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ESTUARIES

OFFSHORE WIND FARM

# FIVE ESTUARIES OFFSHORE WIND FARM

## 10.59.2 APPLICANT'S COMMENTS ON EAST ANGLIA TWO LIMITED'S DEADLINE 6 SUBMISSION

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## 1. INTRODUCTION

- 1.1.1 This document has been prepared by the Applicant in response to the Deadline 6 submission made by Shepherd and Wedderburn LLP on behalf of East Anglia TWO Limited [REP6-079] with regards to wake loss.
- 1.1.2 The Applicant does not intend to repeat submissions which have already been made at length as to the proper interpretation of the NPS and the application of the NPS policies relied on by EA in this case but wishes to make the following brief further submissions.
- 1.1.3 In addition, the Applicant has set out some high level comments on the wake assessment carried out by East Anglia Two Limited and submitted with its deadline 6 submission.
- 1.1.4 The Applicant has adopted the sub-headings used by East Anglia Two limited in its deadline 6 submission.

## 2. APPLICANT'S COMMENTS ON EAST ANGLIA TWO LIMITED'S DEADLINE 6 SUBMISSIONS

### 2.1 BROADER CONTEXT

- 2.1.1 The Applicant notes that East Anglia Two Limited's submission as to the factual position on the seabed leasing process and relevant chronology broadly accords with the note submitted by the Applicant at deadline 6 in response to action point 11 at issue specific hearing 6 on environmental matters [REP6-047]. The Applicant wishes to highlight that as is clear from the chronology included as part of the Applicant's deadline 6 submission [REP6-047], prior to East Anglia Two Limited submitting its application for development consent, the existence of an extension to the Galloper wind farm was in the public domain and thus East Anglia Two Limited has been able to take into account in its project development since that time.
- 2.1.2 The Applicant does not therefore agree that East Anglia Two Limited's assertion that "*EA2 was well advanced before even an announcement was made that Five Estuaries would be proceeding as a project*" is a fair representation of the position. As set out in East Anglia Two Limited's own submission at deadline 6 [REP6-079], development consent for the East Anglia Two project was not granted until March 2022, with the grant of consent then being the subject of legal challenges which were not resolved until 2024, with the project also receiving a Contract for Difference (CfD) in allocation round 6 in September 2024.
- 2.1.3 The Applicant does not consider that it is accurate to regard the East Anglia Two project as "*well advanced*" at a point in time almost 18 months prior to the grant of its consent application and four years before it received a Contract for Difference. In practice there was ample time and opportunity open to East Anglia Two Limited both to engage with the Applicant to obtain more information about the Five Estuaries project (including as part of the non-statutory and statutory consultations carried out prior to the submission of the development consent application). Until shortly before submitting its relevant representation East Anglia Two Limited did not seek to engage with the Applicant, nor does it appear to have taken any steps to consider or account in the design of its project for the proximity of the Five Estuaries development.

- 2.1.4 Notably East Anglia Two Limited has not responded at all to the critique made by the Applicant in its previous submissions [REP3-024 and REP5-073] that it is not aware of any efforts made by East Anglia Two Limited to account for the interaction of wakes between the two projects in its development process. Similarly the Applicant is not aware of any attempt made by East Anglia 2 wind farm to minimise or compensate for the impact of East Anglia Two on the existing operational Galloper and Greater Gabbard offshore wind farms.
- 2.1.5 Further and in contradistinction to the position that East Anglia Two Limited is adopting with respect to the Proposed Development, nor was East Anglia Two Limited's application for development consent examined and decided on the basis that the National Policy Statements required a wake assessment of its impacts on other wind farms to be carried out and for any such effects to be mitigated or minimised. This reinforces the Applicant's position set out in the summary of its case at ISH6 [REP6-045 at section 1.8] as to the accepted understanding of the status of wake effects in the consenting process.
- 2.1.6 By contrast East Anglia Two Limited's position is in effect that whilst it was not required to assess the wake effects of its project on other wind farms or to mitigate them for the purposes of its own consenting process, the Applicant is required to do so in the context of its application for development consent for the Proposed Development. Not only is this position fundamentally contradictory, as set out in the Applicant's previous submissions [REP5-073] if adopted by the Examining Authority or Secretary of State it would give rise to an unlevel playing field between offshore wind developers and potentially inhibit the delivery of the government's renewable energy targets. This is because it would place the Applicant in a fundamentally disadvantaged position compared with East Anglia Two Limited and other developers whose projects have been consented without requiring an assessment of wake effects or implementation of mitigation. This point is returned to under the "**Comments on Wake Assessment**" subheading below.
- 2.1.7 Prior consideration of wake effects: the Applicant stands by its general point that wake effects have not generally been addressed in DCO applications and Examinations. East Anglia Two Limited has submitted a document from the Hornsea Project Two Examination, where the facts of that case are completely different to the situation in relation to Five Estuaries and EA2. Hornsea Project One and Project Two were part of the Round 3 Hornsea Zone. That Zone (along with all Zones in Round 3) was awarded by The Crown Estate on a completely different basis to the Extensions sites, and did not include a buffer requirement for projects within the Zone.

