

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 25, Annex N to Deadline 1 Submission:
Applicant's Responses to the Examining
Authority's First Written Questions – EXQ 1.12.3

Relevant Examination Deadline: 1

Submitted by Vattenfall Wind Power Ltd

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1 Introduction

- 1 This note has been drafted in response to question 1.12.3 raised by ExA following Issue Specific Hearing 2 (ISH2) on 12/12/2018.
- 2 The question has been extracted into this supplementary note for ease of reference.
- 3 The Applicant notes that this subject is also addressed in the Oral summary speaking notes of ISH2.

2 ExA Question 1.12.3

- 4 The ExA Question 1.12.3 is repeated below and is asked of The Applicant, Port of London Authority, Estuary Services Ltd, London Pilots, London Gateway Port Ltd, Port of Tilbury London Ltd, Trinity House and the Maritime and Coastguard Agency

Conditions for pilot transfer simulation:

Responding to concerns raised at ISH2 about the continued ability to board pilots in adverse MetOcean and draught-constrained vessel manoeuvring conditions at the existing NE Spit pilot station, please identify whether the Bridge Simulation of feasibility of pilot transfer was adequate or not, covering the following points:

a) to what extent can the ExA rely on the conclusions of the Simulation carried out?

b) how many simulated runs in different MetOcean conditions would provide a reasonably robust test of feasibility and operating risk?

c) what variables in MetOcean conditions would be reasonably representative of baseline normal operating conditions which would enable the NE Spit pilot station to remain “on station” without the proposed Thanet Extension?

d) to what extent the exercise represented “real world” conditions in respect to local knowledge and communications ability in English of the actors in the simulation and their learning gained by performing multiple runs during the simulation?

e) to what extent did the exercise incorporate impinging factors such as small vessels without AIS and crossing traffic?

f) are there any other relevant factors or considerations that should have been taken into account?

3 Applicants Response – Q1.12.3 – (a)

- 5 ExA asks “*to what extent can the ExA rely on the conclusions of the Simulation carried out?*”
- 6 The Applicant considers that the ExA can rely on and place substantial weight on the pilotage simulations, recognising that full bridge simulation forms amongst the highest evidence bases with the exception of site specific trials This is in accordance with the MCA/DECC 2013 methodology “hierarchy of assessment” (see Annex D1 p63 Table 18)
- 7 The simulation study is a qualitative tool in order to support the wider assessment of the overall NRA and followed a methodology which had been accepted and supported by stakeholders during consultation.
- 8 The study was undertaken with the backing and support of the Port of London Authority, with agreement to utilise their pilot training simulator and senior marine pilots who were involved in the planning and execution of the simulation.
- 9 Simulation was initially proposed and agreed to be considered at a meeting between Marico Marine and the PLA on 05-Apr-2017 (as presented in Annex J to Appendix 25 of this Deadline 1 submission). A subsequent meeting, including ESL, was held on 03-Jul-2017 (refer minutes in Annex J to Appendix 25) where simulation, and the usage of the PLA bridge navigation simulator was developed with the PLA Harbour Master Lower, who provided a brief introduction on the simulator capabilities and facilitated liaison with the PLA pilot training and resource manager. Following this liaison, a further meeting with PLA Pilots and ESL was held on 14-Aug-2017(Annex J to Appendix 25) where the simulator was visited by all attendees and some input parameters discussed with agreement that Marico Marine would develop an Inception Report in order to facilitate a ‘set-up session’ which would be attended by participants (nominated by ESL and PLA) in order to review and confirm parameters.
- 10 An Inception Report was issued on 11-Sep-2017 (Annex J to Appendix 25) drawing together the information received from Interest Parties and consultation to date to ensure a structured and fit for purpose approach was documented. The set-up day session held on 15-Sep-2017 to review in detail and revise all parameters to the agreement of all parties.
- 11 Simulation was held on 20 and 21-Sep-2017 and the draft pilotage simulation report was issued to ESL and the Port of London Authority who confirmed receipt and onward circulation although no comments on the report were provided to imply disagreement - despite request.

4 Applicants Response – Q1.12.3 – (b)

- 12 ExA asks *“how many simulated runs in different MetOcean conditions would provide a reasonably robust test of feasibility and operating risk?”*
- 13 The Applicant considers that the simulation as performed was robust for its intended purpose which was to test the feasibility of conducting pilotage operations with the Thanet Extension Offshore Wind Farm in place. A range of metocean conditions were adopted based on this and can be considered demonstrably representative of adverse metocean conditions in which NE Spit remains on station. Wind conditions selected are consistent with information, as presented within in Figure 2.6 of Chapter 2 of Volume 2 (Marine Physical Processes PINS Ref APP-043 /Application Ref 6.2.2), which illustrates a wind rose based on hindcast wind data from NCEP for the period 1979 to 2016. The wind rose presented indicates a proportion of the wind speeds in the range 10-15 m/s which translates to 19.4 – 29 knots and corresponds with the wind speed applied during the simulation. As noted within the same chapter (APP-043), during the period 1979 to 2016 wind speeds of between 5 - 10 m/s account for around half of the record (9.7 – 19.4 knots).
- 14 With regards the number of simulations undertaken under these agreed and representative metocean conditions, in total 14 simulation runs were undertaken, over 2 days of trials, to provide an overview spread of credible operational scenarios. 6 of the 14 runs were undertaken in poor visibility and 1 in night time conditions.

