

**RWE Renewables UK Dogger Bank  
South (West) Limited**

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**Dogger Bank South Offshore  
Wind Farms**

**The Applicants' Response to the Mona DCO  
Decision with regards to wake effects**

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## Glossary

Term	Definition
Array Areas	The DBS East and DBS West offshore Array Areas, where the wind turbines, offshore platforms and array cables would be located. The Array Areas do not include the Offshore Export Cable Corridor or the Inter-Platform Cable Corridor within which no wind turbines are proposed. Each area is referred to separately as an Array Area.
Awl y Môr	The Awl y Môr (AyM) wind farm, a planned extension to the Gwynt y Môr (GyM) wind farm (see also GyM).
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
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 value, or sensitivity, of the receptor or resource 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 Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Gwynt y Môr	The Gwynt y Môr (GyM) wind farm off the north coast of Wales.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Wake	The area of reduced windspeed behind a wind turbine caused by the removal of momentum and energy by the wind turbine.

## Acronyms

Acronym	Definition
CNP	Critical National Priority
DBA	Dogger Bank A
DBB	Dogger Bank B
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ExA	Examining Authority
GWh	Gigawatt hours
IPs	Interested Parties
MW	Megawatt
SEP and DEP	Sheringham Shoal and Dudgeon Extension Projects
SoS	Secretary of State
TCE	The Crown Estate

# 1 The Applicants' Response to the Mona DCO Decision with regards to wake effects

## 1.1 Evidence base, policy direction, methodological guidance and data sharing mechanism

1. The Applicants have reviewed the Secretary of State's (SoS's) decision in Mona and the Examining Authority's (ExA's) report. The Applicants would start by highlighting the final paragraph in the ExA's overall conclusions on wake effects:

*"5.3.98. In arriving at these conclusions, the ExA observes that in the **absence of a settled evidence base, clear policy direction, methodological guidance and data sharing mechanism**, the question of wake effects is a particularly complex one for applicants and other IPs to navigate. Noting that the Government's Clean Power 2030 Action Plan identifies this as an area requiring attention, the ExA considers that strategic action would assist in improving understanding of the potential effects and de-risking individual OWF applications in the future."* (Emphasis added.)

2. Each of the gaps, which the ExA highlights, is substantial in its own right, particularly the absence of "clear policy direction" for applicants bringing forward schemes in the recent period. Collectively, these gaps have represented a major challenge to the industry, particularly where (in the Applicants' and many other developers' view) the question of wake effects had already been resolved outside the planning process through The Crown Estate's approach to seabed licensing in different rounds.
3. In particular, The Crown Estate (TCE) set buffers from existing or emerging projects, which included wake effects, which were not challenged by relevant developers. Furthermore, relevant developers could have taken steps in recent years to highlight and seek to address these gaps (directly or indirectly) if they considered wake effects should be addressed through the planning system (as opposed to the accepted TCE buffer system) and did not do so.
4. The Mona ExA's observations are, in the Applicants' view, consistent with the concern that the Applicants have expressed throughout the Examination that a retrospective standard should not be imposed on the Applicants (or other applicants in a similar position). The Applicants have highlighted a range of examples to show the inconsistency between what is being expected of them compared to what has been accepted by the Projcos shareholders, Orsted and the SoS for other applications (e.g. Hornsea 3, Hornsea 4, Sheringham Shoal and Dudgeon Extension Projects (SEP and DEP)).

5. The absence of wake assessments in applications to date is striking. This does not mean the issue has been ignored, simply that it has been addressed through a different mechanism, where a balance has been struck between the interests of new and operational or awarded projects, after due consideration and consultation by TCE as an expert stakeholder.
6. There is the need for each of these gaps to be comprehensively addressed, if wake effects are going to be considered on a consistent and fair basis within the planning process for new applications in a way which does not affect the ongoing success of the UK offshore wind sector.

