

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Annex 3.1 to the Applicant's response to Orsted IPs Deadline 5 submissions and responses to ExA Questions

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Image of an offshore wind farm

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Contents

1	ANNEX 3.1 TO THE APPLICANT’S RESPONSE TO ORSTED IPS SUBMISSIONS AND RESPONSES TO EXQ2 QUESTIONS MADE AT DEADLINE 5	1
1.1	Introduction	1
1.2	References	31

Tables

Table 1.1:	The Applicant’s response to Orsted IP’s ExA Q2 Response. REP5-059a.....	2
Table 1.2:	The Applicant’s response to Ørsted IP’s submissions at Deadline 5 (REP5-059, 058,057, 059c,059d, 059b).....	15

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Glossary

Term	Meaning
Applicant	Morgan Offshore Wind Limited.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Morgan Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, scour protection, cable protection and offshore substation platforms (OSPs) forming part of the Morgan Offshore Wind Project: Generation Assets will be located.
Morgan Offshore Wind Project: Generation Assets	This is the name given to the Morgan Generation Assets project as a whole (includes all infrastructure and activities associated with the project construction, operations and maintenance, and decommissioning).
The Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.

Acronyms

Acronym	Description
AEP	Average Energy Production
ALARP	As low as reasonably practicable
CNP	Critical National Priority
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
DONG	Danish Oil and National Gas
EIA	Environmental Impact Assessment
GHG	Green House Gas
HRA	Habitats Regulation Assessment
IEMA	Institute of Environmental Management and Assessment
IP	Interested Party
ISZ	Irish Sea Zone
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MNEF	Marine Navigation Engagement Forum
MPCP	Marine Pollution Contingency Plan
MWL	Morecambe Wind Limited
NPS	National Policy Statement
OFGEM	Office of Gas and Electricity Markets
OWF	Offshore Wind Farm
OVTMP	Outline Vessel Traffic Management Plan

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Acronym	Description
PEIR	Preliminary Environmental Impact Report
TCE	The Crown Estate
UK	United Kingdom
VTMP	Vessel Traffic Management Plan
WEL	Walney Extension Limited

Units

Unit	Description
MWh	MegaWatt Hour

1 Annex 3.1 to the Applicant's response to Orsted IPs submissions and responses to ExQ2 questions made at Deadline 5

1.1 Introduction

- 1.1.1.1 This document has been prepared in response to Orsted IPs submissions and responses to the Examining Authority's second written questions (ExQ2), made at Deadline 5.
- 1.1.1.2 Table 1.1 provides the Applicant's response to Orsted IP's ExQ2 response (REP5-059a).
- 1.1.1.3 Table 1.2 provides the Applicant's response to Orsted IP's submissions at Deadline 5 (REP5-059b, REP-059, REP5-057, REP5-058, REP5-059c, REP5-059d).
- 1.1.1.4 Where there is duplication between the responses in Table 1.1 and Table 1.2, the Applicant has cross referenced accordingly.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 1.1: The Applicant's response to Orsted IP's ExA Q2 Response. REP5-059a.

Reference	Question is addressed to	ExA Question	Orsted IP's Response	Applicant's response
REP5-59a.1	Barrow Offshore Wind Limited Burbo Extension Limited Walney Extension Limited Morecambe Wind Limited Walney (UK) Offshore Windfarms Limited Ørsted Burbo (UK) Limited (collectively "the Ørsted IPs")	INF 2.5 Potential wake effects 2 Tables 5-4 and 5-5 of the Wake Impact Assessment Report [REP4-049] provide a summary of the results of the wake loss assessment for each of the main scenarios on each of the Ørsted IPs windfarms, expressed as a percentage wake loss. Could the Ørsted IPs update the tables to include the following additional information: i) Identify the percentage losses in terms of a quantified total energy loss (in kWh) for each scenario and OWF affected each year. ii) Taking into	i) The Orsted IPs have deliberately not disclosed the expected energy loss in kWh as this would reveal the internal view of the expected annual energy yield for each asset. This is commercially sensitive information. UK Government is currently considering creating market mechanisms for older projects, the disclosure of such information would also not be appropriate in that context. However, a conservative view could be achieved by using the installed capacities of each wind farm alongside average capacity/load factor for offshore wind. Recently, the applicant in the Mona Offshore Windfarm examination utilised OFGEM figures giving the actual capacity factors relating to historic energy production at the Orsted IPs assets, in a technical note produced for the purposes of calculating the net GHG impact of that Project. While the Orsted IPs do not consider this figure provides an accurate representation of future loss, these capacity factors can be utilised to provide a ballpark estimate of potential energy loss as shown in the tables below. However, this is likely to be conservative for the Orsted IPs. Calculation formula for <i>indicative</i> quantified energy loss:	The Applicant notes that Ørsted IPs have responded to ExQ2 INF 2.5 (REP5-059a) to state that they have deliberately not disclosed the expected energy loss of kWh and have used installed capacities of each wind farm alongside the average capacity/load factor for offshore wind. Morgan Offshore Wind Limited (and Mona Offshore Wind Limited) used OFGEM data for the purposes of calculating the net effects on greenhouse gas emissions. i) The Applicant submitted a technical note on the Calculation of Net Effects on Greenhouse Gas Emissions at Deadline 5 (REP5-041). Within this note the Applicant presented historic energy production for Ørsted IPs projects sourced from OFGEM (Table 5.1 of REP5-041). Average Energy Production (AEP) (MWh/yr) from the Ørsted IPs projects since 2014 has been presented for whole year only energy production; where projects are operational for part of a year, this year has not been included as this would likely skew the averages due to partial year AEP reducing the average. These Average AEP values are the same as those presented within Ørsted IPs response for the Morgan Generation Assets only numbers. In the Ørsted IP's updated Wake Impact Assessment Report (REP5-059c), the wake effects detailed in Table 2 have been updated in response to the Applicant's comment regarding use of the Morgan Generation Assets Preliminary Environmental Information Report (PEIR) boundary. In response, the Applicant has updated the values presented in Table 4.5 of the technical note for the 'Ørsted IPs projects revised potential wake effects as a result of Morgan Generation Assets indicative spatial mitigation' (S_D6_41_Morgan Gen_Calculation of Net Effects on Greenhouse Gas Emissions_F02). The values the Applicant has included align with the Ørsted IPs Morgan Generation Assets Only values presented in its response to INF2.5. Whilst the Applicant has not considered cumulative scenarios of the Morgan Generation Assets with the Mona Offshore Wind Project and the Morecambe Offshore Windfarm: Generation Assets, it is anticipated that similar principles would apply in a cumulative scenario, whereby the cumulative net GHG benefit resulting from these projects would significantly outweigh a small reduction in avoided emissions for the Ørsted IPs projects. As is confirmed in the IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance Guidance:

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		account the above, what the overall quantified total energy loss would be for each OWF having regard to the current operational life of each.	<p>Quantified Energy Loss per annum (kWh) = Project capacity (kW) * Capacity factor * Hours in a year (8766h) * Wake loss percentage.</p> <p>The following indicative annual energy losses for each Ørsted IP is presented below for both the Morgan alone impacts and cumulatively with Mona and Morecambe.</p> <p><i>Refer to the Orsted IPs Responses for tables of indicative annual energy losses</i></p> <p>ii) The annual energy loss calculated above would then apply for each year of the projects remaining life post construction of the asset(s) causing the wake. As previously indicated the remaining lifetime of the projects is not a defined value and Orsted A/S have stated that the remaining lifetime of the affected assets may be impacted by the wake as a result of the Applicants development. In this case it would be the entire production of the wind farm that would be lost.</p>	<p><i>"The atmospheric concentration of GHGs and resulting effect on climate change is affected by all sources and sinks globally, anthropogenic and otherwise. All global cumulative GHG sources are relevant to the effect on climate change, and this should be taken into account in defining the receptor (the atmospheric concentration of GHGs) as being of 'high' sensitivity to further emissions.</i></p> <p><i>Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other."</i></p> <p>As such, there is no requirement to consider site specific cumulative effects for the assessment of likely effects on climate change.</p> <p>ii) The Applicant has included calculations for two operating outcomes in S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02, with both outcomes based on information made available in the public domain by the Ørsted IPs, as follows:</p> <ul style="list-style-type: none"> • Calculations which reflect an operating outcome of the Ørsted IPs projects being decommissioned at the end of their lifetime, based on the decommissioning dates from Ørsted IPs submissions into the Mona Offshore Wind Project Examination (EN010137, REP4-130) • Calculations which reflect an operating outcome of potential lifetime extensions of 10 years for the Ørsted IPs projects, based on information provided by Ørsted IPs in response to ISH3 Action Point 5 (EV6-011). <p>As per the Ørsted IPs response to INF 2.5, expected annual energy yield for the future years is commercially sensitive, unknown and dependent on a number of other factors and as such it is not for the Applicant to comment on or make assumptions.</p>
REP5-59a.2	Applicant The Ørsted IPs	INF 2.6 Potential wake effects 3 Provide a commentary on how you consider the matter of any loss of renewable energy yield from	The NPS-EN3 provides that (at 2.1.8) Applicants for Critical National Priority Infrastructure "must show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy. Early application of the mitigation hierarchy is strongly encouraged, as is engagement with	<p>The Applicant has made clear in numerous submissions [see REP1-016, REP2-005, REP2-027, REP4-006, REP5-009] that it disagrees with the Orsted IPs on the applicability of the policy in NPS EN-3 to other offshore wind farms and the requirement for wake loss to be assessed or considered as part of the Morgan Generation Assets application or decision.</p> <p>In the absence of any policy requirement or assessment basis for the consideration of wake effects, mitigation considerations cannot be relevant to the Secretary of State's decision or the status of the Morgan Generation Assets as Critical National Priority (CNP) Infrastructure and the substantial weight that</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		<p>other OWFs might be a matter to be demonstrated in the mitigation hierarchy and in consideration of Critical National Priority, and how it might be weighed in the planning balance.</p>	<p>key stakeholders including SNCBs, both before and at the formal pre-application stage". In light of the material impacts the wake assessment report [REP4-049] indicates the Project will have at the Ørsted IPs' developments, the Ørsted IPs consider this paragraph is engaged. Additionally, paragraph 2.8.35 requires that the secretary of state should be satisfied that ".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...to other offshore industries."</p> <p>The Ørsted IPs consider that, as with other adverse effects of proposed CNP Infrastructure, wake loss is an effect capable of being addressed through the mitigation hierarchy. Once a potential impact is assessed and understood, it is possible to avoid, reduce or mitigate the effect through steps such as site selection and project design, the application of operational mitigation measures, and compensation. Any residual adverse effects must be weighted in the overall planning balance.</p> <p>In this case, the Applicant has failed to cooperate in any meaningful way regarding the assessment of wake effects or to explore the potential for mitigation. Therefore, no att</p>	<p>the NPS say should be given to the benefits of such new infrastructure (see for example paragraphs 3.2.6-3.2.8 and 4.2.6 of EN-1). The Applicant would also highlight para 4.2.15 of EN-1 which confirms that;</p> <p><i>Where residual non-HRA or non-MCZ impacts remain after the mitigation hierarchy has been applied, these residual impacts are unlikely to outweigh the urgent need for this type of infrastructure. Therefore, in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts. The exception to this presumption of consent are residual impacts onshore and offshore which present an unacceptable risk to, or unacceptable interference with, human health and public safety, defence, irreplaceable habitats or unacceptable risk to the achievement of net zero.</i></p> <p>None of the residual impacts identified in para 4.2.15 apply to the Orsted IPs.</p> <p>Notwithstanding its position in relation to NPS policy, the Applicant has demonstrated through the Calculation of net effects on greenhouse gas emissions submitted at Deadline 5 (REP5-041) and the updated submission at Deadline 6 (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02) the effect that increasing the distance between the Morgan Generation Assets and the Orsted IPs has and would have in reducing potential wake effects, and the impact that a further increase in separation distance would have on the Orsted IPs (small beneficial) and Morgan Generation Assets (large adverse) in terms of overall energy production and GHG reductions. Such information provides ample evidence for the Secretary of State, if needed, to conclude that appropriate steps have been taken by the Applicant to reduce potential effects without a detrimental impact on overall GHG reduction accordance with the CNP tests.</p> <p>The Applicant robustly rejects the notion that it has not cooperated in a meaningful way with Orsted on wake loss matters. The Applicant disagrees that wake effect assessments are regularly included in DCO applications and has provided evidence to support this. The Applicant's position is also supported by all other Round 4 developers in their DCO applications (Mona, Morecambe, Outer Dowsing, Dogger Bank South as well as the Five Estuaries and North Falls extension projects). It is also surprising that such assertions are made when Orsted itself does not routinely undertake such public facing assessments as part of their own consent applications.</p> <p>It should be noted within the Orsted response (to INF2.5 [REP5-059a]) that they have not provided the project specific information from their assets as this would require release of commercially sensitive information into the public domain.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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			<p>It has been made to avoid or mitigate those effects and, it is not possible for the Applicant to demonstrate compliance with the mitigation hierarchy.</p> <p>It is noted that while the Project is supported by the CNP policies in the NPS-EN3, this does not exempt the Applicant from needing to demonstrate compliance with the mitigation hierarchy. It is also noted that, the Ørsted IPs combined capacity totals 1,854 MW with all but two developments meeting the threshold for Nationally Significant Infrastructure projects which would be covered by the CNP Infrastructure, if consented today. This highlights the significance of Ørsted IPs' developments for renewable energy generation in the UK, and the importance of ensuring that the Project seeks to coexist with these preexisting developments.</p> <p>The Ørsted IPs consider the loss of renewable energy yield at existing developments as a result of new development is a factor to be weighed in the planning balance against the benefits of new development, in accordance with section 104(7) of the Planning Act 2008.</p> <p>As highlighted in previous submissions [REP4-047] and [REP3-053] in addition to immediate energy</p>	<p>Putting aside the Applicant's position on the need to undertake a wake effect assessment under the Planning Act, this response from Orsted shows alignment with the position adopted by the Applicant that even if such an undertaking were a planning matter it still would not be possible to undertake detailed, robust, public facing detailed wake effects assessment for the purposes of EIA.</p> <p>In response to points made by the Orsted IPs, at ISH1 in relation to the climate change and carbon assessment (during the Shipping and Navigation session) the Applicant has produced a technical note to consider the net effect on green house gas emissions when factoring in wake effects, as submitted at Deadline 5 (REP5-041). Within this assessment the Applicant has specifically explored the potential effect of project level mitigation on the net carbon reduction (see also the Applicant's response in Table 1.2, reference REP5-057.27).</p> <p>The Applicant recognises the updates made by Orsted IPs within the Wake Impact Assessment Report submitted at Deadline 5 (REP5-059c) and has incorporated the Orsted updates into its technical note on the Calculation of Net Effects on Greenhouse Gas Emissions at Deadline 6 (S_D6_41_Morgan Gen_Calculation of Net Effects on Greenhouse Gas Emissions_F02). Furthermore, the Applicant has also updated its technical note to reflect the potential benefit delivered by the post Section 42/PEIR boundary change, as a means to directly address the point raised by Orsted IPs on this matter (see also the Applicant's response in Table 1.2, reference REP5-057.27).</p> <p>The Applicant disagrees with the Orsted IP's interpretation of the North West Marine Plan policy NW-CO-1.</p> <p>The full wording of the policy reads:</p> <p><i>Proposals that optimise the use of space and incorporate opportunities for co-existence and co-operation with existing activities will be supported.</i></p> <p><i>Proposal that may have significant adverse impacts on, or displace, existing activities must demonstrate that they will, in order of preference:</i></p> <ol style="list-style-type: none"> <i>Avoid</i> <i>Minimise</i> <i>Mitigate</i> <p><i>Adverse impacts so they are no longer significant.</i></p> <p><i>If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding.</i></p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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			<p>generation loss, weight should be given to the potential for the impacts of new development to contribute to the long-term future viability of existing developments. This is also relevant to the consideration of whether new development aims to successfully coexist with existing development, which is a cornerstone of decision-making under the NPS-EN3.</p> <p>It is also noted that coexistence is at the heart of marine policy and planning. For example, the North West Marine Plan 2021 provides, at policy NW-CO-1, that proposals which “incorporate opportunities for co-existence and cooperation with existing activities will be supported.” Proposals that may have significant adverse impacts on existing activities must demonstrate that they will avoid, minimise and mitigate such adverse effects on an existing activity so they are no longer significant. Non-compliance with policies in marine planning documents could deter investments in which could hinder the UK's ambitions for offshore wind (that is, 43-50GW by 2030, as set out in the Clean Power 2030 Action Plan, and 65GW-140GW by 2050, under the Balanced Pathway Scenario of the 6th Carbon Budget). A focus on short term results in decision-making could hamper future investment.</p> <p>It is acknowledged that 4.1.7 of the</p>	<p>And the supporting text:</p> <p><i>Space within the busy north west marine plan areas is limited. To realise sustainable social, environmental and economic benefits it is, therefore, important to plan for and make efficient use of the space. NW-CO-1 encourages proposal to be spatially planned, take account of existing activities, and promote co-existence. The policy ensures new proposals seek for avoid creating conflicts and to minimise their footprint, or optimise if where it may not be feasible to minimise.</i></p> <p>Through the development of the Morgan Generation project the Applicant has sought to both maximise the use of the array area for new clean energy generation, and ensure the existing activities (such as fishing and shipping and navigation) can continue. The Applicant does not consider that this policy seeks to protect the Orsted IPs projects as an activity (rather they are infrastructure which is not included within this policy or the relevant policies of NPS EN-3) and no case has been made that there will either be a significant effect on the Orsted IPs projects or that they will be ‘displaced’. In fact the word ‘displaced’ supports the Applicant’s view that this policy simply does not apply to the existing offshore wind infrastructure.</p> <p>The Applicant’s GHG assessment and update demonstrate that in fact the Applicant has complied with this policy by optimising the footprint of the array area to ensure the maximum new electricity generation co-exists with existing activities such as fishing, shipping and navigation.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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			<p>NPS-EN1 provides that, where an applicant for CNP Infrastructure is required to mitigate an effect as far as possible, but the Secretary of State considers that after the implementation of mitigation there would be residual effects "...it is likely that the need case will outweigh the residual effects in all but the most exceptional cases".</p> <p>However, given the Applicant has made no attempt to mitigate or even assess the wake effects of the Project, the Ørsted IPs consider the Project does not benefit from this paragraph. Regardless, given the Applicant's approach to this matter, in particular its refusal to engage meaningfully with the Ørsted IPs and in light of the potential significance of this effect, it should be given considerable weight in the planning balance.</p>	
REP5-59a.3	Applicant The Ørsted IPs	<p>INF 2.8</p> <p>Wake Loss – potential mitigation</p> <p>The Ørsted IPs response to ISH2 Action Point 13 [REP4-047] includes potential mitigation measures to reduce loss of AEP including design and</p>	<p>i) For both approaches the mitigation relies on the applicant turbines to harvest less of the incoming wind in order to reduce the wake impacts on the Orsted assets.</p> <p>Wind sector management refers to the process of adapting a different operating mode on the Applicants turbines when the wind direction is such that it will cause wake on the Orsted IPs.</p> <p>Under normal conditions, wind turbines aim to operate as efficiently</p>	<p>The Applicant responded to this question at Deadline 5 (REP5-015). In addition to the points made then and in response to Ørsted's REP5-059a response, it seems entirely counterintuitive to suggest that <i>"mitigation relies on the Applicant to harvest less of the incoming wind in order to reduce the wake impacts on the Orsted assets."</i></p> <p>The purpose of the project is to maximise the generation of new renewable energy taking account of relevant constraints, and as per NPS EN-2 para 2.8.2 <i>"To meet its objectives government considers that all offshore wind developments are likely to need to maximise their capacity within the technological, environmental, and other constraints of the development."</i></p> <p>Wind sector management is a long-established technology for managing noise, environment or turbine fatigue issues, but the Applicant is not aware of any deployment for the purpose of reducing wake effects over a significant distance. This is unsurprisingly as, in a similar manner to reducing project capacity, a</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		operational changes such as installing a smaller number of large turbines, reducing capacity, increasing separation distance, wind sector management and wake steering. They consider that a commercial side agreement would assist in ensuring their interests are adequately protected, but that this would require meaningful engagement from the Applicant. The Applicant's response (HAP_ISH2_13 [REP4-004]) refers to the final design process and the Crown Estate's 7.5km separation distance, and maintains that an assessment is not required and that	as possible to extract energy from the wind, The more energy that is extracted from the wind, the more the wind speed decreases after it passes through the rotor and the higher the wakes will be. Turbines can change their operating setting to be less aggressive and hence extract less energy from the incoming wind with a subsequent reduction of the wake effect. The changes to operating modes would not be required for wind directions which don't results in wakes on the Orsted assets and additionally would not be required for low and high wind speeds when the wakes have less impact. The balance between turbine efficiency and wakes is not linear (i.e a 1% reduction in turbine efficiency for the Applicant would not equal a 1% improvement of the wake effect) and would require a site-specific analysis to determine the cost/benefit of this approach. Wind sector management is a technically mature solution that is most commonly used to protect turbines from excessive loads due to upstream obstacles (eg mountains) or for turbines to operate in a reduced noise mode. Wake steering refers to a practice where turbines are deliberately yawed out of the wind to deflect the wake	large adverse effect on energy capture can be expected with minimal gain to existing projects. The Applicant understands that Ørsted have not implemented wind sector management on any of their projects, despite the close proximity between these projects in many cases (and much closer than Morgan to the Ørsted IPs projects), reinforcing that no or minimal benefit can be expected. The Applicant agrees that wake steering is a less mature solution and it has not been demonstrated to mitigate long-range wake effects and there are no studies to indicate this is viable (as stated during the Mona Offshore Wind Project examination's ISH6 by Wood Thilsted [EN010137, EV9-004a, time stamp 00:40:48:15-00:42:27:19]). Both of these options are not feasible solutions if the project is to maximise its ability to generate new renewable energy power. The Applicant responded to ExQ2 INF 2.8 (iii) on arbitration (REP5-015) and refers Ørsted IPs to that response. The Applicant reiterates that for an arbitration to be successful, the arbitrator needs to receive instructions on the scope of what they are to arbitrate. The Applicant highlights that in the absence of policy or guidance, it would be very unclear what achieving "good mitigation" would be and what might satisfy the Ørsted IPs. In the absence of understanding this, is difficult to know whether an arbitrator could judge whether effective controls have been put in place. The Applicant therefore considers that a requirement that specified arbitration as a mechanism to resolve the dispute would be unworkable and unenforceable.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		<p>the matters are not suitable for either protective provisions nor a commercial side agreement.</p> <p>i) The Ørsted IPs are asked to explain what is meant by 'wind sector management' and 'wake steering'.</p> <p>ii) The Applicant is asked to comment on the potential mitigation measures referred to by the Ørsted IPs.</p> <p>iii) Both the Ørsted IPs and the Applicant are asked to comment on the following as a potential means of resolving the issue of wake loss: NPS EN-3 Paragraph 2.8.262 states that "In some circumstances, the Secretary of State may wish to consider the</p>	<p>away from the turbine immediately behind. Similarly to wind sector management, there is a reduction in efficiency to the turbines that are yawing as the optimum efficiency is when the turbine rotor is perpendicular to the incoming wind. It may be possible to collectively yaw the turbines of the applicant wind farm to avoid or reduce wakes on the Orsted IP turbines. Again, a site-specific analysis of this mitigation would be required to assess the cost / benefit of this approach for the Applicant against the Orsted IPs.</p> <p>Wake steering is a less mature technology, which has demonstrated overall wake reduction within the wind farm itself (internal wakes) but not yet demonstrated whether it could be a solution to mitigating wakes on neighbouring wind farms (external wakes).</p> <p>In respect of (iii), the Ørsted IPs consider that, if the Applicant does not take the appropriate steps to resolve this matter prior to the close of the examination, arbitration may be an appropriate route to addressing the issue. However, this would be as a last resort following attempts to mitigate the impacts of the Project. Arbitration would likely only be possible following a final decision on layout and potentially following decision-making on lifetime</p>	

