

MONA OFFSHORE WIND PROJECT

Response to Shepherd & Wedderburn LLP on behalf of Ørsted IPs D6 Submission

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Image of an offshore wind farm

MONA OFFSHORE WIND PROJECT

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MONA OFFSHORE WIND PROJECT

Glossary

Term	Meaning
Applicant	Mona Offshore Wind Limited.
Appropriate Assessment	A step-wise procedure undertaken in accordance with Article 6(3) of the Habitats Directive, to determine the implications of a plan or project on a European site in view of the site's conservation objectives, where the plan or project is not directly connected with or necessary to the management of a European site but likely to have a significant effect thereon, either individually or in-combination with other plans or projects.
Bodelwyddan National Grid Substation	This is the Point of Interconnection (POI) selected by the National Grid for the Mona Offshore Wind Project.
Competent Authority	Regulation 6(1) defines competent authorities as "any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office".
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process for the Mona Offshore Wind Project.
Evidence Plan Process	The Evidence Plan process is a mechanism to agree upfront what information the Applicant needs to supply to the Planning Inspectorate as part of the Development Consent Order (DCO) applications for the Mona Offshore Wind Project.
Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation platforms. Inter-array cables will carry the electrical current produced by the wind turbines to the offshore substation platforms.
Interconnector cables	Cables that may be required to interconnect the Offshore Substation Platforms in order to provide redundancy in the case of cable failure elsewhere.
Intertidal access areas	The area from Mean High Water Springs (MHWS) to Mean Low Water Springs (MLWS) which will be used for access to the beach and construction related activities.
Intertidal area	The area between MHWS and MLWS.
Landfall	The area in which the offshore export cables make contact with land and the transitional area where the offshore cabling connects to the onshore cabling.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980.
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for a DCO to apply for a 'deemed' marine licence as part of the DCO process. In addition,

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	licensable activities within 12nm of the Welsh coast require a separate marine licence from Natural Resource Wales (NRW).
Maximum Design Scenario (MDS)	The scenario within the design envelope with the potential to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
Mona 400kV Grid Connection Cable Corridor	The corridor from the Mona onshore substation to the National Grid substation at Bodelwyddan.
Mona Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, offshore export cables and offshore substation platforms (OSPs) forming part of the Mona Offshore Wind Project will be located.
Mona Array Scoping Boundary	The Preferred Bidding Area that the Applicant was awarded by The Crown Estate as part of Offshore Wind Leasing Round 4.
Mona Offshore Cable Corridor	The corridor located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables will be located.
Mona Offshore Cable Corridor and Access Areas	The corridor located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables will be located and in which the intertidal access areas are located.
Mona Offshore Transmission Infrastructure Scoping Search Area	The area that was presented in the Mona Scoping Report as the area encompassing and located between the Mona Potential Array Area and the landfall up to MHWS, in which the offshore export cables will be located.
Mona Offshore Wind Project	The Mona Offshore Wind Project is comprised of both the generation assets, offshore and onshore transmission assets, and associated activities.
Mona Offshore Wind Project Boundary	The area containing all aspects of the Mona Offshore Wind Project, both offshore and onshore.
Mona Offshore Wind Project PEIR	The Mona Offshore Wind Project Preliminary Environmental Information Report (PEIR) that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
Mona Offshore Wind Project Scoping Report	The Mona Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
Mona Onshore Cable Corridor	The corridor between MHWS at the landfall and the Mona onshore substation, in which the onshore export cables will be located.
Mona Onshore Development Area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid substation will be located
Mona Onshore Transmission Infrastructure Scoping Search Area	The area that was presented in the Mona Scoping Report as the area located between MHWS at the landfall and the onshore National Grid substation, in which the onshore export cables, onshore substation and other associated onshore transmission infrastructure will be located.
Mona PEIR Offshore Cable Corridor	The corridor presented at PEIR that was consulted on during statutory consultation and has subsequently been refined for the application for Development Consent. It is located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables and the offshore booster substation will be located.

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Term	Meaning
Mona PEIR Offshore Wind Project Boundary	The area presented at PEIR containing all aspects of the Mona Offshore Wind Project, both offshore and onshore. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Potential Array Area	The area that was presented in the Mona Scoping Report and in the PEIR as the area within which the wind turbines, foundations, meteorological mast, inter-array cables, interconnector cables, offshore export cables and OSPs forming part of the Mona Offshore Wind Project were likely to be located. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Proposed Onshore Development Area	The area presented at PEIR in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid infrastructure will be located. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Scoping Report	The Mona Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
National Policy Statement (NPS)	The current national policy statements published by the Department for Energy Security & Net Zero in 2024.
Non-statutory consultee	Organisations that an applicant may choose to consult in relation to a project who are not designated in law but are likely to have an interest in the project.
Offshore Substation Platform (OSP)	The offshore substation platforms located within the Mona Array Area will transform the electricity generated by the wind turbines to a higher voltage allowing the power to be efficiently transmitted to shore.
Offshore Wind Leasing Round 4	The Crown Estate auction process which allocated developers preferred bidder status on areas of the seabed within Welsh and English waters and ends when the Agreements for Lease (AfLs) are signed.
Pre-construction site investigation surveys	Pre-construction geophysical and/or geotechnical surveys undertaken offshore and, or onshore to inform, amongst other things, the final design of the Mona Offshore Wind Project.
Point of Interconnection	The point of connection at which a project is connected to the grid. For the Mona Offshore Wind Project, this is the Bodelwyddan National Grid Substation.
Relevant Local Planning Authority	The Relevant Local Planning Authority is the Local Authority in respect of an area within which a project is situated, as set out in Section 173 of the Planning Act 2008. Relevant Local Planning Authorities may have responsibility for discharging requirements and some functions pursuant to the DCO, once made.
the Secretary of State for Business, Energy and Industrial Strategy	The decision maker with regards to the application for development consent for the Mona Offshore Wind Project.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).

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Term	Meaning
Wind turbines	The wind turbine generators, including the tower, nacelle and rotor.
The Planning Inspectorate	The agency responsible for operating the planning process for NSIPs.

