Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 12 to Deadline 5 Submission: Written Summary of Vattenfall's Oral Case put at the ISH8 - Shipping and Navigation

Relevant Examination Deadline: 5
Submitted by Vattenfall Wind Power Ltd
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THANET EXTENSION OFFSHORE WIND FARM
ISSUE SPECIFIC HEARING 8 (ISH8)
16 AND 17 APRIL 2019

SUMMARY OF ORAL REPRESENTATIONS MADE ON BEHALF OF THE APPLICANT

AGENDA ITEM (1): INTRODUCTION

1. The following appeared at this ISH on behalf of the Applicant (VWPL): Scott Lyness (SL), Ed Rogers (ER), Jamie Holmes (JH), Simon Moore (SMO), Paul Brown (PB), Sean Leake (SEL), Jennifer Holgate (JKH) and Sammy Mullan (SM).

2. Interested Parties (IPs) were represented as follows:

   a. Port of Tilbury London Ltd (PoT) and London Gateway Port Ltd (LG): Robbie Owen (RO)(Pinsent Masons LLP), Mr Vincent Crockett (VC)(HR Wallingford), Matthew Carpenter (Pinsent Masons LLP), Trevor Hutchison;

   b. Trinity House Lighthouse Services: Roger Barker, Trevor Harris;

   c. Maritime and Coastguard Agency (MCA), Nick Salter, Rakesh Bandet;

   d. UK Chamber of Shipping: Fena Boyle;

   e. Port of London Authority (PLA) and Estuary Services Ltd (ESL): Alex Dillistone, (Winckworth Sherwood LLP), Cathryn Spain (CS)(PLA) and Richard Jackson (RJ)(ESL); and

   f. London Pilots Council: Andy Sime (AS).

3. This oral summary provides a summary of the representations made on shipping and navigational aspects of the Issue Specific Hearing 8 (ISH8) Agenda Items. The environmental and commercial fisheries Agenda Items summaries of representations are provided in Appendices 19 and 20 respectively of the Applicant's Deadline 5 Submission.

4. PB had not appeared before the Panel previously and gave a summary of his experience which the Applicant sets out below.

5. Commander Paul Brown is a Principal Consultant at Marico Marine and also a marine pilot at the ports of Bideford, Brixham and Dartmouth. Paul is also the Associates Representative on the UK Harbour Masters Association Council. Until July 2017 Paul was the Harbour Master and a Class 1 pilot for the Port of Dover for 5 years and previously has 18 years' experience as a deck officer in the Royal Navy gaining an STCW II/2 military equivalent qualification and commanding 3 different warships on operations throughout the world.

6. As a Class 1 Port of Dover pilot PB has handled cruise vessels of varying size, and handling characteristics up to 320m in length including reefer, cargo ships, ferries, bunker tankers and smaller grain, dredger and construction vessels in the constrained waters and

approaches of the port. PB was responsible for recruiting and training new pilots, maintaining the standards of Pilotage Exemption Certificates (PEC) exams and introduced a structured PEC enforcement regime as well as an annual pilot continuation training syllabus. Paul continues to practice as a pilot in the UK South West.

7. PB was the Harbour Master and General Operations Manager for the Port of Dover with direct statutory responsibility for safety of navigation and the safety management system of the port and its approaches - including ownership of the ports Navigation Risk Assessment. In this role PB also sat as a council member on the UK Harbour Masters Association Council and sat on the MCA Port Marine Safety Code Steering Group. Since 2017 PB has worked as a consultant on navigation risk assessment projects on the Thames and the outer estuary (Rotherhithe to Canary Wharf Bridge Project and Thanet Extension Offshore Wind farm) as well as in other UK areas.

8. On the Thanet Extension Offshore Wind Farm Project, PB participated in the pilotage bridge navigation simulation and also reviewed the hazard scores in the Navigation Risk Assessment Addendum - specifically with regard to baseline scores.

9. The Applicant has already provided details of SMO's qualifications and experience. In addition, the following points can be conveniently added here.

10. As a Senior Class One Pilot at the Port of Dover SMO was responsible for training new pilots and also examining external candidates for the reward of a pilotage exemption certificate. Vessel types piloted included the following: RoPax Ferries up to 212m; Cruise ships up to 300m; Container Ships up to 240m; Bunker Tankers up to 120m; General Cargo & Reefers up to 200m; Dredgers up to 100m; Tug and Tows up 150m entering port;; Large Sailing Vessels up to 60m. SMO also had experience as a Class 4 PLA Pilot in 2006, predominantly boarding and landing at the NE Spit. In his current role of Senior Master at P&O Ferries he is responsible for implementing the SMS (safety management system) and conduct a review of this on an annual basis.

    Full biographies are provided in Appendix 7 of the Applicant's Deadline 5 Submission.

AGENDA ITEM 2: PROCEDURAL IMPLICATIONS OF SUBMISSIONS AT D4, 4B AND 4C

11. **The ExA reviewed the procedural implications of documents amending the application or addressing advice provided to the applicant under s51 PA2008, as submitted at Deadlines 4, 4B and 4C.**

The SEZ Material Change request submitted at Deadlines 4 and 4B

12. SL began by expressing the gratitude of the Applicant to the Panel for accommodating the material change into the examination timetable. He explained that the rationale behind the SEZ was contained in Appendix 14 to the D4 submissions, which were accompanied by an outline review of the ES material and an outline addendum NRA. A full suite of amended documents, as set out at Annex A to the ExA's letter of 9 April

2019, was provided at Appendix 4B in response to the amended timetable issued by the ExA. SL explained that the full addendum NRA had not been provided at D4 given that the stakeholder workshop to discuss hazard scoring had been held on 29 March 2019 and that this did not allow for discussions to be reflected in D4 material. SL confirmed that all relevant IPs appeared in the hazard workshop (although the MCA sat in an observing capacity only). As would be explained later, the Applicant had followed up the workshop by issuing full draft hazard logs on 1st April 2019 and holding further discussions with IPs on 1st and 2nd April to allow feedback prior to the submission of the full Addendum NRA.

13. SL added that the hazard workshop was part of a wider process which had included an earlier workshop on 27 February 2019. This was an initial workshop that asked for input from all IPs on the potential scope of what became the Structures Exclusion Zone (SEZ) and although the Applicant invited IPs to indicate their required sea room, this opportunity was declined at the meeting, which focussed instead on establishing agreed parameters for considering the basis upon which any prospective amendment could be made (including appropriate ship size/draft). There was a measure of agreement on the different ship sizes to be taken into account, as well as reference locations for any change to be considered. Following this meeting and D3, the Applicant decided to propose the SEZ which was issued to all stakeholders on 19 March 2019, followed by a series of pre-hazard workshop meetings between 21-25 March to seek feedback on the SEZ and explain the basis for the hazard log workshop to be held on 29 March.

14. SL explained that the Applicant had made all reasonable endeavours to bring all IPs together and to hold the hazard workshop as soon as possible. There had been a series of meetings before and after that workshop; and the IPs have had since the beginning of the month to review the hazard scoring. In addition to comments in the statements of evidence IPs would be able to make representations on the NRA at the ISH and during the rest of the examination. Adequate information had been prepared to allow all IPs to participate fully and fairly in the examination process.

Arrangements for notice of and consultation on the SEZ Material Change request

15. **In response to the ExA referring to the advice they had provided in Annex C to its letter of 9 April 2019**, SL noted the reference to consultation being "analogous" to the requirements of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 and the Infrastructure Planning (EIA) Regulations 2017. Those provisions essentially address circumstances where there is a new proposed application or a subsequent application, which is not the case here. The SEZ is a measure proposed to address the concerns raised by stakeholders in the context of an existing application. It was also necessary to bear in mind Advice Note 16: which anticipates that a targeted approach may be adopted to the identification of those affected by the request to materially change the application. Figure 3 para. 9 also refers to proportionate additional non-statutory consultation.

16. In circumstances where the proposed change is offshore (the SEZ would simply restrict the placement of turbines and other structures within an area of the offshore Order limits); there is no addition to the scheme or change to its underlying substance – in fact the area with installed turbines would reduce; where no new or additional environmental effects are anticipated, within same Rochdale envelope; and where all parties interested in issues which arise in relation to a more extensive scheme have already had the opportunity to comment and participate in the examination process, the Applicant considered that it would be proportionate to not require full requirements of those Regulations to be applied. The judgment that was set out in correspondence to the ExA was that it is not necessary to go further by consulting as if this was an entirely new application.