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		potential to use requirements involving arbitration as a means of resolving how adverse impacts on other commercial activities will be addressed."	<p>extensions.</p> <p>The Ørsted IPs consider that the arbitration process would be a viable alternative if (i) both parties agree for the outcome of the arbitration to be legally binding and (ii) if the appropriate mitigation or compensation for the wake effects of the Project are directly linked to the outcomes of a wake assessment</p>	
REP5-59a.4	Moor Vannin Offshore Wind Farm Limited Ørsted IPs	<p>INF 2.9</p> <p>Moor Vannin Offshore Wind Farm Application</p> <p>The Applicant's response to the Ørsted IPs D3 submission on wake effects [REP4- 009], point REP3-070.24] notes that:</p> <p>"The Moor Vannin Scoping Report does not contain reference to wake effects ... it appears that Ørsted do not consider it necessary for their own projects to make an</p>	<p>In response to the Applicant's comments in [REP4-004], the Ørsted IPs' view is that the effects of wake should be shared effectively managed.</p> <p>Ørsted A/S has historically taken a consistent approach to this issue in respect of its own developments and will continue to do so. As outlined in their deadline 4 submission [REP4-048], the Ørsted IPs are aware that wake effects were openly considered during the consenting process for the Burbo Bank Extension offshore wind farm, the Walney Extension offshore wind farm, and the Hornsea 2 offshore windfarm (which are Ørsted developments). In those circumstances, the issue was dropped by the relevant party due to lack of effect or resolved through negotiation.</p> <p>Moor Vannin was not included in the wake assessment undertaken by Wood Thilsted [REP4-049] for a number of reasons, including that it is at a much earlier stage of</p>	<p>The Applicant is not clear what Ørsted IPs mean by 'shared effectively managed' but note that REP5-057.18 (below) states "<i>The Ørsted IPs view is that the effects of wake should be shared between developers</i>". The stance adopted by the Ørsted IPs does not conform to a shared approach to managing neighbouring wake effects. To share wake effects implies an acceptance that there will be wake effects between projects as a consequence of the fundamentals of wind flow, atmospheric conditions and wind farm operations. These wake effects will have some influence in energy production on the Ørsted projects but also on the Morgan project due to the presence of the Ørsted project.</p> <p>The Applicant disputes the assertion from Ørsted that it adopts a consistent and open approach to the consideration of wake effects. Both Ørsted and the Applicant have evidenced at Deadline 5 that three of the more recent Ørsted projects (Burbo Bank Extension, Walney Extension and Hornsea Project Two) voluntarily chose to enter into private commercial agreements for wake effect claims from a single claimant in each case (which on two of these occasions was a sister project that they were immediately adjacent to). However, the Applicant notes that the Ørsted UK portfolio comprises 16 projects and therefore the Applicant respectfully questions the claims of a consistent approach being adopted.</p> <p>With specific regard to the Ørsted submissions on Moor Vannin, the Applicant would highlight the following points:</p> <p>Point 1 – consideration of Moor Vannin in general terms. Ørsted state that they do not consider it necessary to consider Moor Vannin as it is an early stage of development. This is in direct contradiction to the submissions made by the Ørsted Moor Vannin project. The Applicant fully recognises the challenge of</p>

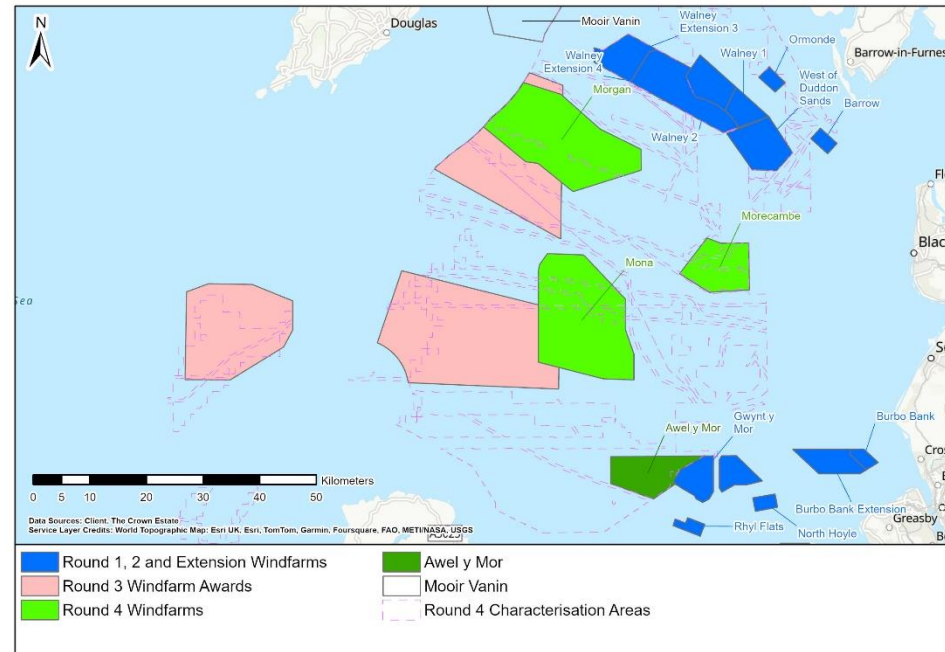
MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Question is addressed to	ExA Question	Orsted IP's Response	Applicant's response
		<p>assessment of such matters (as has been the case for the other six Ørsted projects that have been brought forward under the Planning Act to date). Further, the Applicant cannot see any response to the Scoping Report from the Ørsted IPs to Mooir Vannin in the Scoping Opinion. The Applicant is surprised by this given the Ørsted IPs claimed importance of an assessment being undertaken for all of the Round 4 developments (both within the Irish Sea and North Sea). The Mooir Vannin project is of a similar size, location and distance from the Ørsted IPs assets compared to the Morgan</p>	<p>development, with consent applications not expected to be lodged until Spring 2025. Therefore, the level of information available regarding Mooir Vannin is considerably less certain at this point of its development. It is not clear, as the Applicant has suggested, that Mooir Vannin would have similar effects to the Project.</p> <p>In contrast, the Project, along with the proposed Mona and Morecambe offshore windfarms, is considerably progressed in the DCO examination process, with the applicants for each development refusing to engage with the Ørsted IPs on the issue of wake loss. Therefore, the Ørsted IPs only option has been to assess the effects of those developments as accurately as possible, and given that the predicted effects are material, pursue the issue in the examination process.</p> <p>The Mooir Vannin project falls within a separate legal jurisdiction and therefore will be subject to a different decision-making process. Additionally, it is noted that the Mooir Vannin site was awarded to Ørsted in 2015, well before the round 4 bidding process relevant to the Project commenced. As a result, prospective developers were on notice of potential wake effects from Mooir Vannin at the time of bidding and would have had the opportunity to build the consequences of those effects into their business</p>	<p>considering projects in early stage development and this has been central to its position with regard to Mooir Vannin on other matters (relating to CEA). Notwithstanding this the Applicant has considered Mooir Vannin as far as it practically can in its relevant cumulative assessments, and would have expected Orsted to adopt a consistent approach in their consideration of Mooir Vannin.</p> <p>Point 2 – considering wake effects of Mooir Vannin. The Applicant has categorically not suggested Mooir Vannin <u>should</u> be undertaking a wake effects assessment. However, following Orsted's logic (as put forward by the Orsted IPs) that wake effects are a material planning consideration, that applications should include a wake loss assessment, and that they take a consistent and open approach, then one would expect to see a wake effects assessment linked to Mooir Vannin. The justification provided by Orsted IPs being that they cannot consider Mooir Vannin because there is not enough information, and yet somehow also that projects were on notice about Mooir Vannin. The Applicant is confused by this response as within their Deadline 5 submission (REP5-077) Orsted Mooir Vannin note that they have undertaken a wake effects assessment but that the decision as to whether this is brought forward is dependent on the outcome of commercial discussions. Clearly these Deadline 5 submissions confirm Orsted see this as a commercial and not a planning matter, and that they are neither consistent nor open in their approach to dealing with wake effects across their own projects.</p> <p>A further justification point (by Orsted) to not giving consideration to Mooir Vannin is that they have always known about Mooir Vannin, whereas they do not consider the same holds true for the Round 4 projects in this region at the time investment decisions were being made regarding their developments.</p> <p>The Applicant would like to highlight the following timeline (based on information from TCE 2014 Marine Data Exchange):</p> <ol style="list-style-type: none"> In January 2010 (between 1-2 years before the commissioning of the Walney 1 and 2 projects), The Crown Estate awarded a Round 3 development Zone (2,200 km²) to Centrica Renewables Energy Ltd in the Irish Sea. This Irish Sea Zone (ISZ) identified three potential development areas, two of which were broadly in the locations of where Mona and Morgan Generation Assets are today (see the pink colour 'projects' in the figure below) (Celtic Array, 2014). Construction of Walney 1 & 2 wind farms began in April 2010, with commencement 2011 & 2012, and the sites became fully operational in