- 2.1.8 This reflected the fact that the Zone was awarded on an exclusive basis for 10 years over a huge area to allow a single developer (or consortium) to bring forward a series of projects during the exclusivity period. This structure was designed to ensure that issues arising from the precise location of the projects within the Zone were resolved by the single developer/consortium, during project development and divestment. In the case of the Hornsea Zone (and the projects within the Zone) the ownership position went from 100% ownership by a consortium between Mainstream Renewable Power and Siemens Projects (who were awarded the Zone at the start, in 2009) to 100% ownership by DONG Energy (in August 2015). There was an intermediate stage, when DONG Energy had acquired Hornsea Project One (in February 2015).
- 2.1.9 It appears from the submission which East Anglia Two Limited has provided that when acquiring Hornsea Project One, DONG Energy did not resolve a range of issues between that project and the immediately neighbouring project (Hornsea Project Two), despite the fact that the Zone structure was designed to ensure these would be resolved commercially in that situation. The Applicant does not know why DONG Energy did not ensure that these issues were resolved as part of its acquisition of the Hornsea Project One, pursuant to the Zonal model. In any event, it is plain that Hornsea Project One were not arguing that the NPS language relating to other offshore infrastructure applied to Hornsea Project One. If the Hornsea Projects had been operating pursuant to the Extensions model, then Hornsea Project Two would not have been allowed to be immediately adjacent to Hornsea Project One, save with the express agreement of Hornsea Project One i.e. it would have breached the 5km buffer rule. As East Anglia Two acknowledges, the issue was taken off the table by Hornsea Project One, when an agreement was reached. This means that we do not know how the submissions in relation to wake loss would have fared if they had still been extant at the point of decision by the Secretary of State.
- 2.1.10 In paragraph 1.11 of its submission, East Anglia Two Limited refers to commercial agreements having been entered into in relation to wake loss. APPIt does not provide any examples to allow the context of any such agreement to be understood. In particular, it does not provide any examples which relate to a situation where The Crown Estate's licensing siting approach has been followed as regards buffer distances or Zones (in the case of Round 3).
- 2.1.11 With respect to East Anglia Two Limited's comments regarding agreements between existing and extension projects, as set out at paragraph 1.4.6 of the note provided by the Applicant at Deadline 6 [REP6-047], extension projects such as the Proposed Development were required to share a boundary with an existing wind farm and, because they would therefore be located within the 5km buffer set by The Crown Estate, required the agreement of the existing wind farm in order to obtain seabed rights. The terms of any such agreements are confidential.

