Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 26 to Deadline 6: Response to Deadline 5 Submissions by Interested Parties – Shipping and Navigation

Relevant Examination Deadline: 6

Submitted by Vattenfall Wind Power Ltd

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Revision A

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1 Introduction

1 As requested in the Rule 8 letter (PINS Ref PD-009) the Applicant has reviewed submissions by Interested Parties (IPs) made at Deadline 5 and has provided responses to all submissions.

2 Submissions relating to shipping and navigation were received from the following IPs at D5:

- Port of Tilbury London Limited and London Gateway Port Limited (POTLL and LGPL)
- Maritime Coastguard Agency (MCA)
- Trinity House (TH)
- London Pilots Council (LPC)
- Port of London Authority (PLA)
- Estuary Services Limited (dual response with PLA)

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3 Responses to each of the IP submissions is provided in Section 2.

4 In brief the over-riding issues arising are:

- Searoom;
- RADAR;
- Commercial concerns;
- Calls for navigation simulation.

5 Annex A to this Deadline 6 submission provides the Applicant's summary response to these key themes in the round, Annex B provides a detailed response to the HR Wallingford submission, and Annex C provides further consideration of some of the economic themes emerging from the IP submissions, with Annex E providing accompanying figures. This document provides a point by point response to the IP submissions.

2 Comments on additional Submissions from Deadline 5

2.1 Port of Tilbury London Limited and London Gateway Port Limited

Interested Party	Key points raised in the Submission	Applicant's response
Port of Tilbury London Limited and London Gateway Port Limited	This document provides a response on behalf of Port of Tilbury London Limited (POTLL - 'Other Person' reference TEOW-OP006) and London Gateway Port Limited (LGPL - Registration No. 20011837) to Deadline 5 matters, as set out at Item 25 of the Examining Authority's (EXA's) Rule 8(3) and Rule 9 letter dated 9 April 2019. More specifically this document provides: • A response to the ISH8 Action Points published by the Examining Authority (ExA) on 18 April 2019; • POTLL and LGPL's ISH8 written summary of submissions (Appendix A to this document); • Comments on the Applicant's and other Interested Parties' Deadline 4, 48 and 4C submissions (Section 3 of this document); and • A final version of the HR Wallingford Report provided in draft in POTLL and LGPL's Deadline 4C representations at Appendix 1 (document reference REP4C-016) (Appendix B to this document).	The Applicant notes the nature of Port of Tilbury London Limited and London Gateway Port Limited's representation and responses to the key points identified are provided below.
Port of Tilbury London Limited	**Action Point 1 - Submission of material presented at ASI2 on 15 April 2019**	The Applicant notes these submissions, attended the accompanied site inspection of Port of Tilbury and London

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and London Gateway Port Limited	Port of Tilbury London Limited to submit to Examination Library: • Copy of presentation given at ASl 2 on 15 April 2019. A copy of presentation provided at Appendix C to the representation document. • Masterplan of facility. A copy of masterplan was provided at Appendix D to the representation.	Gateway including the presentation provided by Port of Tilbury, and the guided coach tour of London Gateway, and has no further comment to add at this stage.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 5 – Policy Considerations - EN-3 para 2.6.166** Provided in POTLL and LGPL's ISH8 written summary of submissions contained at Appendix A of the representation.	The Applicant has provided a full and detailed response to policy matters at Appendix 7 and Appendix 12 to the Applicant's D5 submissions. The Applicant has nothing further to add at this stage beyond those submissions which reflect both oral and written submissions.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** Table 2 of POTLL and LGPL's Deadline 2 submission (document reference REP2-050} provided the following information regarding mix of vessels (by length) visiting Port of Tilbury London (POTL) and DP World London Gateway (DPWLG) in the period 1 December 2017 to 30 November 2018. Information provided in response to Action Point 19 below indicates that:	The Applicant has reviewed the logic which underpins the basis of POTLL and DPWLG's position on commercial, employment and economic consequences and does not agree with this. The Applicant provides further detail on this below with reference to the evidence base as provided by PLA and analysed/presented by HR Wallingford (on behalf of POTLL and DPWLG) and as also analysed by the Applicant in conjunction with the Applicant's own evidence base. The Applicant notes the presentation of the mix of vessels by size and route visiting POTLL and DPWLG and draws attention to the following conclusions as presented in Table 1:

Interested Party	Key points raised in the Submission	Applicant's response
	a) 17% and 7.5% of all inbound vessel visits to POTL and DPWLG respectively utilised the inshore route; and b) 50% and 15% of all inbound vessel visits to POTL and DPWLG respectively boarded a pilot at NE Spit.	• 99.1% of vessels visiting POTLL are less than 250m in length • 71.2% of vessels visiting DPWLG are greater than 250m in length The Applicant notes the percentage use of the inshore route by POTLL and DPWLG vessels, which account for a minority of vessels utilising the route (17% and 7.5% of all inbound vessel visits to POTLL and DPWLG respectively utilised the inshore route) and is based on AIS data provided by the PLA. The Applicant notes the percentage usage of the NE Spit pilot boarding area by POTLL and DPWLG vessels, which is derived from PLA POLARIS data provided by the PLA. The Applicant has demonstrated that the majority of vessels are boarded at the NE Spit Pilot Diamond, in an area illustrated by the Applicant at REP4-018, Figure 6 and with the 2nm plus 1 nm buffer as requested by the PLA / ESL provided. The buffer is provided for by the introduction of the SEZ, which means pilotage operations at the NE Spit Pilot Diamond would continue unimpeded should the TEOW be constructed. Therefore, if DPWLG/POTL are correct to identify 50% and 15% of inbound vessels to their ports board a pilot at NE Spit the underlying data used to inform this would demonstrate that the majority of these acts have no interaction with the proposed Thanet Extension boundary with SEZ in place. Without this important

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		context, which the Applicant has sought to provide, the DPWLG/POTL evidence can only be considered a generalisation.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** Unfortunately, information relating to the use of the inshore route and NE Spit pilot boarding station is not specified in terms of vessel mix. Applying the proportions of vessels set out in (a) and (b) above pro-rata to the vessel numbers [provided in Table 1] allows an outline assessment of the likely vessel mix (by length) utilising the inshore route or NE Spit to be established.	The Applicant would note that the vessel mix utilising the inshore route is available from the PLA AIS data and that POTLL and DPWLG, in the same analysis that they undertook to present total numbers, could also derive vessel type and also vessel length. It is therefore not clear to the Applicant why a series of basic assumptions, which have been applied incorrectly (as outlined below), have been applied, when this primary data is available and was provided by the PLA to POTLL / DPWLG (and which was also subsequently supplied to the Applicant on request). Within the POTLL and DPWLG calculations, the Applicant notes that by applying the proportions of vessels set out in (a) and (b) of the IP representation (based on the inshore route PLA AIS Gate 1 data), and then on a pro-rata basis multiplying this by the frequency of vessels, by length category visiting the ports themselves (not the inshore route gate data which is available from the PLA AIS data and has vessel length) is a wholly inadequate and incorrect assumption. This is, for example, because larger vessels (in the 300-350m and 350-400m categories) which currently do visit these ports do not transit the inshore route – e.g. most vessels transit via SUNK or to the north of the TOW (and this is due to existing depth constraints and in accordance with the PLA's general directions and pilotage directions as well as Master choice). The Applicants basis for this

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		is simply demonstrated by Table 2 and Table 3 of POTLL and DPWLG's Action Point 17 in which it shows: • Table 2 shows 5 vessels in the 350-400m category transiting the inshore route for DPWLG. This is an unfounded extrapolation because no vessel within this size category has been evidenced to transit the inshore route in either the AIS data provided by PLA on Gate 1 (December 2017 to November 2018) or the Applicants AIS dataset (March 2017 to February 2018 and as presented in Section 3.1 of REP4C-003). The PLA has also not provided input to confirm whether a vessel of this length has ever or would ever navigate the inshore route. With reference to the 300-350m category - the largest vessel evidenced in the data using the inshore route is 333m and these transits are extremely limited in number (a single occurrence in a 21 month dataset) and the Applicant understands is subject to further risk assessment by PLA and LPC with restrictions in place relating to draught and likely also metocean (wind strength/direction) parameters. • Table 3 shows 10 vessels of 350m-400m board a pilot at NE Spit, however representations from the PLA / ESL and LPC have confirmed the largest vessel served was a 333m (which is also confirmed in the HRW report annexed to the POTLL and DPWLG submission – section 7.7.2 Table 7.6).

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		• Table 2 shows 202 vessels of less than 50m transiting the inshore route on passage to POTLL, whereas review of the HR Wallingford report shows no vessels of less than around 75m transited the inshore route bound to POTLL. It is very unlikely that vessels of this size, captured within the POTLL vessel arrival data, are cargo vessels engaged on coastal or international voyages, and within the original data (supplied in Table 1) are actually most likely to be associated with tug and tows on "intra-port" trade within the inner Thames estuary itself (i.e. to/from Tilbury and between other ports/terminals within the Thames itself), or could also be harbour tugs assisting with the berthing of vessels and other service vessels. Further information is provided on this in the Applicant's review of Section 8.2 of the HR Wallingford report (Appendix B to this document). In summary – the logic of extrapolating numbers of vessel port visits at DPWLG and POTLL (Table 1) to make the case of utilisation of current and future use of the inshore route (Table 2) and the NESP pilot boarding station (Table 3) by vessel length is flawed. This contradicts the evidence presented by the IP's own marine expert (HR Wallingford) who has analysed PLA provided AIS data to conclude (in agreement with the Applicant) for example that the largest vessel utilising the inshore route and north east spit pilot boarding station is 333m LOA (and that this not a common occurrence). Any subsequent position claimed by

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		POTLL and DPWLG on this basis is therefore fundamentally flawed. The POTL and DPWLG in applying percentages from gate vessel totals (in which vessel length is been provided in any case), to total vessel arrivals at each port simply do not take into account the fact that size distribution for the inshore route is not the same as the size distribution for vessels arriving/departing POTLL and DPWLG. From the analysis presented by the author of the POTLL and DPWLG Action 17 response it is unclear to the Applicant as to why assumptions would be put forward when vessel length data is available within the PLA AIS Gate data (and has been analysed by HR Wallingford). It is therefore the Applicant's view that the ports have not on this occasion provided information which reliably shows the likely vessel mix using the inshore route or NE Spit.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** Based on the pro-rata assessments set out in Tables 2 and 3 it is possible to approximate how many vessels would be affected in the event that vessels of a certain size were prevented from continuing to either (i} utilise the inshore route or (b} board pilots at the NE Spit as a result of the TEOWF. For example, on the	As noted above, the Applicant does not consider it possible to comment on the narrative provided, as the underlying calculations provided on vessel length in Tables 2 and 3 are incorrect as they are based on the vessels that visit the ports, not the vessels that transit the inshore route.

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	assumption that all vessels above 250m would be prevented from utilising the inshore channel it could be concluded that five POTL inbound vessels and 56 DPWLG inbound vessels would be required to re-route in a 12 month period.	
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** At paragraph 16 of their Deadline 4C representations POTLL and DPWLG indicate that the NRAA gives more comfort with regard to the transit of ships via the inshore channel. In the absence of a robust pilotage simulation study, however, the effect of the combination of pilotage operations and transits 'co-existing' in the same constrained space is not well enough understood to draw any conclusions regarding the impacts on the inshore route. This was explained in more detail in POTLL and LGPL's Deadline 4C representations and was set out in detail by the ports at ISH8 (see PoTLL and LGPL's ISH8 written summary of submissions at Appendix A to this document for reference}. As such, it is not currently possible to properly assess the economic impact in terms of transiting vessels. POTLL and LGPL consider that once a robust pilotage simulation study has been carried out it will be possible for the Applicant and IPs	The Applicant notes that POTLL and DPWLG have more comfort with regards to the transit of ships via the inshore route as a result of the NRAA (and the sea room provided by the SEZ). The Applicant also notes that a robust pilotage simulation was conducted on the PEIR RLB, which demonstrated feasibility of transits and pilotage operations, and that the RLB was changed prior to application to provide more sea room that that simulated. Subsequent to this the SEZ was introduced to further extend sea room for transit and pilot transfers at NE Spit, and the wider inshore route generally. The basis of this sea room meets the methodological guidance as agreed with this IP and also draws upon analysis of data and the input from stakeholders on sea room. The Applicant is of the view that a further pilotage simulation, beyond that which already confirmed feasibility, with a subsequently greatly increased space for pilotage operations, is not necessary and not a requirement of policy. A pilotage simulation exercise is not needed to identify whether the slight reduction in sea room, with the SEZ in place, to a level that is recognised as still adequate, will have an economic impact. If there is a very limited effect on vessel movements,