Acronyms

Acronym	Description
AfL	Agreement for Lease
BEIS	Department for Business, Energy and Industrial Strategy
BNG	Biodiversity net gain
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EnBW	Energie Baden-Württemberg AG
EWG	Expert Working Group
HVAC	High Voltage Alternating Current
IEF	Important Ecological Feature
IEMA	Institute for Environmental Management and Assessment
ISAA	Information to support the Appropriate Assessment
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NBB	Net Benefits for Biodiversity
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
OSP	Offshore Substation Platform
PDE	Project Design Envelope
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
POI	Point of Interconnection
SAC	Special Area of Conservation
SoCC	Statement of Community Consultation
SPA	Special Protection Area
TCE	The Crown Estate
WTW	Wildlife Trust Wales
TWT	The Wildlife Trusts

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Units

Unit	Description
GW	Gigawatt
km	Kilometres
km ²	Kilometres squared
kV	Kilovolt
MW	Megawatt
nm	Nautical miles

1 Response to Shepherd & Wedderburn LLP on behalf of Ørsted IPs D6 Submission

1.1 Introduction

1.1.1.1 The Applicant has responded to Ørsted IP's Deadline 6 submission below.

2 Response to Shepherd & Wedderburn LLP on behalf of Ørsted IPs D6 Submission

Table 2.1: REP6-147 Sheppard & Wedderburn LLP on behalf of Ørsted IPs

Planning Inspectorate Ref. No.	Written Submission Comment	Applicant's response
REP6-147.1	2. Requirement for wake effects to be considered 2.1. The National Policy Statement EN3 ("NPS-EN3") establishes a policy framework for the consideration of the effects of new offshore wind development on existing operational infrastructure.	The Applicant notes that these issues were discussed during ISH6, and refers to the Applicant's hearing summary (REP6-083). The Applicant would note that the submissions presented by the Ørsted IPs do not suggest or evidence that Mona and other offshore wind farms (Ørsted IPs or others) won't continue to co-exist. As set out in REP5-118, and responded to in REP6-117, any possible impact from Mona on the management of the Ørsted IPs assets will not be realised in the near-term, and may only be relevant in long-term decision making where the individual Ørsted IPs projects are already operating in a marginal way. The Applicant notes this therefore may not be relevant at all in decision making for some of the Ørsted IPs assets, and it is the Applicant's understanding that in reality it may not be relevant for decision making regarding any of the IPs assets.
REP6-147.2	2.2. This framework creates approaches relating to initial site selection and design, assessment and mitigation of effects and, finally, decision-making in respect of a development. As outlined below, the framework as it relates to the relationship between a proposed development and other offshore infrastructure is underpinned by the principle that new development should seek to coexist with existing development. In order for co-existence to be achieved, the effects of new development must be assessed, understood and minimised.	As the Applicant has previously noted (REP6-083), there are a large number of factors that will influence the decision to continue to operate an asset at some time in the future. These include the operational condition of the assets, the operations and maintenance costs of the project at the time, the power price agreement the project holds, and other factors related to both the asset itself and the portfolio of assets it sits within. Mona would not affect any of these factors. Any potential indirect affect from Mona for some of the most marginal of the Ørsted IPs assets would be at most of minor relevance to decision making in the long-term, and cannot be deemed to affect the coexistence of the assets.
REP6-147.3	2.3. When the policy framework is read as a whole it is clear the purpose and intent of the policy is to ensure the successful coexistence of the proposed project with existing and consented projects. Coexistence requires meaningful adverse effects to be properly assessed and analysed. It is only when that exercise has been completed that conclusions can be reached regarding the extent to which her the proposed project can successfully coexist with existing and consented development. That is the policy outcome which underlies the various parts of the policy.	
REP6-147.4	2.4. At the design and site selection stage, applicants are "encouraged to work collaboratively with those other developers and sea users on co-existence/co-location	NPS-EN3, section on 'Factors influencing site selection and design' for offshore wind, para 2.8.44, references constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure, such

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	opportunities, shared mitigation, compensation and monitoring where appropriate..."3	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.
REP6-147.5	2.5. The Applicant, from the outset, has denied that the issue of wake loss on neighbouring development is an issue which is relevant under the NPS-EN3. The Ørsted IPs raised concerns regarding wake effects in their section 48 consultation responses. The Applicant has recorded that the Ørsted IPs raised this issue during the PEIR stage in their consultation report [APP-037], and responds in the Environmental Statement that on the basis of generic findings in the Frazer Nash study undertaken for the Crown Estate ("TCE") and the distances between the assets, wake effects were "not considered further".	Paragraph 2.8.44 goes on to state that prior to the submission of an application involving the development of the seabed, applicants should engage with key stakeholders, such as The Crown Estate and statutory bodies to ensure they are aware of any current or emerging interests on or underneath the seabed which might give rise to a conflict with a specific application. This will ensure adequate opportunity to reduce potential conflicts and increase time to find a resolution. The Applicant would note that at more than 7.5 km from any of the Ørsted IPs projects, and in fact greater than 30 km, there are no impacts on any activities on or underneath the seabed in relation to the Ørsted IPs projects. As the Applicant has set out in ISH6 (REP6-083) the licensable activities that the Ørsted IPs have or are undertaking relate to the installation and operation of their assets, not to the extraction of power from wind. The presence of Mona at a significant distance has no bearing on the Ørsted IPs ability to undertake those activities.
REP6-147.6	2.6. The Applicant has supported its position by cherry picking quotes (for example, that wake losses at distances much larger than 20km become "vanishingly small") from the Frazer Nash study and has refused to revisit the issue or undertake meaningful engagement on it despite considerable evidence indicating that the Project could cause material wake effects. They chose to effectively ignore the issue until the Ørsted IPs submitted the Wake Report demonstrating the materiality of the wake effect. The Applicant now appears to accept that the Project will have an effect on the Ørsted IPs existing developments but the opportunity to engage with the Ørsted IPs and give the matter appropriate consideration at the design and site selection stage has lapsed.	More generally, in determining the separation distance between new offshore wind farms to be developed as part of the Round 4 leasing round and existing wind farm, the Crown Estate had regard to potential interactions due to proximity. The industry as a whole was widely consulted on this, with the Crown Estate ultimately determining that the 7.5km separation distance was appropriate.
REP6-147.7	<u>Assessment of effects</u> 2.7 In respect of assessment of effects, the NPS-EN3 directs: 2.7.1 The scale and location of future offshore wind development around England and Wales means that	The Applicant has set out its position on the interpretation of NPS-EN3, and the need or otherwise for an assessment to be undertaken, in response to ExAQ2.19.1 (REP5-080) and in ISH6 (REP6-083).

