

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 27 to Deadline 4 Submission: Data Analysis and Validation Paper

Relevant Examination Deadline: 4

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1 Introduction

1.1 Background

- 1 This document has been drafted to address specific areas of uncertainty raised by Interested Parties (IPs) during the Thanet Extension examination in relation to the adequacy of the data used to characterise the receiving environment for the purposes of undertaking an Environmental Impact Assessment of potential impacts on shipping and navigation receptors.
- 2 In order to address these uncertainties the Applicant has sourced additional vessel traffic data (12 months SeaRoc/SeaPlanner AIS data (hereafter referred to as 'seaplanner') for the period February 2017 – February 2018) and undertaken a validation exercise comparing the datasets submitted with the application with the 12 month seaplanner dataset.

1.2 Document Objective

- 3 The objective of this document is to summarise the original datasets utilised by the Applicant, present the additional data, describe the relationships between the datasets and then provide a conclusion with regards the validity of the original datasets used to characterise the receiving environment.
- 4 This document accompanies the Deadline 4 submission and the findings are intended to be available to IPs and the Applicant in support of the HAZID Workshop (scheduled on 29 March to re-appraise hazard scoring on the basis of the Structures Exclusion Zone) and the Navigation Risk Assessment Addendum which will be completed for issue at Deadline 4a on 9 April.

1.3 Document Structure

- 5 The remainder of this document seeks to address key themes and questions as raised by IPs. Initially the themes of data uncertainty are identified in Section 2, before then presenting the following:
 - **Section 3** – identification of data sources and spatial reference locations used in the application documents and this Deadline 4 submission
 - **Section 4** – Study area
 - **Section 5** – Recreation and Fishing data adequacy
 - **Section 6** – vessel use of the 'inshore route'
 - **Section 7** – Seasonality of vessel traffic movements

- **Section 8** – Seasonality and distribution of pilotage operations
 - **Section 9** – Summary of conclusions
- 6 Each section initially presents a brief summary of the existing position with regards data utilised by the Applicant, before then presenting a data validation of that data through comparison with the 12 month seaplanner data (and other data where appropriate), and a final Applicant position with regards the considered adequacy and representativity of the characterisation data.
- 7 A final section (Section 9) then tabulates the conclusions against each of the identified themes of uncertainty.

2 Identification of key issues

- 8 Issues have been raised by Interested Parties (IPs) concerning the adequacy and representativeness (temporally and spatially) of the Thanet Extension baseline vessel traffic data (often referred to as the 'MGN 543 survey') and the validity of interpretations made from it as utilised in the Shipping and Navigation studies of the proposed Thanet Extension Offshore Wind Farm.
- 9 The themes of specific relevance to the quality of the characterisation data that have emerged from the representations made during examination, can be broadly summarised as shown in Table 1 which presents the common themes arising from the IPs and identifies the sections of this document that seek to address the themes:

The themes have been identified through reference to representations (relevant, written, and oral) and responses to Examining Authority questions and Action Points made by the following parties:

- Maritime and Coastguard Agency
- Trinity House
- Port of London Authority
- Chamber of Shipping
- London Gateway
- Port of Tilbury
- London Pilots Council
- Estuary Services Limited

Table 1 Identification of key issues and summary of understanding

Overarching theme of uncertainty	Summary of Applicant understanding	Section of this document were uncertainty addressed
Study area	Initial queries were made within representations regarding the adequacy of the study area to capture all inbound traffic	Section 4
Recreation and Fishing data adequacy	Recreational data use of the area is the subject of a Statement of Common Ground with the RYA (PINS REF REP1-036), with all matters agreed, inclusive of adequacy of characterisation of the receiving environment. It is however noted that representations have been made regarding the validity of the vessel traffic survey for both recreation and commercial fishing data in the NRA.	Section 5
Inshore Route.	The numbers and maximum sizes of vessels making use of the inshore route and NE Spit Pilot Boarding Station has been the subject of debate.	Section 6
Seasonality of vessel traffic movements.	Whilst all parties have confirmed that the Feb data is characteristic of winter data - PLA, ESL and DPWLG and POTLL maintain a position that June may not be considered as representative of a summer period.	Section 7
Pilotage Operations	IPs, in particular ESL, have indicated that June does not represent a peak month for pilotage transfers and is not therefore an adequate characterisation for the purposes of EIA	Section 8