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Question is addressed to	ExA Question	Orsted IP's Response	Applicant's response
		<p>Generation Assets and is therefore assumed to have an equivalent wake effects potential on the Ørsted IPs assets".</p> <p>Moor Vannin Offshore Wind Farm Limited are asked:</p> <p>i) Has a wake loss assessment been carried out regarding effects on AEP of the Ørsted IPs existing OWFs within the Irish Sea, and if so, will it inform the forthcoming submission for Marine Infrastructure Consent, including consideration of any mitigation?</p> <p>ii) Is there any reference in Isle of Man policy or legislation or seabed leasing conditions for</p>	<p>cases. In contrast, the Ørsted IPs could not have been aware of the Project (or the proposed Mona or Morecambe offshore windfarms) at the time investment decisions were being made regarding their developments.</p>	<p>June 2012 (based Walney Operations and Maintenance Marine Licence application (L/2016/00298/4)).</p> <p>c) Centrica Renewable Energy Ltd (Centrica), formed a joint venture with DONG Energy (DONG Energy changed its name to Ørsted in 2017) in March 2012, called Celtic Array. Following approval by The Crown Estate, the development rights to the ISZ were transferred to Celtic Array.</p> <p>d) The first project taken forward was Rhiannon Offshore Wind Farm, with a generating capacity of up to 2.2 GW. The first consultation (Stage 1) took place between 29 October and 20 December 2012, with the publication of the Rhiannon Wind Farm scoping report. Stage 1 Preliminary Environmental Information set out the initial proposal and described the potential environmental effects associated with it.</p> <p>e) In 2013 the Walney Extension consent application was submitted, with consent awarded in 2014.</p> <p>f) All responses received during Stage 1 consultation were considered in the Stage 2 proposal (Celtic Array, 2014). In 2014 the Preliminary Environmental Information Report was published for consultation.</p> <p>g) In 2014 a decision to cease development on the Rhiannon Wind Farm and Irish Sea Zone was taken by DONG (now Orsted).</p> <p>h) Within this timeframe (2010-2014) Walney Extension was going through its planning process and early development work, as the Walney Extension final investment decision was in 2015. Therefore, Orsted must have known (what is now known as) Moor Vannin was coming forward, if it secured an agreement for lease in 2015.</p> <p>Therefore, it is simply not credible for Orsted to claim that future large scale development in the Irish Sea (be that in the broad locations of Mona and Morgan Generation Assets and or Moor Vannin) was not reasonably foreseeable from 2010 onwards. Further, the Orsted IPs would have been in discussion with The Crown Estate during the Round 4 process in 2018 (as existing users of the sea and potential bidders).</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Question is addressed to	ExA Question	Orsted IP's Response	Applicant's response
		such an assessment?	<p>The Ørsted IPs are asked to provide comment on the Applicant's response [REP4-009] in respect of potential wake effects of Moir Vannin Offshore Wind Farm, and its comments in relation to ISH2 action point 11 [REP4-004] regarding the specific exclusion of Moir Vannin Offshore Wind Farm from the Wake Impact Assessment Report [REP4-049].</p>	
REP5-59a.5	<p>Maritime and Coastguard Agency</p> <p>Stena Line</p> <p>UK Chamber of Shipping</p> <p>Any Other Interested Parties</p>	<p>SN 2.7</p> <p>Security for continuation of the Marine Navigation Engagement Forum</p> <p>The listed IPs are asked to confirm if they consider that adequate security</p>	<p>Walney Extension Limited ("WEL") and Morecambe Wind Limited ("MWL") have raised concerns regarding shipping and navigation and the Marine Navigation Engagement Forum ("MNEF").</p> <p>WEL and MWL do not consider the application documentation currently provides adequate security for post-consent stakeholder engagement. As noted in previous submissions, WEL</p>	<p>In relation to the Orsted IPs response to SN 2.7 and comments in REP5-057 regarding engagement on plans including the Vessel Traffic Management Plan, the Applicant reiterates its position that it would be neither necessary nor appropriate for a commercial organisation to be named in the Vessel Traffic Management Plan (REP2-005/REP4-009). The Applicant reiterates that the MNEF is not required under any shipping and navigation guidance or legislation, and that no concerns have been raised by the MCA on this matter.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		for post consent stakeholder engagement would be provided by Commitment Co72 in the Commitments Register [REP4-025] which commits to continued engagement of the Marine Navigation Engagement Forum (MNEF) post-consent, and if not, why not.	<p>and MWL seek to be specifically named as consultees in the Outline Vessel Traffic Management Plan ("OVTMP") [REP2-018].</p> <p>MWL and WEL are not satisfied that the commitment to engage with "existing sea users" or through the MNEF provides sufficient certainty that they will be engaged with. We note that it is common that the party responsible for constructing and operating offshore wind development is different to the party applying for consent. In such circumstances, the developer/operator may not be keenly aware of the relevant interests at play.</p> <p>MWL and WEL therefore seek a formal commitment to ensuring they have the opportunity to review the VTMP pre-submission to the Licensing Authority pre-construction in the interests of navigational safety within the vicinity of the Ørsted IPs assets, as a named consultee in the VTMP. The Ørsted IPs also expect close co-operation on the MPCP and ERCoP to ensure mutually beneficial outcomes.</p> <p>MWL and WEL note the provisions regarding the MNEF currently in the OVTMP are relatively high-level and do not detail in sufficiently clear or specific terms how the MNEF will be engaged with in respect of the VTMP, MPCP or ERCoP.</p>	

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 1.2: The Applicant's response to Ørsted IP's submissions at Deadline 5 (REP5-059, 058,057, 059c,059d, 059b).

Reference	Ørsted IP's submission	Applicant's response
REP5-059b	<p>EN010136 - Application by Morgan Offshore Wind Limited for an Order Granting Development Consent for the Morgan Offshore Wind Farm</p> <p>We represent the following parties in respect of the above examination:</p> <ul style="list-style-type: none"> - Barrow Offshore Wind Limited (Ref: 20049595); - Burbo Extension Ltd (Ref: 20049590); - Walney Extension Limited (Ref: 20048542); - Morecambe Wind Limited (Ref: 20049596); - Walney (UK) Offshore Windfarms Limited (Ref: 20049592); and - Ørsted Burbo (UK) Limited (Ref: 20049589). <p>Together, referred to as "the Ørsted IPs". In accordance with examination deadline 5, please find attached on behalf of the Ørsted IPs, the following documents:</p> <ul style="list-style-type: none"> - Response to the second written questions of the examining authority; - Response to deadline 4 submissions, along with a summary of the response (because the response exceeds 1500 words); - Appendix to the response to deadline 4 submissions; - An updated version of the wake assessment report by consultants Wood Thilsted [REP4-049]; - An addendum to the wake assessment report by consultants Wood Thilsted, which responds to comments made by the Applicant at deadline 4. 	<p>The Applicant notes this response.</p>
REP5-059.1	<p>Summary of deadline 5 submission for the Ørsted IPs</p> <p>1.1 This document contains a summary of the Ørsted IPs'1 deadline 5 submission in respect of the application by Morgan Offshore Wind Farm Limited (the "Applicant") for an Order under the Planning Act 2008 (the "Act") granting Development Consent for the Morgan Offshore Wind Farm (the "Project").</p> <p>1.2 The Ørsted IPs deadline 5 submission responds to certain comments made by the Applicant at examination deadline 4 in respect of the Ørsted IPs' arguments. In summary, the deadline 5 submission:</p> <p>1.2.1 Outlines further support for their interpretation of the NPS-EN3;</p> <p>1.2.2 Explains there is a precedent for the consideration of wake effects in offshore wind development, and highlights that Ørsted has taken a historically consistent approach to this matter in respect of its own developments;</p>	<p>The Applicant notes this response and has summarised our position at Deadline 6, which are expanded upon further:</p> <ul style="list-style-type: none"> • The Applicant does not consider NPS-EN3 or EN1 to support Orsted IPs interpretation of the policy • The Applicant notes inconsistencies with Orsted's approach to considering wake effects • The Orsted IPs wake assessment remains not agreed by the Applicant • The Applicant does not consider further mitigation applicable, suitable or capable of delivering the objectives of reducing net carbon emissions • The Applicant does not agree with Orsted's position on shipping and navigation, and has since been acknowledged by Orsted during ISH3