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	<p>development has occurred, and will continue to occur, in or close to areas where there is other offshore infrastructure.</p> <p>2.7.2 Where a potential offshore wind farm is proposed <i>“close to existing operational infrastructure or has the potential to affect activities for which a licence has been issued by government”</i> the Applicant should assess the potential effects on that <i>“existing or permitted infrastructure or activities”</i>,⁴</p> <p>2.7.3 The assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy and guidance for offshore wind farm EIAs; and</p> <p>2.7.4 Applicants should <i>“engage with interested parties in the potentially affected offshore sectors early...with an aim to resolve as many issues as possible prior to the submission of an application”</i> and <i>“such engagement 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>	
REP6-147.8	<p><i>Assessment under paragraph 2.8.197-2.8.198</i></p> <p>2.8 As the Ørsted IPs have outlined in previous submissions,⁶ it is non-contentious that their developments are “existing operational infrastructure” for the purposes of paragraph 2.8.197.</p>	
REP6-147.9	<p>2.9 As previously canvassed, the Ørsted IPs consider their developments are “close” to the Project in the context of wake effects given the potential for the Project to have material adverse impacts on the energy yield at those developments (as demonstrated by the Wake Report). Therefore, the potential effects of the Project on the Ørsted IPs must be assessed and potentially mitigated by the Applicant in order to achieve co-existence and therefore</p>	

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	compliance with paragraphs 2.9.197-2.8.203 of the NPS-EN3.	
REP6-147.10	<p>2.10 Throughout the examination, and at ISH6, the Applicant has argued for an extremely narrow interpretation of the terms of the NPS-EN3 in order to justify their refusal to assess the effects of the Project on the Ørsted IPs developments. In summary, the Applicant argues that:</p> <p>2.10.1 “close” means “proximate” or “not far from” and therefore it is not possible to interpret the distances between the Project as being “close” to Ørsted IPs; and</p> <p>2.10.2 “activities for which a licence has been issued” means activities which are authorised by a marine licence or generation licence only (rather than a consent). Therefore, the only activities which could possibly be captured are the operation of a windfarm under the Electricity Act 1989 (authorised by a generation licence) or the securing of structures to the seabed (authorised by a marine licence). In the Applicant’s view these licences do not authorise economic activity and therefore are not impacted by wake.</p>	
REP6-147.11	2.11 The Ørsted IPs consider the Applicant’s interpretation of these terms to be unduly narrow, ignores the wider context, and if adopted would entirely undermine the purpose of the NPS-EN3.	
REP6-147.12	2.12 In respect of the interpretation of “close”, the Ørsted IPs consider the meaning ascribed by the Applicant of “proximate” or “not far from” does not provide any clarification as to what distances are intended to be captured by this policy. The Applicant has not stated the distance at which a development can no longer be considered ‘close’, however it has relied on the separation distance established for the offshore leasing process (7.5km) as justification for not carrying out an assessment of the Project’s wake effects.	

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REP6-147.13	2.13 The Applicant's interpretation is not workable in a planning context. It is not clear whether the Applicant considers there is a cut-off distance for all types of development, in the context of all effects, or whether a judgment should be made depending on the context. The Applicant's view is that the potential for an effect to occur is irrelevant, however, the Applicant has not provided any alternative basis for making this assessment. Rather, the Applicant's argument appears to be that what qualifies as "close" is an intuitive exercise, which all parties should have a shared understanding of. That would be irrational.	
REP6-147.14	2.14 An important principle of legal interpretation is that where the meaning of a word is not defined, it should be established in light of the purpose of the provision and framework in which it is contained. The purpose of this provision is to provide an understanding of the effects of a development on existing sea users, in order to allow the Secretary of State to undertake decision making in accordance with the coexistence principles of the NPS-EN3. As outlined further below, these principles include satisfaction that site selection and site design has been made with a view to avoiding or minimising disruption or economic loss to other offshore industries. In the Ørsted IPs view, the purpose of the policy framework overall is to ensure that new development understands and minimises adverse impacts on existing infrastructure, to ensure successful coexistence.	
REP6-147.15	2.15 Therefore, if a development has the potential to result in a material impact on existing infrastructure, it should be considered 'close' to that infrastructure for the purposes of the NPSEN3.	
REP6-147.16	2.16 The Ørsted IPs consider the term 'close' is deliberately not defined, to allow for a flexible and contextual interpretation which can be applied to the varied	

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	circumstances which could be relevant under paragraph 2.8.197, in the context of large-scale and complex development, where technical understanding of infrastructure and its impacts on the receiving environment are developing.	
REP6-147.17	2.17 The Applicant's interpretation of the second limb of 2.8.197 – <i>"the potential to affect activities for which a licence has been issued by government is unduly narrow."</i>	
REP6-147.18	2.18 We note that marine licenses are required to deposit a substance or object <i>"in the sea or on or under the sea bed"</i> (not only to structures secured to the seabed). ⁷ Additionally, we consider the Applicant's focus on the divorcing of economic activity from the activities authorised by these licences is unhelpful and unnecessary. A generation licence authorises the operation of, and therefore generation of electricity from, a generating station. Therefore, if a proposed development has the potential to impact on the ability of a generating station to generate electricity, it is captured by paragraph 2.8.197. The generation of income from that activity is a secondary matter.	
REP6-147.19	2.19 The Ørsted IPs consider the intention behind the two limbs in 2.8.197 is to capture both existing development and consented but not yet built development. 'Licence' in this context merely means 'authorised' – it is a broad term intended to capture any activities which the Government has approved. We note that elsewhere in the NPS-EN3 the term 'marine licence' is used where policies specifically only relate to marine licences. This interpretation ensures that unbuilt but authorised developments are protected to the same degree as existing development.	
REP6-147.20	<i>Engagement under paragraph 2.8.200-2.8.203 2.20</i> From the outset, the Applicant has refused to meaningfully engage with the Ørsted IPs on the issue of wake loss. The	

