Outer Dowsing Offshore Wind

Deadline 5 submission

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Glossary of Acronyms

DCO	Development Consent Order
DOWL	Dudgeon Offshore Wind Limited
DEL	Dudgeon Extension Limited
DEP	Dudgeon Offshore Wind Farm Extension Project
SEL	Scira Extension Limited
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SOEL	Scira Offshore Energy Limited
SoS	Secretary of State for Energy Security and Net Zero
SS	Sheringham Shoal
WTG	Wind Turbine Generators

Glossary of Terms

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.
DEP Array area	The area offshore within which the DEP wind turbine generators (WTG), offshore substation, and infield, interlink and export cables will be positioned.
Dudgeon Array Area	The area offshore within which the Dudgeon wind turbine generators (WTG), offshore substation, and infield and export cables are positioned.
Dudgeon Offshore Wind Farm (Dudgeon)	The Dudgeon Offshore Wind Farm including all onshore and offshore infrastructure.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
Equinor	Equinor New Energy Limited acting on behalf of Scira Extension Limited (SEL) and Dudgeon Extension Limited.
Equinor IPs	Scira Offshore Energy Limited, Dudgeon Offshore Wind Limited, Scira Extension Limited and Dudgeon Extension Limited, together or in any combination.
Orsted IPs	Hornsea 1 Limited, the collective of Breesea Limited, Soundmark Wind Limited, Sonningmay Limited and Optimus Wind Limited (together, the “Hornsea 2 Companies”), Orsted Hornsea Project Three (UK) Limited, Orsted Hornsea Project Four Limited, Lincs Wind Farm Limited, Westermost Rough Limited and Race Bank Wind Farm Limited, together or in any combination.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Project Array area	The area offshore within which the Project’s generating station (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling will be positioned.

SEP and DEP Order	Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024.
SEP Array area	The area offshore within which the SEP wind turbine generators (WTG), offshore substation, and infield, interlink and export cables will be positioned.
Sheringham Shoal Array area	The area offshore within which the Sheringham Shoal wind turbine generators (WTG), offshore substations, and infield and export cables are positioned.
Sheringham Shoal Offshore Wind Farm (SS)	Sheringham Shoal Offshore Wind Farm including all onshore and offshore infrastructure.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.

1 Introduction

1. GT R4 Limited (trading as Outer Dowsing Offshore Wind) ("The Applicant") has made an application for development consent for the construction and operation of the Outer Dowsing Offshore Wind project ("the Project").

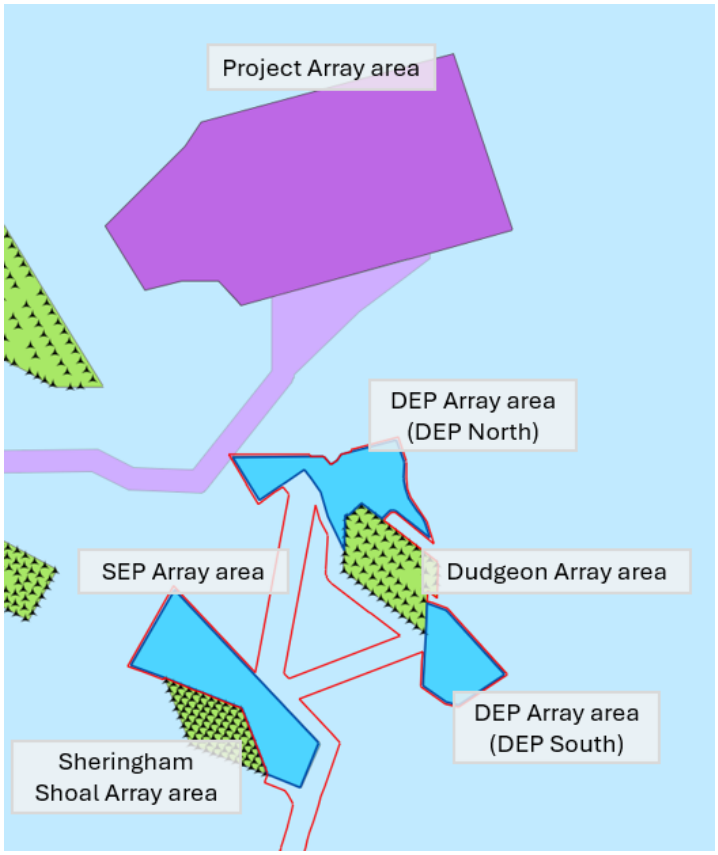
2. Equinor New Energy Limited ("Equinor") is developing the Sheringham Shoal Extension Project ("SEP") and the Dudgeon Extension Project ("DEP") on behalf of Scira Extension Limited ("SEL") and Dudgeon Extension Limited ("DEL") and has submitted a relevant representation on behalf of SEL and DEL.