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	to provide a more substantiated and robust assessment of the economic impacts of the project.	there will be a similar very limited effect on the underlying economics of those vessels.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** With regard to pilotage, the Pilot Simulation Study (document reference APP-090) which informed the Applicant's original Navigation Risk Assessment (document reference APP-089) only considered vessels of up to 240m in length. Thus, in the absence of a revised Pilot Simulation Study, it is reasonable to assume (as indeed it would appear the Applicant did when undertaking the Pilot Simulation Study) that vessels over 240m would seek alternative boarding arrangements. The projected likely numbers of vessels boarding a pilot a NE Spit shown in Table 3 suggests that at least 17 vessels inbound to POTL and 113 inbound to DPWLG would be above this length (a total of 130 inbound vessels would therefore be affected). It is to be noted that these levels are based on an outline assessment of year ending 30 November 2018 data and do not account for growth in vessel traffic over the reasonable planning horizon, which POTLL/DPWLG contend will be significantly greater that the 10% allowance suggested and made by the Applicant.	The Applicant notes that pilotage simulation justification has been provided at REP1-054 (and other submissions through examination), as has the rationale for the future baseline. Further to this the use of a 240m vessel as the longest vessel simulated was following a request made by the Applicant to PLA regarding preferred vessel lengths, and confirmed with the agreement of the PLA (including the participating PLA Pilots) and ESL – who identified a 240m Grande vessel as being the reasonable most onerous vessel required for consideration in the purposes of simulation (Ref: REP1-082: minutes of meeting held on 14-Aug-2017, Section 6 Simulator Session Design and REP1-046: PTBS Inception Report). Subsequent to the PTBS undertaken by the Applicant, the PLA (it is presumed) amended the criteria for the NE Spit to increase vessel size, and as such the largest vessel that has used the NE Spit was 333m length (although this is an extremely rare event). It is not clear whether this transit through the inshore route was risk assessed, as asserted by PLA and LPC during examination (the Applicant notes that, despite being requested, this risk assessment has not been provided for either the ExA or the Applicant to review and utilise/integrate with the NRAA), or whether a simulation was conducted by the PLA/LPC to underpin their assessment prior to vessels of this size using this route into the port. It is also not clear whether the PLA review future

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	The effects of vessels being required to seek alternative pilot boarding locations are varied but include potential delay (particularly where tidal windows or berth availability are relevant) and re-routing. The force of such impacts will depend on the circumstances (i.e. metocean conditions, pilot availability, etc.) at the time. As such it is not possible to provide a full quantitative assessment of economic consequence or effects at this stage.	changes in the use of the inshore route and NE Spit area, including as noted by POTLL / DPWLG at ISH 5, that a 400m long vessel could transit the inshore route. The Applicant therefore considers that by requesting the PLA (and the Pilots and ESL) to decide on the vessels use for the PTBS, these presented the PLA approved vessel types and sizes for consideration in simulation and the assessment. An auditable written record of this was led by the Applicant (Ref: REP1-082: minutes of meeting held on 14-Aug-2017, Section 6 Simulator Session Design and REP1-046: PTBS Inception Report) and issued to all participating parties in the spirit of ensuring that a pro-active collaborative approach underpinned the assessment and that that ample opportunity was provided to PLA, Pilots and ESL to propose larger vessels if they had felt this necessary. As noted above the Applicant does not consider the basis of Table 3 of the written submission to be accurate and should therefore not be relied on. Reference to this table is neither appropriate or accurate. In terms of the future allowance for vessel numbers passing in the vicinity of the TEOW then the Applicant notes that for other projects in close proximity there is a variance between 10% future baseline considered for East Anglia 3, some port developments providing limited consideration of future baseline. This is also true of the PLA's NE Spit specific NRA in which not

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		only was there no consideration given for future traffic, there was no evidential consideration of existing traffic through detailed vessel traffic or incident analysis, or simulation as provided by the Applicant in the TEOW NRA. There is therefore a range of precedents and TEOW NRA and NRA A has sought to present a future baseline that is taken from a review of the PLA's own Thames Vision and regional strategic plans undertaken by the MMO which provide for the inclusion of the Thanet Extension project. In the Applicant's responses to ExQ3 it is possible to see that this future baseline also adds a precautionary increase when compared with DfT port statistics and growth patterns over a ten year period which would indicate a more modest increase (7%) may be appropriate. Whilst a pilotage simulation, as noted by HR Wallingford at ISH1, may find that there is no difference, or some difference in the feasibility for larger vessels to undertake pilotage simulation exercises, it should be emphasised that the allowance made for remaining sea room is based on methodological industry guidance put forward by POTLL / DPWLG marine expert Mr V Crockett from HR Wallingford (MSP guidance), and designed for and applied to, the approaches of some of the busiest port developments in the world. Further margins of safety, to allow for the qualitative feedback provided, have then been applied to the necessary sea room by the Applicant in creation of the SEZ. This provides a combination of the quantitative sea room

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		'needed' and the qualitative sea room 'desired' to give practitioners and mariners comfort. The Applicant is firmly of the view that there is no justifiable or evidenced reason why TEOW would lead to vessels seeking alternative pilot boarding locations. Notwithstanding this the Applicant has provided an indication of the most appropriate form a navigation simulation exercise could take at Appendix 38 of this Deadline 6 submission.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** It is noted that the Applicant has not carried out a quantitative assessment of economic impacts in its application documents. As set out in POTLL and LGPL's Deadline 3 submission (document reference REP-070) in the Planning Policy Position Paper, the lack of regard to economic loss to the shipping and navigation industries is contrary to national policy (see in particular paragraph 2.6.162 of NPS EN-3 (note that the paper comments that the inshore route in question is at the very least a major commercial navigation route)). In respect of quantifying potential costs to property, Table 17 of the Applicant's NRA Addendum (document reference REP4B-002) sets out the approach to categorisation for the four types of consequence considered therein (people; property; environment; and stakeholders/business). With	The Applicant has provided a Shipping Commercial Assessment Response at Appendix 26 (Annex C) of this Deadline 6 submission in order to relate the IP submissions made with policy context and the wider evidence provided during the examination regarding commercial impacts on operators and ports. With regards to use of the "property" and "stakeholder/business" consequence categories and definitions of ALARP, the Applicant notes that POTLL and DPWLG have conflated economic impacts with the IMO Formal Safety Assessment methodology, which seeks to assess the navigation risk of hazards (e.g. collision, contact and grounding) and not economic impact if route deviation were to occur. It is conflated as: 1. The IMO FSA risk assessment methodology (which has been submitted to the Examination at EN010084-001249-D3_Appendix7_TEOW_IMO_FSA_RevA.pdf), as adopted

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	regard to 'property' and 'stakeholder/business' the following cost ranges are cited: Category 1: <£10k Category 2: £10kto £100k Category 3: £100k to £1M Category 4: £1M to £10M Category 5: >£10M With reference to Table 18 and Figure 25 of the NRA Addendum it can be determined that risks which score above ALARP include Category 3 risks which occur yearly. Thus, if the effect on vessels required to seek alternate pilot boarding locations was greater than £769 per vessel (i.e. £100,000 divided across the projected likely 130 inbound vessels affected per annum) then the risk to stakeholders/business (i.e. the economic risk) would give rise to a score above ALARP. A level of consequence or effect of £769 or greater per vessel is highly likely, particularly when the ship charter rates set out in Table 11.4 of the HR Wallingford report (at Appendix B to this document). are taken into account (a charter rate of between $20,000 and $30,000 per day for ships over 5,300 TEU capacity) and the tidally affected draft of such vessels. As such, even by the Applicant's own low level and deficient economic assessment, economic impacts can be seen to be at an unacceptable level.	in the NRA and NRAA, requires the assessment of risk for marine navigation hazards, which have been defined as "*something with the potential to cause harm, loss or injury, the realisation of which results in an accident (e.g. collision, contact grounding*)" – this is noted at paragraph 83 of the NRAA. The use of the consequences categories, which are designed for the assessment of accident realisation for economic impact, is therefore neither correct nor appropriate as navigation accident realisation does not occur within route deviations. 2. The Applicant does not consider the need for deviation of any vessel, as sea room has been provided for on the inshore route, the NE Spit pilot boarding area and the NE RACON buoy, which all to meet and significantly exceed the requirements of vessel sizes and frequencies that transit these areas. 3. As noted above the Applicant considers the use of Tables 2 and 3 are incorrect and are therefore not an appropriate for the basis of this calculation. As the premise for the calculations is both flawed methodologically and flawed in terms of the underlying data used, the Applicant refutes the statement that "economic impacts can be seen to be at an unacceptable level". Fundamentally, as the Applicant considers no deviation is necessary no economic impact can occur.

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Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects** *Commercial* As with economic impact, it is not possible to quantitatively assess the potential commercial impacts of the TEOWF at this stage. Indeed, economic impact is considered to be the primary cause of commercial impact, given that economic factors play a significant role in commercial decision-making. Qualitatively, however, it is clear that delays to shipping (in particular unforeseen delays such as those which may occur as result of loss of resilience of pilot boarding operations) have the potential to affect the commercial decision-making of suppliers regarding their choice of shipping lines/routes, ports and locations for warehousing. This may particularly be the case with regard to the transport of produce and other perishable goods (noting the significant quantities of perishable goods currently transported via POTL/DPWLG as discussed in response to Action Point 19 below).	The Applicant would note that POTLL and DWPLG have stated that they were unable "*to quantitatively assess the potential commercial impacts of the TEOW"* which appears to be at odds with the statement above that "economic impacts can be seen to be at an unacceptable level". POTLL and DPWLG then go on to provide a view that "*loss of resilience of pilot boarding operations*", which has not been specified, could have the potential to affect the commercial decision-making of suppliers. The Applicant has considered the extent to which reliance may be affected by the project in Appendix 26 (Annex C) of this Deadline 6 submission The Applicant does not accept the premise of vessel rerouting being necessary, as adequate sea room has been provided at Elbow and NE Spit RACON; the methodology for calculating the necessary sea room has been agreed by PoTLL and DPWLG at ISH8 (and incorporates guidance as proposed by this IP's marine expert HR Wallingford). Therefore, the Applicant does not agree with the POTLL and DPWLG qualitative view which is at odds with the fact that adequate sea room exists to allow safe passage of vessels through the inshore route via Elbow and that additional sea room has been provided for continued pilotage transfers at North East Spit Pilot Diamond..
Port of Tilbury London Limited	**Action Point 17 - Potential Commercial, Employment and Economic Effects**	As noted above it is the Applicant's view that the slight reduction in searoom, to a level that is recognised as still adequate, will not

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and London Gateway Port Limited	*Employment* It is not possible to quantitatively assess the effects on local/regional employment as a result of the interruption/delay to shipping. In qualitative terms however, an Economic Development Needs Assessment (EDNA) published in December 2017 by GVA on behalf of the South Essex combined authorities (https://www.thurrock.gov.uk/sites/default/ files/assets/documents/Iptech-south-essex- edna124-201712-v0l.pdf) identifies (Table 82) that South Essex is forecast to be subject to an employment creation figure of 52,792 in the period to 2036. 24,520 of that employment creation is forecast to take place in Thurrock (where both DPWLG and POTL are located), with 'B' class uses accounting for 16,402 jobs. In setting out the South Essex economic growth drivers the EDNA states the following in relation to Transport and Logistics: *"Para 8.9 - This activity has a strong sector presence in South Essex, with the core cluster of activity evident in Thurrock. Basildon has some strengths in this activity, and Rochford has been seeing an increasing role in recent years, but not at the scale at which Thurrock accommodates this activity related to the authorities key ports; Tilbury, Purfleet and London Gateway.*	have a detrimental effect on vessels transiting the area. Both current and future traffic movements will be able therefore to continue. If there were to be a limited effect on vessel movements, there would *ergo* be a limited effect on the underlying economics of those vessels. The adequacy of searoom at Elbow and NE Spit was confirmed by HR Wallingford on behalf of PoTLL and DPWLG at ISH8 and it is not expected that vessels will need to deviate as a result of the proposed Thanet Extension project. Notwithstanding this the Applicant has provided further consideration of potential commercial effects at Annex C to this Deadline 6 submission (Annex C to Appendix 26)

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	Para 8.10 - The strength of this type of activity is expected to be further increased, particularly in Thurrock driven by its proximity to London and other key exporting centres, its road infrastructure connectivity, current and future investment into the infrastructure required to support this sector (such as London Gateway), and the comparatively affordable rents offered for this type of activity in Thurrock compared with existing London locations (such as Barking & Dagenham). *Para 8.11- The transport and logistics sector is therefore expected to be a strong growth sector for South Essex, driven particularly by its growth potential in Thurrock, over the projection period for this study {2016 - 2036)."* In qualitative terms therefore, the ENDA suggests that the Thurrock, and indeed the wider South Essex, economy (including its ability to create the forecast number of jobs) may be highly sensitive to proposals which have a detrimental impact on the efficient operations of ports and shipping.	
Port of Tilbury London Limited and London	**Action Point 19 - Ship traffic data** POTLL and LGPL are unable to comment on volume of freight or passengers served at Sheerness ports. In respect of volume of ships, the HRW report identifies	As noted, both within the NRAA and HRW report, the total vessel numbers provided, are based on Department for Transport statistics, which exclude some vessel types. This was noted to POTLL and DPWLG at Deadline 5 (Ref: Item 9 and 10 of REP5-

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Gateway Port Limited	(at Table 4.1 and 4.2) that Medway ports served a total of 207 container vessels and 186 RoRo vessels in 2017. Regarding POTL and LGPL vessel calls, in comparison to the total number of vessel calls for all London Ports, information is provided within: (a} Table 1 of LGPL and POTLL's Deadline 2 representations (document reference REP2-050}; and (b} Figure 26 of the Applicant's NRA Addendum (document reference REP4B-002}. A proportional comparison of numbers of vessel calls has been distilled from these documents and is presented within Table 4 below for a comparison year of 2017 (the final year for which information was provided by the Applicant for the total number of vessel calls to London Ports}. Provided Table 4 - Comparison of numbers of vessel calls to London Ports in 2017. Provided Table 5 - Comparison of volumes of freight throughput at London Ports in 2017 Provided Table 6 - Number of vessel calls and volume of cargo to POTL/DPWLG The ports are unaware of any information which has been submitted by the Applicant or PLA to date regarding the total volume of various types of cargo	024) where as such the Applicant considers that relative percentages derived at Table 4 are incorrect and do not present an accurate representation. Within the POTLL data, identified at Table 1 of the Written Representation, then there were 1191 vessels of between 0-50m in length visiting the port between 1/12/2017 and 30/11/2018, making up 33% of ship calls. The size of these vessels is such that they are highly unlikely to be commercial cargo vessels engaged on coastal or international trade, that could (they are likely not coded for passage in open waters) / would transit past the TEOW and most likely vessel engaged on intra port trade. They are more likely vessels engaged on "intra-port" trade within the inner Thames estuary itself (i.e. to/from Tilbury and between other ports/terminals within the Thames itself), or could also be harbour tugs assisting with the berthing of vessels and other service vessels. As such they are not included in DfT port arrival statistics. Further, and as documented in DfT statics metadata, other vessel types are excluded from the data including passenger vessels. This does not negate the utility of the data in terms of identifying trends in ship arrivals for commercial sea going vessels to London Ports. The data also demonstrates the decline on movements over the last 10 years for London Ports, against an increase in trade volumes, demonstrating a trend towards larger vessels.