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
	<p>1.2.3 Responds to criticism made in respect of the wake assessment commissioned by the Ørsted IPs;</p> <p>1.2.4 Explains why mitigation of the predicted wake effects at their developments is required; and</p> <p>1.2.5 Reiterates the Ørsted IPs position on shipping and navigation.</p> <p>1.3 As flagged at examination deadline 4, this submission also provides a response to action point 11 of the action points arising out of Issue Specific hearing 2.</p>	
REP5-057.1	<p>RESPONSE TO DEADLINE 4 SUBMISSIONS ON BEHALF OF ØRSTED IPs</p> <p>Introduction</p> <p>1.1 This submission is provided in accordance with Deadline 5 of the examination timetable for the application by Morgan Offshore Wind Farm Limited (the "Applicant") for an Order under the Planning Act 2008 (the "Act") granting Development Consent for the Morgan Offshore Wind Farm (the "Project").</p> <p>1.2 We represent six owners of operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-005, RR-007, RR-023, RR-032, RR-043, RR-044), who we refer to together as the "Ørsted IPs".</p> <p>1.3 In this submission, the Ørsted IPs respond to a number of points raised in the Applicant's deadline 4 submissions relating to the issue of wake loss. The Ørsted IPs note that a number of arguments made by the Applicant in its deadline 4 ("DL4") submissions were addressed in the Ørsted IPs' DL4 submissions.¹ The Ørsted IPs do not repeat those arguments in this submission, but wish to respond to a number of key points, as outlined below.</p>	The Applicant notes this response.
REP5-057.2	<p>2. Response to DL4 submissions</p> <p>Interpretation of NPS-EN3</p> <p>2.1 The Ørsted IPs acknowledge the Applicant's arguments in relation to the interpretation of 'close' and 'licence' in paragraph 2.8.197 of the NPS-EN3, 2 and reiterate that this approach to interpretation is not practical or tenable, for the reasons set out in the Ørsted IPs' post-hearing submission [REP-047].</p>	<p>The Applicant re-iterates the points made in its hearing submissions and at Deadline 1, Deadline 2, Deadline 3, Deadline 4 and Deadline 5 (see REP1-016, REP2-005, REP2-027, REP4-006, REP5-009) regarding the interpretation of the wording of paragraph 2.8.197 of EN-3.</p> <p>In addition to these points, the Applicant submits that it simply is not the case that the policy in EN-3 relating to 'other offshore infrastructure' was intended to include existing offshore wind projects:</p> <p>Section 8 of EN-3 is entitled 'Offshore wind'. There are various paragraphs in the remainder of section 8 which address '<u>other</u> offshore infrastructure and activities' (emphasis added). The nature of such infrastructure and activities is explained in paragraph 2.8.44, which states:</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		<p><i>There may be constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure, such as oil and gas, Carbon Capture, Usage and Storage (CCUS), co-location of electrolyzers for hydrogen production, marine aggregate dredging, telecommunications, or activities such as aviation and recreation.</i></p> <p>The Applicant submits that the only fair and objective reading of this paragraph (which frames all the subsequent relevant paragraphs) is that existing offshore wind farm projects are not regarded as 'other offshore infrastructure'. That is why the word 'other' is used in the sub-heading. That is why offshore wind farms are not included in the list of examples. This is how this policy was universally interpreted from 2011 onwards.</p> <p>The remaining paragraphs in section 8 dealing with 'other offshore infrastructure' are entirely consistent with this reading. The Applicant submits that the meaning of these paragraphs was and is clear and excludes other offshore wind farms.</p> <p>In addition, the Applicant would particularly highlight the paragraphs below:</p> <p><i>2.8.203 Such engagement [referenced in immediately prior paragraphs] should be taken to ensure that solutions are sought that allow offshore wind farms and other uses of the sea to co-exist successfully.</i></p> <p>This paragraph 2.8.203 makes no sense if 'other uses of the sea' includes other offshore wind farms. If offshore wind farms were intended to be included this paragraph (and the entire section) would have to have been framed differently. It is therefore clear that this was not intended.</p> <p><i>2.8.342 Where a proposed offshore wind farm potentially affects other offshore infrastructure or activity, a pragmatic approach should be employed by the Secretary of State.</i></p> <p><i>2.8.343 Much of this infrastructure is important to other offshore industries as is its contribution to the UK economy.</i></p> <p>These two paragraphs are intended to be read together. The reference to 'other offshore industries' makes it plain that these paragraphs cannot refer to other offshore wind farms.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
REP5-057.3	<p>2.2 The Ørsted IPs also highlight that support for their position can be drawn from the North West Marine Plan 2021, which applies to the Project. The plan provides, at policy NW-CO-1, that proposals which “incorporate opportunities for co- existence and cooperation with existing activities will be supported.”</p> <p>Proposals that may have significant adverse impacts on existing activities must demonstrate that they will avoid, minimise and mitigate such adverse effects on an existing activity so they are no longer significant. Non-compliance with policies in marine planning documents undermines investor decision making which is likely to influence energy costs. A focus on short term results in decision-making could hamper future investment.</p>	<p>The Applicant disagrees with the Ørsted IP's interpretation of the North West Marine Plan policy NW-CO-1 and cross refers the Ørsted IP's to its response to REP5-59a.2 in Table 1.1 above.</p>
REP5-057.4	<p>2.3 The Ørsted IPs also reiterate the comments made in their DL3 submission [REP4-048] regarding the Crown Estate's submission to the Outer Dowsing Offshore Windfarm examination (“TCE submission”) (available at [REP4-051]). The Applicant suggests the TCE submission indicates that the separation distances in the round 4 leasing process were intended to ensure other offshore windfarms were not developed close to each other.</p>	<p>The Applicant reiterates its response at REP4-048.8 that The Crown Estate's (TCE) response to the Outer Dowsing Offshore Wind Farm (Generating Station) ExQ1 OG 1.2 does not contradict in anyway the approach taken by the Applicant.</p> <p>The Applicant would also highlight that TCE are not suggesting that there is a framework in which to undertake a project specific analysis in the context of EIA for a project to follow. TCE are merely stating it is not their role to undertake any project-specific analysis, beyond any analysis TCE undertook to inform their allowance for wake effects when setting the 7.5km buffer (a 50% increased buffer distance from previous leasing rounds).</p>
REP5-057.5	<p>2.4 In response to this suggestion, the Ørsted IPs wish to highlight that the TCE submission confirms that wake was one of a number of factors considered in establishing the buffer distance. The TCE submission is clear that the buffer was developed “for the purpose of processing project proposals in the tender only...” (i.e. not for the consenting process).</p>	<p>TCE published Characterisation Area Report: Region 17 Irish Sea in September 2019, which referred to 5km between projects and then TCE updated the distance to 7.5km in the Information Memorandum published also in September 2019.</p>
REP5-057.6	<p>2.5 As highlighted by the Applicant, TCE notes the increase in the buffer size compared to the previous leasing round “was for the purpose of de-risking the Round 4 tender by providing additional mitigation and assurance to participants through limiting proximity”. However, contrary to the Applicant's suggestion ‘limiting proximity’ is not the same as ‘close’ – especially in the context of the entirely separate consenting process. The TCE submission does not suggest at any stage that the separation distance established for the leasing process was intended to be used for this purpose. In fact, TCE is clear that “The location of a wind farm within an area of seabed leased from The Crown Estate is for developers to decide and design for, subject to obtaining the necessary consents and The Crown Estate's approval”. Therefore, compliance with the TCE leasing boundaries is not conclusive in the context of considering effects in the consenting process.</p>	<p>TCE are clear that they took account of wake effects, amongst other matters, when setting the 7.5km distance to both new and existing operational projects.</p> <p>The Applicant acknowledges that it is for the project developer to decide where within the agreement for lease area the project is located. The Applicant has taken the approach to development of the project, and as set out in the Site selection and consideration of alternatives chapter (APP-011) has made amendments to the design of the project in response to potential significant effects identified through the EIA process against established guidance and policy in consultation with established regulators.</p> <p>The Applicant reiterates its response in REP4-048.9, that The Crown Estate continues to bring forward leasing rounds with projects in close proximity to each other, with Leasing Round 5 having project areas cited much closer than 7.5 km to a suite of demonstration projects that either have or are well</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
		advanced in securing consents. Furthermore, early outputs for Leasing Round 6 proposals would further suggest that (within the Celtic Sea at least) this trend may continue.
REP5-057.7	<p>Lack of precedent and consistency of Ørsted's approach</p> <p>2.6 The Applicant has noted that the policy in paragraphs 2.8.197 and 2.8.198 of NPS EN-3 is the same as the policy in the 2011 version of the NPS. The Applicant has argued in a number of its DL4 submissions that previous offshore wind farms have not been required to undertake wake loss assessments as part of their applications, and that if the Ørsted IPs interpretation is correct "the policy has been incorrectly applied for the last 13 years".</p>	Please see the Applicant's response to REP5-057.8.
REP5-057.8	<p>2.7 The Ørsted IPs agree the relevant policies of the NPS-EN3 are unchanged. However, as outlined in their response to DL3 submissions [REP4-048], there are numerous examples of wake loss being raised as an issue in previous applications, including during the consenting process for the Burbo Bank Extension offshore wind farm, the Walney Extension offshore wind farm, and the Hornsea Two Offshore Windfarm.</p>	<p>The Applicant set out the results of its research into this matter at Deadline 5 (REP5-008), specifically referencing the projects highlighted by the Ørsted IPs. The Applicant concluded that none of the Ørsted projects brought forward under The Planning Act 2008 have undertaken a quantified wake effects assessment as part of their EIA. The Applicant does not contest that private voluntary agreements (with individual claimants) may have been reached between some of the numerous projects that Ørsted have brought forward, outside of the consenting process.</p> <p>The Applicant notes that the 'Clean Power 2030 Unit' will be looking into the management of wake effects for project delivery, recognising that it is an 'emerging issue', which will involve working with specialists, stakeholders and industry¹. This work is not yet available to set a framework for any discussions in relation to the Morgan Generation Assets. The Applicant therefore considers that in light of the activities set out in the Clean Power 2030 Action Plan, the approach to wake effects is a wider policy matter for government to address, rather than a matter for the Examining Authority to reach a conclusion on in the context of an individual DCO application.</p>
REP5-057.9	<p>2.8 The Ørsted IPs attach as Appendix 1 to this submission, the legal submissions for Danish Oil and National Gas ("DONG") - Ørsted A/S' former name, in respect of the Hornsea Two Offshore Windfarm, which raise concerns regarding the impact of wake effects that Hornsea Two would have on energy yield at Hornsea One. Those submissions acknowledged that, at that time, there was limited understanding of the relationship between</p>	<p>The Applicant's research into this matter set out at Deadline 5 (REP5-008) specifically referenced the document referred to by the Ørsted IPs here (REP5-058). The Applicant's conclusions are referred to in response to REP5-057.8 above. The Applicant would add that the Ørsted IP's submission provided in Appendix 1 (REP5-058) acknowledged that there is uncertainty in</p>

