INFRASTRUCTURE PLANNING

THE INFRASTRUCTURE PLANNING (EXAMINATIONS PROCEDURE) RULES 2010

THE THANET EXTENSION OFFSHORE WIND FARM ORDER

Comments on Appendix 3 to Applicant's Deadline 2 Submission: Applicant's Response to Written Representations on the theme of Ports/Shipping Routes

submitted on behalf of the Port of London Authority and Estuary Services Limited

(Rule 8 letter 18 December 2018)

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Author	Winckworth Sherwood LLP
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Minerva House 5 Montague Close London SE1 9BB

DX: 156810 London Bridge 6

T 020 7593 5000 F 020 7593 5099

www.wslaw.co.uk



Solicitors and Parliamentary Agents

Para	Response summary/extract	PLA/ESL comments
	Empirical Data	
6	6 When considering matters in relation to inshore routes the Applicant would note that further evidence has been provided in response to the ExA ISH2 Action Points. Specifically, this includes the Applicant's response to ExA Action Point 14, and a series of analytical schematic plots to support ExA Question 1.12.1 (the full detail of which is presented at Annex M to Appendix 25 to the Deadline 1 submission (REP1-051)) that illustrate a breakdown of traffic. The schematics utilise the vessel traffic survey data and show the three key vessel activities, i) inshore traffic, ii) dipping traffic and iii) anchorage traffic, in this area with subplots analysing traffic by vessel draught, vessel length and vessel type. Volumes of traffic are tabulated on a per/24hr, 1 month and annualised basis. In summary this demonstrates approximately 10 vessels per day using the inshore route.	 The PLA and ESL have identified a number of issues with the empirical data as presented. (a) The Applicant states that the vessel traffic analysis data (presented schematically in Annex G to Appendix 25) demonstrate approximately 10 vessels per day using the inshore channel. This approximation appears to be taken from Fig. 35 in Annex 10-1:NRA: traffic gate A. However, Section 5.5 (Gate Analysis) within Annex 10-1:NRA refers to the inshore route as Gates A and E. The breakdown of traffic from the two survey periods is shown in Fig. 38 for Gate A as 14 in February and 18 in June and for Gate E as 31 in February and 45 in June. (b) As explained in section 5.5 of the NRA, the gate analysis (shown in Fig. 35) was based on AIS data. This limits the numbers to only those of the vessels using the gate that were equipped with AIS. If the reference in section 5.6 to traffic surveys is intended to refer to Fig. 38 being based on a wider traffic survey that includes non-AIS vessels, it would follow that the seasonality figure would show larger numbers of vessels. That could explain the 60% and 208% differences between the Fig. 35 number and the averages of the numbers in Fig. 38. Importantly, it would also mean that Fig. 35 and Annex G only represent shipping, while Fig. 38 includes all users of the inshore route. As a result, it appears that the two Figures were not truly comparable. The Applicant should

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	Minimum Safe Distances	please explain (c) It follows that the information currently provided by the Applicant does not support calculations based on an average of 10 vessels per day using the inshore channel. (d) In any case, the omission of non-AIS vessels is misconceived. While these are generally the smaller vessels that use less sea room, they have a significant impact on navigation by AIS vessels. This is because they do not interact with other vessels, partly because they lack the communications equipment but also due to low manning, many of the fishing vessels by only one person. Contrary to what might be expected, they are not more manoeuvrable than larger vessels. Experience is that non-AIS vessels largely operate without regard to other vessels, so that the AIS vessels have to accommodate them. An analysis of traffic for the purpose of determining available sea room must therefore include non-AIS traffic.
9	The Applicant's position, (as stated within the NRA), is that 0.5nm is "the minimum safe distance considered acceptable by ships masters to pass a wind farm". The basis for this distance is derived from empirical data collected during the vessel traffic surveys, which show that vessels passing the existing TOWF in the north	The surveys referred to do not show— (a) how many vessels in the survey passed 0.5nm or less from the NW and SW corners (b) the conditions (e.g. vessel size, weather, tide) in which they did so or