Interested Party	Key points raised in the Submission	Applicant's response
	or passengers for all London ports and thus are unable to provide comparison with the same for POTL/ DPWLG. The following paragraphs comment on the types of cargo handled at POTL and DPWLG more generally.	In order to provide a like for like comparison with DfT London Port ship arrival figures, as provided at Figure 26 of the Applicant's NRA Addendum, it is necessary for POTLL (particularly – due to the frequency distribution of vessel lengths) and to a lesser extent DPWLG, to count vessel arrivals in the same manner. The requirement to compare like for like is explained in the Applicants Response to POTLL / DPWLG Deadline 4c Submission Ref#10): which states that: *"It is not clear that the figures submitted by POTLL at REP2-050 are comparable to these numbers, as it is unclear whether POTLL figures have been collected in the same manner and to the same standards as the DfT or whether the data includes other vessel types, such as passenger vessels (e.g. cruise ships) intra port trade, tug and tows etc., not considered in the DfT data."* As a like for like comparison does not appear to have been provided, the Applicant is not able to comment on the percentages presented in relation to all London Ports ship arrival numbers shown or subsequent analysis presented based on Table 4 of the Action Point. With regards to Table 5 it is also not clear whether, as stated above for ship arrivals numbers, that "intra port" trade volumes have been included within the POTLL figures. However, it is

Interested Party	Key points raised in the Submission	Applicant's response
		unlikely that much, if any "intra port" trade is including within the DPWLG, based on the sizes distribution of vessel arrivals. The discrepancy in data is also apparent in Table 6, which from data supplied by the PLA shows the number of ship visits to POTLL and DPWLG for 2018. This tables identifies that POTLL 2018 – there was a total of 3,146 – whereas Table 1 of Written representation shows for a similar period there were 3,605 ship visits - a 15% discrepancy. It is the Applicants view that the analysis presented by POTLL and DPWLG can not be relied on by the ExA as there are too many underlying inaccuracies and assumption errors. The Applicant iterates its analysis as presented in the NRA A (REP5-039) and SEZ paper (REP4-018) as the appropriate sources of information.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 19 - Ship traffic data** *DPWLG* Aside from a small quantity of bulk aggregates imported in association with the Aggregate Industries aggregate and concrete supply facility, throughput at DPWLG is almost entirely containerised. No passenger vessels are handled at DPWLG.	The Applicant notes this comment and has no further response to make.
Port of Tilbury London Limited and London	**Action Point 19 - Ship traffic data** *POTL*	The Applicant would note that the Applicant's submission of 12 months data coincided with the period in which the MGN543 compliant surveys were conducted. It therefore serves to

Interested Party	Key points raised in the Submission	Applicant's response
Gateway Port Limited	POTL handles a range of containerised and bulk products via its riverside and lock berths. A breakdown of the types of cargo handled at POTL in the period from 1 December 2017 to 30 November 2018 is provided within Section 8.3 to 8.8 of the HRW report. This represents the period of AIS and POLARIS data analysed by HR Wallingford on behalf of POTLL/LGPL. The Applicant subsequently obtained and analysed additional data for the year period to February 2018 to inform the NRA Addendum (document reference REP48-002}. Thus it is not possible for LGPL/POTLL to draw direct comparison with "the period or periods relevant to the NRA" as the Applicant chose a different date range to inform the NRA.	validate and contextualise the data associated with the surveys. The output of the validation exercise demonstrated clearly that the surveys are an accurate characterisation of the receiving environment. The Applicant would also note that the data, and associated surveys, have been carried out within 24 months of the application being made, a period of time that is established as reflecting an appropriate characterisation, and a period of time that in part coincides with the Port of Tilbury's own dataset to inform the Tilbury2 application which was 2016, with some 2017 data.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 19 - Ship traffic data** *POTL* One type of cargo which is particularly sensitive to delay is perishable cargo, for example perishable food. In this regard it is to be noted that LGPL had a total throughput of 147,942 TEU in reefer (refrigerated) containers in the period 1 December 2017 to 30 November 2018. This equates to 11.2% of all throughput in this period. In the same period POTL handled 789,611 tonnes of perishable cargo (excluding any perishables that arrived via the RoRo	The Applicant notes this representation from PoT and can confirm that the Applicant's NRAA considers container ships of all types. The Applicant can also confirm that the NRAA QA/QC process was undertaken by an expert master mariner with experience of managing reefer/refrigerated container vessels. The Applicant notes that the potential for diversion, which the Applicant does not consider necessary, would be limited to a maximum of 11-14nm should a vessel transiting through the English Channel (i.e. not a vessel from northern Europe) choose to divert around the Thanet Extension boundary to dip down (on

Interested Party	Key points raised in the Submission	Applicant's response
	facility, the quantity of which is unknown), equivalent to approximately 6% of total throughput.	direction of PLA or ESL) to take a pilot at the NE Spit or take a pilot at the Tongue. Generally, perishable cargo is transported on smaller feeder container vessels and as noted at the POTLL site inspection visit attended by the ExA on particular vessel 'the Ensemble' was such a feeder vessel which at 135m in length is considered a smaller vessel. It is very unlikely that such a vessel would choose to navigate round the TEOW windfarm rather than through the inshore route. It is also the case that the presence of the TEOW would be well known to the vessel, and that when drafting its passage plan it would several days in advance be fully cognisant of its round into either POTLL or DWPLG, such that even if it did decide to transit around the outside of the TEOW, it would be well planned for in terms of its necessarily arrival time, and make up only a barely discernible difference to its total voyage length. Whilst this practice of "dipping" is recognised as primarily driven by ESL commercial and operational efficiency factors, and the number of vessels for which this is directly applicable is currently unknown (i.e. the IP has not noted how many vessels the TEU represents, or how many are transiting from the south versus those transiting from the North Sea continental ports) the cumulative deviation by 'dipping' for all vessels boarding a pilot is already significant, and this cumulatively significant deviation associated with this choice is not considered to represent a hindrance to a just in time/perishable goods vessel transit.

Interested Party	Key points raised in the Submission	Applicant's response
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 19 - Ship traffic data** *POTL* Passenger vessel visits to POTL are discussed within Section 8.7 of the HRW report. Information provided by POTL has confirmed that the total number of passenger vessels visiting POTL in the period 1 December 2017 to 30 November 2018 was 63, resulting in a total passenger throughput of 109,692 persons. Section 8.7 of the HRW report suggests that at least 20 of such passenger vessels transited through Gate 1 (i.e. via the inshore channel). This represents 31.7% of the total ship visits and, taking a pro-rata approach would equate to 34,823 passengers.	The Applicant notes this response, however there is nothing to suggest that these vessels could not continue to transit the inshore route.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 19 - Ship traffic data** *POTL* The HRW report provides information regarding the number of vessels inbound to POTL and DPWLG which utilised the inshore route and NE Spit pilot boarding area in the period from 1 December 2017 to 30 November 2018. This is summarised in Table 7 [in the representation].	The Applicant notes this response, and has provided a detailed response to the HRW report at Annex A to this Response.
Port of Tilbury London Limited and London Gateway Port Limited	**Action Point 19 - Ship traffic data** *POTL* Section 6.6 of the HRW report identifies that the figures in Table 7 relating to pilotage operations at NE	The Applicant notes this response and concludes that it confirms its findings that the minority of vessels transiting the inshore route transit to either POTLL and to DPWLG.

Interested Party	Key points raised in the Submission	Applicant's response
	Spit represent 50% and 15% of all inbound piloted vessel calls to POTL and LGPL respectively. Whilst the data presented in Tables 6 {2018 data) and 7 above represents time periods separated by one month (Table 6 represents year ending 31 December 2018 whilst Table 7 represents year ended 30 November 2018) it is considered that the data is broadly comparable due to the small deviation in timescale. By comparison of the 2018 total ship call figures to POTL and LGPL shown in Table 3 and figures relating to vessels utilising the inshore route shown in Table 7, it can be concluded that approximately 17% and 7.5% of vessels visiting POTL and LGPL respectively utilise the inshore route.	
Port of Tilbury London Limited and London Gateway Port Limited	*Document Ref: REP4-006: Vattenfall Wind Power Limited: Appendix 4 to Deadline 4: Response to Deadline 3 Submissions by Interested Parties - Shipping and Navigation* *Section 2, Page 15: Response to PLA/ ESL - The Applicant's response states "in the 12 months of data analysed by the Applicant 3978 vessels were identified between Elbow Buoy and the wind farm equating to approximately 10.9 vessels per day. This is similarly reflected in the figure provided by POTLL and DPWLG*	The Applicant notes these comments by POTLL and DPWLG and would point out that undertaking a direct comparison of two data sets is necessary to ensure the data is analysed in the same way and results are comparable. The following differences are noted between the two data sets: • The 3978 does not include vessels where lengths could not be characterised (see NRA A Table 4) which is 180 vessels. Therefore the total vessel transits for a direct comparison would be 4,158. which equates to a 1% reduction.

Interested Party	Key points raised in the Submission	Applicant's response
	at Dead line 3, of 4114 vessels using the inshore route, or 11.2 vessels per day." We take the opportunity to highlight that the difference in number of vessels using the inshore route identified by the Applicant's data {3978 for the year ending February 2018) and the POTLL/DPWLG data {4114 for the year ending November 2018) of 136 vessels represents a 3.4% increase in vessel numbers utilising the inshore route in a period of only 9 months. While this information represents a relatively limited dataset to inform growth trends, POTLL/DPWLG contend that this is indicative of the level of growth being experienced at the two ports and casts further doubt over the appropriateness of the 10% allowance for increase in vessel numbers utilised by the Applicant for the purpose of NRA in the reasonable planning horizon (i.e. 35 years from 2019).	• The PLA Gate 1 did not follow the exact location of the Applicant's Gate as presented in the NRA Addendum [REP5-039] and data report submitted at Deadline 4 [REP4-030], and actually extends further inshore of the Elbow buoy, and as such covers a greater number of vessels. When considering the points noted above, and following the POTLL / DWPLG principles, then a net reduction in vessel movements through the inshore channel is demonstrated. (although the difference could be considered *de-minimis*). This therefore demonstrates that the POTLL/DWPLG position regarding a future baseline being greater than 10%is questionable. It therefore remains the Applicant's position that the 10% future growth estimate defined for the project by the Applicant is appropriate.
Port of Tilbury London Limited and London Gateway Port Limited	*Document Ref: REP4-007: VATTENFALL Wind Power Limited: Appendix 5 to the Deadline 4 Submission - Responses to comments on Shipping Policy Considerations* *Paragraph 7 - " Impacts on ports are not therefore prohibited by the draft policy, however as the Applicant has explained it considers that the proposals would not cause any effects on port activity.*	As noted above in the Applicants response to POTLL and DPWLG Action point 19 noted above, the ship traffic data, methodology and assumptions surrounding the IPs ALARP judgement on economic impacts is neither evidenced, substantiated or credible.

Interested Party	Key points raised in the Submission	Applicant's response
	As discussed in Section 2 of this document, whilst the extent of impact is currently difficult to quantify it is clear that some impact to ports would occur as a result of the TEOWF proposals. The discussion of economic impact set out above suggests that such impact is likely to be above ALARP.	
Port of Tilbury London Limited and London Gateway Port Limited	*Document Ref: REP4-007: VATTENFALL Wind Power Limit ed: Appendix 5 to the Deadline 4 Submission - Responses to comments on Shipping Policy Considerations* *Paragraph 34 - "The additional transit distance between the inshore route and the most likely alternative has been estimated as between 11nm by the Applicant and 14nm by other interested parties. This would equate to approximately an additional 20 - 40 minutes of steaming."* To achieve the suggested 20 to 40 minutes of additional steaming time suggested by the applicant for an 11 to 14nm diversion, vessels would need to be travelling between 16.5 - 33 knots {11nm diversion) or 21- 42 knots (14nm diversion). In fact, with reference to the 10 vessels highlighted in Table 7.3 of the HRW Report (Document Ref: REP4C-016), information provided within the www.marinetrafifc.com website	The Applicant notes PoT/LG's response and can confirm that it agreed with the estimate of 47-60 minutes. The Applicant's previous estimate was the result of a typographic error and should have read 40 -60, not 20 – 40 minutes. It is important to put this length of possible delay in context, and as noted within the Applicant Statement of Evidence at Deadline 4C, vessels, even large container vessels often wait in the approaches to the Thames Estuary for their berth to become available , a pilot to board, or sufficient water depth, and as such even if a 46-60 minute diversion were taken, it would have a negligible effect on the majority of vessel that visit London Ports.