¹ <https://assets.publishing.service.gov.uk/media/677bc80399c93b7286a396d6/clean-power-2030-action-plan-main-report.pdf>.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
	offshore windfarms in terms of wake. This issue is one which has matured over time.	<p>the understanding of wake effects over large turbine arrays (rather than 'limited understanding') and considers that observation still applies today.</p> <p>The Applicant wishes to highlight that in withdrawing their representations regarding the potential wake loss impact of Hornsea Project Two on Hornsea Project One (after ownership of Hornsea Project Two transferred to DONG Energy in August 2015), DONG referred to wake loss as 'this commercial issue' (Statement of Common Ground between Hornsea Project Two and Hornsea Project One dated September 2015²). The Applicant has maintained throughout that potential for wake effects is not an EIA or policy matter.</p> <p>The Applicant has responded in full to this Appendix 1 submission at REP5-058.1 below.</p>
REP5-057.10	2.9 In that examination, a private solution was negotiated, such that the examining authority was not required to determine the issue. The Ørsted IPs understand negotiation of such solutions is commonplace in the industry.	Please see the Applicant's response to REP5-057.9. Ørsted IPs have not provided any evidence to support their claim that such negotiations are commonplace in the industry. The Applicant can only comment on discussions that have taken place in the public domain.
REP5-057.11	2.10 The Ørsted IPs reject the Applicant's assertion that the Ørsted IPs' "do not consider it necessary for their own projects to make an assessment of such matters (as has been the case for the other six Ørsted projects that have been brought forward under the Planning Act to date)." As demonstrated by the examples listed above, Ørsted has taken a consistent approach to the issue of wake loss in previous developments. However, as outlined in [REP4-047], the industry's understanding of the impacts of wake effects has developed significantly in recent years, in particular in the years following the Crown Estate's Offshore Wind Leasing Round 4.	<p>The Applicant cross refers the Ørsted IPs to its response to REP5-59a.4 in Table 1.1 above.</p> <p>The Applicant would note that the three examples given by Ørsted IPs relate to early projects within Ørsted's recent portfolio. If knowledge on wake effects was increasing and the risk increasing, and therefore (as is the position Ørsted IPs promote), the need to assess, mitigate and if necessary compensate for wake loss as part of planning also increasing, then one would expect to have seen an increasing level of coverage/evidence of this in their more recent Hornsea Three and Hornsea Four developments, as well as consideration of their Moor Vannin scheme.</p>
REP5-057.12	2.11 While the potential for wake effects has always been acknowledged, recent reporting on real life examples has been able to provide significantly more detailed information regarding actual effects which occur between windfarms, including at greater distances than previously understood. As a result, the offshore wind industry has developed a more sophisticated and empirical understanding of wake effects. As such, the Ørsted IPs consider that asset owners have become increasingly alert to the risk of wake loss at their developments. As a consequence, wake loss has become more of an issue.	The example referenced by Ørsted IPs in Appendix 1 to their submission (REP5-058), which estimated an increase in wake loss by approximately 40%, is dated 2015 (i.e. 10 years old and not recent). The Applicant has not denied that wake impacts will occur and that more understanding has been gained over time, but highlights that it was clear that neighbouring wind farm impacts have been recognised in the industry as far back as 2011 (see for

² https://webarchive.nationalarchives.gov.uk/ukgwa/20180612193021mp_/https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010053/EN010053-000647-Appendix%20A_Statement%20of%20Common%20Ground%20with%20Hornsea%20Project%20One.PDF.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
		example GL Garrad Hassan, 2011 ³). Ørsted (as DONG Energy at the time) published research on this topic in 2014 ⁴ . The relevant policies of NPS-EN3 are unchanged since 2011.
REP5-057.13	2.12 However, the Ørsted IPs reiterate that the interpretation of the NPS-EN3 to include consideration of wake impacts is not novel. Further, significant precedent exists for the consideration and resolution of disagreement between developers regarding wake effects. The Applicant has now had numerous opportunities to work through this issue with the Ørsted IPs in a manner consistent with other developers and has chosen not to.	The Applicant has adopted an entirely consistent approach with industry in regard to addressing the matter of wake effects in that it does not consider it a planning matter. The Applicant has provided evidence to address the concerns raised by Ørsted IPs including coverage of wake effects within its technical note on the Calculation of Net Effects on Greenhouse Gas Emissions (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02) (an approach which Ørsted IPs themselves promoted as a way forward for the Applicant). It is therefore, factually incorrect to suggest the Applicant is not working through this issue with Ørsted IPs.
REP5-057.14	2.13 The UK Government has recognised, in its recently published Clean Power 2030 Action Plan, that while historically wake loss issues between developers have been resolved outside of the planning process, a “precedent was set” in the Awel y Mor decision through the imposition of a wake condition. The UK Government also recognised that new projects (such as the Project) with larger and/or a greater number of turbines have an even greater propensity to cause wake effects on existing downstream operational projects.	Please see the Applicant's response to REP5-057.8 above. Further, the Applicant fundamentally disagrees with the Ørsted IPs that the Clean Power 2030 Action Plan supports their approach. The Applicant's view is that the Clean Power 2030 Action Plan supports its position that wake loss is not a matter for individual project Examinations. It is a topic that the government is looking at cross-industry and that historically was not a matter for Examination or indeed considered as a matter of policy.
REP5-057.15	Moor Vannin 2.14 The Applicant has highlighted, in its responses to action points [REP4-004], that the proposed Moor Vannin Offshore Wind Farm, was not included in the wake assessment carried out by Wood Thilsted [REP4-049], and that the Moor Vannin Scoping Report does not address wake effects.	The Applicant has responded to the ‘Moor Vannin’ point in Table 1.1, REP5-059a.4 above. The Applicant accepts that the Orsted IPs are not the developer of the Moor Vannin development, but they are sub-entities of the same overarching organisation and the Moor Vannin Scoping Report (REP3-043) states, “ <i>Moor Vannin Offshore Wind Farm Limited, is ultimately owned by Orsted A/S</i> ”).
REP5-057.16	2.15 As explained in the Ørsted IPs response to the second written questions of the examining authority, submitted alongside this document, Moor Vannin was not included in the wake assessment undertaken by Wood Thilsted for a number of reasons, including that it is at a much earlier stage of development, with consent applications not expected to be lodged until Spring 2025.	

³ <https://mysoftware.dnv.com/download/public/renewables/windfarmer/docs/EWEA%20Offshore%202011%20-%20Impact%20of%20Large%20Neighbours%20using%20WindFarmer%20-%20GLGH%20-%20GMSmith%20%28secure%29%20PO389.pdf>.