3. Dudgeon Offshore Wind Limited ("DOWL") is the owner of the Dudgeon Offshore Wind Farm (Dudgeon) which is located approximately 32 km from the North Norfolk Coast in the Southern North Sea and has been operating since 2017. Scira Offshore Energy Limited ("SOEL") is the owner of the Sheringham Shoal Offshore Wind Farm ("SS"), which is located approximately 20 km from the North Norfolk Coast in the Southern North Sea and has been operating since 2012. Dudgeon and SS are operated by Equinor on behalf of DOWL and SOEL.

4. Following its review of the Wake Loss Technical Note [REP4-114] Equinor has registered DOWL and SOEL as Interested Parties in the Examination (see [REP4a-126] and [REP4a-131]). The Planning Inspectorate confirmed by email on 10 March 2024 that SOEL and DOWL will be treated as Interested Parties for the remainder of the Examination. Equinor's view expressed in [REP4a-128] applies equally to DOWL and SOEL.

5. This representation has been drafted by Equinor on behalf of SEL, DEL, SOEL and DOWL, who will henceforth be referred to as the Equinor interested parties ("Equinor IPs"). This follows a similar approach to that taken by the Orsted IPs.

6. The distance between the DEP Array area and the Project Array area is 13.3 km. The distance between the SEP Array area and the Project Array area is 25.8 km. The distance between the Dudgeon Array Area and the Project Array Area is 19.9 km. The distance between the Sheringham Shoal Array area and the Project Array Area is 34.0 km. The separation between the Project Array area, the SEP Array area, the DEP Array area, the Dudgeon Array Area and the Sheringham Shoal Array Area is illustrated in Figure 1.



7. **Figure 1 - The Project Array area, Sheringham Shoal Array area, Dudgeon Array area, SEP Array area and DEP Array area**

8. Equinor has previously made a submission on behalf of SEP and DEP which provides more detail on the discussions that have taken place between these parties and the Applicant to date [see REP4a-128 and REP4a-129].

2 Wake Effects

9. The Applicant submitted an assessment of the impacts of the Project as a result of wake effects on other offshore windfarm developments close to the proposed order limits of the Project at Deadline 4, 21.9 Wake Loss Technical Note [REP4-114]. The Wake Loss Technical Note [REP4-114] makes reference to the predicted impacts on the energy yield of the Equinor IPs as a result of wake effects caused by the Project. The Equinor IPs note the Applicant's view in the Wake Loss Technical Note [REP4-114] that "*relevant policy does not require further assessment in the circumstance of its application*". However, this assertion is contrary to the Secretary of State's decision in relation to the Awel y Mor Offshore Wind Farm Order 2023, where the SoS endorsed the ExA's view that a wake effect assessment should be undertaken (see section 3 of this submission below).

10. Following the publication of the Wake Loss Technical Note [REP4-114] at Deadline 4, Equinor entered into discussions with the Applicant on the issue of wake effects on 25 February 2025.