Interested Party	Key points raised in the Submission	Applicant's response
	suggests that on average deep sea container vessels have a top speed of 16.2 knots and an average speed of 14 knots. At an average speed of 14 knots an 11nm to 14nm diversion would require an additional 47 to 60 minutes of steaming. Thus the Applicant's estimates of additional steaming time appear to be significantly understated.	
Port of Tilbury London Limited and London Gateway Port Limited	*Document Ref: REP4C-00 3: Vattenfall Wind Power Ltd: Appendix 2 at Deadline 4C: Statement of Evidence* *Paragraph 80 - With regard to the hazard workshop on 29 March 2019: "Thus all the input likelihood and consequence values for baseline and inherent assessment of risk relating to these 4 hazards were agreed by the parties."* *Paragraph 92 - "As described above, at the hazard workshop meeting the /Ps agreed the inputs to the baseline and inherent risk assessment for 4 identified hazards".* POTLL and DPWLG contend that the basis for scoring of consequence was not clearly understood during the hazard workshop on 29 March 2019. For example, in terms of a collision of a Class 1 or 2 vessel in the 'most likely' scenario, it was not understood what exactly parties were supposed to consider that the Class 1 or	The Applicant notes this representation, but as a pre-workshop pack was circulated outlining the process and methodology of the assessment, and no comments were received by POTLL or DPWLG on either the methodology of information, prior to, or at the workshop, it is disappointing that attendees were unable to understand the process. The methodology employed is standard within the ports and maritime industry, and it came as a surprise to the Applicant that neither POTLL or DPWLG sought for their Harbour Masters or experienced mariners to attend the hazard workshop – who would be familiar with the methodology and hazard workshops. The Applicant would also confirm that it is commonplace for collision for hazid workshops to be preceded by the provision of data for consideration (i.e. hazard classes, mitigation, study areas), and for the workshops to then facilitate the discussion of principles and to seek agree the scoring for certain hazards, and for technical experts to then take these away and undertake the wider scoring process before resubmitting for further

Interested Party	Key points raised in the Submission	Applicant's response
	2 vessel would be colliding with (noting that it was agreed that any collision with a fishing vessel (including a glancing blow) would result in the sinking of that vessel). In terms of the consequences for Stakeholders/Business or Property, the effects of a collision were not discussed. For example, if the collision were to result in the sinking of a fishing vessel (with a strong potential for loss of life) it is not clear whether the Class 1 or 2 vessel involved (or its operators) would be required to remain on the scene or to wait at a nearby port whilst incident investigation took place. It remains unclear whether loss of value of perishable goods (as a result of delay to the vessel) would fall to be considered as a Property or Stakeholder/Business consequence. Indeed it did not appear that loss of value of cargo had been considered in any of the four consequence categories. After being provided with the resulting scores from the hazard workshop on 1 April 2019 (the first opportunity LGPL and POTLL had to clearly see the scores resulting from the discussion at the hazard workshop), the ports raised the above concerns during a conference call between the Applicant and IPs held on 2 April 2019. The ports also raised these concerns regarding the scoring of consequences in an	consideration. The Applicant's process is therefore commonplace with a clear identification of hazards to be assessed as was proposed, agreed and undertaken during the hazard workshop, and indeed this principle is included both with the POTLL Tilbury 2 NRA and the PLA 2015 NE Spit Risk Assessment. Further, and in relation to scoring of hazards outwith of a Hazard Workshop then this also is common place and demonstrated in the Tilbury2's NRA, which confirms in the methodology section that: *Prior to the Workshop, a Hazid Pack had been prepared and distributed to the attendees. The purpose of the Pack was to describe the proposed berth layouts and to confirm the methodology, terminology, and process for the Hazid. Relevant parts of the above Hazid Pack are replicated in this NRA report.* Before then confirming in the results section: *It shall be noted that the scoring of these hazards was not actually carried out at the Hazid, because that meeting became more of a "brainstorming session" from the participants on the proposed design and the operational aspects of the berths if the berths were to be built as shown in Figure 1:1. Instead, the scores and mitigations used in the NRA spreadsheet are those of the report author, and are based on the comments from all the Hazid participants.*

Interested Party	Key points raised in the Submission	Applicant's response
	e-mail sent to the Applicant dated 5 April 2019 (see email to Daniel Bates at Appendix F), following receipt of the hazard workshop minutes on the afternoon of 4 April 2019.	The Applicant notes that attendees from PoT/London Gateway claim to not clearly understand some of the processes being discussed, despite this being discussed at length at the workshop. It is commonplace for a combination of technical and non-technical attendees to attend workshops, and it is understood that for the TEOW NRA A hazard workshop POTLL/DPWLG opted not to attend with the same technical leads that attended, for example, the Tilbury2 technical hazid workshop. As the Tilbury2 workshop and assessment adopted a very similar approach (i.e. Hazard ID 1 collision risk for Tilbury2 is a bulk carrier colliding with any other vessel), and method of assessment, had the attendees been more familiar with the process adopted by both TEOW and Tilbury2 some of the extensive discussion may have been abridged and even more progress made on the scoring of hazards. Notwithstanding this the Applicant accepted POTLL / DPWLG request to amend certain hazard scores and has amended / updated the hazard logs accordingly, which demonstrates a transparent approach to hazard scoring.
Port of Tilbury London Limited and London Gateway Port Limited	*Document Ref: REP4C-00 3: Vattenfall Wind Power Ltd: Appendix 2 at Deadline 4C: Statement of Evidence* *Paragraph 106 - " Following the workshop DPWLG identified that for Hazard ids 1-3 the "most likely" stakeholder outcome could be increased from a negligible to a minor level consequence."*	Please see above note. The Applicant recognises that POTLL/DPWLG's email noted uncertainty that consequences accurately reflected their concerns. The Applicant addressed POTLL/DPWLG's request by amending the hazard scores in the NRAA submitted at D4C which increased to consequence for the most likely occurrence of commercial shipping hazards, for Stakeholder / business category from a category 1 consequence,

Interested Party	Key points raised in the Submission	Applicant's response
	As indicated by the copy of POTLL/DPWLG's e-mail to the Applicant dated 5 April 2019 (see Appendix F), POTLL/DPWLG did not make any reference to an uplift to a "minor level consequence". Instead it is clear that the ports' email correspondence highlighted uncertainty regarding the effects of such a collision for cargo vessels and outlined the potential for "significant costs to business {operating costs of ship and potential loss of cargo (particularly if perishable))". It is noted that the Applicant did not provide a response to this e-mail and no further discussion took place on this topic between the ports and the Applicant prior to ISH8. POTLL/DPWLG therefore remain of the view that: (a) the scoring of risks discussed at the hazard workshop was not agreed; and (b) the scoring with regard to the consequence for property and Stakeholders/Business in the NRA Addendum is not robust.	as agreed at the workshop, to a category 2 consequence – resulting in a corresponding increase in the risk score.
Port of Tilbury London Limited and London Gateway Port Limited	Appendix B: HR WALLINGFORD REPORT FINAL	A full response to the report submitted by HR Wallingford is provided in Annex B to this document.

2.2 Maritime & Coastguard Agency

Interested Party	Key points raised in the Submission	Applicant's response
Maritime & Coastguard Agency	The MCA would like to confirm that the Statement of Common Ground (SoCG) between MCA and Vattenfall has not yet been agreed, and we are not able to confirm acceptance of the 'agreed' positions currently showing within the draft SoCG. The MCA hopes that discussions will progress, and we will then be in a position to agree some (if not all) of the SoCG by the next deadline.	Following discussions with the MCA, the final SoCG between the MCA and the Applicant is provided in Appendix 12 of the Applicant's Deadline 6 Submission. The positions noted as 'agreed' in the draft submission were discussed and minuted as being agreed in the meeting of 4th October 2018. This draft was sent to the MCA for comment in November 2018, however comments were only received in early May 2019.
Maritime & Coastguard Agency	**Action 4: Policy Position on Sea Lanes or Routes** The MCA's position remains the same as our response to the Examining Authority dated 5 March 2019 on the ISH5 Action Points at deadline 3. The area of concern is an area of sea to the west of the existing Thanet windfarm and while it is not an IMO designated routeing measure, the area of sea is actively used by all vessel types, including large commercial and international vessels. It is therefore considered an essential area for navigation and of strategic importance for vessel operation and accessing ports. The SUNK TSS and Dover Straits TSS, both internationally recognised and established sea lanes, are in close proximity to the north and south of the TEOW site and, therefore in an operational	The Applicant has provided detailed responses at Deadline 4C and Deadline 5, the latter at Appendix 7 and 12 which confirms that the area of sea is not a sea lane.

Interested Party	Key points raised in the Submission	Applicant's response
	sense, the area of sea should be treated as a recognised sea lane.	
Maritime & Coastguard Agency	**Action 5: Policy Considerations – EN-3 para 2.6.166** The MCA would like to ensure that as part of the mitigation measures, the turbine layout is designed in accordance with MGN 543 with multiple lines of orientation, and appropriate lighting and marking.	The Applicant can confirm that this has been incorporated within the NRAA and appropriate conditions have been incorporated within the dDCO.
Maritime & Coastguard Agency	**Action 10: Maritime and Coastguard Agency oral submissions** During its oral submission, the MCA noted that the applicant's approach to undertaking the NRA is generally in line with MGN 543. However, it is the detail that informs the assessment and the result that are not agreed. This disagreement is based on IPs' qualitative assessment which must be considered in addition to somewhat purely quantitative assessment presented by the applicant. The MCA was content for local IPs to lead on local issues not agreed under Agenda Item 5. The MCA provides a methodology guideline for assessing risk titled "*Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI)*", which is based on the IMO's Formal Safety	The Applicant can confirm that a series of meetings were held with MCA, and the wider stakeholders, before during and after the drafting of the NRA, which fed into the hazard log for the TEOW project in order to include appropriate quantitative and qualitative considerations. During this time the Applicant also suggested to the MCA that a hazard workshop with them would be beneficial and appropriate given their role. This was noted at ISH8 with the MCA representative noting that they were not familiar with that phase of the assessment (having not been in post at that time), and therefore unaware of the requests having been made. Notwithstanding this during the post application phase the Applicant has provided two workshop forums to allow discussion of the qualitative and IP led concerns. The Applicant notes that at these workshops the MCA attended in an observer capacity and did not seek to lead on any specific issues.

Interested Party	Key points raised in the Submission	Applicant's response
	Assessment for its rule-making process. A Hazard Identification Study is, understandably, the most common technique for assessing risks to shipping and navigation from Offshore Renewable Energy Installations and the recommended process is described in chapter 5. Usually, a full hazard identification workshop takes place before an NRA is completed, and well before planning applications are submitted to PINS, thus allowing time to study the results, resolve issues and obtain agreement with the IPs.	
Maritime & Coastguard Agency	**Action 10: Maritime and Coastguard Agency oral submissions** The MCA's observation of the workshop held on 29 March 2019 was that the applicant was constrained by the need to produce a revised risk assessment in a very short time period, due to the tight deadlines in the examining procedure. As such only four hazards were explicitly assessed with the IPs after which the applicant completed the scores for the remaining 14 hazards without direct IP input. Risk control measures were not discussed during this workshop. During the telephone conference with the IPs on 2 April 2019, none of the scores were discussed either. Instead, the IPs raised concerns on the suitability of the hazard list.	The Applicant notes MCA's representation and can confirm that the risk control measures were presented to all attendees in advance of the workshop, with a request made that IPs confirmed they were content with them. This was agreed within the workshop and captured within the associated minutes. The minutes have been agreed with MCA since as a fair representation of the workshop outputs. During the call on the 2nd April PLA and ESL raised concerns that having reviewed the outputs of the workshop, and calculated the associated scores, they felt the agreed scores no longer reflected their opinion of the day and should be revised. The Applicant has since received those scores and made reference to them in the Deadline 5 submissions.

Interested Party	Key points raised in the Submission	Applicant's response
		Noting that the PLA's re-scoring of these hazards concludes that they are 'moderate' which would be considered ALARP with additional risk controls according the matrix in PLA's deadline 4 submission, or "*Efforts should be made to reduce risk to 'As low as reasonably practicable' (ALARP), but activity may be undertaken*" as provided in the PLA's own guidance, the accepted Tilbury2 NRA and the accepted Silvertown Tunnel DCO NRA (both of which follows PLA guidance as provided at https://www.pla.co.uk/assets/fm197plariskassessmenttemplate.xlsx and noted on the PLA website until removed from the website around the 19th May 2019). With regards the latter resource it is important to note in this context that the approach clearly identifies moderate to be ALARP and can continue, and that the PLA's website guidance page, again representing PLA policy at the time of D4C and ISH8 states that *"It is logical, and not unreasonable, that the approach to and method of risk assessment undertaken by owners/operators in such circumstances is the same or similar to that employed by the PLA. The result of this specific risk assessment can then interface seamlessly with the wider port SMS.*". The Applicant has sought therefore to undertake similar approaches adopted by the PLA, but note that the PLA's hazard log has changed the definition of moderate from ALARP.
Maritime & Coastguard Agency	**Action 10: Maritime and Coastguard Agency oral submissions** The applicant submitted their NRA Addendum on Friday 5 April 2019 (Deadline 4B) and IPs had just three working days to review the document and	The Applicant notes the challenges with examination deadlines and sought to undertake the Hazard workshop in such a way as to ensure that the NRAA reflected recognised and agreed outputs. In this context the Applicant sought to manage the constraints of the