⁴ <https://iopscience.iop.org/article/10.1088/1742-6596/524/1/012162/pdf>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
	Therefore, the level of information available regarding Mooir Vannin is considerably less certain at this point of its development.	
REP5-057.17	2.16 The Ørsted IPs note that they are not the developers of the Mooir Vannin development. However, it is noted that that development is governed by a separate legal jurisdiction. Further, the Mooir Vannin site was awarded to Ørsted in 2015, well before the round 4 bidding process relevant to the Project concluded. As a result, prospective developers were on notice of potential wake effects from Mooir Vannin at the time of bidding and would have had the opportunity to build the consequences of those effects into their business cases.	
REP5-057.18	2.17 The Ørsted IPs view is that the effects of wake should be shared between developers. As outlined earlier in this submission, Ørsted A/S has historically taken a consistent approach to this issue in respect of its own developments and will continue to do so.	
REP5-057.19	<p>Critiques of the Wake Assessment</p> <p>2.18 The Applicant made a number of preliminary comments regarding the Wake Assessment in its responses to action points [REP4-004]. These comments included that the PEIR boundary was utilised by Wood Thilsted, rather than the updated DCO boundary. Wood Thilsted has updated the Wake Assessment in response to this comment, and the updated report is submitted alongside this document. We note that the change in boundary has resulted in predicted impacts worsening by a very small degree. This is due to Wood Thilsted electing to not place turbines in the North Eastern part of the original lease hence there are only limited differences in the assumed layout for Morgan between the PEIR boundary and the DCO boundary. This is an example of Wood Thilsted electing to take a conservative approach to assessing the effects of the Project.</p> <p>2.19 Wood Thilsted has also prepared an addendum to the Wake Assessment, responding to other comments by the Applicant on the Wake Assessment in [REP4-004].</p>	<p>The Applicant notes the updated Wake Assessment (REP5-059c) utilising the Application Order Limits and that this has resulted in a very minor change in total additional wake loss of 0.04% (maximum value of all scenarios considered) on all Ørsted Irish Sea assets. It is not clear to the Applicant where Wood Thilsted put turbines within the array, the layout principles they applied or why they felt it necessary to change their approach for this updated assessment. It should be noted that the Applicant has flexibility in the design envelope to put turbines anywhere in the array (excluding the SMZ), in accordance with the layout principles.</p> <p>Regardless of the outcome, the wake assessment exercise demonstrates the influence of unknowns, uncertainties and variables as the Applicant outlined at the beginning of the Examination (REP1-016 and REP2-005).</p> <p>Regarding the addendum to the Wake Assessment (REP5-059d), the Applicant would reiterate that there is no industry standard model for wake assessment, with a variety of approaches and set-ups being proposed and used by different developers. The Applicant would note that the choice of a model used by a developer is often situation specific, with different models having strengths and weaknesses in how realistically they simulate a situation, how quickly they can be re-run for iterative analysis, and how well validated they are for a given situation.</p> <p>The model used in the Wake Assessment is not validated for the situation it is being used to assess (external wake effects at a significant distance from an</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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		array of large turbines), and whilst there will be a high range of uncertainty in the results from the model, these were not presented in the report.
REP5-057.20	<p>Mitigation of effects</p> <p>2.20 The Ørsted IPs' wish to respond to comments the Applicant has made in respect of avenues for mitigating the wake effects of the Project.</p> <p>2.21 First, the Applicant appears to consider that reducing the Project's array area Red Line Boundary between PEIR and submission to primarily address safety of navigation also constitutes mitigation of wake effects on the Ørsted IPs' developments. The Ørsted IPs reiterate that this is not sufficient. The Applicant has not assessed this effect or considered in any methodical way how it could be mitigated and therefore cannot demonstrate that the effect has been avoided, minimised or properly designed for</p>	<p>The Applicant has updated the Greenhouse Gas Technical Note (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02) to theoretically show what the reduction of the PEIR boundary (and increase in separation distance between the Orsted IPs and Morgan Generation to 8.1km) has in terms of potential wake effects on the Orsted IPs. The purpose for the increase in distance is not relevant and whilst it was not specifically identified as a way of reducing wake effects, the evidence shows that this was the effect, and therefore it can be taken account of by the Secretary of State as mitigation for this effect.</p>
REP5-057.21	<p>2.22 Second, the Applicant has stated that the Ørsted IPs "...are effectively sterilising the seabed from future development and new energy MW generation because the only way to mitigate the effect is to increase the distance between projects...".</p> <p>2.23 This is not correct. In line with the relevant policy requirements, the Ørsted IPs consider the Applicant must seek to ensure the Project coexists with existing development. In order for coexistence to be achieved, the Ørsted IPs consider the potential for wake effects should be carefully considered and addressed.</p>	<p>The Applicant has through undertaking the GHG report considered how wake effects can be addressed and the study has demonstrated that in order to achieve any meaningful reduction in wake effects for the Orsted IPs, the Project would need to be reduced to such a size within the Agreement for lease area that is not viable or moved to a distance (which is not possible under the lease) at which there are no longer wake effects on the Orsted IPs. The equivalent submission for the Mona project, demonstrates that this is not feasible at a distance of ~30km in the Irish Sea and therefore there is nowhere in the Irish Sea that wouldn't have an effect.</p>
REP5-057.22	<p>2.24 One option to reduce wake effects on a neighbouring wind farm is to increase the distance between the development and the affected neighbour(s), however a number of other options exist (as outlined in the Ørsted IPs response to DL submissions [REP4-048]), including design and operational changes such as installing a smaller number of larger turbines, reducing capacity, wind sector management or exploring new technologies such as wake steering. It is not possible to determine what steps would be "disproportionate" in terms of their impact on the Project, without carrying out an assessment of those measures.</p>	<p>The Applicant has responded to the 'Mitigation – wind sector management/wake steering' point in Table 1, REP5-059a.3 above and in greater detail within its Deadline 5 submission REP5-009.</p>
REP5-057.23	<p>2.25 The Ørsted IPs do not seek to 'sterilise' the seabed. But, in light of the material impact the Project is predicted to have on their assets' AEP, it is reasonable to expect the Applicant to engage meaningfully on finding a solution to this issue.</p>	<p>The Applicant considers it has engaged meaningfully with the Orsted IPs on wake matters through its submissions to the examination, GHG report, subsequent updates to reflect new information provided by Orsted IPs, and attempts to negotiate the Statement of Common Ground requested by the Examining Authority. As has been clear from its submissions, the Applicant disagrees that this is within the remit of NPS policy and therefore it is not a matter for either the ExA or the Secretary of State.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
REP5-057.24	2.26 The Applicant has stated it is unclear how to determine when wake effects should be considered significant and that: "The only way for new schemes not to affect the wind regime for existing projects would be for them not to be built at all, clearly not the intention of either TCE or Government who see new offshore wind capacity as Critical National Priority infrastructure."	The Applicant notes this point.
REP5-057.25	2.27 The Ørsted IPs consider a degree of common sense should be applied here – the effects that have been predicted at their assets (up to 5.21% AEP cumulatively with other developments), would be considered significant by any offshore wind business. Additionally, it is noted that in the Awel y Mor examination, a maximum predicted impact of 2% was considered sufficient to justify the imposition of a DCO Requirement to assess and mitigate the effect.	<p>The Applicant disagrees that there is any basis on which to consider the suggested wake effects on the Ørsted IPs projects should be considered significant. In the absence of any recognised EIA assessment methodology, industry standard model or specific commercial information (withheld by the Ørsted IPs in their Wake loss assessment) it is simply not possible to reach a conclusion on the significance of any potential effects.</p> <p>The Applicant also considers that the Awel y Mor decision and DCO requirement included in the final Order should not be taken as precedent for either a conclusion on the potential scale of any effect or the need for a wake assessment. It is not reasonable for a widely accepted interpretation of a long standing policy, which reflects its plain meaning, to be re-interpreted by the previous Secretary of State in the way which took place in the Awel y Mor decision. The 2024 NPSs were consulted on twice before being designated. There was substantial engagement by offshore wind developers and other stakeholders in these consultations. The relevant wording regarding 'offshore infrastructure' stayed the same as the 2011 wording (in all relevant respects) and there was no suggestion that a different interpretation should or would be applied by the Secretary of State in decision making.</p>
REP5-057.26	2.28 Further, as explained above, there are many options to reduce the wake impacts of a new development. The Ørsted IPs have not suggested that such effects must be reduced to 0.0%, however they consider that in order to comply with policy, the Applicant must demonstrate that it has, at the very least, attempted to mitigate the effects of the Project in line with the overarching policy aim of coexistence with other development.	<p>The Applicant has responded to the points raised by the Ørsted IPs in relation to options to reduce wake impacts [see REP5-59a.2 and REP5-59a.3 above].</p> <p>Notwithstanding its position in relation to NPS policy, the Applicant has demonstrated through REP5-041 and S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02 (the initial and updated GHG notes) the effect that increasing the distance between the Morgan Generation Assets project and the Ørsted IPs. Such information provides ample evidence of the effect that increasing the distance between the Morgan Generation project and the Ørsted IPs has and would have in reducing potential wake effects, and the impact that a further increase in separation distance would have on the Ørsted IPs (small beneficial) and Morgan (large adverse) in terms of overall energy production and GHG reductions. Such information provides ample evidence for the SoS, if needed, to conclude that appropriate steps have been taken by the Morgan Generation project to reduce potential effects</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
REP5-057.27	<p>GHG Assessment</p> <p>2.29 The Applicant has indicated that it will update its assessment of the Project's net effects on GHG emissions to reflect the outcomes of the Wake Assessment. The Ørsted IPs look forward to receiving that updated assessment.</p>	<p>without a detrimental impact on overall GHG reduction accordance with the CNP tests.</p> <p>The Applicant has responded to Ørsted IP's ExQ2 INF 2.5 in Table 1.1 above (REP5-59a.1).</p> <p>The Applicant has submitted an updated technical note on the Calculation of Net Effects on Greenhouse Gas Emissions at Deadline 6 (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02). The note has been updated as follows:</p> <ul style="list-style-type: none"> • To take account of the updated figures provided in the Wood Thilsted Wake Impact Assessment Report submitted by Ørsted IPs at Deadline 5 (REP5-059c). The Applicant confirms that the application of the updated figures does not change the conclusions of the technical note. • To include an additional sensitivity study scenario (c1), representing the Morgan Generation Assets Preliminary Environmental Information Report (PEIR) boundary, to demonstrate the mitigation that has already been achieved through the refinement of the Morgan Array Area boundary presented in the DCO application. The sensitivity study confirms that the closer positioning of the Morgan Generation Assets to the Ørsted IPs projects (aligning with the PEIR boundary) would likely result in increased potential wake loss effects, reducing the Ørsted IPs projects' annual energy production (AEP). This therefore demonstrates that the refined boundary submitted with the Morgan Generation Assets' DCO application constitutes demonstrable mitigation on the potential wake loss effects experienced by the Ørsted IPs projects. • The Applicant does not agree with the logic of needing to consider lifetime extensions for reasons set out within its response at Deadline 5 to ExQ2 CE 2.3 (REP5-015). Notwithstanding this, the Applicant has included a new (S_D6_41) to the note which presents an exercise considering a hypothetical lifetime extension of 10 years to the Ørsted IPs assets, as supplied by the Ørsted IPs in response to Action Point 5 from Issue Specific Hearing 3 (ISH3) (EV6-011). The Applicant confirms that the results demonstrate that the conclusions of the note have not been altered when accounting for 10 year lifetime extensions for Ørsted IPs projects.
REP5-057.28	<p>2.30 However, the Ørsted IPs wish to record that they do not agree with the Applicant's statement that "it is uncontentious that factoring in any potential change in the Ørsted IPs generation output, when viewed against the long</p>	<p>The Applicant confirms that the updated technical note on the Calculation of Net Effects on Greenhouse Gas Emissions at Deadline 6 (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02) provides the evidence to support the statement that 'it is uncontentious that factoring in any potential change in the Ørsted IPs generation output, when viewed</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
	<p>term-marginal source of electricity that would replace that generation, would not change the outcome of the EIA assessment for GHG net effects”.</p>	<p>against the long term-marginal source of electricity that would replace that generation, would not change the outcome of the EIA assessment for GHG net effects (see section 12.11 of Volume 2, Chapter 12: Climate change (APP-016)) as beneficial, and therefore of overwhelmingly positive significance in EIA terms’. This is evidenced through the following conclusions within S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02:</p> <ul style="list-style-type: none"> • It is demonstrated that under ‘Scenario b’, as a result of the operation of the Morgan Generation Assets, net lifetime avoided GHG emissions (79,863,381 tCO_{2e}) greatly exceed those associated with ‘Scenario a’ (business as usual without Morgan Generation Assets) (27,042,721 tCO_{2e}). • The loss of avoided emissions by the Ørsted IPs projects as a result of the presence and operation of the Morgan Generation Assets is negligible (591,020 tCO_{2e}) when compared to the avoided emissions achieved by the Morgan Generation Assets (53,411,680 tCO_{2e}). • The greatest benefit to national GHG emissions reduction, and UK renewable energy production, is achieved through the presence of the Morgan Generation Assets, despite any potential losses experienced by the Ørsted IPs OWFs. • These conclusions have not been altered when accounting for 10 year lifetime extensions for Ørsted IPs projects without considering commensurate potential lifetime extensions to Morgan Generation Assets. <p>The above stated GHG emissions are using the DESNZ ‘non-renewable fuels’ avoided emissions only.</p>
<p>REP5-057.29</p>	<p>2.31 The Ørsted IPs consider the assessment of the Project’s met effects on GHG emissions should encompass scenarios where existing assets end operation earlier than they would otherwise, in part due to the impacts of wake loss from the Project. Taking this approach encompasses a realistic worst-case scenario, which in EIA terms should be evaluated.</p>	<p>The Applicant has included calculations for two operating outcomes in S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02, with both outcomes based on information made available in the public domain by the Ørsted IPs, as follows:</p> <ul style="list-style-type: none"> • Calculations which reflect an operating outcome of the Ørsted IPs projects being decommissioned at the end of their lifetime, based on the decommissioning dates from Ørsted IPs submissions into the Mona Offshore Wind Project Examination (EN010137, REP4-130) • Calculations which reflect an operating outcome of potential lifetime extensions of 10 years for the Ørsted IPs projects, based on information provided by Ørsted IPs in response to ISH3 Action Point 5 (EV6-011). <p>The Applicant therefore considers that a reasonable approach has been taken in response to Ørsted IPs submissions made available, and as noted</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
		<p>above (reference REP5-057.28), both operating outcomes result in the same overall conclusions within S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02.</p> <p>The Applicant also notes that the Ørsted IPs constructed extensions to the existing Burbo Bank and Walney 1 and 2 sites (Burbo Bank Extension and Walney Extension), with the extension projects located directly adjacent to the existing projects (in much closer proximity than the Ørsted IPs projects are to the Morgan Generation Assets), and that Ørsted IPs have stated in their response to ISH3 Action Point 5 (EV6-011) that they are already exploring whether to extend the lifetime of the Burbo Bank project (paragraph 1.28). This is despite the presence of the Burbo Bank Extension project immediately adjacent, and therefore appears to contradict Ørsted IPs claims that they would look to end operation of a project earlier due to the presence of another project.</p>
REP5-057.30	<p>2.32 The value of protecting the generation from existing assets and encouraging lifetime extensions has been supported recently by the UK Government in the Clean Power Action Plan 2030 (published in December 2024). In that document it is recognised that early retirement of existing assets presents a risk to the achievement of Clean Power 2030 targets and Carbon Budget 6. It is also noted that wider measures are being implemented to support the repowering and life extension of renewable assets.</p>	<p>Please see the Applicant's response to REP5-057.28 and REP5-057.29 above. In response to Action Point 6 of ISH3 (EV6-011), the Applicant has now carried out a sensitivity analysis which assumes a 10 year lifetime extension of the Ørsted IPs projects (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02). The conclusions of the technical note on the Calculation of Net Effects on Greenhouse Gas Emissions have not been altered when accounting for 10 year lifetime extensions for Ørsted IPs projects, namely that the greatest benefit to national GHG emissions reduction, and UK renewable energy production, is achieved through the presence of the Morgan Generation Assets, despite any potential losses experienced by the Ørsted IPs OWFs.</p>
REP5-057.31	<p>2.33 This has also been recognised by TCE. As part of their 2023 annual report, TCE published a study of the benefits of life extension along with a comparative analysis of different offshore wind project types. They summarise their finding as such: "while new developments contribute highly to security of affordable energy, a life extended project scores much higher in terms of the efficiency of materials and space, and minimising environmental impact". This conclusion underscores the importance of properly assessing wake to facilitate the future coexistence of the projects.</p>	<p>The Applicant accepts that new projects, lifetime extensions, and repowering options all play a part in achieving targets.</p> <p>The Crown Estate's Round 4 offshore wind portfolio across the UK seeks to deliver around 8 GW of new offshore wind projects by the end of the decade. This is enough to power more than seven million homes and deliver the step-change in the UK's journey to net zero by 2050. NPS EN-1 recognises that this target will need a dramatic increase in the volume of new large-scale energy development, which will not be possible without some level of residual impacts (paras 3.1.1 and 3.1.2). For Critical National Priority infrastructure, such as the Morgan Generation Assets, the starting point is a presumption that the need outweighs the residual effects in all but the most exceptional cases (para 4.1.7). NPS EN-3 encourages developers to maximise the</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
		<p>capacity of new large-scale energy development within technological, environmental and other constraints (EN-3 para 2.8.2).</p> <p>As noted in response to REP5-057.30, the Applicant has demonstrated the consequence of a 10 year lifetime extension of the Ørsted IPs projects, and the conclusions of the technical note on the Calculation of Net Effects on Greenhouse Gas Emissions have not been altered.</p>
REP5-057.32	<p>Shipping and Navigation</p> <p>2.34 Morecambe Wind Limited ("MWL") and Walney Extension Limited ("WEL") note the Applicant's comments in respect of engagement on plans including the Vessel Traffic Management Plan. As outlined in their response to the examining authority's question SN2.7, MWL and WEL do not consider their engagement on these matters is sufficiently secured at this stage through the Marine Navigation Engagement Forum ("MNEF").</p>	<p>The Applicant has responded to the 'security for the MNEF' point in Table 1, REP5-059a.5 above.</p> <p>In relation to allision risk at their assets, the Applicant's response to REP3-070.27 (REP4-009) clearly sets out that the Applicant's assessment concludes the risks are ALARP and this conclusion was agreed with stakeholders (as demonstrated in SoCG with the MCA (REP5-051), UK CoS (REP5-048), Stena Line (REP3-029) and IoMSPC (REP3-026)).</p>
REP5-057.33	<p>2.35 Additionally, in relation to allision risk at their assets, MWL and WEL understand from the Applicant's comments that increases in allision risk have been considered from the perspective of vessel and SAR operators, but not from the asset owner's perspective. MWL and WEL seek confirmation that allision risk directly to their developments remains within ALARP parameters and whether additional mitigations may be required for those projects to achieve ALARP status.</p>	<p>Ørsted IPs may wish to review their own project risk assessments as part of their safety management systems but noting the above this has no bearing on the Examination of the Morgan Generation Assets Application.</p>
REP5-057.34	<p>3. Response to ISH2 action point</p> <p>3.1 As flagged in the Ørsted IPs' post hearing submission submitted at deadline 4 [REP4-047], the Ørsted IPs have considered the examining authority's query at action point 11 [EV5-015] regarding whether the modelling undertaken by Wood Thilsted represents loss at "front row receptor turbines only" and how many turbines the Ørsted IPs' contend would suffer wake loss effects.</p>	<p>The Applicant notes this response.</p>
REP5-057.35	<p>3.2 The wake losses identified by Wood Thilsted in their independent report [REP4-049] are park-level impacts, and therefore represent the predicted aggregate impact on all turbines in the individual Ørsted IP assets. The losses are assessed on a turbine-by-turbine basis covering all wind directions and wind speeds, but then reported on an annual aggregated wind farm level to more simply and directly convey the predicted impacts. Individual turbine losses, again for all wind directions and wind speeds and not only the wind directions which cause the wake, are included in Appendix D5 of the wake report.</p>	