17. Annex B of the Rule 8(3) letter from the ExA of 4 April 2019 had summarised those IPs that should receive electronic distribution of the documentation to which the material change relates. This list was appropriate and did not require entirely new consultation. The Applicant considered, for completeness, that it would be prudent to include a number of other interested persons whose remit relates to offshore matters in varying capacities. A full list of the persons the Applicant proposes to consult is contained at Appendix 1 of the Deadline 4C letter. The Applicant respectfully suggested that it was not necessary to go further in all the circumstances. The list of persons which the Applicant proposed to consult, as set out in its correspondence to the ExA, was proportionate having regard to the nature of the proposed change.

18. SL added that the Applicant was keen to commence consultation last week, however, on reflection, it was considered to be prudent to await the carrying out of such consultation until after the hearings have taken place this week. Consultation will commence next week for a 30- day period, which would allow compliance with the timetable proposed by the ExA, including the preparation of a consultation report.

19. **The ExA noted that they could not provide an absolute warranty regarding this approach and would return to the list of consultees proposed by the Applicant later in the agenda.**

AGENDA ITEM 3: APPLICANT'S SUBSTANTIVE POSITION ON SHIPPING, NAVIGATION AND MARITIME SAFETY POST ISH5 AND RESPONSES BY IPS

20. **The ExA sought views mainly on Agenda item *(d) which seeks to identify in headline terms that matters that were still in contention.* The Applicant was also asked under item *(a) to briefly present and explain the SEZ Material Change*.**

21. Taking these issues together, SL explained that the document which fundamentally explains the SEZ, based largely in an attempt to resolve shipping and navigation concerns, appeared at Appendix 14 to the D4 submissions. In short, it was based on taking the agreed parameters identified at the earlier workshop on 27 February, along

with updated data considered in Appendix 27 to the D4 submissions to identify proposed sea room requirements at the agreed reference locations.

22. It did so by having regard to guidance relating to vessel passage requirements n MGN543 Annex 3 and Marine Spatial Planning guidance (see para. 28 p. 15). It sets out a series of calculated sea room requirements according to different vessel sizes (pp. 15-18), interpreting that guidance having regard to calculations advanced earlier in the examination by the LPC. It also took up, in relation to sea room for pilot transfer operations, other aspects of MGN543 relating to vessel turning requirements as set out by LPC (p. 21). It did so having regard to what was understood at the time to be IPs' respective positions.

23. SL explained briefly how the SEZ was devised at particular reference points.

24. At NE Spit pilot diamond (p. 26): the Applicant took the precautionary approach of considering an area defined by the no anchoring area and the north foreland sector light, which essentially involved addressing the largest vessels (constrained by draught and length) that are considered to be restricted to an area to the east of this line. It should be emphasised however that pilotage is undertaken routinely outside this area. The basis of the proposed amendment was to secure 2nm sea room in recognition of PLA/ESL and LPC reps, plus an additional 1nm in the area where greatest pilot transfer operations focused (see Fig 6 p. 26). The widest point in this area was in fact 3.4nm.

25. At the NE Spit Racon buoy: (p.23): the Applicant, recognizing that in this area movements were dominated more by the passage of vessels, considered a sea room requirement assuming a highly precautionary range of vessel sizes, focusing on the MGN543 and MSP guidance. The approach adopted was to provide for the concurrent passage of four 333m vessels, notwithstanding that the new AIS data described in Appendix 27 to the D4 submissions showed only 13 vessels at 299m and above passing the racon buoy over a year's worth of around 5000 movements (Table 4 pp. 11-12). The evidence showed only 1 vessel greater than 333m transiting the inshore route over 21 months period of survey and combined AIS data (paragraph 22 p. 12). Even on this approach, there would remain a substantial area of sea room buffer to allow for other maritime considerations, including crossing vessels, to influence available sea room, having regard to fact that this fell outside the area of the most focused pilotage operations.

26. At the Elbow buoy (p. 28): a similar approach was taken. Here movements were passage dominated so applying the guidance, even on a highly precautionary basis of four 333m in length vessels, gave a buffer of well over 0.5nm; and a buffer of around 1nm if 3 vessels were employed. It should be emphasised that the MSP guidance only sought 3 vessels to be included in any calculation, for routes with up to 18,000 vessels, which is far lower than any route being considered here.

27. Overall the SEZ was considered to provide substantial sea room according to the MGN543/MSP guidance, with additional space to account for perceived complexities in marine traffic and metocean conditions. The precautionary nature of the approach was emphasised by the AIS data which showed that an average of only 11-13 vessels per day

would pass the Elbow buoy/ NE spit buoy. The SEZ was therefore based on a precautionary quantitative rationale (see Section 4 of App 14 to the D4 submissions), combined with the mariner experience and qualitative issues raised by IPs in various submissions including those submitted at D3.

28. SL noted that the areas of contention now relate to the sea room that was calculated at the agreed reference points. The sea room at the Elbow buoy is now agreed with LPC and for reasons which would be explored later the extent of disagreement elsewhere was unclear. As for the PLA/ESL, it is now understood that they are seeking what could broadly be described as a 2+1 nm area at Elbow, the NE Spit pilot diamond and the NE Spit racon buoy, but this could also be confirmed at the ISH. As for the PoT/LG, the Applicant does not take them to be raising any issue in relation to vessel passage but have stated that they will listen to the views of other stakeholders on sea room and make separate points on the NRA.

29. Following on from the question of sea room, SL noted that other areas of contention related to NRA itself. SL explained that in short the Applicant thought that after identifying the 4 main hazards, as identified in consultation with the PLA work, the input scores for these hazards had been agreed at the workshop. There was one point raised by the ports in the evening after the meeting finished, relating to consequence scores (which had been addressed in the Addendum NRA), but fundamentally there was an understanding that the inputs were agreed. However the PLA later informed the Applicant that they wished to review the scores. The Applicant does not now understand these to be agreed, although it is disappointed that the PLA has sought to row back from a position that was agreed following extensive workshop discussions. As for the other hazards, numbered 5 to 18 from an agreed list, the Applicant has provided hazard score results in the Addendum NRA to accompany the first four (baseline and inherent risk scores). It is not clear if any of these are agreed yet, but the scores for hazards 5-18 largely reflect the approach the Applicant thought was agreed. Further details on the NRA process could be provided under a later agenda item, in particular the details of the hazard workshop and the scoring itself. As for this agenda item relating to the basis of the definition of the SEZ, JH could explain that in more detail, again in a later agenda item.

30. **SB asked the Applicant to clarify various matters:**

a. **In relation to paragraph 6 (i.e. hazards 5 to 18) in the Addendum to NRA, ER explained that the scoring of the principal inputs was dealt with towards the end of the workshop after extensive prior discussion of the factors underlying the scoring. Draft resulting scores were then circulated for comment after the meeting.**

(a) ER explained that the scoring was dealt with towards the end of the workshop with draft scores circulated for comments on the next working day, as agreed at the workshop.

b. **In relation to para 9 of the NRA on operational phase, SB asked if on 29 March workshop there was a discussion about the risk during maintenance that activities may be taking place outside SEZ?**

c. ER explained that in terms of specific maintenance activities it was agreed that there would at times be a need for service vessels to transit to the wind farm, but it was not an issue which generated any detailed discussion at the workshop. The presence of small maintenance, or infrequent larger maintenance vessels, is a transient activity of short duration and limited spatial effect.

d. **On consultation proposal, SB asked if the Port of Sheerness was consulted in any way at all regarding workshop on the 29th.**

e. SL agreed to check the extent of consultation with the Port of Sheerness generally, but confirmed they were not involved as attendees in the workshop.

f. SL agreed that the Applicant would produce a document seeking to show how judgments in hazard scores had changed from the NRA to the Addendum NRA, but noted that in consultation with the PLA, the hazards had been changed to more closely reflect the vessel classification used by the PLA and so the correlation would not be direct. Once the baseline assessment of consequence and likelihood was undertaken , the likelihood only was reviewed with regards to the inherent assessment of risk. In some cases the likelihood was doubled to reflect the TEOW being in place, in other hazards a lower uplift was applied.

g. **In relation to paragraph 88, SB noted that experience of team was submitted in a document but asked for clarification on two master mariners, the sizes and types of vessels in which they were experienced.**

h. SL confirmed that the reference in the Addendum NRA (paragraph 88), to a review of hazard scores by two master mariners, related to SMO and PB (see too Appendix 7 of this Deadline 5 submission for a full account of the experience held by the two master mariners, including the vessel types and sizes which have been operated by them); and details of their experience could be provided in writing.

i. **SB noted that there is an effect of congestion due to a number of circumstances, regarding requiring vessels to take a pilot and turn so the congestion in the sea space is additional hazard. SB asked if that was address in the workshop?**

j. ER explained in respect of potential vessel congestion that the general environment in which hazards would appear had been discussed at the workshop, particularly as regards the risk of collision, including pilot transfer operations issues. The risk assessment identified congestion as a cause and not a hazard and as such it is an inherent part of the assessment when considering the likely cause of any hazard under discussion.