Interested Party	Key points raised in the Submission	Applicant's response
	provide their comments by 10 April 2019 (Deadline 4C). Such tight timescales did not provide adequate time for IPs to give enough consideration for their concerns and it did not provide any time to allow discussion of these concerns for finding an agreed position. The applicant should have allowed for more time to conduct additional stakeholder engagement, with ideally a full hazard identification workshop with all relevant IPs held in advance of the planning application to the Examining Authority to ensure agreement of the risk assessment. Whilst the risk assessment may have resulted in risk scores that the applicant deems tolerable with mitigation, these mitigation measures or risk controls have not been agreed between the applicant and IPs. The MCA would therefore recommend that, in order to reduce risks to ALARP, the applicant further considers increasing the available sea room between the NE Spit buoy and SEZ boundary to a distance that is acceptable for continued safe pilot transfer operations.	Deadlines in such a way as to facilitate a review of information that would not be novel. The Applicant notes the MCA's position with regards holding a hazard workshop in advance of the application and regrets that, despite multiple requests by the Applicant, the MCA did not feel able to attend such a workshop. The Applicant can confirm that both the Applicant's NRAA and the PLA's draft NRA for the project conclude that the risks associated with the project are ALARP when considered against the PLA's standard methodology and assessment process available at the time of the D4C submission and ISH8 (see above). The MCA therefore appear to be suggesting that an additional SEZ be introduced in order to reduce the project further within ALARP
Maritime & Coastguard Agency	**Action 10: Maritime and Coastguard Agency oral submissions**	The Applicant can confirm that at Appendix 8 of the Applicant's Deadline 5 submission the position with regards embedded and further mitigation is clarified. The Applicant accepts that promulgation of information is, in its standard format, an embedded

Interested Party	Key points raised in the Submission	Applicant's response
	With regard to the risk control measures identified in the Chapter 5.5 of the NRA Addendum, the MCA has the following points to make: a. Paragraph 134 - 'Promulgation of Information' should be an embedded risk control measure. The issuing of Notices to Mariners, notification to fishing industry and the charting of hazards is a very common risk control measure utilised within the shipping industry in order to ensure other vessels in the vicinity can safely plan and conduct their passage. b. Paragraph 143 - 'Optimise TEOW line of orientation and symmetry' is a duplicate of 'Layout plan to be submitted to MCA [and Trinity House] for approval prior to construction' in Paragraph 133. Part of this approval process is to ensure the turbine layout design allows for vessels and SAR helicopters to safely transit through the wind farm, therefore it aims to optimise line of orientation and symmetry.	control. The Applicant notes however that further enhanced promulgation of information, through liaison and the development of a stakeholder liaison group, has been put forward as an additional control measure. In this context the Applicant also notes that the orientation of the proposed project is a matter for which a layout plan is provided, and this is included as an embedded control measure. The Applicant's commitment at this early stage to ensure two lines of orientation are present is however a commitment that is frequently not made at the pre-consent stage and is instead discussed with MCA post-consent with some projects having been built without this. The Applicant's commitment at this early stage is therefore considered to be a further or additional control measure in order to give MCA comfort and confidence in the enhanced measure in addition to the embedded measure.
Maritime & Coastguard Agency	**Development Consent Order** Having considered the ISH9 Hearing Action Points on the Development Consent Order the MCA will provide its comment on the draft DCO at Deadline 5A.	This is noted and welcomed by the Applicant. The Applicant's responses to the issues raised are addressed in Appendix 44 of the Applicant's Deadline 6 Submission.

2.3 Trinity House

Interested Party	Key points raised in the Submission	Applicant's response
Trinity House	**Point 4: Policy Position on Sea Lanes or Routes.** Matters regarding formal routeing measures fall within the remit of the flag state. In this case the Maritime and Coastguard Agency (MCA) together with the overarching Department for Transport (DfT) oversight. As such, it would be inappropriate for TH to comment on the specifics requested in the action with regard to National Policy Statements.	The Applicant notes TH's position and has nothing further to add.
Trinity House	**Point 5 Policy Considerations- EN-3 para 2.6.166.** TH recognise that mitigation for recreational craft is accommodated for within the layout design by ensuring multiple lines of turbine orientation would be provided together with ID marking and other Aids to Navigation as specified. TH note that the extinguishment of Public Rights to Navigation will only apply during construction and recreational craft, along with Fishing and commercial vessels, will be able to navigate within the site freely on completion of construction activities.	The Applicant notes TH's position and has nothing further to add.
Trinity House	**Point 10 Maritime and Coastguard Agency and Trinity House to submit a written copy of their oral submissions to ISH8 and observations on the workshops**	The Applicant notes TH's position that the searoom at Elbow Buoy is considered adequate under normal circumstances, and recognises TH's reference to local pilot providers providing

Interested Party	Key points raised in the Submission	Applicant's response
	TH reaffirmed previous submissions that the areas indicated are those used for general navigation and that qualitative data should be used, along with quantitative data, when assessing the risks to be mitigated in the area. TH stated that, in our opinion, the area between the Elbow Buoy and the array with the proposed Structure Exclusion Zone (SEZ) was adequate for passage under normal circumstances. It was also stated that the area around the NE spit was considered adequate for general navigation but we would not comment on pilotage operations as the pilots and pilot boat crews were best placed to answer on this. As contained within our previous submissions we mentioned the qualitative factor needing to be taken in to account. TH raised concerns over what could actually be placed in the SEZ as this could reduce the available sea room in these areas.	expertise when considering the searoom requirements at NE Spit for pilot transfer. The Applicant also notes that TH consider the searoom at NE Spit buoy to be sufficient for general navigation with the SEZ in place. The Applicant would also note that the SEZ was based on a combination of quantitative, guidance lead, analysis and incorporation of qualitative concerns, including those raised by Trinity House on the 27th February and from ISH2. Indeed the Original NRA confirmed that navigation risk was at ALARP, and the introduction and extent of the SEZ was implemented to take into qualitative concerns. The Applicant can confirm that Deadline 5 Applicant submissions provided a detailed account of what can be placed within the SEZ.
Trinity House	**Point 10 Maritime and Coastguard Agency and Trinity House to submit a written copy of their oral submissions to /SHB and observations on the workshops** TH raised a question on the Navigational Risk Assessment (NRA) and new Addendum (NRAA) about	The Applicant notes this representation and can confirm that as agreed at the Hazard workshop the focus of the NRAA would be on the operational phase as it would be this phase that represented the long term reduction in searoom.

Interested Party	Key points raised in the Submission	Applicant's response
	what should be considered appropriate during the construction, and any decommissioning, phase as the NRAA only cover the operational phase with the SEZ in situ.	The construction phase was noted as being subject to temporary, rolling advisory safety zones which are commonplace within the marine environment and would be applicable only around vessels, and that the navigation risk during the construction and decommissioning phases were considered acceptable within the original NRA and as the SEZ provides for more sea room the risk would be less. The Applicant provided comparisons that Trinity House will be familiar with, including the installation of the European inter-connector projects such as Nemo and BritNed.
Trinity House	**Point 10 Maritime and Coastguard Agency and Trinity House to submit a written copy of their oral submissions to /SHB and observations on the workshops** At Workshop 1 all Interested Parties (IPs) were invited to express their views on the project. All IPs identified their areas of concern and the content from the meeting provided the Applicant the good reasons to submit the now proposed SEZ in the application. At Workshop 2 all IPs in attendance were provided the opportunity to identify, discuss, and score relevant hazards. The applicants' original proposals were discussed and 18 main hazards identified for scoring. It is however notable that significant debate	The Applicant notes TH's position and has nothing further to add beyond clarifying that the proposed control measures were circulated in advance of the workshop and discussed in brief at the workshop to confirm/request if any IPs wished to make comment on them. As confirmed within the minutes there were no matters arising from the control measures.

Interested Party	Key points raised in the Submission	Applicant's response
	surrounding the scenarios and scoring led to only 4 hazards being considered. The scoring for these 4 hazards was on general consensus rather than agreement. Final scoring was not possible due to only 4 hazards being assessed and the remaining 14 completed by the applicant after completion of the workshop. TH did not engage with the applicant on these after the workshop by phone, although like other IPs we had been offered a teleconference. At workshop 2 IPs did not discuss further mitigation proposals or possibilities as the time had been used on just 4 identified hazards.	
Trinity House	**Point 20 Updated simulation report.** The TH position on an updated simulation report is stated in Annex A of Document EN010084-001770 by the Examining Authority, and we still consider that if one is carried out it should be prior to the Secretary of State's decision. We also questioned what value an updated simulation report would bring to the application as we would still have concerns over very experienced personnel being used and limited scenarios trialled. These are the same concerns we have over the original simulation as stated previously and in meetings with the applicant.	The Applicant notes TH's position and has nothing further to add beyond its proposed approach to simulation as outlined in Appendix 38 of this Deadline 6 submission. The Applicant shares elements of the concerns raised by Trinity House, and agrees that the use of appropriately qualified personnel, albeit those without local area familiarity could be an appropriate proposal, introducing an independent element to the study.

2.4 London Pilots Council

Interested Party	Key points raised in the Submission	Applicant's response
London Pilots Council	**Revised red line boundary** The LPC were asked to provide clarification of a sketch in their Deadline 4 submissions which showed a preferred red line boundary in order to maximise sea room at the NESP for manoeuvring large vessels, as shown in Fig.1 [of their representation].	Whilst the Applicant notes LPC's most recent submission in response to the request by ExA, the Applicant is compelled to identify that the submitted sketch differs significantly from that submitted by LPC at Deadline 4C. The Applicant further notes that this also appears to deviate significantly from previous submissions by LPC throughout the Examination. The submissions made by LPC are summarised by the Applicant in their response to Action Point 9 from ISH8 (Ref: REP5-012, Section 10) as: • 'Figure 1: LPC Submission by email to Applicant on 19-March 2019 *(also repeated at Figure 3 of LPC Submission at Deadline 4C)*' [REP4C-012] • Figure 2: LPC Submission at Deadline 4C (Figure 8) with Applicant overlays in green [REP4C-012] In REP5-061 (Responses to ExA Actions Points arising from ISH8) the Applicant provided further commentary in Section 10 (principally in Table 2 and accompanying text) on the LPC submissions and where the Applicant considers the SEZ meets the LPC requirements. In order to aid the ExA in interpretation of the various LPC submissions with the Applicants SEZ and the application RLB, the Applicant has produced a further composite plot of the above submissions by LPC together with that made at Deadline 5

Interested Party	Key points raised in the Submission	Applicant's response
		(REP5-061) together with dimensions. This is available at Annex E of this document. The Applicant is unclear why LPC have further amended their suggestion on 3 separate occasions since the Applicant submitted its proposed SEZ (which it considered met LPC's requirements from REP3-083 of "an unrestricted sea room of at least 2nm" as 'required for general navigation and pilot operations" together with a justified buffer), as no rationale for the evolving position has been provided.
London Pilots Council	**Available Sea Room and SEZ** The LPC are concerned that the Applicants proposed red line boundary does not allow sufficient sea room for manoeuvring large vessels at the NESP particularly in the contentious area or choke point, to the SE of the NESP Racon.	The Applicant would note that the LPC's own suggestion, prior to the most recent iteration, appears to suggest that the Applicant's SEZ is in line with that submitted by LPC via email to the Applicant (and Trinity House) and forming the 'red hatched area' in their LPC D4C submission. Notwithstanding this the Applicant notes LPC's confirmation received during ISH8 that the searoom available between the Elbow buoy and the SEZ, and also the searoom surrounding the NE Spit pilot diamond is considered adequate and, with the regards to the latter, the following minimum requirements stated by the LPC in Section 5.1 of their submission at Deadline 4C (Ref: REP4C-012) had been met (and exceeded in the view of the Applicant) through provision of 3.4nm of sea room in the area just to the north of the NE Spit pilot diamond where the greatest density of pilotage operations occur: • "South of the NESP Pilot boarding diamond to be not less than 2.75nm

Interested Party	Key points raised in the Submission	Applicant's response
		• Pilot boarding diamond to be not less than 3nm"
London Pilots Council	**Available Sea Room and SEZ** The Port of London business is constantly expanding with new berths coming on line at Oikos, tanker berth upgrades to accommodate deeper, bigger ships at Grays and Vopak are complete, the Tilbury 2 development is well underway and a further 3 berths are planned at the London Gateway. As a result the PLA business is over 1 million tons above budget for the 2019 first quarter, £0.6 million above budget. This has resulted in a 11% increase in Pilot acts in the last 12 months running at 98% efficiency for serving vessels without delay. The increase in business and vessel numbers has in turn increased the demand for landing and boarding more vessels and bigger and deeper vessels at the NESP. One future development plan to cope with the requirement is to reopen the deep water route in the North Edinburgh Channel, 6 mile NW of the NESP Racon Buoy. The channel entrance will require dredging and navigation buoyage to be installed but the growth in traffic and overall vessel sizes as shown above together with the pressures of multiple large vessel	The Applicant has provided a more detailed response on this statement in response to ExAQ3 3.12.8 (Appendix 22 to Deadline 6) but notes that this future development plan is considered conjecture as it is a plan which fundamentally alters the manner of navigation and navigable depths. The conjecture dredging of the North Edinburgh Channel does not appear on any future plans or project list and is not identifiable as either an EIA or NSIP project. Furthermore the dredging of the North Edinburgh Channel (which has previously been determined by the PLA as no longer viable to navigation and is designated as a sand placement site for disposal of dredge material) is not consistent with the PLA position who have stated during Examination that, whilst future dredging options have been considered, no decision has been made at this time although North Edinburgh Channel would not be likely to be the selected location. In any event, the PLA stated that dredging at the selected location would likely be to 10m below chart datum, for vessels of routinely up to 12m during higher tides (and not 13.5m as stated by LPC). The proposal to dredge significant sections of an internationally designated site, of which the sandbanks LPC suggests should be dredged are a designated feature (Margate Sands SAC), is not therefore understood to be a material consideration. Any such proposal would require a Habitats Regulations Assessment to be undertaken and