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	potential for wake loss was 'scoped out' of the application, and the Applicant has refused to engage on an approach to assessing wake effects, even in light of considerable evidence provided by the Ørsted IPs for material impacts at their developments at various stages of this examination. As outlined earlier in this submission, the Ørsted IPs raised their concerns regarding wake effects at their developments at the earliest opportunity, in their section 48 consultation responses. The Applicant's consultation report [APP-037] records that the Ørsted IPs' feedback on this point was received at PEIR stage, however the Applicant did not consider assessment or analysis was required.	
REP6-147.21	2.21 The Applicant's approach to this issue has been belligerent and fails to accord with the spirit and intent of the NPS-EN3. The Applicant has not engaged with a view to ensuring solutions which enable successful co-existence.	
REP6-147.22	<p><u>Decision-making</u></p> <p>2.22 In respect of the Secretary of State's decision-making, the NPS-EN3 highlights the importance of potential effects of a proposal on existing development. The NPS-EN3 relevantly provides that:</p> <p>2.22.1 In circumstances where a proposed offshore windfarm potentially affects other offshore infrastructure <i>"the Secretary of State should expect the applicant to work with the impacted sector to minimise negative impacts..."</i>; ⁸</p> <p>2.22.2 The Secretary of State should be <i>"satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss...to other offshore industries..."</i>; ⁹ and</p> <p>2.22.3 Where proposed development is <i>"likely to affect the future viability...of an existing or approved/licensed offshore</i></p>	<p>As set out in the Site Selection and Alternative chapter of the ES AS-016) the siting and design of the project has followed an iterative process, and included consideration of a large range of potential factors and constraints, including the presence and operation of other marine users and industries.</p> <p>In selecting a site that accords with the Crown Estate Round 4 siting criteria the Applicant has taken account of the Ørsted IPs in designing its project. The distance between Mona and the Ørsted IPs projects is, at its closest, over 4 times the 7.5 km buffer required by The Crown Estate (and over 5 times for some of the Ørsted IPs projects). The Applicant made changes to the project design through the development phase of the project, principally in relation to navigation risk, but which had the added effect of increasing the distance to some of the Ørsted IPs projects by over 4 km.</p> <p>The Applicant would note, that based on the Ørsted IPs presentation of the potential for effects up to 100km downstream of an offshore wind farm (REP5-120 and referenced documents therein) there is nowhere within the Round 4 Northern</p>

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	<i>infrastructure or activity</i> ” the Secretary of State is directed to give those effects “substantial weight in its decision-making.”	Wales & Irish Sea bidding area that would not have the potential for effects as outlined by the Ørsted IPs.
REP6-147.23	2.23 The Ørsted IPs have provided significant evidence for a material and relevant effect of the Project, which the Applicant has consistently refused to engage with. As a result, the Applicant cannot be considered to have worked with industry to “minimise negative impacts” and to date site selection and design cannot be considered to have been made to avoid or minimise wakeloss related impacts on industry.	As the Applicant has set out in response to REP6-147.1, the presence of Mona is not likely to affect the viability of the Ørsted IPs projects.
REP6-147.24	2.24 There are now limited options to address this issue. Those options are: 2.24.1 to modify site layout or project design, to minimise the adverse impact; 2.24.2 to modify the operation of the development to minimise the adverse impact (in this case, this could include measures such as wind sector management or wake steering); or 2.24.3 privately negotiate compensation.	The Applicant responded to the Ørsted IPs points on potential mitigation in ISH6 (REP6-083). The potential effects on the Ørsted IPs are already minimised by the siting of Mona at a distance of over 30 km away. Any greater increase through amendment to the boundary/area of the Mona array would compromise the objective of Mona to deliver 1.5GW of clean energy by 2030 and compromise the broader policy ambitions of the UK Government, through the NPS and otherwise, to maximise clean energy production. No further amendment to the Mona array can be justified. With respect to wake steering the Applicant questioned whether operational control of this nature would have any meaningful effect with a distance of 30 km between projects. Wake steering has been used, in some cases, to manage wake effects internal to a project, but there is no evidence of its use or efficacy for managing external wakes effects over long distance, as was acknowledged by the Ørsted IPs wake specialist present at ISH6. Management of this nature would have an effect internal to Mona (if designed to focus on trying to reduce impacts on a distant project that effect would be to reduce the efficiency of the Mona project and move it away from its optimal operational state), whilst likely having no effect on distant projects. Other operational modifications such as sector management would also reduce the operational efficiency of Mona, with significant operational changes likely needing to be made in order to have any noticeable effect on distant external projects.
REP6-147.25	2.25 Given the Applicant's refusal to acknowledge the materiality of the effects of the Project in terms of wake loss, despite the Ørsted IPs raising direct concerns in June 2023, during the Project's PEIR-phase (a phase that an applicant typically uses to understand and respond to concerns raised by stakeholders, and to share preliminary impact assessments with them), no steps have been taken to assess or to minimise the material effects of the Project on the Ørsted IPs developments. It is noted that the effects raised by the Ørsted IPs are not merely hypothetical – they have been substantiated by a body of evidence including a specific wake report.	The Applicant has set out an example, from first principles rather than on a project specific basis, of how a modification to project design, through a reduction in the area of a project would have significant internal effects on the modified project but

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		<p>very limited benefit to the distant external project, with the overall effect of reducing the net benefit of the projects (see AS-033).</p> <p>The Applicant has also previously noted that it is negotiating commercial side agreements with parties where there are identified residual effects under the EIA process undertaken against established guidance by established regulators in the relevant field, which is not the case for the Ørsted IPs.</p> <p>Put simply, there is no need for the Applicant to take further steps to comply with the policy in NPS EN-3.</p>
REP6-147.26	2.26 During ISH6, the Applicant made statements that suggested mitigations would only have a minor beneficial effect at the Ørsted IPs developments but would have a major adverse impact on the Project. Therefore, the Applicant's implication is that because the Project has a larger generating capacity compared to individual existing developments, it is exempted from complying with obligations of coexistence under the NPS-EN3.	<p>The Ørsted IPs understanding or interpretation of this point is incorrect. The relative impact of a mitigation on Mona, and projects at a distance from Mona, is irrespective of the size of the respective projects. The impacts of a mitigation will be more greatly felt at Mona, and only of minor benefit to the Ørsted IPs projects, because wake effects are more greatly felt over short distances and decrease with distance. Therefore mitigations that increase wake effects on Mona (for instance moving boundaries further away from the Ørsted IPs projects and therefore increasing the density of turbines within the Mona array area) will have a far greater relative negative impact on Mona than any minor benefit (if at all) on the Ørsted IPs projects. That cannot be justified in the context of the UK's ambitions to increase renewable electricity production to contribute to Net Zero targets.</p> <p>This principle is set out in AS-033, where a first principles approach has been taken to demonstrate the relative impact of a mitigation on the mitigated project and projects in the far field.</p>
REP6-147.27	2.27 We note that the Applicant is not in a position to make judgments regarding the effectiveness of potential mitigation measures, or the proportionality of effects between the Ørsted IPs developments and the Project, given it has not shared evidence that supports its position on these issues. As evidenced by the research submitted by the Ørsted IPs [REP4-126], the industry understanding of wake effects has developed considerably in the last 10 years. The Applicant's position on this issue does not reflect contemporary understanding, and they have provided no evidence to support their assertions regarding the materiality of Project's	<p>The Applicant has demonstrated the relative impacts of an area reduction mitigation (from first principles rather than site/wind farm specific) in AS-033. As the Applicant has set out in previous submissions (REP5-080) it is unable to undertake a project specific wake assessment, leaving aside the position that policy doesn't require it.</p> <p>The Applicant would note that whilst there has been an increase in research on wake effects over the last decade (much of which has not been peer-reviewed) that work has not necessarily led to a high level of understanding but rather an exposure of the considerable differences in the predictions made by different wake models and a high uncertainty in the magnitude of observed wake impacts, and therefore the magnitude of wake losses. It is notable, in the context of Mona and the Ørsted IPs projects, that there has been no validation of wake models for the</p>