k. **In terms of the effects on congestion and delay in passage, SB asked if the risk assessment looked at other risks, other than collision risk, i.e., delay to the**

passage caused by congestions and if there is an incident that its consequences may have economic impact on operation of local ports?

l. In terms of economic impacts, the NRA process involved *inter alia* assessing the risks for consequences on people, environment, and stakeholders. That category takes into account widespread issues including the effect on businesses. The stakeholder category takes into account widespread issues so also hazards related to addressed businesses operation. Regarding efficiency by pilot boarding that was included in the risk assessment.

m. **SB asked for clarity on consequential implications of the top 4 hazards and how much the overall NRA addendum looks at combination risks.**

n. ER added in relation to in-combination risk that the NRA had already considered this issue [Ed we need to explain this further]. And in so far as the question of wider societal risk had been raised previously, this was addressed in a previous written response by the Applicant [identify response D1/D2?].

o. **On paragraph 177 of the Addendum, SB requested an explanation of what is meant by "significantly increased" in relation to ALARP.**

p. In relation to paragraph 177 of the Addendum NRA, which includes the phrase "*significantly increased*", SL explained that the conclusion stated in that paragraph was that there would not be significant increase in risk to a level that was beyond ALARP.

q. A number of action points were agreed following ExA questions which were later listed by the ExA and are now reflected in separate response document prepared by the Applicant (Appendix 7 of the Applicant's Deadline 5 Submission).

31. SL added that the IPs record, particularly that of the PLA, of what happened at the hazard workshop is distorted which was extremely disappointing, for reasons that would be explained in evidence. It would also be necessary to understand the focus of the PLA concern, given their statement at the ISH that the passage of vessels was not of concern. Given that pilotage operations were focussed in the area of the NE Spit pilot diamond, the Applicant sought clarity on the extent to which PLA concerns actually extended beyond that area to other areas including the racon buoy and Elbow which were instead dominated by passage and where a very small fraction of pilot operations occurred (as demonstrated by Table 5 in the Addendum NRA, which showed eg only 2.2% of pilotage acts taking place in the area identified by the PLA as the NE Spit racon buoy in 2018). These matters would be explored in later agenda items, along with the issues raised by other IPs.

SL, THROUGH REFERENCE TO PB PRESENTED THAT A PILOT SIMULATION HAS BEEN CARRIED OUT, THAT IS CONSIDERED TO BE ADEQUATELY REPRESENTATIVE, HAVING BEEN CARRIED OUT IN A TRANSPARENT AND APPROPRIATE MANNER. SL ALSO NOTED THAT THERE ISN'T A REQUIREMENT TO CONDUCT A SIMULATION NRA UNDER POLICY (AS CONFIRMED BY THE

MCA). THE APPLICANT MAINTAINS THAT ADDITIONAL STUDY IS NOT NECESSARY. AGENDA ITEM (4): POLICY CONSIDERATIONS

32. This agenda item was not completed before the ISH moved onto item 8 in particular, but for convenience this summary deals with all representations on policy considerations together.

33. **The ExA confirmed that the purpose of this agenda item was to allow the parties to set out their summary positions on important policy issues, with detailed debate to follow in later agenda items.**

(a) To which if any routes approaching London and Sheerness ports does the definition of '…recognized sea lanes essential to international navigation…' apply, with reference to UNCLOS 1967; and could the proposed TEOW development cause interference with their use (2.6.161)?

34. SL confirmed that for the reasons set out in (DL3 App. 3 submissions) and App. 5 to the D4 submissions, the Applicant does not consider any of the relevant routes to be recognised international sea lanes and as such 2.6.161 is not relevant.

35. Paragraph 2.6.1.161 defines as a recognised sea lane essential to international navigation as: (a) anything that constitutes the use of such a sea lane for the purposes of article 60(7) of the United Nations Convention on the Law of the Sea 1982; and (b) any use of waters in the territorial sea adjacent to Great Britain that would fall within paragraph (a) if the waters were in a Renewable Energy Zone (REZ)).

36. No-one has suggested that (b) applies but in any event it refers to any use that would fall within (a) and if (a) does not apply then (b) does not appear to add anything relevant.

37. As for (a), Article 60(7) does not define "recognised sea lane…" and indeed this not defined in UNCLOS. However Article 22 (sea lanes and traffic separation schemes in the territorial sea) allows sea lanes to be designated by coastal States, and requires that any such sea lanes are shown on charts to which due publicity shall be given. Similar provisions apply under Article 41 (sea lanes and traffic separation schemes in straits used for international navigation). Although UNCLOS Article 60(7) does not explicitly refer to formal designation or charting as appears in other Articles within UNCLOS, the term "recognised sea lane" within that Article suggests some form of procedure by which a sea lane is "recognised" internationally as essential. The Applicant considers it reasonable to assume that the reference to sea lanes under paragraph 2.6.161(a) involves recognition by the IMO by some formal publicised means, including through entries on navigational charts. This is consistent with EN-3 para. 2.6.155, which advises that information on internationally recognised sea lanes is publicly available and this should be considered by applicants prior to undertaking assessments. No publicly available information designates the inshore route or northern route in this case as recognised international sea lanes.

38. SL added that the MCA had accepted that there were no recognised sea lanes relevant to this case. There had been a suggestion that it should be "treated" as such, but this was not a proper application of EN-3 para 2.6.161. There was also a suggestion that it might be possible to designate under Article 22, but this has not happened and this process would not make any such lane an internationally recognised sea lane under the EN-3 definition anyway. Further, the fact that (as the MCA had identified) there may be internationally recognised sea lanes elsewhere did not make any route around the project fall within para. 2.6.161.

39. For these straightforward reasons, para. 2.161 did not apply. In so far as PoT/LG focussed on the concept of "use" in that paragraph, to claim that routes were used so as to fall within the scope of an internationally recognised sea lane, this did not consider the full guidance in EN-3 or the need for some form of recognition as well as publication. It was not sufficient to identify that any route was simply being used. Read as a whole the guidance required consideration of whether the use fell within the specific definition set out in that paragraph. It would not be consistent with EN-3 to simply consider whether a route was used and somehow infer that it should be a recognised sea lane under Article 60(7) of UNCLOS.

40. SL added that if the Applicant's submissions were correct, it followed that the project would not involve any infringement of any international obligations applicable to the UK.

41. The ExA noted that at Deadline 7 the parties should set out their final positions on policies identified in this agenda item.

(b) Has site selection (or definition) been made 'with a view to avoiding or minimising disruption or economic loss to the shipping and navigation industries with particular regard to approaches to ports and to strategic routes essential to regional, national and international trade' (2.6.162) and if not, what adverse effects can be quantified and presented in evidence, or what reorganisation of traffic activity might be effected to mitigate disruption or economic loss?

42. SL noted that there were various aspects to the question, as there were to paragraph 2.6.162. Dealing first with the statement that "The [SoS] should be satisfied that the site selection has been made with a view to avoiding or minimising disruption or economic loss to the shipping and navigation industries", the Applicant's approach to site selection was set out in the ES Volume 1, Chapter 4 (PINS Ref APP-040/ Application ref 6.1.4) and clearly sets out how regard has been given to minimising the effect on these industries (see eg paragraph 4.6.7, 4.6.11 and Figure 4.2), particularly through the pre-application boundary change, following consultation responses at Section 42 stage. The area to the south was trimmed to allow for an appropriate alignment and 2 lines of orientation with the existing OWF, as has been agreed with the shipping stakeholders since the scoping phase. The area to the west was reduced to minimise interaction with shipping

stakeholders, albeit that the evidence indicated an area of relatively low density of vessel movements. This change was introduced prior to consultation, proactively seeking to minimise disruption to shipping and navigation industries. A further change was then introduced following the formal consultation phase of the Pre-application (the PEIR). The change made at this stage was specifically to reduce interaction with pilotage operations and dipping traffic with regards use of the inshore route. This change is recorded at para 4.12.15 of the ES chapter and illustrated at Figure 4.20 which is the final application RLB. Since that stage further amendments are now the matter of consultation whilst undergoing examination. The introduction of the SEZ has been made specifically with a view to minimising disruption to the shipping and navigation industries. The remaining searoom is sufficient for multiples of the largest vessel on record as using the inshore area, and aligns with best practice guidance (MSP) which relates to much higher route usage (see above). The SEZ has been expanded to not only align with the guidance but to provide suitable buffers and adequate searoom to allow for more complex activities.