## 1.2 The Applicants' Closing Submissions

7. The principal submissions in **The Applicants Wake Closing Submissions** [REP8-046] are not affected by the Mona Development Consent Order (DCO) decision. In particular:
  - i. There are special considerations which apply to bespoke impacts within an industry sector as compared to impacts between sectors. This requires a pragmatic approach which takes into account the industry context and relevant history and comparators;
  - ii. The conclusions of the Applicants' submitted wake assessments should be preferred for the reasons outlined in **The Applicants Deadline 7 Wake Loss Submission** [REP7-136];
  - iii. The impact of wake effects from the Projects is not significant in Environmental Impact Assessment (EIA) or planning terms. This conclusion is consistent with the conduct of the Projcos and Orsted Interested Parties (IPs). A true concern about significant impact with a meaningful threat to viability would have resulted in demonstrably different conduct. The commercial decisions (FID and new investments after the Projects were known) are clearly inconsistent with a conclusion of significance.
  - iv. The original greenhouse gas assessment, forming part of the EIA, has been supplemented with material which demonstrates that taking wake effects into account does not alter the overall conclusion of the major benefit of the project in greenhouse gas terms.
  - v. The Applicants have taken reasonable steps to mitigate wake effects (the 7.5km buffer) and to consider reasonable design mitigations for wake effects, both generically and specific to Dogger Bank A (DBA) as the closest project;
  - vi. The design of the Projcos' own projects (DBA and Dogger Bank B (DBB)) are consistent with this evaluation of the availability of reasonable design mitigation (i.e. the absence of layout modifications to reduce wake effects between those two projects)
  - vii. The engagement with the Projcos has been consistent with normal industry practice on wake matters and the opportunities available for design mitigation;

- viii. The Orsted IPs did not raise wake effects prior to the Application being submitted despite frequent engagement in the pre-application stage;
- ix. There is no or insufficient purpose in requiring further submission or consideration of the detail of the wake assessments pursuant to the DCO;
- x. The Applicants have satisfied the mitigation hierarchy generally and for Critical National Priority (CNP) purposes through their approach to mitigation. There is no justification for compensation to satisfy the hierarchy where mitigation has been applied, and on the specific policy and factual circumstances of this case and its wider context.
- xi. There is no or insufficient purpose in requiring further consideration of design mitigation in the light of the steps already taken or considered as explained in detail by the Applicants (but see further the Applicants without prejudice position below);
- xii. There is no evidence regarding viability which engages paragraph 2.8.347 of EN-3 in the case of the Projcos or Orsted IPs. The suggestion that the SoS should simply rely on assertions by the Projcos and Orsted IPs regarding claimed impact on viability, rather than meaningful and evidenced analysis is unsustainable.
- xiii. There is no justification for financial compensation by way of protective provisions or otherwise;
- xiv. To impose financial compensation for wake effects through the planning system would be an extraordinary step given the various injustices and inconsistencies it would immediately give rise to and could only be introduced after full industry consultation and fair transitional provisions (i.e. only applying to new applications thereafter).
- xv. At most the wake effects on DBA, should be afforded limited weight against the Application as concluded by **The Applicants' Closing Statements on Wake Effects** [REP8-046].

### 1.3 Specific points arising from the Mona SoS decision

8. Many of the points in the ExA report and SoS decision letter are inevitably specific to the facts of that case. The Applicants comment below on the specific areas of focus for the ExA and the SoS, which appear to be of most relevance to the Application:

*'Whether the Mona Applicant ought to have carried out a wake assessment'*

9. The ExA concluded that the Mona Applicant ought to have conducted a wake effects assessment and by failing to do so had failed to comply with paragraph 2.8.197 of the EN-3. The SoS agreed with this and was critical of the Mona applicant for not providing a wake assessment when asked to do so by the Mona ExA.



10. The Applicants did carry out a wake assessment in the pre-application stage of the closest wind farm (DBA) and concluded the impact was negligible. On that basis they did not carry out wake assessments of any wind farms further away. Wake assessment was included within the original revision of **Chapter 16 - Infrastructure and Other Users** [document reference 7.16] of the Environmental Statement.
11. The Applicants changed their position at the start of the Examination and withdrew the wake assessment conclusion (and related text) from **Chapter 16 - Infrastructure and Other Users** [document reference 7.16], which was reissued, for the reasons explained at the time. At the request of the ExA they submitted that wake assessment at Deadline 4 (**Wake Effects - Response to Issue Specific Hearing 3 (ISH3) Action Points** [REP4-099]), and also submitted shortly afterwards an assessment of DBB, DBC, Hornsea 1, 2, 3 and 4 (and a further iteration of the DBA assessment) (**Addendum to Wake Effects - Response to ISH3 Action Points Submission for Deadline 4** [AS-179]).
12. Whilst it is unusual for an applicant to change its position in this way, the Applicants had assessed wake effects at the point of application and the detail of that assessment (and further assessments, which the Applicants did not consider were needed, applying normal principles of assessment, where a conclusion of negligible is reached) were submitted during the Examination at the request of the ExA on a without prejudice basis. These were then the subject of a hearing, ExQs and submissions and engagement with the Projcos and the Orsted IPs. Taken in the round, the Applicants submit that they are in compliance with paragraph 2.8.197.