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	wake effects, or what design mitigations might be possible and the consequences of those for the Project.	scale of projects and turbines that are being proposed for Mona, and that a robust, accurate wake loss assessment cannot be performed in this context.
REP6-147.28	<p>3. Responses to issues raised at ISH6</p> <p><u>Previous examples of wake analysis</u></p> <p>3.1 During ISH6, the Applicant has asserted that the Ørsted IPs' interpretation of NPS-EN3 in this examination is unprecedented. The Applicant argues that if consideration of the wake effects of a project was required by policy, it would have been addressed in the consenting of round three projects. Therefore, the Applicant considers this is not a genuine policy requirement and has implied that Ørsted A/S (the parent company of the Ørsted IPs) has been inconsistent in its approach to this issue.</p>	<p>The Applicant has carried out a review of the application and Examination material publicly available for the Burbo Bank Extension, Walney Extension, and the Hornsea Project Two offshore wind farms (i.e. as available on the respective project pages on the Planning Inspectorate's website, including archived content). Following this review, the Applicant notes the following:</p> <ul style="list-style-type: none"> • Burbo Bank Extension: a brief and high level consideration of potential wake effects was provided within the Other Infrastructure and Licensed Activities chapter of the Environmental Statement (DONG Energy Burbo Extension (UK) Ltd., 2013), in relation to potential effects on the Gwynt y Mor project, located approximately 8 km west of Burbo Bank Extension. Paragraphs 23.9.59 and 23.9.60 of the chapter note that RWE npower renewables had raised potential wake effects as a concern. In response, it is stated that DONG Energy Burbo Extension (UK) Ltd carried out a study which concluded that potential effects would be unlikely to be measurable. The Applicant could not find any reference to this study being submitted with the application or during the Examination.
REP6-147.29	<p>3.2 The Ørsted IPs' response to this assertion is two-fold:</p> <p>3.2.1 First, the Ørsted IPs consider their interpretation of the NPS-EN3 and approach to wake loss is not new and there are numerous examples of agreements which reflect that;</p> <p>3.2.2 Second, the Ørsted IPs consider any increased focus by existing developers on the wake impacts of incumbent development in contemporary consenting processes is due to the outcomes of assessing the interrelationship of built offshore windfarms becoming available. This has disclosed that wake loss is a more material issue than was previously understood.</p>	<ul style="list-style-type: none"> • Walney Extension: potential for wake effects is briefly referred to within the Other Infrastructure and Licensed Activities chapter of the Environmental Statement (DONG Energy Walney Extension (UK) Ltd., 2013). This includes reference within the consultation table, which noted that operators of nearby offshore wind farms (West of Duddon Sands, Walney II, Barrow, Irish Sea Zone and associated Offshore Transmission Owners) had raised potential for wake loss. However, it was noted in paragraph 21.7.3 of the chapter that this matter was being addressed via commercial agreement, and as such, assessment of wake loss would not be made public within the Environmental Statement.
REP6-147.30	<p>3.3 There are examples of wake loss between offshore wind development being dealt with in the consenting process. Namely, as the Applicant and Examining Authority are aware, the equivalent policies (under a previous iteration of the NPS-EN3) were considered in the Awel y Mor application. In that case, where there was potential for a 2% reduction in energy yield at the existing windfarm, the Secretary of State considered a wake assessment was</p>	<ul style="list-style-type: none"> • Hornsea Project Two: during the initial stages of the Examination for Hornsea Project Two (Deadline 1), potential wake effects were raised by the adjacent Hornsea Project One development (Heron Wind Limited, Njord Wind Limited and Vi Aura Limited – the "Project One Companies"). The Project One Companies raised that 'if Project Two is constructed up to the Order Limits there will be wake effects which will impact Project One', and provided a 'conservative estimate' that Project Two may increase wake losses on Project One by approximately

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	required to ensure the effect was mitigated and minimised. ¹¹	<p>40%. The Project One Companies requested that a buffer zone around Project One was secured, within which 'Project Two would have to seek approval for any turbine installation'. The scale of the buffer is not specified and it was stated that it would be agreed via a confidential cooperation agreement or Protective Provisions between the parties.</p> <p>In this regard, the Applicant notes that the boundaries of the Hornsea Project One and Hornsea Project Two developments are contiguous, which is not the case for Mona and the Ørsted IPs projects. The Applicant also notes that the 40% figure is considerably greater than the figures provided by the Ørsted IPs in relation to Mona, and cumulatively with other developments. In addition, the Applicant notes that this concern was not raised during the Hornsea Project Two Examination beyond Deadline 3, where it was stated in the Summary of Oral Case for ISH 15 dated September 2015 that 'that all matters between the Project and Hornsea Project One have now been agreed'. Similarly, the Statement of Common Ground between Hornsea Project Two and Hornsea Project One dated September 2015 states, in relation to wake loss, that 'The Projects are satisfied that this commercial issue is no longer an area of objection in relation to Project Two's DCO examination' and that 'The Project One Companies hereby withdraw their representations regarding potential wake loss impact'.</p> <p>The Applicant highlights, based on as-built data publicly available from Oceanwise, that the closest distances between the as-built wind turbines of Hornsea Project Two and Hornsea Project One at the boundary are 1,280 m (western boundary), 1,157 m (northwestern boundary) and 1,165 m (northern boundary) (see Annex 1). This is significantly closer than the closest separation distance between Mona and the Ørsted IPs projects (>30 km). It is therefore assumed that these distances were sufficient to resolve the concerns raised by the Project One Companies regarding wake losses, energy production and long term business case for the project, based on a far greater percentage impact than that being put forward by the Ørsted IPs for Mona.</p> <ul style="list-style-type: none"> • Hornsea Three and Hornsea Four: The Applicant notes that no concerns in relation to wake effects or the need for buffer zones were raised in the applications or Examination material for subsequent adjacent projects in the Hornsea Zone (i.e. Hornsea Three or Hornsea Four). Within the layout principles for Hornsea Four, Principle 9 states that 'The minimum separation distance
REP6-147.31	3.4 Additionally, the Ørsted IPs note 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.	
REP6-147.32	3.5 Importantly, the Ørsted IPs wish to respond to the Applicant's insinuation that Ørsted A/S has taken an inconsistent approach to this matter in respect of Ørsted-owned development. Danish Oil and National Gas ("DONG") - Ørsted A/S' former name, raised the issue of wake loss in the examination of Hornsea Two offshore windfarm, a round 3 project.	
REP6-147.33	3.6 In that examination, solicitors acting on behalf of DONG, raised concerns regarding the impact of wake effects that Hornsea Two would have on energy yield at Hornsea One. That submission is attached as Appendix 2 to this document. It also acknowledged that, at that time, there was limited understanding of the relationship between offshore windfarms in terms of wake. This issue is one which has matured over time.	
REP6-147.34	3.7 In that examination, a private solution was negotiated, such that the examining authority was not required to determine the issue. It is noted the relevant provisions of the NPS-EN3 relied on by the Ørsted IPs are the same in substance as those which applied in the Hornsea Two examination.	
REP6-147.35	3.8 These submissions demonstrate that the Ørsted IPs' interpretation of NPS-EN3 is not new or novel. Further, they demonstrate that Ørsted A/S has taken a consistent approach to wake loss in respect of other developments.	