Interested Party	Key points raised in the Submission	Applicant's response
	boardings at the Sunk pilot station, has created an immediate demand for deep draft Class1 and Ultra large (ULCS) vessels to transit the North Edinburgh Channel to and from the NESP at drafts up to13.5 meters, having boarded or landed a Pilot at the NESP. This is a major factor in the future growth of business in the Port of London.	submitted before the MMO and Natural England as a plan of project. In the absence of these considerations the Applicant does not consider LPC's proposal to be material. The Applicant can confirm, as noted in LPC's representation, that allowance has been made for the future baseline through considering PLA's vision for the Thames, and benchmarking against other projects including Tilbury2 which considered its proposal with other plans and projects, including those noted by LPC.
London Pilots Council	**Available Sea Room and SEZ** Serving larger and deeper vessels with greater manoeuvring characteristics such as turn radius, smaller rates of turn and greater time required steaming on an embarkation heading to get the Pilot onboard all require greater amounts of sea room and a requirement for greater margins for vessel speed and position, traffic density, weather conditions and the proximity of fishing vessels and leisure craft. Combining all of these factors then it is not in the best practice of seamanship or vessel safety to initiate and complete a manoeuvre requiring a large change of heading of a ULCS for a Pilot in less than 2 miles sea room. The time and distance factor for margin of error is very small and as such the LPC require a minimum 1 mile SEZ in addition to the two miles sea room as shown in Fig.B [of their representation].	ULCS class vessels are defined by the PLA as ships of more than 320 metres in length and /or more than 13.5 meters draught. Given that the Applicant is only aware of 1 over 320m ship transiting the route (that did not, according to the POTLL / DPWLG HR Wallingford report board a pilot at the NE Spit) and the fact that it has been agreed with IPs that a reasonable deepest draught for consideration in the inshore area is 11.5m, the Applicant considers that such vessels as suggested by LPC are extremely unlikely to be transiting in this project area due to the limitations of the existing bathymetry in the area and the unconfirmed nature of any future dredging suggested by LPC (as per the Applicants above response). In any event it is also extremely unlikely, as suggested by LPC that this would be served exactly in the narrowest point between the NESP Racon buoy and the SEZ regardless of the project and particularly when additional sea room of in excess of 3.0nm exists in the NE spirt pilot boarding area to the south of this location as created by the SEZ. Furthermore if they were to transfer in this area it would be

Interested Party	Key points raised in the Submission	Applicant's response
	It is not possible to serve Ultra Large vessels transiting the North Edinburgh Channel in a position directly to the North of the NESP Racon Buoy as this area comprises the busiest East/West Traffic route.	so rare an event so as to be immaterial to the operation of NE spit pilot boarding area. The LPC also advise that it is not good practice to make large changes of heading in 2 miles sea room and require the 1 mile SEZ. Looking at other areas within the Thames Estuary these vessels regularly make large heading alterations of up to 80 degrees in more confined areas such as at the junction of the Fisherman's Gat with the Black Deep channel. It would be possible to service ULCS in the area directly to the north of the NE Spit buoy. However, it would seem that it is the preference not to board and land pilots in this area despite this area being in the vicinity of the Tongue pilot diamond. There are plenty of other examples in the Thames Estuary where the pilot boarding ground is in a busy waterway including at the Sunk and Oaze pilot diamonds.
London Pilots Council	**Available Sea Room and SEZ** Fig.C [of their representation] shows how critical speed and position is for boarding and landing Pilots in this area and why a 1 mile SEZ is critical to the safe operation of vessels. It can be seen that using the same turn radius and the vessel requiring approximately 6 minutes to board a Pilot then the vessel has only to overrun its turn position abeam of the NESP Racon Buoy by 1 mile or at Dead Slow Ahead on a Cap San of 7.5 knots, 8 minutes, then the vessel would be in close proximity to the Windfarm.	Fig C shows the track of a vessel departing the North Edinburgh channel which is fictional as this channel is not currently open to navigation. The track proceeds down towards the NE Spit buoy and then a turn to port. This indicates that there is no intention to land the pilot down at the NE Spit pilotage diamond but instead use the Tongue pilotage diamond to the north of the windfarm. This is in direct contradiction to the point being made with regards not being possible to server ULCS transiting the North Edinburgh Channel.

Interested Party	Key points raised in the Submission	Applicant's response
	Traffic management is required to maintain two miles of sea room and a practical amount of buffer zone between the operational sea room and the existing Windfarm to ensure a safe operation. The LPC require a minimum of 2 miles of sea room and a 1 mile of safety buffer zone to safely operate vessels of this type at the NESP.	
London Pilots Council	**Available Sea Room and SEZ** Fig.B [of their representation] Large and ULCS vessels departing the North Edinburgh Channel for Pilot disembarkation at a position ESE x 0.5 miles from the NESP Racon Buoy. Headings available for Pilot transfer from SE, Easterly and NE at 6 mins slow speed requires approximate turn radius between 1.0 mile and 1.7 miles for ULCS vessels. Rate of turn between 5 and 10 degrees. (ROT = V/Radius) (Info from vessel bridge manoeuvring data IMO Res.A601(15)) Change of heading shown is 90 degrees, from 130 degrees inward to Pilot disembarkation turning to 040 degrees outward to the VTS reporting point.	Fig B is inaccurate as there is no chance of the vessel tracking down to the intended area to land the pilot. The turn commences when abeam of the NE Spit buoy and as the vessel turns it tracks north of the intended pilot transfer point. By looking to land the pilot ESE x 0.5nm from the NE Spit buoy this has been deliberately manufactured to try and highlight the lack of sea room in an area which is not a recognised boarding/landing position.
London Pilots Council	The requirement for accurate speed and position when manoeuvring large vessels is paramount. Port of London Pilots use portable pilot units, PPUs to maintain accurate rate of turns (ROT) , turn radius and position prediction to maintain a correct course,	The Applicant notes this amended position from LPC and would note that the Applicant's proposed SEZ broadly matches the proposal put forward by LPC directly to the Applicant, and at Deadline 4B. Notwithstanding this the LPC appear to have taken a point made by Capt Simon Moore out of context. This comment was made

Interested Party	Key points raised in the Submission	Applicant's response
	speed and vessel position when Piloting large deep draft and ULCS vessels. It is simply not possible to maintain the required level of accuracy whilst manoeuvring large vessels in a sea area such as the NESP and in close proximity to a windfarm by simply looking out of the window as Captain Moore suggested in his evidence. Fig.C clearly shows that by overrunning the turn position by 1.0mile or 8 minutes in time or losing the rate of turn and increasing the turn radius then the vessel will be in close proximity to the Windfarm within a very short space of time. The red line boundary proposed by the applicant removes any margin the Pilot may have had for speed and position, traffic density or heading allowance for weather. Fig.C [of their representation] gives a clear picture of the requirement for a 1 mile SEZ in addition to the required 2 miles of sea room.	with regards to the sole use of radar for collision avoidance and target detection. There are many navigation techniques and methods which can be utilised to ensure the required level of accuracy is maintained and this is not disputed. The prudent mariner should use all available means at their disposable to ensure navigation accuracy against the intended route is maintained at all times. As per 2.8 & Fib B. If a pilot has successfully managed to skilfully navigate their ship out from the Thames where accuracy is critical and the available sea room is more confined then why would the vessel all of a sudden overrun by 1nm? The intended track shown takes the outbound vessel to 0.5nm of the NE Spit buoy. This is bad seamanship in some respects because if a vessel was proceeding north from the vicinity of the NE Spit pilotage diamond the outbound vessel would not be able to alter her course to starboard to give way in a collision situation. Instead she would be better routeing further to the north of the NE Spit buoy to give more sea room.
London Pilots Council	**Captain Simon Moore's comments on the LPC DL4 submission** It is the opinion of the LPC that Captain Moore is greatly lacking in actual experience of manoeuvring large vessels in close proximity to windfarms and that	The LPC are correct that Capt. Moore does not have the exact same experience as they state with regards manoeuvring large vessels close to windfarm and this is not disputed. This does not however mean that the opinion expressed by Capt. Moore is irrelevant. All Master Mariners and Pilots undergo

Interested Party	Key points raised in the Submission	Applicant's response
	the quality and relevance of his 'expert' opinion on the challenges to the safety of navigation that mariners face around windfarms can add little or no value to the process. Explanation of LPC's opinion are included in section 4 of their representation.	comprehensive training throughout their careers. They use their skills and experiences gained over many years and apply this to the unique situations and challenges that are encountered. As a Class One Senior Pilot at Dover Capt Moore regularly piloted large cruise ships of up to 300m in length. These vessels were constrained by their draft with often just 1m under keel clearance when manoeuvring or less. These ships had a surface windage area of in excess of 10,000m^3 and were very susceptible to the effects of the wind. The approaches to the Port of Dover required the ships to pass within 0.5nm of the cliffs and shallow water. The entrance at the port is just 204m wide and to get these large ships into the port in strong winds and tides required the same skill and accuracy. Therefore, the LPC claim that Capt. Moore does not have the exact same experience as some of the local pilot that the expert opinion is invalid appears ill founded. The draft information in paragraph (4.4) is incorrect, for clarity the "Pride" class vessels have a maximum draft of 6.40m and the "Spirit" class vessel 6.80m. The LPC have again taken comments Capt. Moore made regarding the maximum size of vessel to transit the inshore route out of context. At ISH8 Counsel for the Applicant asked Capot. Moore to respond to the comments made by Richard Jackson of ESL who stated that in his opinion the largest vessel which would safely transit through the inshore route was high sided car carries or around 140m in length. Capt. Moore responded to confirm that as a master of a vessel larger than this he would be able to transit the inshore route without issue or concern.

Interested Party	Key points raised in the Submission	Applicant's response
		The LPC are correct that there are no windfarms on the Dover to Calais route and this is not disputed. The LPC are incorrect by stating that Capt. Moore has no experience whatsoever of navigating in and around windfarms. When employed as a PLA pilot predominantly using the NE Spit Capt. Moore regularly passed the Kentish Flats windfarm. The windfarm had not long been completed and on several occasions observers were on board from Marico Marine who were completing a study on the effects of windfarms on marine radar. Capt Moore recalls that at the time the LPC were very anti windfarm and it would seem this view has not changed. Other experience of transits in and around windfarms includes the Scroby Sands off Great Yarmouth and numerous windfarms on the west Danish coast. Windfarms can be viewed as a physical barrier where ships cannot navigate, they are an obstruction. This philosophy can then be adapted to the Dover to Calais route where there are a number of sand banks which limit the route the vessel can take. An example here would be the approach channel to the Port of Calais. This channel runs between the coastline of France and a sandbank with the channel narrowing to 0.3nm at its narrowest point.
London Pilots Council	**Radar usage** During the last hearing Captain Moore criticised the radar range scale in use, the pulse setting and the sensitivity settings of the radar picture in the LPC	The Applicant notes this and has provided a further response at Annex A of this submission.

Interested Party	Key points raised in the Submission	Applicant's response
	Submission 4, Fig.7. Captain Moore claimed that the range scale was in his opinion unsafe and should be set at 1.5 miles for anti collision. The following examples show just how incorrect Captain Moore's testimony was. Captain Moore's Radar scale of 1.5 miles. Target appears on radar screen at 1.5 miles. If his vessel speed is 15 knots then the time available to determine if risk of collision exists is 6 minutes, but only if the target is stationary (1.5 ml / 15 kn = 0.1 x 60 min = 6 mins) If the target is a vessel moving at 15 knots then the closing speed on a reciprocal course is 30 knots, Captain Moore's Radar screen gives him only 3 minutes to determine if risk of collision exists. LPC Pilots Radar scale 3 miles offset = 4.5 miles. Target appears on screen with 18 minutes to determine if risk of collision exists and for a target on a reciprocal course and speed, a full 9 minutes to appraise the situation and take avoiding action.	
London Pilots Council	**Radar usage** Examples of where alterations were required to avoid collision in the proximity of London Array Offshore	The Applicant notes this and has provided a further response at Annex A of this submission.

Interested Party	Key points raised in the Submission	Applicant's response
	Wind Farm and Kentish Flats Offshore Wind Farm are presented in Figures 1 and 2, and paragraphs 5.5 to 5.10 of their representation. These examples "demonstrate[s] very clearly why the LPC require a 1.0 mile exclusion zone in addition to the 2 miles sea room to the North and West of the proposed Windfarm extension".	
London Pilots Council	**Radar Pulse Settings** The LPC suggest that the expert opinion given by Captain Moore on the 'Pulse Settings' on marine radar to be incorrect and misleading Captain Moore described the M1 and M2 'pulse settings' shown on the 3mile radar plots in the LPC submissions to be incorrect and described them as "long pulses". Without going into the science of pulse length, short pulse (SP) energy gives clear sharp definition of fixed targets at very close range typically buoys, berths, anchorages and channel edges. Medium pulse (MP) energy gives adequate definition of targets for plotting, such as target vessels, racon buoys and use in passage monitoring. Long Pulse (LP) energy is used	The Applicant notes this and has provided a further response at Annex A of this submission.