43. Notwithstanding this general position, which demonstrates compliance with the policy, the paragraph goes on to state that the site selection should be made 'with particular regard to approaches to ports and to strategic routes essential to regional, national and international trade, lifeline ferries and recreational users of the sea.' The NPS does not define what approaches to ports, or such routes are, by reference to independent regulatory definition or otherwise. In relation to approaches to ports, the area of the inshore route and routes surrounding the project is better described as an area of open sea. There is no demarcation of these areas as a recognised sea lane; nor is there buoyage, VTS or other controls which you would expect to find in the approaches to port further into the Thames Estuary. The PLA has made it clear in their submissions that this area cannot be equated to marked channels such as Fisherman's Gat or the Princes Channel because of the additional control measures in place within their statutory harbour limits. It is areas such as these that should be considered approaches to ports (in this case the Port of London and ports further along the river) and not wider areas of open sea, as with the routes around the project.

44. As for "strategic routes essential to regional, national and international trade", again there is no clear definition of what these routes are. The Applicant is not convinced that this definition should apply in this case. The Applicant has noted that there is a variety of routes into Thames Estuary and that the AIS traffic recorded in the Addendum NRA places the use of the inshore route and passage via the NE Spit racon buoy at between 4-5000 per year, which falls at the lower end of the range of vessel traffic identified in the MSP guidance to define sea room for passage (the guidance refers to traffic lanes ranging from less than 4000 vessels per year to more than 18000). Further, the AIS data shows only around a dozen ships a day going through inshore route, which in the Applicant's view cannot should not be regarded as a strategic route within this paragraph. By way of comparative example, the PLA provided AIS data for 2018 as

analysed by HR Wallingford, demonstrates that *circa* 12,500 vessels transit Gate 2 to the east of the wind farm, covering vessels using Princes Chanel, Fisherman's Gat or the deep water routes of the SUNK)The Applicant also notes that later in para. 2.6.162, where the potential re-organisation of traffic activity is contemplated, there is a reference to route alterations possibly requiring national endorsement and international agreement. This tends to indicate the nature of route that is more likely to be contemplated by this paragraph and there is no suggestion that any such route around the project is in place here. There is no formally designated or charted inshore route or route immediately to the north of the project. There is nothing in the Pilot Books to indicate that either is an important route to be followed when route planning (as is the case with e.g. the Dover Straits).

45. In any event, for the reasons given, if it is considered that this aspect of para. 2.6.162 applies, the project meets this test. For completeness, the Applicant considers that the project does not affect lifeline ferries and will not have significant effects on recreational users of the sea, as confirmed in the Statement of Common Ground with the Royal Yachting Association (PINS Ref REP3-044).

46. In response to submissions from PoT/LG, SL recognised that the SoS "should be satisfied" that site selection had been carried out as stated, but considered that it went too far to suggest that any breach of this aspect of 2.6.162 inevitably required consent to be refused, given the need for all policies in this section of EN-3 and the wider policy statement to be applied in the round. However this eventuality did not raise as the policy was complied with.

47. Paragraph 2.6.162 goes on to state 'Where a proposed development is likely to affect major commercial navigation routes, for instance by causing appreciably longer transit times, the IPC should give these adverse effects substantial weight in its decision making.' Again, there is no definition of 'major commercial navigation routes' and the Applicant has seen no substantiated case, by reference to regulatory definitions or otherwise, to confirm that the inshore or northern routes fall within this definition. Similar considerations to those set out above, relating to the extent of use of the inshore and northern routes, apply here.

48. In any event, the Applicant does not accept that there would be any likely effect on any major commercial navigation route. There would be no significant change to routeing to the north of the site. As for the inshore route, this would remain open for vessel transits and the Applicant does not consider that vessels would avoid it, for reasons which can be developed in later agenda items. It now appears to be agreed that there is adequate sea room for the passage of vessels. Even if some of the largest vessels chose to avoid this area (which the Applicant does not accept), this would be a very small fraction of the total traffic. For example vessels over 240m represent just 1% of traffic using the

inshore route. The additional transit distance between the inshore route and the most likely alternative has been estimated as 11nm (40-45 mins) by the Applicant and up to 14nm by other Interested Parties. But any extra steaming time would have to be seen in context, including the potential length of journeys from container ports in southern Europe or beyond and other factors explained in the Applicant's Statement of Evidence such as weather, waiting for berths mean that any increase would not be significant in context of wider realities of routeing.

49. Further, the paragraph acknowledges that 'There may, however, be some situations where reorganisation of traffic activity might be both possible and desirable when considered against the benefits of the wind farm proposal'. The Applicant does not accept that any reorganisation is necessary, but notes that the policy does anticipate that some effects on shipping routes covered by this policy may occur and remain acceptable.

(c) Has the Applicant taken sufficient measures to 'minimise negative impacts to as low as reasonably practicable (ALARP)' and if not, what additional measures could be implemented (2.6.163)?

50. Paragraph 2.6.163 was to be read in full and applied "Where a proposed offshore wind farm is likely to affect less strategically important shipping routes, a pragmatic approach should be employed". The guidance appeared to relate to impact on shipping routes other than those addressed by paragraph 2.6.162 and for similar reasons to those set out above, it is not accepted that there would be negative impacts or if there were, they have been minimised and could not be described as significant. Navigational safety is addressed in a later paragraph in EN3, but to the extent that the term ALARP as employed by the parties to the examination was considered, the project falls into this category for reasons that would be explained in more detail later.

(d) Are there sufficient 'significant concerns over the frequency or consequences of [such] incidents [that] a full Search and Rescue Response Assessment is 'required before the application can be determined' (2.6.164)

51. SL explained that search and rescue is dealt with at section 7.7 of the NRA. It is expected that all aspects of SAR requirements can be adapted from the existing wind farm to ensure compliance of the extension. The design of the project, involving two lines of orientation with the existing OWF, and appropriate spacing of WTGs, is such that it does not necessitate a SARRA at this stage. Table 20 of the NRA (Risk Control No. 6) includes as an embedded risk control an Emergency Response and Co-operation Plan to be drafted in conjunction with MCA. No-one has suggested that this is insufficient or that there are significant concerns requiring anything further by way of assessment at this stage.

(e) Would the proposed development 'pose unacceptable risks to navigational safety after mitigation measures have been adopted'? (2.6.165) and if that is considered by regulators to be the case with present proposals, could additional design or risk controls/mitigation measures be implemented to make risks acceptable?

52. SL explained that this aspect of EN-3 policy related specifically to navigational safety as opposed to impacts on shipping routes and this issue would be covered substantively later in the agenda. But the position in short was that the recent Addendum to the NRA confirmed what had been position established by the original NRA. EN-3 advises (2.6.156) Applicants to undertake NRA, so policy clearly identifies use of the NRA as being an appropriate way to measure "risk". MGN543 confirms that the ALARP approach is an effective way of assessing whether risk is acceptable. There is ample evidence within the Addendum NRA to conclude that ALARP would be achieved in this case. The inputs in relation to 4 hazards were agreed at the workshop and the Applicant has provided scoring for all 18 hazards agreed for assessment. Any outstanding concerns could be considered at the ISH. The results show that even before considering risk controls additional to those "embedded" in the inherent risk scores, the project would fall within the ALARP range. The Applicant will confirm the extent of any further reduction in scoring through the residual risk scores which take into account additional risk controls identified in the Schedule of Mitigation and in the Addendum NRA, drawing on the measures set out in the original NRA.

53. The NRA was not incomplete as alleged by some IPs. Any concerns that they had to ensure that qualitative judgments are accounted for could properly form part of the scoring process, which was discussed in relation to the main hazards 1-4 and led to a more precautionary approach to risk likelihood being adopted by agreement (a doubling of likelihood scores in the most onerous case, as would be explained later). The purpose of the hazard workshop was for those issues to be considered so as to understand whether the project would remain within the ALARP range. The Addendum NRA demonstrates that it would, by applying a similar approach to hazards 5-18 to that adopted in relation to hazards 1-4 at the workshop, even without adding in further risk controls. The IPs could provide further comments as appropriate on the scoring, including the extent to which risk controls would ensure that the project remained within the ALARP range. The absence of any comment on those risk scores does not mean the NRA is incomplete.

54. The summary position of the Applicant was therefore that the project would not result in unacceptable risk to navigation and paragraph 2.6.155 is satisfied.

(f) Has the scheme been 'designed to minimise [the] effects on recreational craft and that appropriate mitigation measures, such as buffer areas …allow for recreational use outside of commercial shipping routes' (2.6.166)?

55. The ExA stated that this item would be picked up in later written submissions.

(g) Are mitigation measures possible to 'negate or reduce effects on navigation to a level sufficient to enable the [Secretary of State] to grant consent' (2.6.167)?