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REP6-147.36	3.9 The Ørsted IPs understand that this is an issue which is regularly dealt with by applicants and incumbent developers - often resolved through negotiation. In other cases, applicants have engaged with impacted sea users on this effect, assessed the effect and either demonstrated the effect is immaterial or provided appropriate mitigation, such that scrutiny of the issue in an examination has not been required.	between the Hornsea Four Array area and Hornsea Project Two Offshore Wind Farm array area will be no less than 2.2nm as measured from the centre-point of WTGs' (see Table 1, page 5, within Ørsted, 2021). The Applicant notes that 2.2 nm is 4.07 km. In summary, none of the Ørsted projects brought forward under The Planning Act 2008 have undertaken a quantified wake effects assessment as part of their Environmental Impact Assessment as Ørsted are suggesting should be the case for the Applicants project. The Applicant does not contest that private voluntary agreements may have been reached between projects that Ørsted have brought forward, but there is no evidence to suggest mitigation has been required to address wake effects. The NPS paragraphs relied on by the Ørsted IPs as justifying a wake assessment are in the same terms as the provisions set out in the 2011 NPS. If the effect of those provisions was to require any new offshore wind farm development to assess wake loss effects on existing wind farms, that would have become a well-established practice in the industry by this point. That is simply not the case. The limited circumstances referred to above relate to projects in far closer proximity that in this application and, even in those limited instances that the Ørsted IPs rely on, the discussion of wake loss was minimal through the consenting process. The relevant NPS policies have not historically been considered to require wake assessment and there is no basis for a change in interpretation now.
REP6-147.37	3.10 The Ørsted IPs acknowledge that 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. It is noted that the majority of the research provided by the Ørsted IPs at deadline 4 [REP4-127]-[REP4-131] is post-2020.	
REP6-147.38	3.11 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.	
REP6-147.39	3.12 As such, the Ørsted IPs consider that asset owners have become increasingly alert to the risk of wake loss at their developments. That being the case, it may be that the issue of wake loss has become a greater focus in contemporary examinations of offshore windfarm projects.	
REP6-147.40	3.13 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	

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	the Ørsted IPs in a manner consistent with other developers and has chosen not to.	
REP6-147.41	<u>The Crown Estate's Round 4 leasing requirements</u> 3.14 As discussed in previous submissions, the Applicant has erroneously relied on compliance with the boundary requirements in the Crown Estate's ("TCE") round 4 leasing process, to justify not carrying out an assessment of the Project's wake effects.	The Applicant refers to the points made in ISH6 (REP6-083) for its position on TCE's Round 4 siting criteria. TCE has taken wake effects into account when, amongst other matters, setting the 7.5 km distance between Round 4 leasing areas and other OWFs (unless otherwise agreed to be less with the relevant OWF). TCE note that this increased distance, relative to previous bidding rounds where it was 5 km, was for the purpose of de-risking the Round 4 tender process by providing additional mitigation and assurance to participants through limiting proximity to other OWFs, or in other words, ensuring they were not close to each other.
REP6-147.42	3.15 During ISH6, the Applicant stated that TCE's recent submission on the examination of the Outer Dowsing Offshore windfarm (the "ODOW submission") ¹² indicated that wake was taken into account in the setting of this separation distance.	TCE controls leasing of seabed and interactions. As part of the leasing process, TCE requires new interests to seek consent from existing leaseholders where there is the potential for those projects to interact. For Round 4 projects, TCE required a minimum separation distance of 7.5 km between existing projects, and where existing assets could be affected based on distance, consent of that party is needed. Whilst the Applicant is not aware of the specific detail of the commercial agreements of other projects where wake loss has been considered relevant (due to commercial confidentiality), it is likely to that in some cases those agreements were driven by the need to get the consent of existing operators where development was within the TCE minimum separation buffer.
REP6-147.43	3.16 Further, the Applicant appears to rely ¹³ on the following passage from the ODOW submission as support for its argument that development beyond the TCE separation distance is not 'close' under the NPS-EN3 for the purposes of wake effect: ¹⁴ This 7.5km was used for the purpose of processing project proposals in the tender only, being higher than the 5km buffers that are specified within the seabed lease agreements (introduced in Round 3); this was for the purpose of de-risking the Round 4 tender by providing additional mitigation and assurance to participants through limiting proximity.	The Applicant notes that all of Ørsted IP projects are beyond the area within which consent would be needed – with a separation of over 30 km between Mona and the closest Ørsted IP project.
REP6-147.44	3.17 The Ørsted IPs reiterate that the ODOW submission demonstrates that wake was one of a number of factors (including navigation and safety) taken into account in setting a minimum separation distance between offshore windfarms. As noted in the submission, that distance was set "for the purposes of processing project proposals in tender only...". Therefore, the buffer was not intended to replace analysis in the consenting process.	The only way for new schemes not to affect the wind regime for existing projects at all, when accounting for the Ørsted IPs position that wake effects persist for up to 100 km, 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.