### 1.3.1 Engagement

13. The Applicants have explained their position on engagement in **The Applicants' Closing Statements on Wake Effects** [REP8-046].
14. The Applicants would stress that they have not ignored the issue of wake loss. It has been addressed through their engagement with TCE in the design of the Round 4 process (along with the rest of the industry), by respecting TCE's buffer distance (which has been the accepted industry mitigation, despite claims to the contrary), by conducting substantial and ongoing research into available wake mitigation options and giving specific consideration to the assessment of wake effects on DBA, and wake mitigation for DBA, as the closest affected wind farm.

15. If the expectations on new applicants are to be changed, away from a settled approach where wake effects were routinely not addressed in offshore wind applications at all (e.g. Equinor SEP and DEP, where the applicant did not address it in the September 2022 application, despite a range of existing projects within 50km which will be affected, including one at 10.1km distance, and this was not considered a failing by the Planning Inspectorate at acceptance, the ExA in Examination or the SoS in the April 2024 decision), and there was minimal engagement on this topic generally by applicants (for good reasons), then that has to take place in a consistent, fair and transparent way with policy clarity on the special considerations and complexities which obviously arise (as highlighted in part by the Mona ExA) and which have not been addressed through the planning system and guidance before.

### 1.3.2 Policy interpretation

16. The Applicants acknowledge that the SoS has taken a clear position on the interpretation of EN-3. They respectfully disagree that there was “no sensible basis” for questioning the applicability of the “other offshore infrastructure” policies to other offshore wind farms. If those policies are to be applied, the Applicants have stressed that there are special considerations which apply within an asset class and that the advice in paragraph 2.8.342 to be pragmatic is of particular importance.
17. These special considerations include the central role which TCE buffer distances have played (despite the various attempts to deny or finesse this), the continuing evolution of understanding of wake effects (where the Applicants do not accept the narrative of a paradigm shift in 2019 in the light of models were used by developers prior to that); the continuing evolution of research into potential mitigation measures; the prior lack of expectation for engagement by competing developers on wake matters (outside the relevant TCE buffer zone) and the absence of relevant guidance (on assessments or significance calibration); protocols regarding the potential sharing of sensitive data, etc.
18. For those and other reasons, the Applicants respectfully disagree that further policy clarity on wake effects was not required and agree with the point regarding the need for policy direction made by the Mona ExA which has already been cited above.
19. That new policy direction needs to be applied on a consistent and fair basis taking account of substantial industry consultation. In the meantime, individual planning decisions need to be pragmatic and have regard to the fact that this issue has not hitherto been meaningfully dealt with through the planning system. Otherwise, an inappropriate retrospective standard will be applied and a range of stark inconsistencies and injustices will result.

20. In this regard, the Applicants consider that the SoS has struck the correct overall balance in the Mona decision. Namely, if there are reasonable design or operational mitigation steps available that still allow the capacity/output of the new wind farm to be maximised (and do not conflict with the other constraints on the wind farm, which will include committed mitigations on other topics), then that should be required, as long as this is applied in a pragmatic and timely way. However, to impose financial compensation through the planning system is not appropriate. The SoS imposed requirement 27 in the absence, as he saw it, of enough evidence of consideration of mitigation measures by the Mona applicant. The Applicants consider they have provided substantial evidence on this matter, such that an equivalent requirement would not be justified. However, see further the Applicants comments on Mona Requirement 29, and their without prejudice position, below.
21. The Applicants respectfully disagree that a wake effect many kilometres away can be regarded as a “direct physical impact” on another wind farm and do not accept that the word “close” can be reasonably applied using this argument. (By contrast, a new turbine immediately proximate to another one can cause measurable additional physical fatigue and damage to its operation. That has never been suggested in this case.)