56. SL stated that in summary the project met this aspect of the policy for the same reasons as applied to para. 2.6.166. The Applicant had set out in the NRA embedded risk controls which were followed through into the Addendum NRA. There were additional risk controls which could be applied to the inherent risk scores to give residual risk scores, albeit that the project already fell within the ALARP range. This demonstrated that there were mitigation measures which could be applied to reduce effects to an acceptable level. These were identified in the NRA and reflected in the Schedule of Mitigation for Shipping and Navigation (App. 41 to the D1 submissions), with a broad summary in the Addendum NRA which could be reviewed when preparing a finalised residual risk score. The Applicant has not received any substantive comment on risk controls from IPs; and to the extent that the SEZ was treated as mitigation, for the reasons that would be explained this was sufficient to enable consent to the granted.

(h) What is the 'extent and nature of any obstruction or danger to navigation, which, (without amounting to interference with the use of [such] sea lanes)…likely to be caused by the development' (2.6.168 and 2.6.161) with regard both to 'the overall effect of development in question and to any cumulative effects of other relevant proposed, consented and operational offshore wind farms' (2.6.169)?

57. SL explained that to a large extent the responses on earlier aspects of EN policy addressed this question. It is the Applicant's position that there is no obstruction or danger to navigation. The project does not prevent vessels from following any established route; and it appeared to be common ground that there was no issue with passage along any route. Any effect on dipping traffic caused by the additional extent of WTBs was not significant as explained previously. As for cumulative effects, that could be dealt with more generally under a later item.

(i) Has engagement between the Applicant and maritime navigation stakeholders ensured that solutions have been sought to 'allow [the Thanet OWFE] and navigation uses of the sea to successfully co-exist' (2.6.153) and if not, what additionally needs to be done?

58. SL explained that the Applicant had previously set out in detail the consultation process which was undertaken with stakeholders, both in the NRA (Table 8) and in D1 submissions (Annex I to Appendix 25 – response to ExA written question 1.12.12). The Applicant has continued to seek engagement with interested parties and has held a

series of workshops, since the last hearings. These were set out in the Addendum NRA (and are included below for convenience):

- Pre-Hazard Workshop Meetings to provide rationale on SEZ and outline Addendum NRA strategy (including hazard identification approach, benchmarking to hazards to incident data, hazard workshop approach and identification of risk control measures), with:
  - MCA / TH – 21 March – MCA Head Quarters
  - PLA / ESL - 22 March - Teleconference
  - LPC / PLA – 25 March – PLA Head Quarters
  - POTLL / DWPLG – 25 March – Teleconference
  - Thanet Fishermen's Association (TFA) - 26 March – Ramsgate
- Hazard Workshop – 29 March – 10:00 – 16:00 London, attended by MCA Trinity House PLA ESL POTLL DPWLG TFA and the Applicant (including Navigation Risk Assessment specialist (Workshop Chair) and Master Mariner)
- Post Hazard Workshop Teleconference to run through additional hazard scores as drafted by the Navigation Risk Assessment Specialist – 2 April – attended by PLA ESL, LPC, MCA, DPWLG, POTLL.

59. Following the pre-hazard workshops, the workshop and post workshop conferences, there is no dispute that there is a now deficit of engagement. Discussions with IPs have enabled the preparation of the Addendum NRA which demonstrates that no safety issues arise from the project and that it can successfully co-exist with the navigation uses of the sea. This could be explored in later agenda items.

60. To the extent that PoT/LG suggested that it was necessary to carry out a full navigation simulation, the Applicant did not accept this approach. An adequate pilot simulation had already been carried out, in relation to a more extensive pre-application red line boundary and it found operations to be feasible, not accounting for the SEZ. Any judgement parties wish to make about the pilotage simulation could inform judgements on risk scores. There was nothing in the guidance to suggest that a further simulation was required, in circumstances where such work was only one aspect of a wider assessment intended to result in the hazard risk scores, a process that had been followed by the applicant in accordance with guidance. The IPs could now indicate where they differ from the scoring system in the Addendum NRA, noting the extent of agreement reached at the workshop.

(j) Has the Navigation Risk Assessment (NRA) identified and assessed cumulative and in-combination risks associated with the development and other developments in the Thames Estuary and its approaches (2.6.157)?

61. Cumulative effects were considered within the ES chapter (Section 10.13, PDF pages 39-41), and within the NRA (Section 7.10 and Table 17). Section 3.6 of the NRA details the

other offshore infrastructure which was considered when assessing in combination and cumulative impacts, including spoil grounds, cables and 0&M for Kentish Flats, TOWF, London Array. Operational projects were included because of the ongoing vessel movements as part of those projects. In summary, cumulative impacts due to increased vessel activity were judged to be probable but of low magnitude (the Applicant has initiated the preparation of the Shipping and Navigation Liaison plan . The cumulative impact on vessel routeing was assessed as unlikely and of low magnitude. In response to a query from the ExA regarding the assessment of societal impacts in the NRA context, the Applicant had prepared a response at Appendix 25 to Deadline 1 Submission: Applicant's Responses to the Examining Authority's First Written Questions – EXQ1 p.132.

62. Prior to moving on to the next agenda item, in response to questions from the ExA SL confirmed that the Applicant considered the MSP guidance to be relevant given its employment in the assessment of sea room. This appeared to be an agreed position with the other IPs. SL advised that the reference to the UNESCO guidance in page 3 MSP document would be addressed through written submissions by D5, along with the IMO's General Provisions on Ship Routeing (as provided in Appendix 7 to Deadline 5 – ExA Action Point 7).

AGENDA ITEM (7): CONSTRUCTION EFFECTS AT SEA AND ON LAND

63. The ExA deferred this agenda item to the third set of written questions.

AGENDA ITEMS 5 AND 6: EFFECTS ON NAVIGATION IN THE APPROACHES TO THAMES AND MEDWAY PORTS; AND DETAILED CONSIDERATIONS: NAVIGATIONAL RISK ASSESSMENT (NRA)

(CONTINUATION OF HEARING ON 17 APRIL)

Introduction and IP evidence

64. **The ExA confirmed that the parties should address these two agenda items together.** After the IP witnesses summarised their positions SL briefly put questions to them, on the understanding that other issues would be picked up by Applicant witnesses when giving their evidence.

65. In questions to CS (PLA) it was established that:

a. EN-3 para. 2.6.156 advises that applicants should undertake NRAs in accordance with relevant guidance;

b. The PLA had produced their own NRA of the project, which sought to use the same broad methodology as the Applicant albeit that they presented their own consequence scores and took a different approach to scoring likelihoods. The

NRA was a sense check of the Applicant's work and focused on consequence of hazard occurrence in follow up to the NRA Addendum;

c. MGN543 is relevant guidance which advises (Annex 2 3c) that an NRA should be carried out with the purpose of demonstrating whether ALARP can be achieved;

d. MGN543 cross-refers to the MCA's guidance "Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI)" and advises that it should be followed as part of the NRA;

e. The MCA guidance (p. 58) confirms that a risk is tolerable if reduced to ALARP;

f. In navigational safety terms, the question of tolerability is therefore whether risk can be reduced to ALARP;

g. (Notwithstanding submissions made to the examination previously, that this area is at the limits of operational safely and that any increase in risk was unacceptable), the position of the PLA was the reduction in sea room caused by proposal would increase risk to a level that is not acceptable;

h. It was not correct to ask simply whether there has been an increase in risk; the test is whether ALARP is achieved;

i. Even based on the scoring in the PLA work, according to its own methodology as there set out, the scheme was categorised within the moderate or minor levels of risk and even moderate levels could be tolerable with additional risk controls;

j. The scoring carried out did not include any additional risk controls;

k. The additional risk controls identified by the Applicant in the NRA should be taken into account;

l. The PLA considered that the question of what additional risk controls were needed required further assessment;

m. In relation to concerns about the claimed difficulties in agreeing hazard risk scores at the workshop:

   (a) CS was involved in the risk scoring for the PLA NRA assessment work;

   (b) CS had been involved in hazard risk scoring for the North East Spit NRA;

   (c) CS was familiar with the principles of hazard scoring; and

   (d) There was substantial discussion of the top 4 hazards at the workshop;

n. It was agreed in relation to the North East Spit NRA that the PLA would confirm which of the risk controls identified and recommended had since been implemented, along with the current status of those which were not adopted at the time.

66. Further, the Applicant has reviewed how the methodology adopted in the NRA, as produced within the PLA's Statement of Evidence, can been compared with the NRA

methodology followed for the Tilbury 2 NRA and the methodology set out in the PLA's online guidance on conducting NRA's.

67. The Tilbury 2 NRA, prepared by the POTLL, is at https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000257-ES%20Appendix%2014.A%20Navigational%20Risk%20Assessment.pdf.