Interested Party	Key points raised in the Submission	Applicant's response
	typically in making landfall at long range. See Fig.3 [of their representation]. On most marine radars the pulse settings are automatically selected as the range scale is changed. The Kelvin Hughes operation manual shows Short Pulse (SP) for ranges 0.25, 0.5, 0.75 and some 1.5 mile ranges. Medium Pulse (MP) is an auto setting for ranges 3 and 6 miles and finally Long Pulse settings (LP) for 12 and 24 and radars with a 48 mile ranges. The radar plots shown in Figs.1 & 2 [of their representation] above and in the LPC Submission 4 all show a common Kelvin Hughes Marine radar set on a medium range scale 3 miles with an auto select medium pulse, M1 or M2 setting, in accordance with manufacturers guidelines. Clearly Captain Moore's expert opinion on the radar range in use to determine if risk of collision exists and the use of pulse settings was incorrect and misleading. Captain Moore's opinions on radar range scale, pulse length and use of radar as a means to determine if risk of collision exists, effects of windfarms on radar clutter, false echoes, loss of line of sight, loss of AIS	

Interested Party	Key points raised in the Submission	Applicant's response
	targets, small vessel movements, the stopping ability of large vessels and navigation in reduced visibility around windfarms are not in keeping with best practice of good seamanship. To summarise Captain Moore's expert evidence then clearly he has no relevant experience of manoeuvring large deep draft vessels in the proximity of Windfarms and consequently his lack of experience of the challenges to the safety of navigation to Mariners in the proximity of any Windfarm whatsoever suggests that, in the opinion of the LPC, he is in this particular application unfit to challenge any of the data or evidence provided by the LPC.	
London Pilots Council	The collision regulations (COLREGS) relevant to the LPC comments and opinion are as follows: • Rule 5 Lookout • Rule 7 Risk of Collision, in particular reference to long range scanning and systematic plotting for early warning of risk of collision • Rule 8 Action to avoid collision. Special reference to positive, ample time and due regard to good seamanship • Rule 14 Head on situation • Rule 15 Crossing situation	The Applicant notes this and has provided a further response at Annex A of this Deadline 6 submission.

Interested Party	Key points raised in the Submission	Applicant's response
	• Rule 19 Conduct of vessels in restricted visibility, special reference to d) Ample time	

2.5 Port of London Authority and Estuary Services Limited

Interested Party	Key points raised in the Submission	Applicant's response
PLA and ESL	**Action Point 7 – Risk Controls** Those risk controls which were identified, but subsequently not taken forward, were given further consideration following the working group, but were not adopted as a result. The risk controls that were not adopted were deemed not to be cost effective at the time, or not necessary due to the residual risk scores, but were kept under consideration/review. The two final points on the list were identified in the Terms of Reference of the group, but did not evolve into specific risk controls during the course of the review. However, the PLA's powers and rules and regulations are subject to regular review. A table of the recommended/ existing risk controls and status were provided in their representation.	The Applicant notes that the PLA have chosen not to implement two "recommended" risk control measures from the NRA Working Group 2015 on the Safety of Navigation in the North East Spit Area. These include: • **Recommendation 5**: Installation of additional Met Sensor in vicinity of NE Spit. • **Recommendation 7:** Form a working group consisting of the PLA, ESL and Peel Ports Medway to undertaken study examining the option, benefits and risk of charted pilot boarding areas as opposed to the single diamond. It is not clear the metric by which these risk controls were given further consideration, or whether the decision to not take them forward was undertaken by the PLA or the wider Working Group Attendees. The Applicant notes that as the PLA have chosen not to implement these controls then there is no basis for any suggestion that the risk is at the limits of tolerability currently. A significant number of other controls were either not adopted, or not assessed to identify the full extent to which risk controls may mitigate any risk with the NE Spit Operational Area. The Applicant notes that these risk controls had the following effectiveness applied at them:

Interested Party	Key points raised in the Submission	Applicant's response
		• Met Sensor – 5% effective for likelihood and 5% effective for consequence reduction. • Chartered Pilot Boarding – 30% effective for likelihood and 20% effective for consequence reduction. The Applicant wishes to note that it is willing and able to provide a Met Sensor (Recommendation 5) on a WTG located at the NW extremity of the TEOW, and provide meteorological data to the PLA and ESL – thereby providing a reduction in the baseline risk to navigation in the area. The Applicant also notes that Recommendation 7 is for the establishment of a working group to undertake a study into defining pilot boarding locations within the NE Spit Operational Area. As the Applicant has proposed the establishment of a Shipping and Navigation Liaison Group for the NE Spit area, this recommendation could be taken up by the Group. Therefore, the Applicant is willing to aid and assist in the development of the defined pilot boarding locations, which would have a further reduction in the TEOW NRA Baseline risk in the area. The Applicant also notes that "Planning of critical/high risk vessels with ESL/Pilot/VTS" is a control measure in place, the details of which vessels types and sizes this applies to is unclear and no procedure has been issued to date which suggests these vessels are individually assessed. This control measure suggest that large vessels or during times of adverse MetOcean conditions vessel transfers are individually assessed. As such, even with the TEOW an individual assessment for high vessels would be carried out, such that any

Interested Party	Key points raised in the Submission	Applicant's response
		transfers considered unsafe, would not be undertaken. This is a strong control measure to maintaining navigation safety within the study area and should be very effective an ensuring unsafe acts are not undertaken. Based on this risk control, assuming a clear, documented and followed procedure is in place, the Applicant considers it highly unlikely that unsafe pilot transfer operations could ever be carried out at the NE Spit pilot boarding area, with or without the TEOW being in place.
PLA and ESL	**Action Point 17 – Potential Commercial, Employment or Economic Effects** 238 vessels were served by ESL in the area of the Elbow in 2018. One third of the boardings and landings took place during or adjacent to periods when ESL was operating a restricted service and the Sunk pilot station was either off station or restricted. The remaining two thirds of vessels using the area of the Elbow would have done so as a result either of the sea conditions, or due to traffic considerations. Operations which took place when the Sunk pilot station was off station or restricted almost certainly took place in the vicinity of the Elbow as a direct result	The Applicant notes that the number of vessels served within the Elbow Operational Pilot Boarding area in 2018 (238) is 50% greater than that served in 2017 (157 served). It is not clear, from the information supplied by ESL as part of the examination process, why such a large increase has occurred. The Applicant notes that this increase has occurred during the DCO Application for TEOW, but has not been identified in consultation meetings with either the PLA or ESL. On analysis of the ESL / PLA supplied Off Station / Restricted periods (provided as Annex D to Appendix 22), then it appears that the Elbow operational area has been the only "On Station" pilot boarding area for the PLA (otherwise the NE Spit Pilot diamond would be used) for: • 09/01/2018 Restricted Service 21.19 hr • 20/03/2018 Restricted Service 36.53 hr • 01/05/2018 Restricted Service 10.24 hr

Interested Party	Key points raised in the Submission	Applicant's response
	of adverse sea conditions which restricted or prohibited ESL's service and the use of the Sunk pilot station. If the Elbow had not been available as the reserve option for pilotage services, it is likely that ESL would not have been able to offer pilotage services at these times. This would have caused significant disruption to these vessels, which included container ships for London Gateway and Port of Tilbury and tankers for Grays, Shell, Navigator, West Thurrock and Oikos oil terminals. It would also have had a knock-on impact to subsequent vessels due at these berths.	This gives a total time of 68 hours, and if a third of the boarding and landings took place when ESL were operating a restricted service (at NE Spit pilot boarding station) and the SUNK was off Station, then this suggests that around 71 transfers took place at Elbow during these times – approximately 1.05 per hour. If this rate of transfer is multiplied up to a yearly number this suggests around 9,000 transfers per year – more than 50% higher than the number that actually take place in the whole NE Spit operational area. The Applicant therefore questions the efficacy of this position. The Applicant notes that PLA / ESL state that the remaining 2/3 of transfers at Elbow take place due to "sea conditions, or due to traffic considerations" – the Applicant notes that transfers have taken place at Elbow during 2018 during periods of good weather conditions and with no other traffic considerations evident, which demonstrates that Elbow is also used for convenience of operators or other reasons not given in this answer. The Applicant would also note that, even within the TEOW in place, pilot boarding can be continued with the Elbow area, and that sea room is markedly increased immediately to the south and south east of Elbow buoy up to the NE Goodwin pilot boarding diamond, such that it is Applicant's view, current operations could be maintained within the NE Spit pilot diamond or the area immediately South and south east of Elbow with the TEOW in place. The Applicant also notes that the sea room of 2.1nm as created by the SEZ at Elbow meets requirements of the LPC.
PLA and ESL	**Action Point 17 – Potential Commercial, Employment or Economic Effects**	

Interested Party	Key points raised in the Submission	Applicant's response
	If the proposed development goes ahead, the use of the Elbow will be [more commonly] restricted or inhibited, which will increase the times that pilotage services are unavailable and, in turn, decrease the commercial attractiveness of these ports and terminals. The effect of that would be to reduce the employment and economic opportunities offered by the pilotage services, ports and terminals. ESL maintains its position that as a result of the SEZ there will be an increase in vessels detouring around the windfarm instead of using the inshore route (when approaching from the south). If a vessel is reluctant to transit the inshore route, it follows that they will also be reluctant to come to the inner boarding position (when approaching from the North/North-East as a result of the detour). ESL and the PLA therefore believe that there will be an increase in traffic at the existing Tongue DWD. Currently the Tongue DWD is one of ESL's least frequently used positions (86 vessels	The Applicant notes that the PLA / ESL acknowledge that Elbow remains operational as a pilot boarding area post construction of the TEOW with the SEZ in place. PLA / ESL have not provided any evidential or empirical calculations on the nature of any increase in "off station" frequency for NE Spit based on TEOW. As the Applicant has acceded to the PLA / ESL view, that a 2nm pilot boarding area plus 1 nm buffer is needed for NE Pilot Boarding area, the Applicant considers that pilot boarding at the NE Spit pilot boarding diamond remains no different with the TEOW in place, compared to the current situation. Therefore, and as described above, during 2018 there was a total 68 hours when only the Elbow pilot boarding operational area was available, representing 0.78% of the year and that this is higher than in 2016 (0.34% or 2017 (0.22%) at the time of the NRA assessment. Even with the TEOW in place, and during these times, pilot boarding will likely be possible, either within the Elbow or immediately to the South or South East and therefore the Applicant does not agree that the construction of the TEOW will prevent pilot transfers to take place. The Applicant has always considered that the inshore route remains navigable for general navigation, and this point has been agreed by a number of interested parties. Therefore, the Applicant does not consider it likely that vessels will detour around the windfarm, and therefore the Applicant does not consider that there will be a material change in the frequency of pilot boarding at the Tongue (NE Spit Deepwater) pilot boarding location.

Interested Party	Key points raised in the Submission	Applicant's response
	in 2018). The reduction in sea room between the Tongue DWD and SEZ (by approx. 0.7nm) would require the Tongue DWD to be relocated (even if there is no increase in usage). In anticipation of the extension progressing North, the potential for an increase in use of the Tongue DWD and the fact that we currently don't have a 'relocated' position for the Thanet North Buoy (and therefore no prediction of its effect on traffic behaviour approaching the Tongue DWD), ESL would suggest a relocated Tongue DWD should be approximately 2.4nm miles North/North-East of its current position. This will keep boarding and landing at a safe distance from the Tongue anchorage and the northern boundary of the extension but will inevitably increase passage time and running costs to ESL and pilotage.	The Applicant does consider that the use of the Tongue Deep Water Diamond may increase, due to the proven, trend for larger deeper draught vessels visiting the Thames Estuary in the future. Also, the Applicant notes that pilot transfer operations at the Tongue (Deep Water Diamond) are currently underutilised in preference to the boarding and landing of pilots (even for deep draught vessels) at the NE Spit pilot diamond. The Applicant assumes that this is due to operational efficiency from minimising ESL pilot launches transit distances and reducing pilotage time for pilots on board a vessel. This has been a strong driver for ESL / PLA in recent years due to pressure to improve services. The Applicant notes that revenue gained by PLA and ESL from transferring a pilot is fixed for the whole of the NE Spit area for boarding and landing charges (either a pilot or other person). Details on commercial concerns has been provided in a Shipping Commercial Assessment Response at Appendix 26 (Annex C) of this Deadline 6 submission. In terms of pilot charges then these are also fixed for the NE Spit and no variation is provided for between the NE Spit and the Tongue (Deep Water boarding diamond). Therefore, commercially, ESL and PLA benefit from boarding and landing pilots as close to the pilot launch base as possible in vicinity of NE Spit Diamond, even though this is not the most efficient operation for the vessel, whilst noting that in some metocean conditions there are also operational benefits to transferring around the pilot diamond The Applicant notes that the nature and extent of any relocation of the Tongue Pilot Boarding Station, would in the most onerous conditions (that of a WTG located close to the SEZ boundary at the closest point to the Tongue) would represent a maximum relocation distance of 0.7nm (as noted by the

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		PLA / ESL).). See Annex E of this document. It is unclear why the Tongue pilot diamond would need to be relocated by 2.4nm as specified by the PLA / ESL. The Applicant would also note that some 770 pilot transfers took place in ESL operational areas termed E Margate and NE Buoy, nearly 10 times the number that take place at the Tongue and where sea room is significantly less than will be available at the Tongue post TEOW construction, and where the TEOW has no impact on sea room. Effectively the distance being asked for at Tongue by the PLA, is not available at other pilot boarding areas that are used significantly more and seems to have no basis. The Applicant notes that the TEOW risk control – Shipping and Liaison Group would be well placed to consider the need and extent to relocate the Tongue pilot boarding station, once the final position of the North Thanet buoy is confirmed and final layout of the TEOW is known.
PLA and ESL	The PLA and ESL's comments on the SEZ Material Change application are set out in their Summaries of Oral Submissions at ISH8. The PLA and ESL will respond to the Applicant's SEZ Material Change consultation by the Applicant's consultation deadline of 26 May. The PLA and ESL's response will be consistent with their submissions made at Deadline 4 and subsequent deadlines.	This is noted by the Applicant and full responses to the PLA and ESL submission is provided in Appendix 28 of the Applicant's Deadline 6 Submission.

