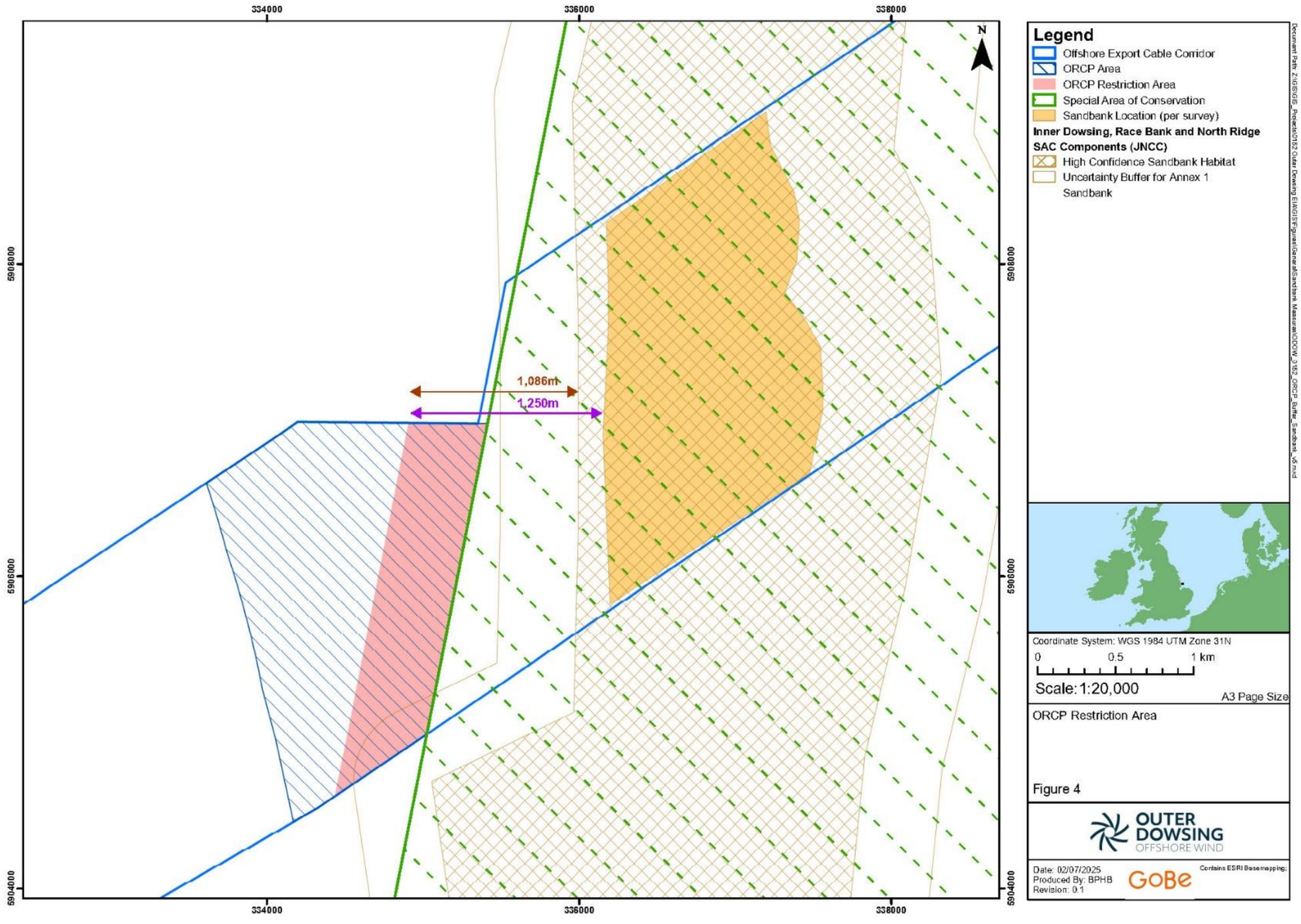

Figure 4 The distances between the JNCC boundary of the IDRBNR SAC components and the Project survey location to the ORCP area and ORCP restriction area.

3 Conclusions

26 The Applicant concludes no Adverse Effect on Integrity (AEoI) on the IDRBNR SAC from the proposed ORCP Area and associated infrastructure on the basis that:

- There is no conceptual pathway, as supported by numerical model results, between the presence of the ORCP structure via tides and waves, to the IDRBNR SAC;
- The maximum sandbank migration estimates provided in the Seabed Mobility Study are highly conservative and do not reflect existing regulatory publications (JNCC, 2010; Reach *et al*., 2025); and
- The commitment to the 500m restricted build/buffer zone at the eastern extent of the Proposed ORCP Area places the ORCP structure, at its closest possible location, 1,086m from the High Confidence Sandbank Habitat area defined by JNCC.

27 This demonstrates that there is no pathway of effect from the ORCP on the Inner Dowsing sandbank, in its current location, from wave and tidal blockage effects. The suggested westward migration of the Inner Dowsing sandbank, as presented in the Seabed Mobility Study, is highly conservative and inconsistent with other evidence, including regulatory publications (JNCC, 2010; Reach *et al*., 2025). Furthermore, even if this suggested migration were to take place, interactions between the ORCP and sandbank would be mitigated by the commitment to the ORCP Restriction Area. The Applicant therefore maintains that there will be no AEoI on the IDRBNR SAC.

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