68. It records at section 3.2 that "*Whilst all hazards should be kept under review, it may be considered that a hazard categorised as Moderate, Minor, or Slight is already As Low As Reasonably Practicable (ALARP)*". The assessment concluded that *"residual risks are reduced to a moderate/ALARP level.*"

69. This categorisation system is the similar to that employed at Appendix 4 to the PLA Statement of Evidence, but the action key in that PLA Statement of Evidence describes "Moderate" risk hazards as follows "*Additional Controls required to reduce risk to ALARP*". It is unclear why Moderate risk hazards are identified as falling within ALARP in the Tilbury 2 NRA Assessment but Appendix 4 uses a different formulation. If the methodology was applied consistently then even on the PLA NRA at Appendix 4 to their Statement of Evidence, the project would at worst (with no additional risk controls in place) be at a "moderate/ALARP" level.

70. The same point applies to the worked example of the PLA NRA methodology as appears online (Annex B at http://www.pla.co.uk/Safety/SMS/Navigational-Risk-Assessment-Guidance-to-Operators-and-Owners). Annex B again employs the same methodology but moderate risk hazards are described as follows: "*Efforts should be made to reduce risk to 'As low as reasonably practicable' (ALARP), but activity may be undertaken*". Again this differs from the formulation used in Appendix 4 and if applied to the project would suggest that its proposed "activity may be undertaken" in safety terms.

71. The Applicant reviewed the consequence scores of the PLA Statement of Evidence NRA and it is apparent that the PLA / ESL agreed with over 80% of the most likely consequence scores and over 90% of the worst credible consequence scores allocated to hazards either at the workshop or afterwards. The NRA Addendum has subsequently been updated to reflect the majority of these consequence score changes.

72. It was not possible to correlate the likelihood scores, due the methodology employed and details provided by the PLA, however, it was noted by CS that the purpose of the NRA was to primarily validate and review the consequence scores of the hazards assessed in and post the Hazard Workshop.

73. In questions to AS of LPC it was established that:

    a. Figure 8 in the LPC Statement of Evidence recorded what AS regarded as acceptable sea room;

    b. the 2nm shown at the Elbow buoy was acceptable;

c. the 3.4 mile sea room, shown in Figure 1 to Appendix 14 to the D4 submissions (sea room available just north of the NE Spit pilot diamond, where the greatest density of pilotage operations occur), would appear to be provided where the LPC plan sought 2.7 miles, such that this claimed requirement was met;

d. it was possible that the 3nm sought further to the north, in the area of the NE Spit Racon buoy, could be met;

74. However AS asked for more time to look at the distances on the plan to check and confirm his position, through discussions with the Applicant.

75. In questions of both THA and NS , it was established that both parties has taken positions in reliance on input from local users rather than any independent analysis of their own.

76. In questions of VC (PoT/LG) it was established that:

a. The ports' case is not based on issues with sea room relating to the passage of vessels;

b. Although the Statement of Evidence suggested that the ports would like to have seen more detail in the combination of vessels used in the NRA, they were prepared to accept the categorisation;

c. Subject to a concern relating to the assessment of risk consequence, which was only raised after the meeting (and addressed in the Addendum NRA (PINS Ref REP4B-002), VC accepted that all other input scores had been agreed at the workshop.

d. There was no issue with the use of the HAZMAN software to generate the inherent risk scores using the identified inputs; and there were no comments on the risk controls.

e. In relation to future traffic and in particular the statement in the HR Wallingford report (section 12.1.4) that the 22.5% increase in port business accounted for the 10% assumed growth in the NRA and Addendum NRA (see para. 122):

(a) The 22.5% figure, at para. 12.1.4 of the HR Wallingford report within the Statement of Evidence, purported to indicated growth in the ports' business;

(b) It was accepted that growth in business did not translate directly into a commensurate percentage growth in vessel movements, for reasons including the use of larger ships;

(c) Further, it was accepted that any such growth did not translate directly into a commensurate percentage growth in movements along the relevant routes inshore or at the NE spit racon buoy

(d) Figure 4.1 of the report, which had been used to identify an increase in traffic through London, also included a graph showing a decrease at Medway;

(e) Figure 4.1 showed an overall trend of decreasing traffic when both aspects of the figure were considered together (albeit that VC considered that it was important to look to the future);

(f) To the extent that any future additional traffic was generated from the ports into the inshore channel or at the NE Spit racon buoy, this had to be seen in the context of:

(i) The NRA assuming a 10% increase in all commercial traffic and

(ii) Ports' traffic only forming a fraction of that traffic on those routes,

(iii) Albeit that VC wished to check the figures put to him, which were drawn from the ports' own data in their D3 submissions:

(A) PoT = 534 inbound vessels, LG = 79 inbound vessels in inshore route in the y/e 30/11/18; which could be compared to even their (lower) figure of 4114 vessels using the inshore route over the same period (see Table 6 of Appendix 27 to the Applicant's D4 submission)'

(B) PoT = 754 piloted movements at NE Spit, LG 160 such movements over the same period; which could be compared with c. 5500 pilotage acts at NE Spit Pilot diamond and racon buoy as shown in PLA Statement of Evidence Appendix 2 (noting too the overall piloted trips coming to PoT (3127) and LG (2134)).

Applicant evidence

77. There followed evidence from the Applicant witnesses. JH dealt broadly with issues arising under agenda item 5. ER dealt with agenda item 6.

78. JH referred to Appendix 14 to the D4 submissions. He gave an overview of the process of defining the SEZ. JH explained that the definition of these requirements was informed by

- Input from IPs (Workshop of 27 Feb)
- Methodological guidance
- Analysis of the project to date.

79. The workshop allowed for an agreed position on vessel types and sizes. Key metric point locations for defining sea room were agreed and have subsequently used through the examination (North East Spit Buoy, North East Pilot Boarding Diamond, Elbow Buoy.. Agreement was reached on the relevance of MGN543 and the MSP document to the consideration of sea room. The Applicant also sought to receive collaborative input and contributions from IP's towards defining spatial requirements and IPs proposed any area

of change although none were received. There followed the D3 submissions and the LPC request for 2nm eastwards of sea room at each of these 3 metric points, with an undefined buffer. LPC had earlier referred to MGN543 when assessing sea room requirements including pilotage. The PLA sought a 2nm operation area and 1nm buffer, although there was no methodological basis identified for this approach.

80. The Applicant took these matters into account to define the SEZ. This was informed by considering the guidance on sea room for passage as set out in MGN543 and MSP (see e.g. Tables 5 and 6 of Appendix 14) and considering other factors as part of a highly precautionary approach (e.g. size of vessels and number of concurrent transits) to the calculation of sea room under the guidance. This approach was particularly relevant in areas where movements were dominated by the passage of vessels and by a very small fraction of pilotage operations (see Table 5 of the Addendum NRA and the density plots at Figure 16, also shown in Figure 6 of the Appendix 14 document and Figure 21 of the Addendum NRA). In these areas there remained substantial "buffers" even after applying a precautionary approach to sea room calculations. Those calculations were premised upon the concurrent passage of 3 of the largest ships which, as had been shown, passed very infrequently through either route. ScL and JH noted that evidence reviewed at the ISH8 did not demonstrate concern with regards to passage of vessels on transit and therefore the area of residual dispute relates to areas of pilot boarding.

81. In the area dominated by pilotage (see Figure 20 of the NRA Addendum), a precautionary approach was also adopted, by using the no anchoring line to differentiate an area to the east for the pilotage of deep draft vessels, despite other pilotage operations taking place elsewhere. In this area the Figure showed that the 2nm plus 1nm buffer sought by the PLA was achieved in the area where the greatest density of pilotage operations was carried out, for any vessel including deep draught vessels.

82. **The ExA requested what extent is it considered appropriate to focus on the norm versus the limit states of exceptional conditions with larger vessels and or adverse metocean conditions and whether the assessment of risk needs to consider the average or limit state.**

83. JH explained this is taken into account as this information on distribution being presented based on a large (1 year) AIS dataset and therefore this includes a full range of metocean conditions over the one year period. By way of qualitative example the 2017 dataset coincided with an abnormally high total of 7 named storms (MetOffice records).

84. Following the ISH8 the Applicant wishes to further note the following points with regards to this question:

- Consideration has been given to non 'normal' Metocean due to it being embedded in the 1 year AIS dataset noting this period included a number of storm events, as noted above the 2017 dataset coincided with a number of storm events and a range of what may be considered to be representative weather conditions for the study area.