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	west and south west corners routinely do so at a distance of 0.5nm, and in some cases even closer than this.	(c) the reasons for passing at that distance e.g. necessitated by other traffic.
		The fact that vessels can and do pass at a distance of 0.5nm from the TOWF only demonstrates that it is capable of being a safe distance. However, the key word is 'minimum'. There will be circumstances when that minimum will be safe, but many occasions when factors such as weather conditions, size of vessel, volume of traffic and state of the tide mean that it is unsafe and a greater distance must be maintained.
		The Applicants seem to imply that passing at a distance of 0.5nm will be the planned preference of a prudent mariner. That cannot be assumed. The current closest point between NE Spit buoy and TOW is 2.7nm, which minus the 0.5nm buffer zone leaves 2.2nm, if one allows a very small, say 0.2nm, buffer for the NE Spit buoy as well, potentially the gap available to navigate is only 2nm. In such a restricted space it is to be expected that vessels may be forced to pass as little as 0.5nm from the windfarm at this point because of the high volume of traffic in the area.
		It should be noted that MGN 372 states:
		"2.8.5 Where adequate safe water exists it may be prudent in planning the voyage of larger vessels to set tracks at least 2nm clear of turbine fields.
		4.8.4 These notes do not provide guidance on a safe distance at which to pass an OREI [Offshore Renewable Energy

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		Installation], as this depends upon individual vessels and conditions. However where there is sufficient sea room it is prudent to avoid the area completely".
		It is also relevant that the MCA guidance relates to appropriate minimum safe distances for passage. As explained below, greater distances will be needed for safe boarding and landing operations.
10	This minimum safe distance of 0.5nm was also confirmed, at the ISH2, by Capt. Simon Moore, the Applicant's expert witness who is an active master mariner and former PLA pilot.	(a) A minimum safe distance for passing vessels will not provide sufficient room for the safe boarding and landing of pilots in a high density traffic area. Allowance must be made for a turning circle for the vessel manoeuvring to board or land a pilot, the position (centre point) of which will be governed by
11	Also, the London Pilotage Council (LPC), who represent Port of London Authority Pilots (REP1-104) state in paragraph 16.1 of their representation that it is the	e.g. size of vessel, weather conditions and state of the tide, as well as the density and positions of other vessels in the area.
	professional opinion of the LPC that all vessels should not approach any wind farm at a distance of less than 0.5nm.	(b) For boarding and landing operations a 1nm buffer should give a safe distance when combined with an operational area (i.e. the safe area for boarding and landing) of 2nm. Whilst ESL

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12	However, both PLA (REP1-142) and ESL (REP1-141) contest this value, stating a buffer of 1nm between a route and the proposed WTGs should be considered. This is neither evidenced by existing		have boarded/landed pilots within 1 nm of a windfarm, this is rare and typically an outward bound vessel (pilot already on board) so the arrangements are made with the pilot beforehand.
	practise (vessels transit <0.5nm from the east of the operational Thanet OWF), or any specific PLA guidance documentation (received during consultation), and within PLA Statutory Harbour Authority channels is not evident.	(c)	The most severe disruption is often caused by fog, necessitating a larger buffer zone. The foggiest period of the year is mid-February to mid-April, not December and January as stated in the NRA, when there is more traffic than in December and January. With more traffic there is also an increased need to be able to maintain a larger buffer zone so that there is room for all vessels to navigate safely in foggy
13	It is the Applicant's view therefore, as set out in representations made during ISH2 by Simon Moore, active Master Mariner, the NRA (and associated studies), and the LPC that 0.5nm is a reasonable minimum distance by which the prudent mariner would expect to avoid a wind.	(d)	Fog also Increases our reliance upon radar. In foggy conditions more reliance is placed on vessels' radars for navigation so there is a special need to keep well away from wind farms so as to avoid the risk of radar interference from the turbines.
		(f)	(The issue of turbines causing echoes is recognised in MGN 372 section 2.8.)
		(g)	As regards current practice around TOWF:
			(i) In the ES Chapter 10 - Shipping and Navigation, Fig.10.11 -Vessel Pilot Tracks shows that the pilot operation at the NE Spit does not typically operate within a mile of the TOW site. This is because ESL deliberately avoids the risks that flow from serving vessels near a windfarm.

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		(ii) The Applicant's surveys confirm that only a minority vessels passes at an approximate distance of 0.5nm or less, with the majority maintaining a greater distance (see ES Chapter 10 – Shipping and Navigation as regards traffic gates A, B, C and E and Appendix 25, Annex H to Deadline 1 Submission: Gate Analysis Foxtrot as regards Gate F).
		(iii) The NRA references section (page 134) mentions the document Assessing the impacts to vessel traffic from the offshore windfarms in the Thames Estuary (page 143). This document suggests there are three main considerations for passage plans surrounding windfarms, as follows:
		1 The distance should be a comfortable buffer so that if an incident was to occur on board, or another vessel was encountered, there would be sufficient sea room to make an evasive manoeuvre.
		2 Installation effects on visibility. Visually a windfarm may obscure smaller vessels (recreational/fishing/maintenance). If sufficient clearance is given from the edge of the windfarm then there is more time to respond to a collision situation. Situational awareness would be improved by greater buffers being maintained (this could also lessen the possibility of radar interference from the turbines).
		3 Commercial route economy (fuel and passage time). In general, and where no other constraints are present,