- 2.1.12 It is also important to keep in mind that the Awel y Môr case referred to by East Anglia Two Limited concerned an objection from an existing, operational wind farm which had the benefit of SCADA data to evidence historical wind yields which could thus be said to represent a ‘baseline’ scenario against which the impacts of the proposed new project could be assessed. By contrast East Anglia Two is not an existing operational wind farm and has no such data. In contradistinction from the Awel y Môr scenario, given the respective project development timelines referred to above, since August 2019 the appropriate baseline development scenario has been that both the East Anglia Two and the Five Estuaries projects would be developed. Accordingly the Applicant submits that it would not be reasonable to consider a counterfactual “*without Five Estuaries*” development scenario against which East Anglia Two could assert that the wake effects of the Five Estuaries project should be assessed and mitigated. More broadly, since the announcement in August 2019 that an extension to the Galloper project (subsequently known as Five Estuaries) would proceed to the grant of seabed rights, East Anglia Two Limited should have planned and developed its project on the basis that another wind farm was being developed in the surrounding seabed. This would be entirely normal in offshore wind farm development.
- 2.1.13 In any case full argument on the scope or efficacy of any technical mitigation was not made during the Awel y Môr examination and neither the Examining Authority nor Secretary of State reached any conclusions as to the scope of any forms of mitigation that should be considered in principle, and whether it would be appropriate to require the promoter in that case to implement such measures having regard to their likely efficacy and impact on overall energy yield across the two projects. The Applicant has set out further submissions on the efficacy of potential wake mitigation under the subheading “**Comments on Wake Assessment**” below.

## 2.2 CURRENT POLICY FRAMEWORK

- 2.2.1 The Applicant has nothing detailed to add to the submissions it has already made regarding the current policy framework, save to comment that East Anglia Two Limited continues to argue for an interpretation of EN-3 which is in clear conflict with its natural and fair interpretation. If other offshore wind farms had been intended to be covered by EN-3, then that would have raised a host of special considerations (being projects in the same asset class), which EN-3 would need to have addressed, which it does not. The timing of the Awel y Môr decision did not allow this to be raised by consultees on draft EN-3, which had clearly reached a point of no return in the policy process. The fact that wake loss is playing out as a significant point of debate across multiple Examinations for the first time (each with substantially different factual matrices), which in turn has led to substantial offline dialogue by the industry with DESNZ is the clearest indication that the original interpretation was correct. The new Secretary of State has an opportunity with his decisions in Mona, Morgan and Five Estuaries (which fall to be decided within 3 months of each other) to reconsider the interpretation applied in Awel y Môr.

## 2.3 COMMENTS ON WAKE ASSESSMENT

- 2.3.1 The Applicant notes that East Anglia Two Limited has made a submission of a wake impact assessment contained at page 251 out of 273 in [REP6-079].

2.3.2 The following points are made by the Applicant after a high level review of this wake impact assessment.

### **General/overarching comments on wake assessment**

2.3.3 Further to the Applicant's comments above, the Applicant wishes to stress that the wake assessment provided by East Anglia Two Limited is based on the incorrect premise that East Anglia Two should be regarded as akin to an existing, operational wind farm with a fixed layout which will inevitably and unavoidably be affected by wake effects from the Proposed Development. As set out above, the East Anglia Two project is in development and has not yet proceeded to offshore construction and it is not therefore appropriate to proceed (as the wake assessment does) on this incorrect premise.

2.3.4 A further fundamental deficiency of the assessment provided by East Anglia Two Limited, expanded on below, is that it only considers the effects of the Five Estuaries project on East Anglia Two. The assessment wholly fails to identify or take into account effects that the East Anglia Two project will have on Five Estuaries, or effects on the existing operational Galloper and Greater Gabbard wind farms.

2.3.5 In addition to the preliminary points above, the Applicant now provides a small number of more detailed comments on the wake loss assessment. These comments are provided strictly without prejudice to the Applicant's primary argument that a wake assessment is not required under the energy National Policy Statements, or that the Applicant is required to take account of any wake effects on the East Anglia Two project as an additional design consideration for the Project.

### **Technical points**

#### **RECIPROCAL IMPACT OF EAST ANGLIA 2 ON FIVE ESTUARIES**

2.3.6 To expand upon the point in paragraph 2.3.4 The Applicant refers to the 'wind rose' presented in the assessment; repeated below in Figure 1 for convenience. This shows the prevailing direction of the wind as being from the south west and going to the north east. When considering the wake effects of neighbouring wind farms it is important to not only consider the wakes caused by wind farms "up wind" in the prevailing direction, the impact of wakes caused by wind farms "up wind" in the non-prevailing direction must also be considered as these impacts can be of a similar magnitude.