5 Applicants Response – Q1.12.3 – (c)

- 15 ExA asks ***“what variables in MetOcean conditions would be reasonably representative of baseline normal operating conditions which would enable the NE Spit pilot station to remain “on station” without the proposed Thanet Extension?”***
- 16 As noted in response to ExQ1.12.3(c) the metocean conditions which were agreed with the participants, and employed during the simulation runs, are considered to be representative of the prevailing metocean conditions over a period of nearly 40 years. The pilot simulation was therefore representative of baseline normal operating conditions and the approach was precautionary by utilising upper bounds of selected parameters. It was noted that ESL explained (in the meeting of 14-Aug-2017) usage of a planning diamond tool (enabling information on appropriate ship directions based on metocean conditions). In the absence of receiving this the metocean conditions were informed by consultation meetings, data analysis and agreed by participants on the set-up day.
- 17 Delineation of the metocean variables that define the ‘on station / off station’ thresholds of NE Spit (and Tongue) may consider wind strength and direction, wave height, period, frequency and direction, tidal state level and flow direction, atmospheric pressure and the interrelationship between these variables. The simulation incorporated the key variables from this.

6 Applicants Response – Q1.12.3 – (d)

- 18 ExA asks ***“to what extent the exercise represented “real world” conditions in respect to local knowledge and communications ability in English of the actors in the simulation and their learning gained by performing multiple runs during the simulation?”***
- 19 The Applicant considers that the exercise appropriately sought to represent real world condition as agreed when the simulation was set up and performed, as discussed above. As for comments regarding knowledge of local conditions and the English language, the Applicant considers that whilst some mariners may not have local area knowledge, or fluent English they remain sufficiently professionally qualified, under the ships flag state, to navigate and communicate in the area.
- 20 Four PLA Pilots (nominated by the PLA for the assessment) participated and rotated variously between roles as Pilots, Ships Master and operating other vessels (from the control room) to address familiarisation and performance improvement, role rotation was undertaken. Additionally, a Dover Class 1 Pilot participated as a facilitator and Ships Master providing some degree of non-area specific knowledge.
- 21 It should be recognised that familiarisation and performance improvement is also a factor in the real-world scenario where many the participants, inherently involved in acts of pilotage and pilot transfer are familiar with the area and the activities undertaken.
- 22 Furthermore the simulation, being undertaken over a range of runs which varied significantly, by its nature reduced the likelihood of familiarity from task repetition.

7 Applicants Response – Q1.12.3 – (e)

- 23 ExA asks *“to what extent did the exercise incorporate impinging factors such as small vessels without AIS and crossing traffic?”*
- 24 Some adverse factors were recognised with the participants at the meeting of 14-Aug-2017 and incorporated, including 3rd party traffic and other issues causing potential delay such as incorrectly rigged pilot boarding ladders.
- 25 However, interactions with other traffic (such as non AIS vessels and crossing traffic) was primarily addressed through other aspects of the overall assessment (collision risk modelling for example) and therefore the objectives of the bridge simulation were specifically focussed on the question of sea room for pilot transfers.
- 26 A number of additional conservatisms should be noted and include:
- Usage of a tug mode (as the Pilot Launch was required due to the PLA Simulator not possessing a pilot launch model). The fundamental limitations of this mode related to transit speed (albeit it was agreed that transit speed would be reduced to the circa 18kts in the 25kts wind conditions as principally tested). The handling characteristics were also different to a pilot launch albeit after some familiarisation it was agreed the tug provided a close enough facsimile simulation. A radar screen was not available but replaced with an ECDIS screen providing comparative information.
 - The simulation, and the conclusions made regarding sufficient sea room for continued pilot transfer operations, were undertaken on the previous RLB (which provided a more restrictive area of sea room to the north of the NE Spit Pilot Boarding Station). The RLB was modified following the simulations.

8 Applicants Response – Q1.12.3 – (f)

- 27 ExA asks ***“are there any other relevant factors or considerations that should have been taken into account?”***
- 28 The Applicant does not consider additional factors should be highlighted and emphasises that the simulation was undertaken in accordance with methodology that was agreed with participants through extensive consultation and using a simulator endorsed (and owned/operated by the PLA) with methodology which was agreed with the participants.
- 29 The Applicant provides, at Annex 008 plots showing tracks taken by the vessels during the 14 runs which shows the sea room taken by the 14 runs and multiple vessels undertaking pilot transfers.