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		commercial shipping typically follows straight routes between waypoints. It is clear from factors 1 and 2 that the assumption that 0.5nm as a buffer can be applied to all, or even the majority, of vessels operating in this area cannot be made. (h) The assumption that 0.5nm would be a reasonable minimum distance appears to assume that a prudent mariner would normally plan for this minimum. That is wrong – see (a) to (e) above and the comments on para 9 – as it ignores the other factors that must be allowed for.
	Vessel Size	
16	The Applicant's vessel traffic radar, AIS and visual observation survey was taken over 32 days.	 (a) It should be noted that four days of the survey period is supported by AIS data alone, not survey. Due to weather conditions the survey vessel was only able to remain on station for 28 days, a relatively short data period. (b) The survey took place in February and June. February is an appropriately representative months but June is not all time.
		appropriately representative month, but June is not. It is noted as a quiet period. The peak is August. As a result the survey does not take full account of seasonal traffic fluctuations.

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17	The PLA and ESL response to ExAQ 1.12.1 at Deadline 1 states the inshore route is 'routinely used by vessels of up to 9m draught and up to 175m length in moderate metocean conditions. It is occasionally used by vessels up to 250m and 12m draught; this represents the reasonably maximum size of vessel that can be prudently served in moderate metocean conditions on the inshore route'. The PLA and ESL WR therefore appears to accept that it is appropriate to use a reasonable maximum size of vessel of a length that is shorter than that identified in the empirical data from the vessel traffic survey.	The PLA and ESL do not accept the position as stated by the Applicant and their response does not imply otherwise. The PLA/ESL response correctly stated routine use and use in stated conditions. That does not preclude use by larger vessels when circumstances permit, and larger vessels do in fact use the inshore channel. All those present at the workshop on 27 February agreed that calculations should be on the basis of vessels with a maximum draught of 11.5m.
	Sea Room	
20	When considering sea room the Applicant notes its Deadline 1 submission – NE Spit Sea Room Distances – presented at Figure 2 - which shows sea room distances to the west of the proposed TEOW Red Line boundary (RLB). The Applicant also notes that there has been no evidential / empirical basis for the reduction in RLB requested by any IP (except from LPC where empirical calculations are documented – but not expressed for either the inshore route or	There is no "empirical" formula that can be adopted. So far as the PLA and ESL are concerned the RLB must be moved because in its present proposed position there is insufficient safe distance and sea room, this for all the reasons explained elsewhere in these comments. The following comments on paras 20 and 21 reflect that concern in relation to the RLB as presently proposed. However, the PLA and ESL recognise that these matters were discussed in the workshop on 27 February 2019 and were glad to hear the Applicant's positive suggestion to change the RLB, They look forward to seeing the Applicant's proposed revised RLB.

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	for "dipping" traffic).	to recognise that the requirements for vessel passage are not the same as those for boarding and landing where, as explained above, more sea room and longer distances must be available.
21	When considering how to determine the minimum safe searoom the Applicant would draw the ExA's attention to the LPC's representations, with regard to necessary sea room for a shipping route, as calculated through reference to MGN543 (Section 10.3, MGN Compliance at pg 6 of the LPC Action Point document, REP1-104), where sea room calculations are made on the basis of a vessel with length of 400m and a beam of 50m, and are referenced to the shipping route to the north of the proposed TEOW passing through the Tongue pilot boarding station.	 (a) The LPC's sea room calculation, based on MGN 543 recommendations, is representative of a best case scenario. There is no allowance for the effects of bad weather or other traffic, and the LPC says as much. It is precisely to make such an allowance that the PLA and ESL seek provision for a 2nm operational area (with 1nm buffer) so as to enable that a safe and dynamic service to remain in place. (b) It should also be noted that the calculations here are for shipping and passing vessels, not boarding and landing. As regards the reference to shipping routes, all those present at the 27 February workshop agreed that they would not wish to see the area designated as a sea lane.
	Sea Room – Inshore Route	
24	Based on the maximum length vessel transiting the inshore route from the vessel traffic survey, the MSC ANTIGUA at 299m length overall and beam of 48m (which is 49m longer than the PLA state the maximum occasional use vessel length is, and comparable with the beam applied by LPC), and using the same calculations as presented in the LPC WR then 1.40nm is calculated as the necessary sea room	The ExA will note that these numbers relate to vessel passage, not pilotage.