2.3.7 The reason for this is because the energy output generated by WTGs is not a linear correlation with wind speed; the WTG power curve as shown in Figure 1 b) must be considered.

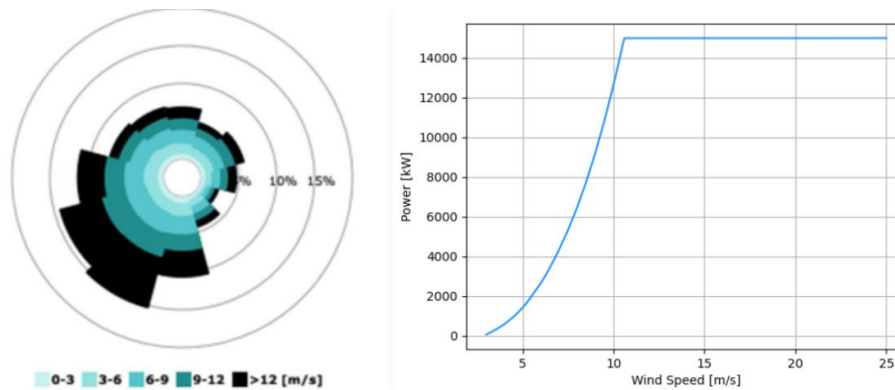


FIGURE 1. A) LEFT - WIND ROSE PRESENTED BY EA2, B) RIGHT – EXAMPLE WTG POWER CURVE

Rated wind speed is the speed at which the turbine is at its maximum generating capacity. When the wind is above this speed it does not generate any more energy as the wind speed increases; below this speed there is a curved gradient whereby changes in wind speed have a significant impact on WTG output.

- 2.3.8 This means that although turbines will be creating wakes at speeds above rated wind speed, if the wind at the “waked” turbines remains above the speed associated with rated power then there will be a negligible impact on the yield.
- 2.3.9 Conversely wakes being created when the wind is blowing at or below rated power that cause, the wind speed at the “waked” turbines there will be a significant loss of power generated by the “waked” turbines.
- 2.3.10 In the case of the wind rose presented by East Anglia Two although it may appear that there is strong prevailing wind from the south west, the impact on yield does not directly correlate to this and the impact of East Anglia Two on the Proposed Development when the wind is blowing in the non-prevailing direction must also be considered.
- 2.3.11 The Applicant considered this relative impact between the two wind farms is a more appropriate representation of the impact compared to considering only the impact of Five Estuaries on East Anglia Two as presented in the assessment conducted by East Anglia Two.

### LACK OF INCLUSION OF ALL POTENTIAL WIND FARMS

- 2.3.12 The Applicant notes that East Anglia Two have provided “wind farm layouts, turbine types, hub heights, turbine power curves and thrust curves for East Anglia 2 wind farm, and for all other neighbouring wind farms, as shown in Figure 1.” This Figure 1 provided by East Anglia Two is shown below in Figure 2.



Figure 1-1 The proposed Five Estuaries offshore wind farm and neighbouring wind farms