3 Identification of data sources and spatial reference locations used in the application documents and this Deadline 4 submission

- 10 Table 2 identifies the data sources used in the Application documentation to characterise the receiving environment for shipping and navigation receptors, with reference made to the date and duration of the data, and which study made use of the data:

Table 2 Data utilised in the Application with date, duration and relevant study

Data Type	Date	Duration	Study
AIS (SeaPlanner)	01-Dec-2016 to 01-Feb-2017	2 months	Pilotage Study, PEIR and NRA (Application Ref APP-089)
AIS, Radar & Visual	07-Feb-2017 to 25-Feb-2017 15-Jun-2017 to 29-Jun-2017	28 days	NRA
RYA Boating Intensity	2016	1 year	NRA
VMS	2011 - 2014		NRA
SuccorFish	April-2017 to December-2017	9 months	Used qualitatively within the NRA and formed the partial basis of the commercial fisheries assessment (Application Ref APP-050)

- 11 The following data sources have been utilised in the validation exercise and to address themes of uncertainty raised by IPs.

Table 3 Data utilised in this data validation exercise with date, duration and relevant study

Data Type	Date	Duration	Study
AIS (SeaPlanner)	Mar-2017 to Feb-2018	1 year	Examination
SuccorFish	April-2017 to December-2017	9 months	Illustrated against wider shipping baseline for this Deadline 4 submission and inclusion in the rationale for the introduction of the SEZ (Appendix 14)

3.2 Spatial reference locations

- 12 Key points of reference locations were agreed at a Shipping Navigation Workshop held on 27th February 2019 and are relevant in terms of points at which to define numbers and spatial distribution of vessel traffic. Accordingly, the analysis presented in this report (particularly in regards to seasonal variance) is benchmarked with reference to these locations between the following buoys and the wind farm:
- North East Spit Buoy
 - Elbow Buoy
- 13 These are specifically relevant, on the basis of precautionary approach, as these are the agreed limiting spatial areas for larger vessels (vessels of large length, draught or with notable manoeuvring restrictions/characteristics). Notwithstanding this, a wider area of sea room (and in particular over the shallower NE Spit Bank and the area to the west of the North East Spit Buoy and the line demarcating the anchorage boundary) is available for use by the large majority of the vessel profiles which navigate in the study area and as such the above spatial references are considered to be the areas of greatest relevance for the consideration of alleged data uncertainty.
- 14 The North East Spit Pilot Boarding Station and vicinity is also a relevant reference location with regards to the usage of this area for pilot transfers.

4 Study area

4.1 Applicant position at application phase

15 Section 1.5 of the NRA identifies that the study area for assessment was the outer Thames Estuary, with analysis undertaken for vessel traffic within 5nm of the development site and a 2nm from the cable route (given the more local impacts on navigation).

4.2 Data analysis

16 Following discussion during the examination, and reference made to the draft SoCGs it is considered that the study area captures all relevant traffic and navigational areas.

17 In response to the draft Statement of Common Ground ([REP2-039](#)) reference is made by ESL to the study area not encompassing the Tongue Deep Water Anchorage and Tongue Deep Water pilot boarding position. As can be seen in [REP1-044](#) (searoom) the features raised are approximately 1nm from the proposed array and as such the 5nm study area provides adequate coverage of them.

4.3 Applicant position following data validation

18 In light of the above the study area is considered adequate. An extended study area would not materially alter the findings of the NRA and this study area is agreed with the MCA.

5 Recreation and Fishing data adequacy

5.1 Applicant position at application phase

Recreational vessels

- 19 The Application documents made reference to a combination of data including tracks of recreational vessels collected during the winter and summer surveys, cruising routes, and RYA's boating intensity maps around the wind farm. The combination of RYA data and cruising routes support the activity suggested in the radar and AIS plots.
- 20 It was noted in the NRA that the majority of tracks are concentrated inshore, with vessels passing around North Foreland. Some tracks were identified around the wind farm, but only a single recreational craft transited through the existing Thanet site (a 13m yacht).
- 21 Consultation with Royal Temple Yacht Club and the RYA identified that much of the activity is inshore and to the southwest of the wind farm.