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	width for the inshore route. Adding in the 0.5nm "minimum safe distance considered acceptable by ships masters to pass a wind farm" to this a total sea room width of 1.90nm is required for the inshore passage.	
26	Also, when considering the PLA determination that a 250m length would be a reasonable maximum vessel, the four largest vessels identified in the MGN compliant vessel traffic radar, AIS and visual observation survey, have lengths and beams as follows: • MSC ANTIGUA (Container Ship) at 299m length overall and 48m beam • COLUMBUS (Cruise Ship) at 245.6m length overall and 32.23m beam • FPMC P IDEAL (Tanker) at 243.8m length and 42m beam • MANON (Vehicles Carrier) at 227.9m length and 32.29m beam as follows: • MSC ANTIGUA (Container Ship) at 299m length overall and 48m beam • COLUMBUS (Cruise Ship) at 245.6m length overall and 32.23m beam •	 (a) The PLA and ESL note that paras 26 to 29 relate to shipping (vessel passage), not boarding and landing. The area would still remain open for vessels on passage but for the purposes of boarding and landing pilots the area would become too restricted. (b) There does not appear to be any evidence that larger vessels would still use the inshore route. Given the reduction in sea room, the condensing of traffic and the visual obstruction the windfarm puts in place the PLA and ESL consider it likely that vessels approaching from the south will choose to go around the TEOWF and approach from the North. (c) This outcome would increase the likelihood of the Ne Spit (inner) pilot station being displaced. The NE Spit diamond would become redundant and the Tongue diamond would have to be moved further NE, due to the presence of the extension. The PLA and ESL would consider the increased risk to boarding and landing at the NE Spit to be too high and therefore would not want to operate there. The extension itself and the relocation of the pilot stations would result in more vessels going round the outside of the TEOWF.
	MANON (Vehicles Carrier) at 227.9m	(d) If boarding and landing pilots took place further out to sea,

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	length and 32.29m beam	away from the inshore channel, it would follow that vessels requiring pilotage would not use the inshore channel so that pilotage issues of sea room and safe distances would fall away. But if the pilot stations are not forced to move these problems would be as stated elsewhere in these comments.
27	This shows that the largest vessel is significantly longer than the next three largest vessels, which in general are in line with the PLA determination of 250m maximum. A vessel of 299m would therefore, in this context, be considered somewhat anomalous.	
28	When reference is made to the sea room plot at Figure 2, and submitted at Deadline 1, where a sea room distance from the Elbow cardinal mark to the TEOW RLB is presented as 2.0nm, then it is evident that the inshore route sea room remains appropriate based on LPC calculations.	

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29	Based on the LPC calculations presented above, the NRA and associated analysis, including the pilotage bridge simulations, the collision risk modelling and the expert opinion of Capt. Simon Moore (Master Mariner) it is the Applicant's firm position that the use of the inshore route would remain the same based on the submitted TEOW Red Line Boundary, and that there would be no safety or operational need for any rerouting of vessels.	
	Sea Room - Dipping traffic to take a pilot route	
33	The LPC WR does reference possible use of North East Spit Pilot Boarding station by larger vessels such as 'Havens' class vessels (which are documented in the LPC Figure 2 as having a length 333m), and states that a risk assessment has been conducted for this. The Applicant assumes this is in relation to vessels "dipping" to the NE Spit Pilot Boarding Station, and therefore asks whether a copy of this risk assessment could be made available to benchmark against the TEOW NRA and compare evidential methodologies, clarify whether the risk assessment proved use of NE Spit Pilot Boarding station was	Initial discussions between the PLA/ESL and the LPC have taken place and the question of use by larger vessels is a work in progress.