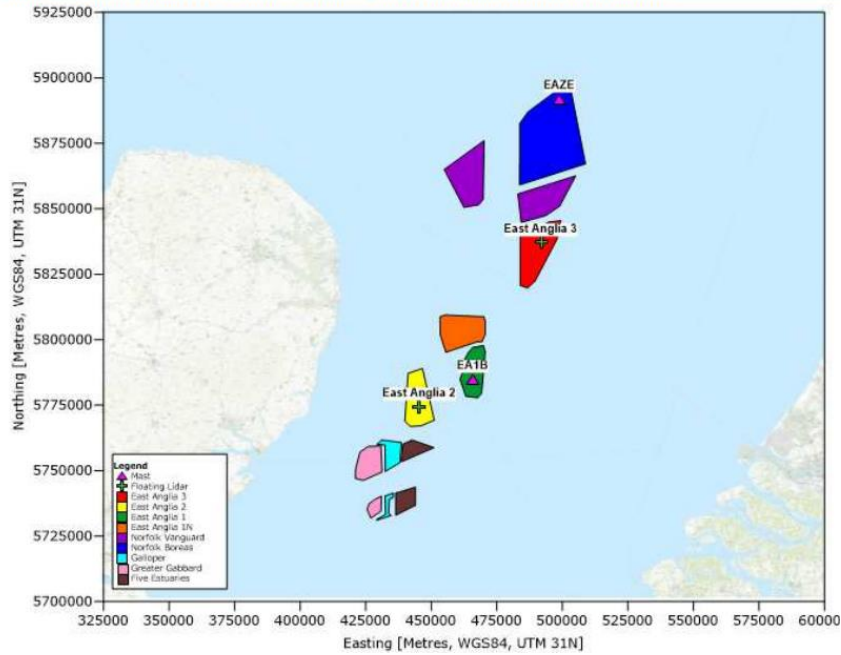


FIGURE 2. WIND FARMS INCLUDED IN THE EAST ANGLIA TWO WAKE ASSESSMENT

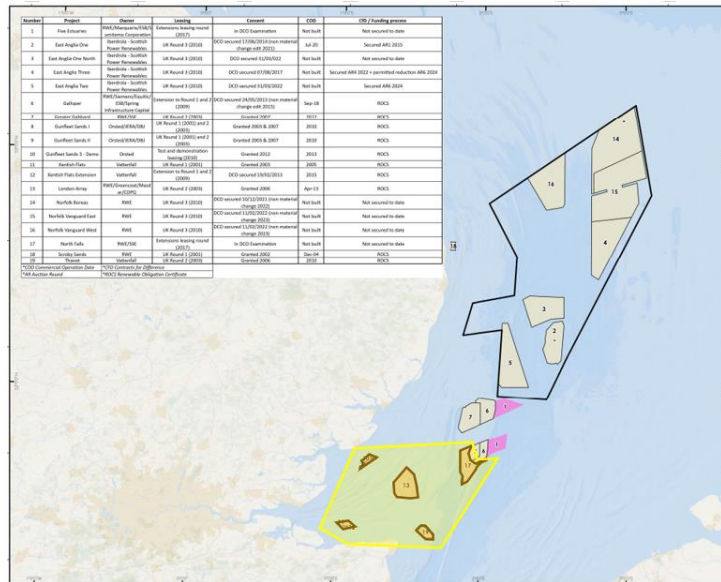


FIGURE 3. WIND FARMS “UP WIND” IN THE PREVAILING DIRECTION THAT ARE NOT INCLUDED IN THE EAST ANGLIA TWO WAKE ASSESSMENT

2.3.13 None of the operational or proposed wind farms “up wind” in the prevailing wind direction have been modelled in the assessment. These wind farms in the “up wind” direction are highlighted in Figure 3.

2.3.14 The exclusion of these wind farms means that wakes and blockage effect being caused by these wind farms when the wind is blowing in the prevailing direction “up wind” from Five Estuaries are not accounted for in the assessment provided by East Anglia Two Limited.

2.3.15 This means that the quantified impact being calculated by East Anglia Two wake assessment will be therefore highly overestimate the impact of Five Estuaries wakes on East Anglia Two.

### **LACK OF OPERATIONAL DATA**

2.3.16 In addition to the Applicant's comments under the section "**Prior consideration of wake effects**" subheading above with respect to the fallacy of proceeding on the basis that East Anglia Two is akin to an existing operational wind farm, it is noted that projects such as East Anglia Two that are not constructed or operational do not have existing data, and hence must make assumptions in relation to factors that may affect the turbine output.

2.3.17 These include factors such as the operational efficiency and availability of the turbines themselves (how well they work and how often different components break down), how often the electrical system is available (i.e. the amount of energy generated also depends on the availability of the cables and electrical equipment); how the actual wind conditions compare to the theoretical wind conditions (which is known to have uncertainty when modelling groups of differently sized turbines). ).

2.3.18 As there is no operational data for East Anglia Two any assessment is subject to significantly more uncertainty than an assessment that is based on data of an operational wind farm.