11. At Deadline 4a of the Examination, Equinor submitted Equinor's Comments on 21.9 Wake Loss Technical Note [REP4a-128] which provided Equinor's initial comments on the Wake Loss Technical Note [REP4-114] and on related examination documents on the topic of wake loss submitted by the Applicant, Ørsted IPs and The Crown Estate at Deadline 4.

12. At Deadline 4a Ørsted IPs submitted the Outer Dowsing Project Wake Study at Appendix 1 of their Deadline 4a submission [REP4A-125a]. The Ørsted modelling on anticipated wake effects produces different levels of impact than the Wake Loss Technical Note [REP4-114] produced by the Applicant (see Section 4, Technical Analysis).

3 Materiality of Impacts to the Equinor IPs

13. In its Deadline 4a submission commenting on the Applicant's Wake Loss Technical Note [REP4-114], Equinor concludes that the assessment presented in the Wake Loss Technical Note [REP4-114] demonstrates significant impacts on the operation, energy yields and commercial interests of the Equinor IPs resulting in economic loss to them.

14. In the Wake Loss Technical Note [REP4-114], the Applicant states that it "*does not consider these wake effects to be significant in EIA terms*". However, in the view of the Equinor IPs this statement does not correctly reflect the national policy position set out in the NPS.

15. The Examining Authority in its written questions "*notes the provisions of National Policy Statement (NPS) EN-3, including paragraphs 2.8.197, 2.8.198, 2.8.345, 2.8.347, Requirement (R)25 of The Awel y Mor Offshore Wind Farm Order 2023 and the conclusions of SoS for DESNZ on this project that a wake assessment was required*" [PD-013].

16. Paragraph 2.8.197 requires that, "*where a potential offshore wind farm is proposed close to existing operational offshore infrastructure, or has the potential to affect activities for which a licence has been issued by government, the applicant should undertake an assessment of the potential effects of the proposed development on such existing or permitted infrastructure or activities.*"

17. Paragraph 2.8.198 states that the "*assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy and guidance for offshore wind farm EIAs.*"

18. In the Awel y Mor decision, the SoS endorsed the ExA's view "*that NPS EN-3 does apply to offshore wind farm effects on other windfarms*" and therefore *"existing offshore wind farms do fall within the definition of existing operational infrastructure".* The ExA reasoned that "*had NPS EN-3 intended to exclude existing wind farms this would have been made explicit."* It is therefore uncontentious that SEP, DEP, SS and Dudgeon do fall within the definition of "*existing operational offshore infrastructure*" meaning that an assessment under 2.8.197 and 2.8.198 is required.

19. The SoS decision-making section of NPS EN-1 must be read together with the policy requirements relating to other offshore infrastructure above. In particular paragraph 2.8.342 of NPS EN-3 states that "*where a proposed offshore wind farm potentially affects other offshore infrastructure or activity, a pragmatic approach should be employed by the Secretary of State*". Paragraph 2.8.345 then goes on to state that "…*the Secretary of State should be satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries*." Paragraph 2.8.345 should be read together with paragraph 2.8.197 as the SoS would not be able to satisfy themselves under paragraph 2.8.345 without having the benefit of an assessment of the potential effects on the existing offshore infrastructure. The SoS therefore requires the wake loss assessment to be undertaken so that it can apply the policies of the NPS EN-3 and exercise its decision-making powers.

20. The Equinor IPs therefore respectfully disagree with the Applicant's view that "*Paragraph 2.8.345 of NPS EN-3 does not apply to wake effects between proposed and existing or consented offshore wind developments."* It is clear from the Awel y Mor decision and the NPS EN-3 itself that the SoS considers that it does. Consequently, economic loss to the Equinor IPs arising from the Project is relevant to the SoS's decision.