- Qualitative referral has also been made to long term (40 year) hindcast metocean used in other site characterisation chapters, which again demonstrates the representative nature of the overall EIA characterisation, and specifically for the shipping and navigation assessment. The Applicant has demonstrated that the physical metocean conditions are an appropriate and adequate characterisation for the purposes of conducting an EIA (EIA Evidence Plan). Combined with the 12 months AIS data which encompasses a period characterised by a range of metocean conditions including 'the extreme' the Applicant has demonstrated that that the assessment adequately provides for both the norm and the extreme.
- It should be noted, with reference to submissions by ESL, that the inner boarding area will be restricted or off station at 30 knots wind speed and above (dependent on wind direction and other aspects such as height of tide and sea state) and therefore pilot transfer operations will not take place at 'extreme' metocean conditions when it is not safe to do so.
- The spread of pilotage operations is a reflection of choice and commercial considerations rather than weather.
- The adoption of MGN543 and MSP design guidance includes consideration to metocean factors beyond 'norm' and additionally this has been applied on a precautionary basis (with regards to the size and number of concurrent vessels)

85. The Applicant was also asked how users being uncomfortable going closer than 1 nm of the array was factored into the assessment.

86. SL emphasised the highly precautionary nature of the approach followed. The MGN543 and MSP guidance was expressed in general terms and it was reasonable to expect it to anticipate a range of metocean conditions. The calculations had also been based on a large vessel size (333m) which the evidence suggests passed through both the inshore route and the NE spit racon buoy very infrequently. The Appendix 14 document showed even greater areas of "buffer" assuming smaller ships, again passing concurrently. These calculations provided further scope for allowances to be made to take into account varying metocean conditions or other factors including perceived complexities in vessel movements. As for the 1nm, this had been taken into account and the various calculations in the Appendix 14 document showed that this "buffer" could be achieved, not only in the area dominated by pilotage movements (see Figure 6 which specifically refers to a 1nm "buffer" for pilotage), as well as in other areas depending on the assumed vessel passages. These assumptions were precautionary. SL added that there was already evidence, identified within the Applicant's submissions [can we add references], of vessels passing within 1nm of the existing wind farm (and the Applicant had noted evidence from LPC which referred to a 0.5nm allowance for passage next to the wind farm. There was ample scope in that sea room to provide a buffer zone of 1nm.

87. Further, when it came to the NRA hazard scoring, all baseline information and other factors relevant to passage and pilotage could be fed into judgments on risk scoring, so

there had been an opportunity for all parties to assess risk scores based on relevant conditions at sea.

88. **The ExA requested clarification on how the qualitative aspects in this area are included.**

89. SMO had earlier stated, in relation to qualitative considerations in this area, that ships entering the NE spit racon buoy area, will have a passage plan approved by the master. SMO explained: this area there has two functions there. Ships transiting down to the pilot boarding area will be doing so at a relatively slow speed and assessing the conditions and the traffic density on the way down. The Master will not turn into a narrower area of sea room without formally assessing the conditions beforehand. The ship will produce a passage for its intended voyage as it is required to do and master will approve that. On a normal day in average conditions this is fine. Then what happens as the ship gets closer to the intended destination the weather becomes more relevant and the ship will complete a dynamic risk assessments of the conditions. The bridge team will be watching out for traffic whilst monitoring the tidal conditions and monitoring the leeway caused by the wind. The master will make an assessment to see if the ship has the manoeuvring characteristics to balance out the anticipated metocean conditions. If the master feels he cannot balance out these conditions he would not proceed into that sea area. On average day when the master is confident he will be able to fully control his vessel. Having completed pilot transfers the mind set of the master switches back to traffic monitoring and collision avoidance as required. The master will be fully aware that he is operating in congested waters and therefore makes a continued assessment utilising his bridge team and the advice of the pilot if on board

90. SL then asked the witnesses to pick up <u>specific points made by ESL and PLA</u>.

91. In relation to the issue of congested sea room advanced by ESL in particular, SMO explained that it was important to bear in mind that although evidence had been provided by pilot coxswains from the PLA, it was the decision of the ship's master whether to go into the area, in particular the area in question near the NE spit racon buoy or the pilot diamond. In his job as an active master, decisions on vessel movement and navigation are dealt with a dynamic basis, but it was clear that the area of contention gave sea room amounting to 2.5 miles, only 0.5 nm less than the distance to the existing windfarm, which was sufficient. Not all ships use that sea room. The vast majority of ships will proceed to the west of North East Spit RACON Buoy. The 2.5 miles is enough sea room to avoid collision. It should also be remembered that in a dynamic situation, there are other factors in play. Slowing down can be used to avoid collision. In this area there is very good communication between the ships and they would defuse any possible issue. Vessels would keep a look out for other vessels by using navigational aids including looking out the window.

92. SMO added that the allowance made (2 plus 1 nm sea room) in the area of densest pilotage operations would be sufficient to allow the turning of ships, with a safety buffer as well. In response to the PLA/ESL point that 3nm of sea room was required even in

areas of a lower density of pilotage operations, SMO explained that not all ships come there. It would be unusual for all three ships as assessed to arrive at the same point. The area with the SEZ in place would overall be ample for pilot operations. He saw no difference in reality between the 2.5nm we would be providing at the NE spit racon buoy and the 3 nm there already.

93. ER, in reply to CS's point regarding Marico directing the hazard workshop, explained that the workshop lasted 6 hours and they looked at the top four hazards at that time. He described his role as open and transparent and he was happy to discuss anything IPs wanted to raise. He explained that the point for the workshops was to look at the area to the west of the wind farm, not specifically pilot boarding but inshore route as well, as well as an area including the Tongue.

94. ER further explained by way of example that when considering likelihood scores the process identified there was a requirement to look at historical information; and it was also clear to him that future vessel movements were taken into account, as there was added 10% of likelihood of hazard occurring. For the Baseline assessment the assessed likelihood scores were generally increased from the that shown in the historical incident analysis. Also the ratio between most likely and worst credible – which is nominally 1 in 100, was also made more frequent.

95. An overall increase in likelihood scores, of up to a doubling for Class1 or 2 vessel collision hazard, was applied in calculating the inherent risk scores, which reflects the precautionary approach taken. That was all clear to his mind.

96. In reply to the comment that the IPs were not allowed to see final hazard scores, which would have been available to Marico, ER explained that this did not represent what happened at the meeting. SMO had suggested originally that the final scores could be considered; ER had explained the potential difficulties in parties allowing the final scores to influence the inputs and CS had agreed. Marico did not have access to the final scores during the workshop but provided these afterwards in accordance with what had been understood as agreed at the workshop in relation to the first 4 most important hazards.

97. As for the claim that the scoring could have been more robust due to the speed of the process, ER replied that he did not accept the criticism. There had been substantial discussion at the workshop over a long period of time, at the end of which the parties had scored 4 individual hazards. The remaining 5-18 hazards were agreed for further scoring.

98. SL asked ER to respond to points raised about difficulties in scoring risks in combination, in particular whether the approach followed was a normal part of the NRA process. ER explained that the approach used in the NRA addendum was common and used on a variety of different projects including the 2015 PLA NE Spit NRA.

99. RS asked ER: You said that you took a view that you would review the more likely occurrence – did you discount higher consequence event? ER answered that the most likely occurrence was that outcome of a hazard that would be most ordinary result if the

hazard occurred – in most instances this is of a lesser consequence severity than an a worst credible outcome. ER also explained that as the magnitude consequence of a particular hazard increases, there is in most situations (especially for hazards such as collision, contact and grounding), a reduction in the likelihood of hazard occurring – such that the resulting risk score can largely remain the same. For the hazards assessed the workshop discussed and agreed the most likely outcomes of the hazards

100. SB's questioned whether the economic costs (for example associated with pilotage transfer issues) were considered in the assessment. ER noted that economic cost is included and split between physical damage to property, which was identified in the consequence "Property" classification, and cost to business or stakeholders which was considered in the "Stakeholder / Business" consequence category. The assessment however required these consequences to be related to the hazard definitions – such as collision, contact or grounding. In terms of possible impacts associated with the pilotage transfer, which do not result in a hazard occurring (hazards defined by the IMO as having a detrimental outcome related to navigation safety), then the Applicant does not accept that the propensity for transfers to result in vessels being delayed and having a delay cost brought about by TEOW will increase as:

- Pilot transfer issues currently occur and are independent of the TEOW, mostly as a result of incorrectly set up or deficient pilot ladders. These issues are present in the system at the moment and are therefore included in the baseline assessment of risk;
- The pilot transfer bridge simulation study, conducted on the PEIR Red Line Boundary, demonstrated that transfers remained feasible; and
- The sea rom for transfer with the SEZ now in place, is considerably larger and meets the PLA requirements for 2nm plus 1nm buffer for where the vast majority of pilotage transfers take place in the NE Spit pilotage transfer operational area.

101. SL asked PB to speak to issues raised regarding congestion and the feasibility of pilotage operations, having regard to his involvement in the pilotage simulation.