2.3.19 There are also many possibilities that may occur before both the Proposed Development and East Anglia Two wind farms are operational which could affect the theoretical magnitude of impact. Examples include;

- > East Anglia Two's planned turbine layout changing or some WTGs not being built
- > The efficiency and availability of the East Anglia Two WTGs differing from predictions
- > Electrical equipment availability for transmission of the energy produced by the WTG to the National Grid
- > Changes to the timelines of both projects meaning the duration of time they are operating simultaneously changes; hence affecting the total output changes in terms of a total MWh impact
- > Uncertainties in the Five Estuaries wind farm as the layout and turbine size is not determined

Accordingly the Applicant does not accept the underlying premise of the predictive assessment presented that East Anglia Two should be regarded as akin to a built, operational wind farm.

### **TOTAL ENERGY OUTPUT AND MITIGATION OPTIONS**

2.3.20 It is well known that turbines up wind cause wakes on turbines downwind from them. This happens both between wind farms and within the wind farms themselves.

2.3.21 The wind turbines on the outside edge of wind farms are often the most productive because for at least part of the time when the wind is blowing from the "open" direction there are no "internal" wakes.

2.3.22 Though Five Estuaries' northern turbines and East Anglia Two's southern turbines will affect each other, they are further apart than the distance between the turbines within the wind farm.

2.3.23 If the ExA's rationale in requesting East Anglia Two Limited to provide a wake assessment is to allow the panel to consider whether there is an impact that it considers requires mitigation, then the Applicant considers that in that scenario – and again without prejudice to its primary argument that - that it is very important to outline to the ExA what the options are and their implications both for the Proposed Development and more broadly for the wider policy objectives set out in the NPSs.

### **ADDITIONAL BUFFER**

2.3.24 To reduce the wakes caused by the projects on each other both EA2 and VE could, in theory, create a larger buffer area, by moving the WTGs further apart, within their project areas. Assuming the same number of WTGs are kept in totality (to maintain the same “nameplate capacity”), the WTGs within each site will therefore be located closer together. This will, however, inevitably cause the turbines within the project areas to wake each other more and hence be less efficient and generate less energy. The Applicant does not consider this approach is appropriate and it is clearly at odds with the NPS objectives regarding renewable energy generation.

### **REMOVAL OF TURBINES**

2.3.25 Both East Anglia Two and Five Estuaries could in principle remove WTGs from the closest edges of the respective array areas. This would reduce the wake interaction between the projects.

2.3.26 This will however have the impact of reducing total energy yield from both projects and the Applicant submits, again, that is contrary to the urgent need for renewable energy generation projects established in the NPS.

### **CONTROL SYSTEMS OPTIONS**

2.3.27 Other options that could be used to try and mitigate wake effects between projects are likely to include WTG control systems. These are systems that are used to control how the WTGs operate.

2.3.28 These control systems are designed to maximize the yield generated by the WTGs.

2.3.29 Modifying these systems with an alternative aim other than maximum yield generation is likely to result in less energy being generated.

2.3.30 Also to reliably understand the interaction of modifying control systems between two projects would require operational data as a theoretical calculation would have a very high level of uncertainty at this stage.

2.3.31 The Applicant, again, does not consider this approach is appropriate and it is clearly at odds with the NPS objectives regarding renewable energy generation.

### **NEGATIVE IMPACT OF DESIGNING FOR WAKES**

2.3.32 In addition to these points it should be noted that the design of wind farm arrays is complex and has many competing constraints and influences potential impacts that must be considered.

2.3.33 These include (but not limited to);

- > Shipping and Navigation safety constraints (compliance with MGN 654 Safety of Navigation: Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response);

- > Impact on environmental receptors
- > Minimum required WTG spacing for fatigue
- > Proximity to existing obstruction or cables on a site (e.g. wrecks or third party cables already in the seabed)
- > Ground conditions
- > Water depth & met-ocean conditions
- > Maintenance considerations.

2.3.34 Developers typically consider all of these factors when determining layout and balance them in terms of the impact on Levelized Cost of Energy (LCOE). Simply designing layouts to reduce / minimize wake impact between projects would be contrary to this and would increase the cost of delivering offshore wind.