Commercial fishing vessels

- 22 The Application again drew on a combination of data including VMS, consultation with TFA, and the primary surveys, reference was also made to the Succorfish data presented within the commercial fisheries chapter, although for the avoidance of confusion this dataset was illustrated solely in the commercial fisheries chapter and considered contextually in the NRA. The NRA noted that there is a large amount of activity to the north-east, of which the vessels are larger. Consultation for the NRA confirmed that there are approximately 20 vessels based in Ramsgate, generally day boats less than 15m LOA, with ~50% of the fleet out fishing at any one time.

5.2 Data analysis

Recreational vessels

- 23 Despite the baseline being agreed with the relevant body (RYA) further analysis has been undertaken. Figure 25 of the NRA clearly notes the areas of greatest density being inshore within the inshore route, and primarily to the west of the Elbow Buoy. This dataset is not seasonally constrained and as such there is not considered to be a likely seasonal bias that may be under represented in the MGN543 survey. As such interactions between recreational vessels are recognised as being likely to be very limited. The underlying characterisation is therefore considered to be robust, having made use of both MGN543 compliant survey, AIS, and the RYA approved datasets.

Commercial fishing vessels

- 24 Additional analysis of the Succorfish fishing vessel data, which provides anonymised spatial distribution of circa 15 Thanet based fishing vessels, has been undertaken. The data was referred to qualitatively when undertaking the NRA, but is presented here for completeness. It should be noted that whilst Succorfish data provides a good representation of fishing traffic and intensity, it does not represent all vessels and this is therefore supplementary to the baseline MGN543 compliant survey undertaken to inform the assessment.
- 25 Indicative plots showing anonymised Succorfish data are illustrated at Figure 1, Figure 2 and Figure 3 covering the period April to December 2017.
- 26 As can be seen the Succorfish data identify routes across the 'inshore route' are undertaken by commercial fishermen to fish in areas to the NW and east of the proposed array. There is a potential for some interaction with these vessels and the proposed project, and this is assessed in detail in the commercial fisheries chapter of the application.
- 27 With regards coverage of commercial fishing vessels in the NRA Figures 22 and 23 of that document correlate closely with the Succorfish data. For ease of reference Figure 22 is duplicated at Figure 4 of this document.

