



OUR REF S6152.23/CBW/CWI

YOUR REF

3 March 2025

National Infrastructure Planning
Temple Quay House
2 The Square
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Dear Sir, Madam

Five Estuaries Offshore Windfarm Project (the “Project”)

Application Ref: EN010115

East Anglia TWO Limited’s Deadline 7 Submission – Response to Examining Authority’s Rule 17 Letter

1. Introduction

- 1.1 We refer to the above Examination and confirm we are instructed by East Anglia TWO Limited (“EA2”). This submission is in response to the Examining Authority’s (“ExA”) Rule 17 Letter dated 20 February 2025 (PD-031) where the ExA requested EA2 to quantify in MWh how much electricity generation it is estimated might be lost per year as a consequence of the proximity of the proposed Five Estuaries offshore wind farm. In responding to this request, EA2 were asked to:
- 1.1.1 identify what the expected installed MW capacity for East Anglia TWO Offshore Wind Farm will be;
 - 1.1.2 provide an estimate for the annual generating output for East Anglia TWO Offshore Wind Farm in MWh (or gigawatt hours) with and without Five Estuaries, identifying the load factor relied on to determine those levels of generating output; and
 - 1.1.3 submit a worked calculation for the annual estimate for the reduction in MWh output that EA2 consider would arise from the proximity of the proposed Five Estuaries offshore wind farm.
- 1.2 We have set out EA2’s responses to the above questions below.

2. Expected installed MW capacity for East Anglia TWO Offshore Wind Farm

- 2.1 The East Anglia TWO Offshore Wind Farm’s installed capacity is 960MW, corresponding to 64 x 15MW wind turbine generators (“WTGs”) (including power boost).

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3. Estimate for the annual generating output for East Anglia TWO offshore Wind Farm in MWh (or gigawatt hours) with and without Five Estuaries

- 3.1 The best estimate for the East Anglia TWO Offshore Wind Farm's net annual production, **not** accounting for the wake effects and other losses caused by the Five Estuaries wind farm, corresponds to a 47.9% net capacity factor ("CF"). This is equivalent to 4030.6 GWh per year.
- 3.2 Based on the DNV calculated central value for wake losses of 1.3%, due to the Five Estuaries wind farm in the wake loss assessment submitted by EA2 at Deadline 6 (Annex 8 of REP6-079)¹ (the "**Initial Wake Loss Assessment**"), the production of East Anglia TWO Wind Farm is estimated to become 3978.2 GWh per year (net CF of 47.3%).
- 3.3 Based on the upper bound of the 95% confidence interval for additional wake loss due to Five Estuaries calculated by DNV in the Initial Wake Loss Assessment, corresponding to a 2.1% additional wake loss (=1.3% + 2 x 0.4%), the production of East Anglia TWO Offshore Wind Farm is estimated to be 3945.9 GWh per year (net CF of 46.9%).
- 3.4 Based on abovementioned net CF variations, the estimated annual net energy losses due to wake effects caused by the Five Estuaries wind farm are expected to be 52398MWh/year for the central wake loss estimate from DNV but up to 84642MWh/year for the 95% confidence interval wake estimate based on the same study.

4. Worked calculation for the annual estimate for the reduction in MWh output

- 4.1 The impact on the East Anglia TWO Wind Farm yearly net production is summarised in the table below:

	East Anglia TWO without Five Estuaries	East Anglia TWO with Five Estuaries DNV central estimate for additional wake (1.3%)	East Anglia TWO 2 with Five Estuaries DNV 95% confidence interval for additional wake (2.1%)
Net production [GWh/year]	4030.6	3978.2	3945.9
Net Capacity Factor [%]	47.9%	47.3%	46.9%
Expected net production loss due to Five Estuaries [MWh/year]	-	-52398	-84642

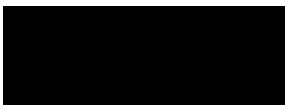
- 4.2 The East Anglia TWO Offshore Wind Farm production has been evaluated using high-quality wind data, measured from nearby met masts and Floating LIDAR, combined with industry-leading mesoscale models.
- 4.3 Once the wind regime is established and the turbine layout optimized, the estimated production is calculated based on the chosen power curve. This "gross" production is then adjusted for various losses, including wake effects, electrical losses, and turbine performance. The result is the expected net production value.
- 4.4 The production estimate above accounts for the internal wake of East Anglia TWO Offshore Wind Farm and external wake from other projects operating in the vicinity (e.g. East Anglia ONE, Greater Gabbard,

¹ "00384599-R-01-A Wake Impact Assessment (Wakes and Blockage Impact Assessment of the proposed Five Estuaries Wind Farm on East Anglia 2 Wind Farm)", DNV, 11 February 2025

Galloper), in construction or consented (e.g. East Anglia THREE, East Anglia ONE North, Norfolk Vanguard, Norfolk Boreas), as also referred in figure 1-1 of the Initial Wake Loss Assessment.

- 4.5 The energy assessment (carried out by EA2 and DNV) has been performed using wind industry standard software such as the DNV *WindFarmer*.
- 4.6 As clarified in the Initial Wake Loss Assessment, given the level of detail available to EA2 concerning Five Estuaries wind farm, several assumptions were required to build a model, such as the number of WTGs (72) and their respective capacity (15MW), resulting in a total capacity of 1080MW in total, an hypothetical layout based on DNV experience and following best practice with respect to distance between WTGs and other local aspects, with closest distances between East Anglia TWO Offshore Wind Farm and Five Estuaries turbines of about 6km (as per the polygon boundaries provided by the Five Estuaries wind farm, see turbine coordinates assumed by DNV in the Initial Wake Loss Assessment). This does not preclude that an alternative layout with a very high turbine density to the northern boundary could not produce significantly higher losses whilst still being compliant with all other DCO limitations.

Yours faithfully



For and on behalf of Shepherd and Wedderburn LLP