### **UNCERTAINTY AND RELIABILITY**

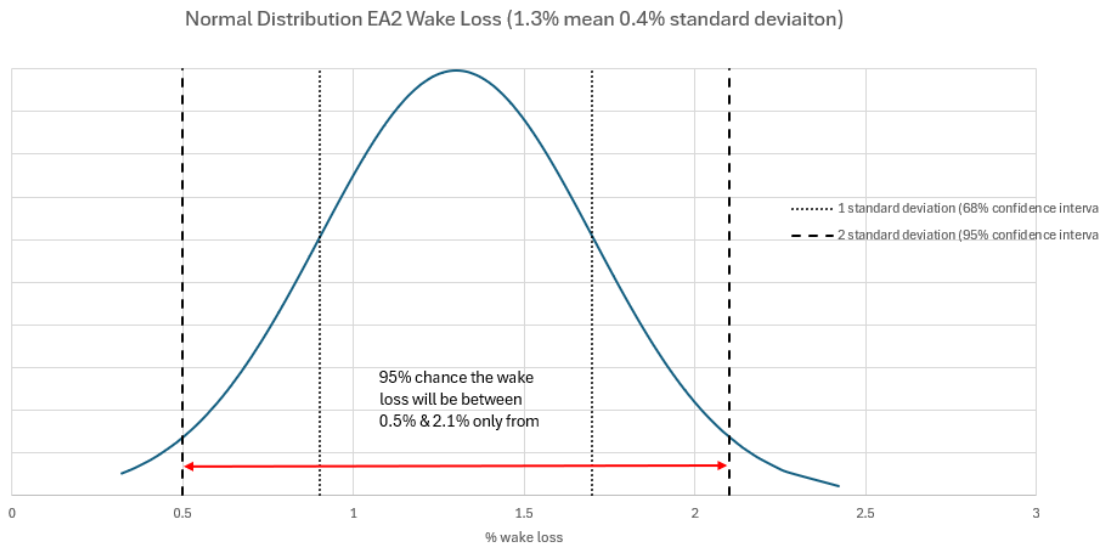
2.3.35 The assessment highlights a number of times that the models available have limitations in relation to larger turbines:

*“It is stressed however that uncertainty remains in the wake loss estimate, especially when estimating the wake losses for larger turbines and larger offshore wind farm clusters, beyond the envelope of previous wake validation studies”*

*“DNV notes that whilst the wake and blockage models used are extensively validated for UK offshore wind conditions, the models have not been validated for turbines of this size, or for very large clusters of wind farms, such as the combined cluster of Galloper, Greater Gabbard and Five Estuaries.”*

2.3.36 The Applicant notes that the “uncertainty” presented in the report is actually the standard deviation.

2.3.37 It is more appropriate to reflect uncertainty through the use of estimation with confidence levels. A normal distribution graph is shown in Figure 4 below. This shows that with a mean of 1.3% and a standard deviation of 0.4% there is a 95% chance that the value of wake loss will be between 0.5 and 2.1%; or there is a 68% chance that the value of wake loss will be between 0.9 and 1.7%.



**FIGURE 4. NORMAL DISTRIBUTION SHOWING THE WAKE LOSS UNCERTAINTY**

- 2.3.38 Putting this in context the range in the 95% confidence interval is greater than the central estimate of wake loss.
- 2.3.39 This level of uncertainty is before the assumption uncertainty is accounted for which is also noted as having a high impact.
- 2.3.40 This noted by The Applicant as a very high level of uncertainty, and any resulting estimate of impact on yield in MWh will be very uncertain (this would also be disregarding the factors outlines in paragraph 2.3.19).
- 2.3.41 This average standard deviation for the wind farm is also a much lower range than is observed at each individual WTG. This is significant because the magnitude of impact will be uneven across the wind farm (as noted in the assessment the most southerly WTGs at EA2 will be impacted more); but these may also have a greater level of uncertainty associated with them.
- 2.3.42 The assessment also highlights the uncertainty of the input including WTG locations; this has been tested in this assessment by modelling a number of potential layouts. The result of doing this is stated:
- “The additional wake and blockage loss at East Anglia 2 is within the range 1.2% - 1.4% for the different potential Five Estuaries turbine locations considered.”*
- It is noted by the Applicant that the magnitude of variation in the resulting wake impact from different layouts is less than the uncertainty range considering a standard deviation.
- 2.3.43 These points highlight the reason why the Applicant considered it unhelpful to adopt this quantification approach as the level of certainty that results is not appropriate to draw meaningful conclusions.