Interested Party	Key points raised in the Submission	Applicant's response
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** The additional data referred to was in the form of AIS or Succorfish data. Recreational vehicles do not tend to carry AIS equipment, so the additional data does not accurately capture the increase in recreational vessels that occurs in the peak summer period of August. Therefore the data still relies on on-site summer monitoring which was done in June rather than in August; August is the busiest time for recreational traffic and therefore would be the reliable month on which to base the assessment for and risks to recreational vehicles.	The Applicant notes this response and can confirm that the data were used to validate the existing MGN543 compliant survey. The surveys adequately characterised recreational traffic. As has therefore been confirmed the MGN543 compliant survey represents an appropriate and adequate characterisation for the purposes of undertaking an EIA [REP4-030]. The Applicant can also confirm that within the region it is frequently the case that reliance is placed solely on AIS data, as is apparent from the PLA's 2015 NRA for the NE Spit. The Applicant has sought to go beyond this current practice and provide a comprehensive dataset drawing existing AIS data, site specific surveys, and other appropriate sources including RYA and MMO data for recreational sailing and commercial fishing respectively. This combination of data represents a robust characterisation of the receiving environment. In so far as any changes to recreational vessel traffic in the areas considered within the NRA, it is also the case the additional adopted risk controls, "Shipping and Navigation Liaison Group" and "Enhanced Promulgation of Information", specifically target recreation sailors and as such any increase risk brought about by the TEOW can be effectively mitigated, out with of any comments on the survey provided by the PLA / ESL, which the Applicant does not consider valid.
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** The 1 mile buffer is in relation to boarding and landing operations specifically. Only having the 2 miles plus one mile buffer at the NE Spit area will not give ESL the	The Applicant can confirm that the searoom available at NE Spit represents in excess of the 2nm sea room and 1nm buffer requested by PLA, ESL and LPC during previous submissions. This distance has been validated against the spatial pilotage distribution data and AIS derived density charts prepared by LPC and the Applicant respectively [summarised in section 2.5 of REP5-039]and evidentially the Applicant has significantly minimised interactions with ESL's commercial operations. Noting the stated requirement for

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	flexibility required to undertake transfers in the full range of MetOcean and traffic conditions that they would normally expect to encounter on a regular basis.	flexibility, the Applicant makes reference to the points made above, specifically that pilotage operations presently appear to undertake boarding and landing of vessels over the wider area for reasons of ESL preference. For example, vessels the under utilisation of the Tongue Deep Water Diamond whereby vessels are often drawn as close to the pilot launch base as possible and in vicinity of NE Spit Diamond, as although this is not the most efficient operation for the vessel, it reduces the travel time for the ESL launch. Correspondingly, the Applicant has demonstrated that utilisation of Elbow is prevalent during good weather conditions and indicative of ESL commercial convenience and not purely due to bad weather. The usage of the wider NE Spit area for the landing and boarding of pilots ensures additional operational contingency to ESL / PLA. Based on the absolute numbers of pilot transfer distributed over the whole NE Spit operational area, the only area that could be materially impacted is the Elbow area, and for reasons set out above the Applicant does not consider this poses an issue and particularly given that boardings can continue at NE Spit pilot boarding station, and immediately to the north, south and south east of the Elbow buoy. Notwithstanding this, it is noteworthy that LPC are in agreement that the distance at Elbow location is acceptable.
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** The max safe sea-room has been calculated based on a standard turning circle with an allowance for the pilot transfer time, but does not make any allowance for non-standard situations	The Applicant can confirm that the searoom available at NE Spit represents in excess of the 2nm searoom plus 1nm requested by PLA and LPC during previous submissions and further detail is provided by the Applicant on how these requests were reconciled with guidance and data within Section 4 of REP4C-003. The 2nm sea room is precautionary when considered against the turning circles of vessels as summarised in the REP4-018 Table 11 and the accompanying text (which draws together turning circles by various lengths in

Interested Party	Key points raised in the Submission	Applicant's response
	which may occur as a result of traffic conflicts of emergency scenarios, which is why the additional buffer zone of 1 mile is critical.	accordance with MGN guidance, MSP guidance and IP submissions) and when considering the maximum turning circle for a 333m LOA vessel is 1.7nm (noting this includes a 0.6nm allowance for pilot transfer time) there is already an extra 0.3nm included that can be available for any traffic conflict associated emergency scenario (a further 3min of travel assuming the vessel is unable to further alter course or speed in this time). Noting that the 333m LOA vessel is exceptional (and subject to further risk assessment by PLA and LPC) it is reasonable to assume that other risk controls and indeed operational responses by bridge teams may serve to minimise traffic conflicts for vessels of this size. A more credible normal upper vessel size of 240m (noting with reference to Table 4 of REP4-030 that only 1% of traffic transiting the inshore gates is greater than this length) would have a turning circle of 1.4nm (noting this includes a 0.6nm allowance for pilot transfer time) and thus an additional 0.6nm of the sea room is available for any traffic associated emergency scenario without compromising any safety buffer allowance. It should also be noted that in addition to this, additional space is available to utilise for most vessels to the west of the North Foreland sector light in the event of emergency and when required and safe to do so. In summary, the Applicant notes that caution should be applied about compounding safety factors for manoeuvring vessels in any determination of sea room and the Applicant has sought to do this within the turning circle calculation itself and also in the margin between the turning circle and 2nm as requested by IP's. It is also noted that the 1nm safety buffer (proposed by the PLA and adopted by the Applicant for the area of NE Spit pilot boarding diamond) remains an option for use, as per its definition, when required.

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PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** Concern over the CRM was not only in the results, but that it was based on one month's data for December, and that month was the lowest in a 12 month period in terms of the number of vessels using the NE Spit pilot stations. There would also have been lower than average number of recreational vessels, as it was winter data.	The Applicant notes this, and can confirm that following a further CRM, undertaken by an independent expert (Anatec), the risk with the SEZ has changed from a 1 in 48 year occurrence to a 1 in 47 year occurrence. The full analysis is presented at Appendix 42 of this Deadline 6 submission. The revised CRM note is based on September 2017 data which were confirmed to be more representative of busy times of year by PLA/ESL at ISH2 in their oral representations. The results from the independent Anatec CRM demonstrate that baseline modelled collision return rate of 1 in 48 years is comparable to the 1 in 6 years return rate computed as part of the original NRA when it is considered that: • The Anatec study area is approximately a quarter the size of the original study area of the original NRA CRM. • Collisions involving anchored vessels are omitted from the Anatec CRM, which were included int eh original CRM. • Collisions that only result in material damage are considered, whereas all collision were considered in the original NRA CRM. The Anatec CRM showed that there was around a 4% increase in collision risk in the smaller study area assessed, attributable to the TEOW with SEZ in place, which is lower than the difference seen in the original CRM. This difference is associated with:

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		• The substantial reduction in in RLB between the PIER, on which the original study was conducted, and the application RLB, and then further reduced with the introduction of the SEZ, such that the extent of the TEOW in the Anatec study area is considerably reduced compared to the original NRA CRM. • Inclusion within the Anatec CRM results of embedded mitigation measures not considered within the original NRA CRM.
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** The four recommended additional risk control measures (para 107 of the amended NRA) include two that are also embedded risk controls (being promulgation of information and optimisation of the orientation of the TEOW). The two additional mitigation measures proposed are moving buoys and the shipping liaison plan. As for the moving buoys, 'aids to navigation management' is also an embedded control so it is not clear what benefit these would add, and the shipping liaison plan is still in the early stages of drafting by the Applicant and has	The Applicant has identified four additional risk control measures, two of which are enhanced embedded controls as detailed with the NRA A, the Statement of Evidence, and clarified within ExA Action Point 12 arising from the ISH8 of: • Enhanced Promulgation of Information • Optimisation of TEOW layout Therefore, the Applicant does not consider these controls measures to be embedded within the project, and the Applicants commitment to go beyond that which is included within the embedded level of risk demonstrates its commitment to ensuring safety of navigation. In regard to "Review of Aids to Navigation" this control cannot be considered embedded within the project at consenting stage, as the need and magnitude of any Aid to Navigation change / addition is not known until final layout of the TEOW is known. The Applicant has committed to carry out a review of Aids to navigation once the final layout of the TEOW is known.

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	yet to be agreed, so it is unclear to what extent, if any, it will reduce the risks to navigation. In any event, the controls which the Applicant proposes would still cause adverse impacts to the PLA and ESL from an operational perspective, and the Applicant further proposes that they would be implemented by the PLA, ESL and other IPs and the expense of the latter group, rather than the Applicant. For these reasons, the PLA and ESL do not consider the Applicant's proposed mitigation to be adequate.	The Applicant maintains these controls would not cause an "*cause adverse impacts to the PLA and ESL from an operational perspective*" – the controls have expressly been identified to maintain navigation safety for PLA / ESL, and any operational issues, which the Applicants does not agreed will occur, cannot be as a result of these controls. The Applicant has not proposed that the PLA or ESL would be responsible for the implementation of any TEOW risk control, the responsibility being that of the Applicant only. The attendance and involvement of the PLA / ESL in the Shipping and Navigation Liaison Group, whilst ideal, rests entirely with the PLA / ESL as commercial users of the NE Spit area. The Applicant would note that the purpose of the Shipping and Liaison Group is to provide a forum for the identification of navigational safety issues, the maintenance of communication of the use of the NE Spit area with the TEOW in place and aid dissemination of information. Whilst the position is that the mitigation and risk control measures are appropriate to ensure the project is tolerable, the Applicant is disappointed that PLA / ESL do not consider mitigation that may be delivered by IPs to be appropriate. In many circumstances third parties are often best placed to deliver mitigation noting that it would be expected that the Applicant would fund and facilitate these. The Applicant notes ESL and PLA's concerns on the adequacy of the additional risk controls relate to operational matters. The Applicant can further confirm that it has minimised interactions with PLA and ESL's commercial operations

Interested Party	Key points raised in the Submission	Applicant's response
		through introduction of the SEZ, and a commitment to agree an appropriate liaison plan to ensure enhanced promulgation of information.
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** These paragraphs [114-115] do not seem to take account of the Tongue Deep Water Diamond and the fact it will have to be moved (see response to Action point 17). In the NRA the Applicant did not recommend relocating the pilot station due to the disproportionate cost/benefit of doing so, but has provided no evidence as to what the relative cost or benefits of that relocation would be. Paragraph 115 recommending mitigation 'further north' of the diamond is too vague as to be of any meaningful benefit.	In relation to the Tongue Deep Water Diamond please see response to response to Action point 17 above. The original NRA did not recommend relocation of the pilot station to the Tongue, as the hazard risk score did not mandate such a risk control and the PTBS study demonstrated that use of the NE Spit Pilot Diamond was feasible with the original RLB, which has subsequently been revised and then an SEZ put in place. The introduction of the SEZ has justified sea room for transit and pilot boarding, further negating the need for relocation of pilot boarding. The Statement at Para. 15 is clear in that it regards transfers for larger vessel can be accommodated within the existing pilot boarding operations area of the NE Spit.
PLA and ESL	**Comments on Applicant's Appendix 2 submitted at Deadline 4C: Shipping and Navigation – Statement of Evidence** The inshore route was used by the vessels listed in table 2 due to poor weather. All 7 of these voyages took place during periods of poor sea conditions at which time the	The Applicant notes that it is not clear from the data provided by the PLA the tracks of these seven vessels, and the Applicant notes (as presented in the Figures Annexed to the Statement of Evidence) that the tracks of vessels during adverse weather can be erratic and variable as suitable pilot boarding locations are identified, wind limits for berthing reach acceptable levels, berths becomes available (adverse weather can prevent transhipment of cargo by cranes causing delays) or tidal slots can be missed.

<table>
<tr><th>Interested Party</th><th>Key points raised in the Submission</th><th>Applicant's response</th></tr>
<tr><td></td><td>Sunk Pilot Station was off-station. The use of inshore route provided sufficient shelter to enable boarding and landing operations to continue and therefore for the ports to remain open to all traffic. For 5 of the voyages ESL was operating a restricted service so these vessels would not have been able to go round the outside and use the Tongue or dip down to a position to the north of the NE Spit diamond. Between December 2017 and November 2018 the NE Spit (including Tongue, NE Goodwin etc) was off station on 17 separate calendar days. During the same period the Sunk was off station on 35 separate days. With the extension in place ESL would lose the flexibility to operate outside of the identified 2 mile circle north of the NE Spit diamond, which they require to continue operations in poor weather, when other boarding and landing areas are no longer viable.</td><td>It is also the case that a question of safety needs to be raised with regards the apparent practice proposed by ESL of bringing large vessels closer to land for pilot boarding during periods of adverse weather, when ordinarily they are routed a different and presumably more appropriate route in periods of clement weather.

The Applicant considers that use of the number of calendar days to account for the number of times the NE Spit is off station is misleading, as it is not consistent with data received from the PLA (Deadline 1 Written Representations) – see below. The majority of restrictions last for a matter of hours and not whole days - the PLA / ESL submission at Deadline 1 is as follows:

5.18 Based on the information inputted by London Vessel Traffic Services (which manages and oversees the safety of navigation in the area) into the POLARIS database, the following table shows the relative number of days that the NE Spit and Sunk were off station during a 12 month period from 01/11/2017 – 30/11/2018

<table><tr><th></th><th>SUNK</th><th>NE SPIT</th></tr><tr><td>OFF</td><td>19.6 days</td><td>7.3 days</td></tr><tr><td>RESTRICTED</td><td>8.1 days</td><td>9.6 days</td></tr></table>
The Applicant does not accept the magnitude of any change to off station time proposed by the PLA / ESL in this regards, and maintains that use of the NE Spit Operational Area, including to the area south and south west of Elbow</td></tr>
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Interested Party	Key points raised in the Submission	Applicant's response
		buoy remains available and viable for transfer of pilots during adverse weather.