21. Where impacts are anticipated, the Applicant must seek to avoid, minimise or compensate those impacts. The Applicant has not demonstrated that their site selection and site design of the Project has been made with a view to avoid or minimise disruption or economic loss to the Equinor IPs. As is usual for offshore wind projects the Applicant has yet to finalise its design and so the SoS cannot be satisfied at this stage that the design of the Project seeks to minimise impacts to the Equinor IPs' operations and avoid any consequential economic loss. Given the complexity of the issue, the view of the Equinor IPs is that the Applicant will not be able to mitigate the impacts due to there being a residual degree of economic loss regardless of any mitigation measures implemented. Moreover the level of impact of the final project design to the Equinor IPs' assets are unknown at this stage and consequently, protection should be provided for SEP, DEP, SS and Dudgeon due to the likely (albeit unquantified) material impacts that the Project will cause to their operations leading to the associated economic loss.

22. The Equinor IPs position is that wake loss effects do not need to be significant in EIA terms for the NPS policy to apply. The wake loss effects potentially caused by the Project are likely to result in economic loss to the Equinor IPs and therefore the Project is likely to cause a commercial impact to the Equinor IPs which they consider to be material.

23. The Equinor IPs are further concerned that the potential effects caused by the Project to them could affect their viability. Paragraph 2.8.347 of EN-3 of the NPS states that "*where a proposed development is likely to affect the future viability or safety of an existing or approved/licensed offshore infrastructure or activity, the Secretary of State should give these adverse effects substantial weight in its decision-making*." The policy position is that the economic success of other offshore projects is an important consideration for the SoS and should therefore be given substantial weight. This consideration does not only apply at the point at which such infrastructure become unviable or unsafe. This weighting aligns with broader government policy. The Government has published its strategy paper "Clean Power 2030 Action Plan: A New Era of Clean Electricity" which stipulates broad energy production targets for offshore wind.

24. For SEP and DEP the potential wake loss effect could materially affect the projects' competitiveness in securing a Contract for Difference. For SS and Dudgeon, the impact may curtail their ability to keep operating for as long as possible. The potential reduction in energy yield to SS and Dudgeon could impact the ability of these projects to continue to generate electricity economically, thus impacting their future viability to which the NPS EN-3 refers.

25. The wake loss effects to the SEP, DEP, SS and Dudgeon projects would reduce the contribution of those project towards the achievement of 2030 targets. Given that the SEP and DEP projects are consented, they should be an important contributor to the 2030 target, this may be compromised if the viability of these projects is impacted.

26. The wake loss effects to the SS and Dudgeon projects will commence around the time those projects reach the end of their current support mechanisms (Renewable Obligation Certificates and Contracts for Difference respectively). The continuing operation of these projects (and others of a similar age) form an important contribution to the achievement of Government's Clean Power 2030 targets and longer-term renewable targets. The wake loss effects place a risk on the commercial viability of the continued operation of these projects in a period where they will need to secure new offtake arrangements in an increasingly competitive market.

4 Technical Analysis

27. As outlined above, further to Equinor's submission at Deadline 4a [REP4a-128], DOWL and SOEL have registered as Interested Parties in the Examination. Equinor's views expressed in REP4A-128 in relation to the Ørsted IP's responses to written questions presented in [REP2-076] apply equally to SS and Dudgeon.

28. The Equinor IPs have reviewed the Applicant's Wake Loss Methodology Clarification Note [REP4a-119] and Ørsted's IP's - Deadline 4a Submission [REP4A-125a], particularly Appendix 1 of the latter document, and has the following comments in so far as they relate to SEP, DEP, SS, and Dudgeon.

29. The Equinor IPs support the views expressed by Ørsted IP's, that the Applicant's Wake Loss Technical Note [REP4-114] does not provide sufficient information on the model settings applied to determine the quality of the Applicant's wake modelling assessment. The Equinor IPs also note the difference in wake estimates provided by Ørsted in REP4A-125a to those presented by the Applicant. The Equinor IPs have similarly run their own wake modelling for SEP, DEP, SS and Dudgeon applying the Equinor IPs' own wake model and relevant assumptions about number of turbines in the Outer Dowsing array, the power curve and applying fewer turbines than the Applicant is consenting as a worst case. This moderate modelling scenario, with respect to input parameters and model settings, presents results similar to those presented by the Applicant as worst-case. Based on the information provided, the Equinor IPs do not therefore consider that the assessment presented in the Wake Loss Technical Note [REP4-114] is likely to represent the worst-case scenario for wake loss impacts on SEP, DEP, SS and Dudgeon.