102. PB said that he was a moderator for pilot simulation, which in his view was an absolute model of stakeholder collaborative work. Any perceived limitations in the simulator e.g. the absence of the existing windfarm, was worked around. Port of London Pilots conducted the simulation. It became clear to him that once the geometry was established and then decided then the simulation was straightforward and sufficient. The only input from Marico came to ask the pilots who were acting as ships captains not to use advanced ship handling techniques such as pulsing the engine so as to reduce the tactical diameter (turning circle) of the ship and make the simulation unrealistic. Those present did as much as they could and at the end of the simulation the view was that there was nothing more which could be done to establish feasibility. He was not convinced that a new simulation would achieve anything further. All parties agreed the outcome.

103. SL asked SMO to speak to the Figures in the LPC evidence, including Figure 3 relating to vessel turning. SMO saw no issues with turning. He noted that the worse case situation of a ship is transiting along the north of the windfarm on a westerly heading. Due to the extension they would not be able to turn as soon as they were previously able to. However, once the way is clear down to the pilot diamond the vessel would alter course 40 or 50 degrees from the original course of 270 degrees. This turn is not dissimilar to the turn which is currently completed at the existing windfarm today.

104. In response to points raised by PoT/LG, PB did not accept any criticism regarding the pilot simulation not covering vessels greater than 240m. In his view this was not a limitation on the effectiveness of the simulation, as a larger ship would give the same overall results. It should also be borne in mind that the simulation was conducted with less available sea room than was even available under the eventual project application.

105. SL asked ER to respond to the ports' concerns with consequence scoring, albeit raised after the workshop. ER explained that after workshop there was a telephone conference during which there was no specific request for increasing individuals hazard scores. However, a specific request for increasing some consequence scores was asked by DWPLG and POTLL and sensitivity analysis undertaken on the hazard log and noted in the NRA Addendum. ER therefore understood the need to look at sensitivity in the hazard log and produced additional inherent scores associated with the top 4 hazards. However, any change to the hazards needed to be agreed by all parties involved in the assessment.

106. Once the baseline assessment of consequence and likelihood was undertaken, the likelihood only was reviewed with regards to the inherent assessment of risk. In some cases the likelihood was doubled (e.g. collision of a Class 1 or 2 vessel) to reflect the TEOW being in place, in other hazards a lower uplifts were agreed and applied.

107. As for the alleged failure to allow for future vessel traffic ER responded that future uplift in traffic was considered unlikely based on historical trends and that whilst trade has increase, vessel arrival numbers at Thames Estuary ports had declined. However, hazard risk scored were uplifted by 10% to account for future traffic increase.

108. In response to criticisms of the pilot simulation work, ER stated that the study carried equal weight now as regards any influence on the NRA scoring. Its conclusions were that pilot operations would remain feasible and this continued to apply and could be taken into account as one aspect of the risk scoring.

109. In response to a queries regarding the extent to which the risk assessment relies on controls by other parties to produce the baseline, as well as other controls being managed by other parties, SL offered to clarify the position in writing, bearing in mind that the residual scoring relying on additional controls had not yet been finalised given the absence so far of further discussions with IPs. ER noted that the risk scoring in the Addendum NRA had found ALARP even without additional controls; and in the PLA "revised" NRA no additional controls had been taken into account.

110. In the cross-examination of the Applicant's witnesses, the following main points were established:

PLA/ESL

a. ER took away from the workshop that individual hazards were agreed. There was consensus around the scoring and there was time frame to do the final scoring. He did not expect to take away from the workshop that there would be a need to go through the same process again.

b. ER considered that the hazards had been considered in great detail, and in workshops such as this the process quickens after these initial discussions as people become used to the methodology. He expressed surprise that the PLA was appearing to claim that it did not fully understand the process of the risk assessment and its methodology.

c. In response to a point that Marico were not an independent facilitator of the workshop, ER explained that Marico were commissioned to do the NRA as an independent organisation and as experts were not to simply push the views of the Applicant. Further, most hazard workshops in this field do not have independent facilitators, although in this case the MCA were expressly there as observers and were involved in the process by asking questions. That was an appropriate approach. Workshops involving a range of other consultants in the market take place the same way.

d. In response to question about the HAZMAN software, ER explained that Hazman as a risk management software for maritime applications was developed early 2000's, based on the Port Marine Safety Code being implements and mandating the structured assessment of navigation risk in ports and harbours. The underlying risk algorithm that generates risk scores from the matrix provided was developed in around 1999 by founder Marico Marine John Riding. The latest iteration of the software – Hazman II was developed based on the original underlying risk algorithm as used in Hazman I in 2011 by a small software company in Wellington NZ. Hazman II is used by a wide range of port and harbour authorities for their marine risk management needs in conformance with the Department for Transport Port Marine Safety Code.

e. In response to questions from RJ of ESL on distribution of pilotage operations, JH confirmed that Figure 16 of the NRA Addendum was derived from AIS data and filters based on speeds of 7kts and 10kts of the pilot launch. This provides an indication of spatial distribution of pilotage operations. The high to low scale is a non-dimension density based scale – recognising that filtering by vessel speed is a proxy to show spatial distribution and an indication of operations. Importantly this can be ratioed by reference to submissions provided by ESL (Figure 14 and Figure 15) which show strong correlation and agreement.

f. In a response to a question by RJ of ESL of determination of 11 vessels per day using the inshore route JH confirmed that this is based on 3,978 vessels as questioned by RJ (i.e. 10.8 vessels per 24 hour period) passing between Elbow Buoy and the wind farm from the Mar 2017 to Feb 2018 AIS Seaplanner Data. This is also consistent with 4,114 (11.3 vessels per 24 hour period) "*vessel passages (inbound and outbound) was recorded in the AIS data* [PLA provided] *using the inshore route"* (Ref: Section 3.2 of DPWLGL and PoTLL Deadline 3 submissions).

g. The Gate C information as presented in Figure 47 of the NRA would be confirmed and provided at Deadline 5.

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h. In response to questions regarding the pilot simulation, PB answered that the people who drove the vessels were PLA pilots; ESL also participated and there was no input from the Applicant in the simulation itself. There was no failure in the parameters of the set up and PB was surprised by how easy it had been;

i. In response to questions to ER on his confidence regarding safety issues bearing in mind the apparent uncertainty arising from the workshop, ER replied that as a scientist, who looks to prepare NRAs based on evidence, throughout the process of examination he become more confident of the ALARP outcome and the original NRA came out with similar outcomes. He was confident that the assessment is correct (and in reply to a question from the ExA added that the SEZ was strictly unnecessary given the outcome of the original NRA, albeit that it was justified if it would reduce risk even further);

MCA

j. In response to questions about the function of the SEZ, including during the construction and decommissioning phase, SL offered to address this in writing, along with a query regarding the potential duplication of embedded and additional risk controls relating respectively to agreeing the project layout in detail with the MCA and refining the orientation of WTGs.

PoT/PoLG

k. ER agreed to provide documentation showing how the 10% assumed growth figure in the NRA had been arrived at. It was also agreed to provide further information on the activities which could take place within the SEZ.

111. ER noted that throughout the process of examination, he has become more confident of the ALARP outcome and the original NRA came out with similar outcomes, the PLA assessment in 2015 aligned to the Applicants risk assessment and the PLA Assessment at Deadline 4c also aligned to the Applicants Assessment. He is therefore confident that the assessment is correct.

112. RS asked ER: do you think the SEZ is unnecessary in your professional opinion? Is the SEZ a concession and not justified?

113. ER explained that in pure technical risk terms it is not necessary but further explained that it is justified because it reflects the qualitative concerns raised by IPS, and reduces risk, but that the project was ALARP prior to the introduction of the SEZ, and so it is a concession that reflects the qualitative concerns raised by IPs.

AGENDA ITEM (8) BIODIVERSITY, ECOLOGY AND NATURAL ENVIRONMENT CONSIDERATIONS

114. The Applicant's representations on this Agenda Item are presented in Appendix 19 of the Applicant's Deadline 5 Submission.

AGENDA ITEMS (9,10 and 11) Commercial Fisheries

115. The Applicant's representations on these Agenda Items are presented in Appendix 20 of the Applicant's Deadline 5 Submission.

PROCEDURAL DECISIONS

116. In relation to the procedure for consulting on the material change, the ExA provided a list of bodies beyond those identified by the Applicant for consultation. SL agreed that these would be considered overnight by the Applicant. In response to a specific query regarding the Port of Sheerness, SL noted that the Port had been included in the list. They had submitted relevant representation but no other submission to date. The Applicant would check if they were consulted in earlier stage. It was not understood that they were invited to participate in the NRA process, however Peel Ports have been kept informed of the progress of the examination over the past few months including details of the hazard workshop. No request to participate has been received. . SL added that the Applicant remained of the view that the requirements of D6 could be achieved.

117. As for the question of whether a further simulation study ought to be carried out, SL explained that his instructions were that an additional study was unnecessary for reasons which had been previously stated.