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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REP5-058.1	Appendix 1 – DONG submissions on Hornsea Two (provided separately)	<p>The Applicant notes this and provided a summary of this in terms of wake loss assessments and mitigation to the Examining Authority at Deadline 5 (REP5-008).</p> <p>Further to that submission, the Applicant would add that Round 3 adopted a completely different approach to all other licensing rounds. It awarded exclusivity for 10 years to a single developer or consortium over a very large area to allow multiple projects to be brought forward in a coordinated way over a period of time. There was no need for TCE to impose a buffer between projects as the developer had complete control and would decide each project location. This meant that any impacts between projects arising from proximity was a matter for the developer to decide.</p> <p>The Hornsea Zone went from being 100% owned by SMartWind – a consortium of Mainstream Renewable Power and Siemens Projects – to 100% ownership by DONG Energy.</p> <p>There was an intermediate stage where DONG Energy had acquired Hornsea One (H1) (when its DCO was granted, pursuant to a prior agreement) and – as became apparent later – was in negotiations to acquire Hornsea Two (H2) and ultimately the rest of the Zone.</p> <p>It is apparent from the submissions made by H1 into the H2 process that DONG had not negotiated a full set of offshore and onshore protections and controls as regards the potential interactions with and effects of H2 on H1 as part of its acquisition of H1. This meant that DONG Energy had to seek to use the planning system to secure those protections, which could have been secured through the original commercial negotiation. The whole philosophy of Round 3 was to leave the developer to resolve these matters through the project development and project divestment process and thereby to avoid conflict between projects. The Applicant does not know why this did not happen in this case.</p> <p>The H2 boundary was immediately adjacent to the H1 boundary and no buffer was provided for in the H2 DCO. If this had been a Round 4 scenario that would only have been possible with the full agreement of the first project (H1), which would have had a right of veto over the second project (H2).</p> <p>In other words, the buffer distance imposed by TCE would have been respected or a commercial agreement would have been reached if the second project was within the buffer.</p> <p>What ultimately happened is that a commercial agreement was reached with H1, which allowed the whole issue to be removed from the planning system.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Reference	Ørsted IP's submission	Applicant's response
REP5-059c	<p>Wake Impact Assessment Report - Irish Sea Cluster - Ørsted</p> <p>An updated version of the wake assessment report by consultants Wood Thilsted [REP4-049];</p>	<p>The Applicant has submitted an updated technical note on the Calculation of Net Effects on Greenhouse Gas Emissions at Deadline 6 (S_D6_41 Calculation of Net Effects on Greenhouse Gas Emissions F02). The note has been updated to take account of the updated figures provided in the Wood Thilsted Wake Impact Assessment Report submitted by Ørsted IPs at Deadline 5 (REP5-059c). The Applicant confirms that the application of the updated figures does not change the conclusions of the technical note.</p>
REP5-059d	<p>Wake Impact Assessment Report Response to Comments from Morgan OWF - Irish Sea Cluster – Ørsted</p> <p>An addendum to the wake assessment report by consultants Wood Thilsted, which responds to comments made by the Applicant at deadline 4.</p>	<p>The Applicant has responded to this at REP5-057.19 above.</p>

1.2 References

The Crown Estate, 2014, Centrica and DONG, Zone 9 - Celtic Array, Stage 2 Preliminary Environmental Information <https://www.marinedataexchange.co.uk/details/TCE-2688/2014-centrica-and-dong-zone-9---celtic-array-stage-2-preliminary-environmental-information>

The Crown Estate, 2019, Offshore Wind Leasing Round 4: Summary Stakeholder Feedback Report, <https://www.datocms-assets.com/136653/1720790421-tce-r4-summary-stakeholder-feedback-report.pdf>