### 1.3.3 Magnitude of Impact of Mona

22. The Projcos have advanced the argument that the wake loss from the Projects is of such a magnitude that it must be given greater weight than was given in the Awel y Mor decision. The Mona decision has shown on the basis of annual impact that the SoS did not support this line of thinking in the Mona case.
23. In the Mona case eight wind farms made representations as IPs (with a range of differing shareholding groups), totalling 1852 megawatts (MW) of installed capacity. The Orsted IPs in that examination commissioned Wood Thilsted to assess wake impacts [REP7-153 of the Mona examination]. Relying on the results given in Table 2 of that study the Applicants are able to estimate the total magnitude of wake impact caused by Mona (detailed in **Table 1-1** below). For reference the wake impact calculated for the Projects has been provided in **Table 1-2** below.

Table 1-1 Calculation of Wake impact of Mona

	Barrow	Walney 1	Walney 2	Walney Extension 3	Walney Extension 4	West of Duddon Sands	Burbo Bank	Burbo Bank Extension	Barrow	Totals
Capacity [MW]	90	183.6	183.6	330	329	388.8	90	256	90	1851
Scenario 1 - Addition of Mona OWF	1.55%	1.67%	1.22%	0.83%	1.58%	1.57%	0.96%	1.22%	1.55%	1.38%
Energy lost assuming 45% NCF [GWh/yr]	5.7	12.6	9.2	11.3	21.4	25.1	3.6	12.9	5.7	101.9
Energy lost assuming 55% NCF [GWh/yr]	6.7	14.8	10.8	13.2	25.1	29.4	4.2	15.1	6.7	119.2

Table 1-2 Calculation of Wake Impact of DBS

	Hornsea 1	Hornsea 2	Hornsea 3	DBA	DBB	DBC	Totals
Capacity [MW]	1200	1300	2900	1235	1235	1218	9088
Impact of DBS [%]	0.65%	0.75%	0.35%	1.97%	0.47%	0.03%	1.38%
Energy lost [GWh/yr]	35.2	44.0	45.8	113.9	27.2	1.7	267.9

24. This calculation indicates that Mona causes a total loss to all farms in the range of 101.9-119.2 gigawatt hours (GWh) per year, depending on assumptions made for the capacity factor of the farms being impacted.
25. Proportionate to the size of two schemes (Mona being 1500 MW, and the Projects being 3000 MW), the 267 GWh the Applicants analysis indicates the Projects will cause on all IPs (Projcos: 143 GWh, Orsted: 125 GWh), is only marginally larger.
26. The SoS weighed the impact of Mona, found that it was unlikely to affect the future viability of the operational assets in question, in the light of the submissions by the Orsted IPs on viability. Additionally, the Wood Thilsted report estimated a cumulative impact from further development of 5.3% on the most-affected asset, which the SoS found was not a threat to viability, while the maximum suggested impact before this examination is 3.5% (which the Applicants consider is a very substantial over-estimate with their assessment concluding ~2%). Adopting the approach the SoS has followed, given the greater benefit (due to larger capacity) from the Projects, the conclusion in this examination should not differ i.e. that the Projects will not affect future viability of either Orsted IPs' or Projcos' assets.

### 1.3.4 Greenhouse gas assessment

27. The approach to taking account of wake effects in the Mona greenhouse gas assessment was different to that which the Applicants have adopted and does not assist consideration of this issue in this Examination.