## 2.4 CONCLUSIONS

- 2.4.1 The Applicant considers that East Anglia Two did have ample time to consider the Five Estuaries Project in its planning process, as its existence as a project was publicly known in 2019 before East Anglia Two submitted its application. The claim that East Anglia Two was “well advanced” before Five Estuaries was announced is disputed, as EA2 only received development consent in 2022 (2024 following a legal challenge) and a contract for difference in 2024.
- 2.4.2 The Applicant notes that East Anglia Two did not engage with Five Estuaries during its planning process, prior to submission of its DCO application, and is not aware of any adaption in its design to mitigate potential wake effects. Furthermore, East Anglia Two did not assess or mitigate its own wake effects on existing wind farms like Galloper and Greater Gabbard. However, East Anglia Two now argues that the Applicant must assess and mitigate wake effects for its own project, which the Applicant sees as inconsistent and unfair. The Applicant contends that imposing such a requirement on its project would create an unequal regulatory burden, potentially hindering the government's renewable energy targets. Since 2019, EA2 has been aware of Five Estuaries and should have factored its presence into its development strategy.
- 2.4.3 In terms of the other projects that East Anglia Two has cited as being relevant, it should be noted that the Hornsea case is not a suitable precedent for East Anglia Two's arguments regarding wake effects as the circumstances of that case differ significantly from those of Five Estuaries and East Anglia Two. Hornsea Project One and Project Two were part of the Round 3 Hornsea Zone, awarded by The Crown Estate under a different framework than extension sites, and unlike extension sites, the Hornsea Zone did not have a buffer requirement for projects within it. The ownership structure for the projects within the zone was also significantly different.
- 2.4.4 Equally, the Awel y Môr case is not comparable, as East Anglia Two is not an existing constructed project and lacks operational data to establish a baseline as was the case with Awel y Môr, which was challenged by an operational site with access to SCADA data including historical wind yields enabling a more credible baseline to be derived, and that could not make any changes or take account of Awel y Môr.
- 2.4.5 Significant limitations have been identified in relation to the wake assessment, including the lack of a credible operational baseline, reciprocal effects on Five Estuaries not being accounted for, no consideration of effects from or on operational and planned wind farms in the prevailing wind direction. In addition, there are significant uncertainties in currently available models for larger turbines and turbine clusters, which are acknowledged in the assessment. Given these limitations and uncertainties, the Applicant argues that the wake assessment approach is not reliable enough to inform decision-making.
- 2.4.6 Wind farm layouts must consider multiple factors beyond wake effects, including navigation safety compliance, environmental impacts, structural integrity (fatigue constraints), proximity to obstacles like shipwrecks and third-party cables, and seabed conditions, water depth, and maintenance needs. Prioritizing wake minimization over these factors would increase costs and create inefficiencies.

- 2.4.7 The Applicant maintains that there are no industry-accepted mitigation solutions that do not result in greater energy losses overall from a national perspective and the uncertainty in the wake assessment is too high to justify imposing mitigation requirements. Any imposed mitigation would, unfairly burden Five Estuaries and would also reduce total energy output, conflicting with national renewable energy policy goals for expanding offshore wind capacity.
- 2.4.8 The Applicant respectfully submits that no wake mitigation conditions should be imposed on Five Estuaries based on the reasoning outlined above.





F I V E   
ESTUARIES  
OFFSHORE WIND FARM

PHONE  
EMAIL  
WEBSITE  
ADDRESS

COMPANY NO

0333 880 5306

[fiveestuaries@rwe.com](mailto:fiveestuaries@rwe.com)

[www.fiveestuaries.co.uk](http://www.fiveestuaries.co.uk)

Five Estuaries Offshore Wind Farm Ltd  
Windmill Hill Business Park  
Whitehill Way, Swindon, SN5 6PB  
Registered in England and Wales  
company number 12292474