30. The Applicant has applied an Eddy viscosity model with large windfarm correction which can underestimate wake losses, dependent on the assumptions made and model settings being used. Nevertheless, the range of estimates seen in the Equinor IPs' modelling, Ørsted's modelling and the modelling presented by the Applicant are as would be expected in this type of modelling. In all cases, the impacts presented give rise to potentially significant operational impacts for SEP, DEP, SS and Dudgeon.

31. The Equinor IPs also agree with Ørsted's comment in REP4A-125a that wake loss calculations have an uncertainty of at least 10%. Results are highly dependent on the chosen wake model and the parameters applied in that model, as well as assumptions about the climatic conditions. Equinor supports the suggestion from Ørsted that estimation of wake impacts are therefore best resolved through engaging an independent party to calculate the effect, ideally consisting of an ensemble wake modelling approach to account for the inherent uncertainties in wake models.

5 Mitigation

32. The Applicant concludes in its Wake Loss Technical Note [REP4-114] that "*it's not considered to be appropriate in EIA or policy terms to require any further mitigation*" in respect of the wake loss effects anticipated as a result of the Project. From a practical perspective, the Equinor IPs do not consider that any proposed operational mitigation measures will be effective in addressing the impact in any event and therefore are seeking that any economic loss arising from the wake loss effects is offset. Such losses cannot be quantified at this stage and therefore a mechanism will be required to secure protection through the DCO.

6 Protective Provisions and Side Agreement

33. In light of the above, the Equinor IPs will require protective provisions for the benefit of SEP, DEP, SS and Dudgeon to be included in the DCO. The Equinor IPs propose that these protective provisions will provide a framework to govern the principles between the parties.

34. The Equinor IPs understand that the Ørsted IPs intend to submit its preferred form of protective provisions into the Examination at Deadline 5, having shared these with the Applicant. Given the in-principle alignment between the Equinor IPs' and the Ørsted IPs' position on the issue of wake loss effects, the Equinor IPs consider it pragmatic to also seek alignment between the Ørsted IPs and the Equinor IPs proposed form of protective provisions. The Equinor IPs will therefore review any protective provisions submitted by Ørsted , and will submit a form of protective provisions in relation to their interests at Deadline 6 of the Examination.

35. Given the complexity of the wake loss effects issue, the Equinor IPs anticipate that a commercial side agreement may also be required alongside the protective provisions.

36. In terms of timescales, the Equinor IPs will submit a form of protective provisions into the Examination by Deadline 6 thus allowing sufficient time for them to be examined before the Examination closes. Given the early stage of discussions in relation to the side agreement, it is unrealistic to suggest that this could be agreed before the Examination closes.

7 Cooperation and Proximity

37. It should be noted that in accordance with [REP4a-128] Equinor on behalf of SEL and DEL only is continuing to progress discussions with the Applicant with respect to cooperation and proximity and will seek to include provisions in the protective provisions to cover these matters.

8 Conclusion

38. Given the potential material impacts to the SEP, DEP SS and Dudgeon projects, the Equinor IPs will only be in a position to withdraw this representation once sufficient protection has been secured for them through protective provisions.

References

Awel y Mor Offshore Wind Farm Order 2023, Statutory Instrument 2023 No.1033
Wake Loss Technical Note, Outer Dowsing Offshore Wind, 2025, REP4-114
Outer Dowsing Project Wake Study, Orsted, Appendix 1 of Deadline 4a submission REP4A-125a
Applicant's Wake Loss Methodology Clarification Note, REP4a-119
Responses to ExQ1, Orsted, 2025, REP2-076
The Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024, Statutory Instrument 2024 No.564