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REP6-147.45	3.18 This is made clear further on in the submission, where TCE acknowledges that wake effects can extend beyond the buffer distance and states <i>"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."</i>	
REP6-147.46	<p>3.19 In the Ørsted IPs' view, the clear thrust of the ODOW submission is that:</p> <p>3.19.1 TCE did not undertake a detailed or conclusive analysis of wake loss in setting the round 4 separation distances. Rather, it was one factor taken into consideration in setting a minimum distance for the purposes of the leasing tender process.</p> <p>3.19.2 The 7.5km separation distance was not intended to replace the requirement for project specific analysis of the effects on any of the factors taken into account in its establishment. This includes navigation, safety and wake.</p> <p>3.19.3 It is accepted that wake effects can extend beyond the 7.5km separation distance and that factors other than distance are relevant to the level of wake effect experienced at other developments.</p>	
REP6-147.47	3.20 Additionally, as outlined earlier in this submission, the industry's understanding of wake effects has developed significantly in the years following the establishment of TCE's separation distance. Therefore, even if TCE intended for this distance to be relied on for what should be considered 'close' under NPS-EN3 (which the Ørsted IPs consider would be irrational as it would allow TCE to implicitly override a regulatory process over which it does not have jurisdiction), this distance would no longer be based on sound information.	
REP6-147.48	3.21 We note the 2023 Frazer-Nash study relied on by the Applicant and provided at deadline 3 post-dates the	

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	establishment of the round 4 separation distances (and the signing of the agreements for lease) and should not be interpreted as forming the basis for that separation distance. This is confirmed by TCE in the ODOW submission: "...[the Fazer-Nash study] has no direct link to the buffer zones set out in the 2019 Information Memorandum for Offshore Wind Leasing Round 4".	
REP6-147.49	3.22 We also reiterate that that study, which takes some generic, theoretical offshore wind farm pairs and looks at the balance in total production based on different densities and separation buffers, cannot be relied on as an assessment of the likely effects of the Project on the Ørsted IPs' developments, in these specific circumstances.	
REP6-147.50	3.23 This is supported by TCE's comments in the ODOW submission that " <i>The report summarises modelling applied to generic/hypothetical wind farms and does not replace the need for projectspecific analysis.</i> "	
REP6-147.51	<p>Appendix 1 – Ørsted responses</p> <p><u>Introduction</u></p> <p>1.1 Ørsted commissioned the Wake Report for two major reasons. Firstly, to evidence that wake effects have a material impact on other wind farms that cannot be ignored and secondly, to demonstrate that modelling wake is feasible and not an obscure, untrustworthy science, as argued by the Applicant, but an essential tool that underpins all investment decisions in the wind industry, including the estimation of wake effect.</p>	<p>The Applicant would note this is a mischaracterisation of the Applicant's position. The Applicant has never denied that wake effects can occur, and does not believe the modelling of effects to be obscure or untrustworthy.</p> <p>The Applicant has set out in detail across a number of representations why it believes modelling is not required by policy, and were it to be that there is no guidance or agreed industry standard by which to conduct such an assessment, no regulator to provide independent scrutiny of it, a need for access to confidential information that the Applicant is not in receipt of (amongst other limitations), and no framework by which to understand the results of any modelling in impact assessment terms. The Assessment the Ørsted IPs have presented does not overcome these issues, for the reasons set out in RE6-130 (and in some cases acknowledged in REP5-120).</p>
REP6-147.52	1.2 We ought to acknowledge that the Applicant knows more about their development than third parties and for this reason our preference is for the Applicant to assess impact in line with NPS-EN3. Their continued refusal to comply with the policy forced us into commissioning an independent consultant, Wood Thilsted (WT), to assess the wake effect.	

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REP6-147.53	1.3 As such, WT used their expertise and professional judgment to create a reasonable set of assumptions and calculate the wake effect. We believe it is still possible for the Applicant, and indeed their responsibility, to apply their insider knowledge of the development to better the understanding of the wake effect on other wind farms.	
REP6-147.54	<u>Impact of wake effect on Irish Sea developments future viability</u> 1.4 The Applicant appears to assume the only relevant effect of the Project is the immediate impact on energy generation at individual developments. UK offshore wind projects have historically been developed with government-sponsored market support. This support typically guarantees developers minimum electricity prices via Contract for Difference (CfD) and Renewable Obligation Certificates (ROCs) but are time limited.	As the Applicant has previously noted (REP6-083), and as is referred to here by the Ørsted IPs, there are a large number of factors that will influence the decision to continue to operate an asset at some time in the future. These include the operational condition of the assets, the operations and maintenance costs of the project at the time, the power price agreement the project holds, and other factors related to both the asset itself and the portfolio of assets it sits within. Mona would not affect any of these factors. Any potential in-direct affect from Mona for some of the most marginal of the Ørsted IPs assets would be at most of minor relevance to decision making in the long-term, and cannot be deemed to affect the coexistence of the assets.
REP6-147.55	1.5 As a result, late life developments will face greater uncertainties and pressure on profit margins due to volatile revenues coupled with the ageing nature of the assets pushing operating costs up. In such environment, it is entirely possible that a 5% reduction in electricity production could accelerate the decision to decommission early. [comments]	
REP6-147.56	1.6 As part of their 2023 annual report ¹ , The Crown Estate 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: <i>“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”</i> . This conclusion underscores the importance of properly assessing wake to facilitate the future co-existence of the projects.	

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REP6-147.57	1.7 The Applicant's approach ignores that the unmitigated effect of the Project is such that it is likely to be a material factor in long-term decision making regarding such generation assets. Therefore, the generation at risk is not merely immediate reductions canvassed in the Wake Report but could (a) shorten the life and result in the loss of the entire output of the generation assets; or (b) stop the generator from pursuing a lifetime extension of the existing generation assets.	
REP6-147.58	<u>Critiques of the Wake Report</u> 1.8 Wood Thilsted have prepared an addendum to the Wake Report, which addresses technical criticisms made at ISH6. That addendum is submitted alongside this submission. We do not seek to repeat the responses made in the addendum here. However, the Ørsted IPs wish to respond to a small number of issues raised.	The Applicant has addressed some of the specific points in rows below.
REP6-147.59	<u>Reliability of modelling</u> 1.9 During ISH6 the Applicant characterised the Wake Report as " <i>one of multiple different approaches which could be taken to understanding this issue</i> " which would all have " <i>equal validity</i> " and which would produce an " <i>almost endless variety of different outcomes</i> ". The Applicant stated it did not understand where the Wake Report sits in the overall realm of possible outcomes. The Applicant also stated that there is " <i>no such thing as industry standard methodology</i> ".	The Applicant would reiterate that there is no industry standard model, 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. For business case purposes developers will use a range of models to try and reduce uncertainty in relation to these factors. As set out above, no models have been validated for external wake effects at long distances (as is the situation here). However, as external wake impacts are typically small, high uncertainty is tolerable when considering this in business case assessments, but for the isolated purpose of evaluating long-range wake effects, the high uncertainties means robust, accurate assessment is not possible.
REP6-147.60	1.10 The Ørsted IPs considers this characterisation undersells the industry's understanding and ability to deal with this issue. Developers such as Orsted and the Applicant would not be able to calculate business cases for the purpose of price auctions or take investment decisions if the Applicants assertions were true.	As the Applicant has noted in its response to the Ørsted IPs Wake Impact Assessment (REP6-130) the model used is not validated for the situation it is