### 1.3.5 Requirement 29 of the Mona DCO

28. The Applicants consider that the analysis and reasoning which the ExA conducted in relation to the possible imposition of an AyM-type requirement adopted the correct balancing of the issues and recognised the complexities and inherent limits of wake mitigation. The ExA also acknowledged that the Mona application had applied wake mitigation through observing TCE's 7.5km buffer. The ExA did not recommend an AyM-type requirement and recommended instead that the residual wake impact be taken into the planning balance.
29. The SoS disagreed with this recommendation and considered that the conduct of the Mona Applicant justified a requirement to explore what further reasonable mitigation measures might be adopted.
30. The Applicants do not consider that a requirement such as Requirement 29 of the Mona DCO, is justified. Similar issues to those which led to the ExA recommendation on this point apply to the Application. The Applicants have already applied substantial mitigation through their compliance with the 7.5km buffer and have demonstrated their substantial consideration of other mitigation measures, through substantial ongoing research and specific consideration of DBA as the closest project **The Applicants Deadline 7 Wake Loss Submission** [REP7-136]. The Applicants have stated their position in **The Applicants' Closing Statements on Wake Effects** [REP8-046] and other prior submissions.
31. The Applicants are, however, conscious that the SoS did impose Requirement 27 and appears to be minded to impose an equivalent requirement on the Morgan DCO, assuming it is granted. If the SoS is minded to impose this type of requirement (requiring further consideration of mitigation to reduce wake effects) then, on a without prejudice basis, the Applicants position is that the wording should be as shown below.

#### ***Wake effects***

*XX.—(1) Work No. 1A must not be commenced until a wake effects plan relating to that part of the authorised project has been submitted to and approved by the Secretary of State.*

*(2) Work No. 1B must not be commenced until a wake effects plan relating to that part of the authorised project has been submitted to and approved by the Secretary of State.*

*(3) Any wake effects plan provided in accordance with sub-paragraph (1) or (2) must include details of the reasonable steps that have been taken or are proposed to be taken by the relevant undertaker to minimise wake effects on the relevant offshore wind farms whilst maximising the capacity and energy output of the authorised development within the identified technical, environmental and other constraints of the authorised development.*

*(4) The layout plan submitted to the MMO under condition 15(1)(a) of schedule 10 of this Order must be in accordance with any approved wake effects plan submitted in accordance with sub-paragraph (1) above.*

*(5) The layout plan submitted to the MMO under condition 15(1)(a) of schedule 11 of this Order must be in accordance with any approved wake effects plan submitted in accordance with sub-paragraph (2) above.*

*(6) Each approved wake effects plan submitted under this requirement must be implemented as approved.*

*(7) For the purposes of this requirement— "relevant offshore wind farms" means the two offshore wind farms consented under the Dogger Bank Cleyke Beck Offshore Wind Farm Order 2015 (SI2015/318) as amended at the date of this Order and known as Dogger Bank A and Dogger Bank B, the offshore wind farm consented under the Dogger Bank Teesside A and B Offshore Wind Farm Order 2015 (SI2015/1592) as amended at the date of this Order and known as Dogger Bank C, the offshore wind farm consented under the Hornsea One Offshore Wind Farm Order 2014 (SI2014/3334) as amended at the date of this Order, the offshore wind farm consented under the Hornsea Two Offshore Wind Farm Order 2016 (SI2016/844) as amended at the date of this Order and the offshore wind farm consented under the Hornsea Three Offshore Wind Farm Order 2020 as amended at the date of this Order.*

32. The reasons for the amended drafting are as follows. First, the wake effects plan should only relate to steps which alter the physical wake effects i.e. paragraph 1(a) of the Mona requirement. Second, the wake effects plan should record the reasonable steps already taken, but also relate to any proposed steps in the future (which should not reopen past project decisions) Third, the test regarding capacity needs to relate to energy output as well, which is at the heart of the reasonableness test. (Capacity seems to be used as shorthand for output in the Mona SoS decision letter and so this is simply a point of clarification.) The test is about identifying whether there are steps which are net neutral i.e. which do not reduce the capacity or output of the Projects (whilst respecting the identified technical, environmental and other constraints) but which do meaningfully benefit the relevant wind farms as to be reasonable. Reasonableness will also include whether they are proven and available within the delivery timelines of the Project(s). Fourth, the plan must be implemented as approved. Fifth, the plan needs to allow for each of the Projects to come forward on a different timeline, in accordance with the rest of the DCO for the Projects.
33. The Applicants have sought to minimise the changes from the drafting as imposed in the Mona DCO in addressing their points. They do have residual concerns about the reasonableness and precision of the requirement. They are mindful, however, that there have been competing submissions in this Examination (and others) as to the availability, effectiveness and reasonableness of design and operational mitigation steps. This may mean the SoS wants the comfort of having more detailed information provided through the process of considering and approving the wake effects plan, before the development proceeds.

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