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	feasible for this size of vessel, and identify whether the assessment was based on use of the current NE Spit pilot boarding diamond.	
	Distance of re-routing	
38	However, the PLA and ESL WR contest the distance put forward by the Applicant as representative of any increase in journey re-routeing, and in their view this is closer to 14nm which assumes that the vessel would "dip" down into North East Spit boarding area to take a pilot. It is however counter intuitive for a vessel that actively chose not to navigate the inshore, would then "dip" down (into the inshore route) to take a pilot, and would more likely request a pilot at either the Tongue or NE Goodwin pilot boarding stations. In addition to this Port of Tilbury / DPWLG also identify a similar distance to PLA /ESL of 14.4nm. (see Figure 3).	 (a) Due to significant operational costs (both in time and money) to ESL and the PLA, the Tongue and NE Goodwin stations are not used unless absolutely necessary. It follows that if, as the Applicant believes will happen, the NE Spit station remains viable, that will continue to be the station ESL will use. Vessels requiring a pilot will therefore dip down to take a pilot at the NE Spit, resulting in the 14nm increased journey. (b) There will continue to be occasions when the Tongue and NE Goodwin stations are used but shippers accept that the station of choice is a matter for ESL, so there is no question of the NE Spit station ceasing to be used unless ESL considers it necessary. (c) For all these reasons 14nm is the added distance that should
40	Part of the reason for these discrepancies, is the assumed start and end point of the deviation. Notwithstanding the potential economic effect associated with the rerouteing as raised by LPC in their response, it should be noted that Port of Tilbury, PLA and ESL all assume vessels would 'dip' back into the NE Spit pilot	be assumed.

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	station. This assumption requires a vessel master to pass by NE Goodwin and the Tongue pilot stations in order to get to NE Spit. This appears to be an overtly conservative assumption that is unlikely to be borne out, in particular given the Applicant's firm view that pilotage operations are evidentially able to continue, as recorded within the pilotage simulation.	
41	On this basis and considering the variation in assumed distances submitted at Deadline 1, the Applicant maintains that an assumed re-routeing for pilotage operations of 11nm for vessels that chose to reroute from the inshore route is a reasonable basis for the purposes of assessment, noting however the Applicant does not agree that vessels would need take this diversion.	
	Collision risk	
47	Within the PLA and ESL WRs it is stated that there would be the same number of vessels slowing down and changing direction but in a reduced area of sea room, which would increase the risk of vessel collisions. Notably, however, the PLA and ESL also state that they consider the sea room too small and that vessel	There is no inconsistency. Para 4.7 of the WRs addressed two possible scenarios: (i) The NRA concludes that the inshore channel will continue to be used by the same number of vessels as at present. If that happens the volume of traffic at the inner boarding ground (NE Spit) will be unaffected, resulting in a high volume of traffic operating in a condensed area. That increases

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	would choose to reroute round the wind farm, which would consequently reduce collision risk. It is unclear which of these is considered to represent the most likely position on their case.	collision risk. Significantly section 7.3 of the NRA comes to the conclusion that risk of collision increases at the inner boarding ground. (ii) The alternative scenario is that vessels will avoid a congested area and re-route round the TEOWF. In that case the risk of collisions will reduce. It should be noted that both scenarios have a negative impact on the pilotage and pilot boat operations of the PLA and ESL. Scenario (i) would dangerously increase collision risk in the inshore area, which is prejudicial to any boarding and landing operation. Scenario (ii) would force pilot operations to move further offshore, whether to a repositioned NE Spit or to the Tongue or NE Goodwin. Any of these would give rise to significant additional costs in terms of time, longer pilot boat journeys, longer acts of pilotage and not least the cost of moving a pilot station. There would also be increased safety risks for pilots.
48	The Applicant does not accept that there would be any unacceptable increase in collision risk in this case. The Applicant notes, as put forward in response to ExQ 1.12.15, that whilst the term collision risk is used in line with common practice, the analysis is in reality based on 'encounters', considered by reference to "domain" areas drawn on a precautionary basis at a distance around the vessels in the model. This does not fully account for human intervention (i.e. the reality that a vessel	 (a) The NRA concludes that there will be a 23% increase in collision risk. The response indicates that the Applicant is prepared to accept this. The PLA and ESL invite the ExA to agree that such an increase would be unacceptable. (b) It seems to be suggested that most of the events will be insignificant encounters. Without any analysis of the events that have occurred it is not possible to say whether this is correct for the present. It must be problematic to make an assumption to that effect for the future, particularly in the

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	master would seek to avoid any collision when an encounter occurs) nor the severity of that collision, of that ESL or PLA may intervene.	context of increased risk. (c) In these circumstances the PLA and ESL urge the ExA to agree that the 23% collision risk increase cannot simply be discounted, as the Applicant seems to suggest. (d) There appears to be a suggestion that the PLA/ESL may intervene in some way. There is no explanation of the relevance of this to the enhanced risk as found by the NRA. (e) These comments ignore the PLA's/ESL's reservations about the NRA.