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REP6-147.61	1.11 Offshore wind developers routinely undertake wake assessments of their developments. An accurate understanding of energy yield, which is inextricably linked with wind resource and wake, is fundamental to any business case for such development. While certain assumptions must be made in carrying out such assessments, these can and are made on an educated basis to provide a range of robust likely outcomes.	being used to assess (external wake effects at a significant distance from an 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. The addendum to the report (REP6-157) in response to points raised by the Applicant at ISH6 suggests a variance in the range of 3.1% to 4.5% and a resultant variability of less than 0.7% AEP on their calculated cumulative effect of 3.8%. The Applicant would note that given the model is validated for near-field effects assessment, and has not been validated for effects between projects at distance and with large turbines, the can be little confidence in the stated variance ranges.
REP6-147.62	1.12 The modelling tool utilised for the Wake Report (DNV WindFarmer:Analyst) is the most common tool used by developers and is broadly accepted in the industry to produce reliable results.	
REP6-147.63	1.13 The accuracy of the wake model used in the Wake Report has been extensively validated by DNV as mentioned in the final paragraph of section 1.2 of the Wake Report. These validations show that the wake model produces results which closely predict actual losses experienced on operational wind farms, and not one of endless possible outcomes as suggested by the Applicant.	
REP6-147.64	1.14 As with any model, the wake model used in the Wake Report will have an uncertainty which has been established through the extensive validations on operational projects. The inputs to the wake model will also contain uncertainties. The industry is very able to understand and characterise these uncertainties hence the Applicants assertion that each different approaches have equal validity shows a fundamental misunderstanding of the effect. Wake impacts can be evaluated taking consideration of the uncertainty of the analysis	
REP6-147.65	1.15 As the Wake Study looks at the comparative difference between two scenarios where the only thing changing is the addition of neighbouring wind farms, many of the modelling and input uncertainties will be identical and cancel each	

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	other out reducing the inherent uncertainty in the wake analysis.	
REP6-147.66	<p><i>Mooir Vannin</i></p> <p>1.16 During ISH6, the Applicant criticised that the Wake Report did not include an assessment of the proposed Mooir Vannin offshore wind project ("MV"). The Applicant suggested that this indicates the Ørsted IPs do not consider its own developments should be subject to the same requirements as other developments.</p>	<p>The Applicant is not the first developer to consider the significant offshore wind potential in the Irish Sea. A number of projects, under the Celtic Array North East development areas (and primarily the Rhiannon Wind Farm), were awarded as part of The Crown Estates Round 3 leasing process. These projects broadly overlapped with the Mona Offshore Wind Farm and the Morgan Generation Assets project areas, and were planned in the region with an award date (2010), that overlapped the Commencement of Operations Dates of the Ørsted IPs as follows:</p> <ul style="list-style-type: none"> ○ Walney Phase 1: July 2011, ○ Walney Phase 2: June 2012, ○ West of Duddon Sands: Sept 2014 ○ Walney Ext: Aug 2019 <p>The proponents of these planned projects were a 50/50 Joint Venture between Centrica and Ørsted (previously known as DONG Energy). The planned Rhiannon project was terminated in 2014 but there was a proposed project in this region between 2010 and 2014. The 2012 Scoping Report for the Rhiannon project did not scope in the need for a wake effects assessment in the EIA. The Applicant would note that at the time, development of Walney 1, 2, and West of Duddon Sands would have been brought forward in the expectation that there would be or at least it was reasonably foreseeable that there could be one or two large wind farms brought forward in this region. Having been involved in these development, Ørsted (previously DONG) would have understood the potential for further development of offshore wind in the region, and would have taken some consideration of it when progressing the relevant Ørsted IP projects.</p>
REP6-147.67	1.17 The Ørsted IPs wish to record that this is not their position. 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.	
REP6-147.68	1.18 MV was not included in the Wake Report 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. Therefore, the level of information available regarding MV is considerably less certain at this point of its development.	
REP6-147.69	1.19 In contrast, the Project, along with the proposed Morgan and Morecambe offshore windfarms are 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.	
REP6-147.70	1.20 However, we note that MV falls within a neighbouring nation and separate legal jurisdiction and therefore will be	

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	<p>subject to a different decision-making process. Additionally, the MV 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 MV at the time of bidding and would have had the opportunity to build the consequences of those effects into their business cases. In contrast, the Ørsted IPs could not have been aware of the Project (or the proposed Morgan or Morecambe offshore windfarms) at the time of investment decisions were being made regarding their developments.</p>	
REP6-147.71	<p><u>Response to ISH6 Action Point 9</u></p> <p>1.21 Typically, the wind resource available to an offshore wind farm will vary from year-to-year in the range of $\pm 5\%$ of the average production. Outlier years can result in fluctuations that extend outside this range.</p>	This is noted by the Applicant.
REP6-147.72	<p>1.22 However, the size of the fluctuations from year to year is not directly related to the wake impacts as described in the Wake Report. It is very important to note that the wake losses predicted as a result of the Project would occur in both low and high wind years. It is not a variable effect which would be eliminated if the natural variability of the wind resource was to cause an annual effect greater than the estimated wake loss. It would impact the Ørsted IP developments in every year post commissioning of the Project resulting in a long-term average effect as estimated in the Wake Report, and the wake effect is not in any way mitigated by wind resource variability</p>	

3 ANNEX 1 - AS-BUILT WIND TURBINE LAYOUTS OF HORNSEA PROJECT TWO AND HORNSEA PROJECT ONE

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