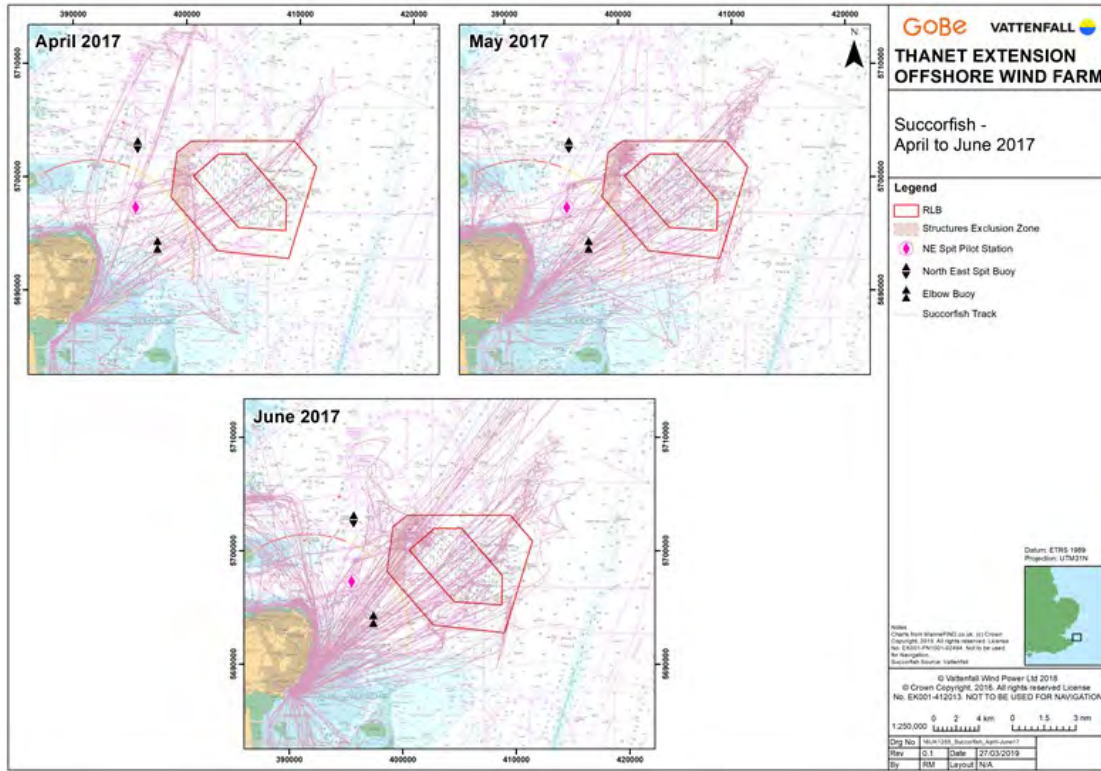


Figure 1 Anonymised Succorfish Data April to June 2017

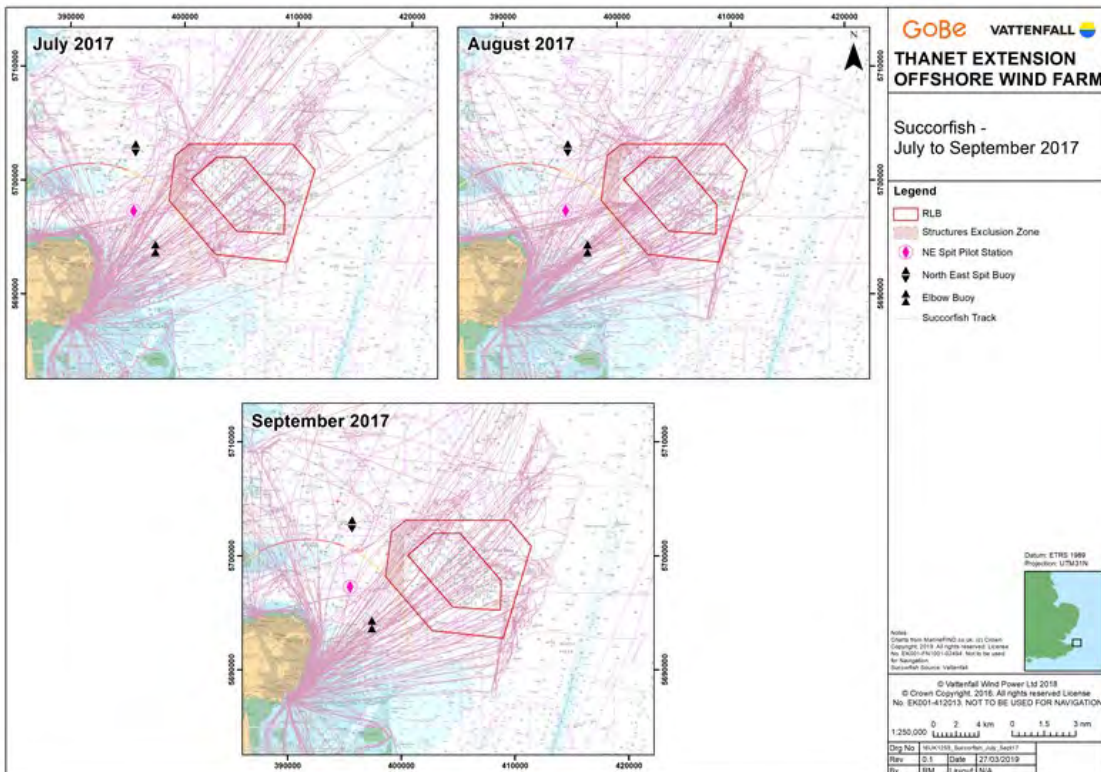


Figure 2 Anonymised Succorfish Data July to September 2017

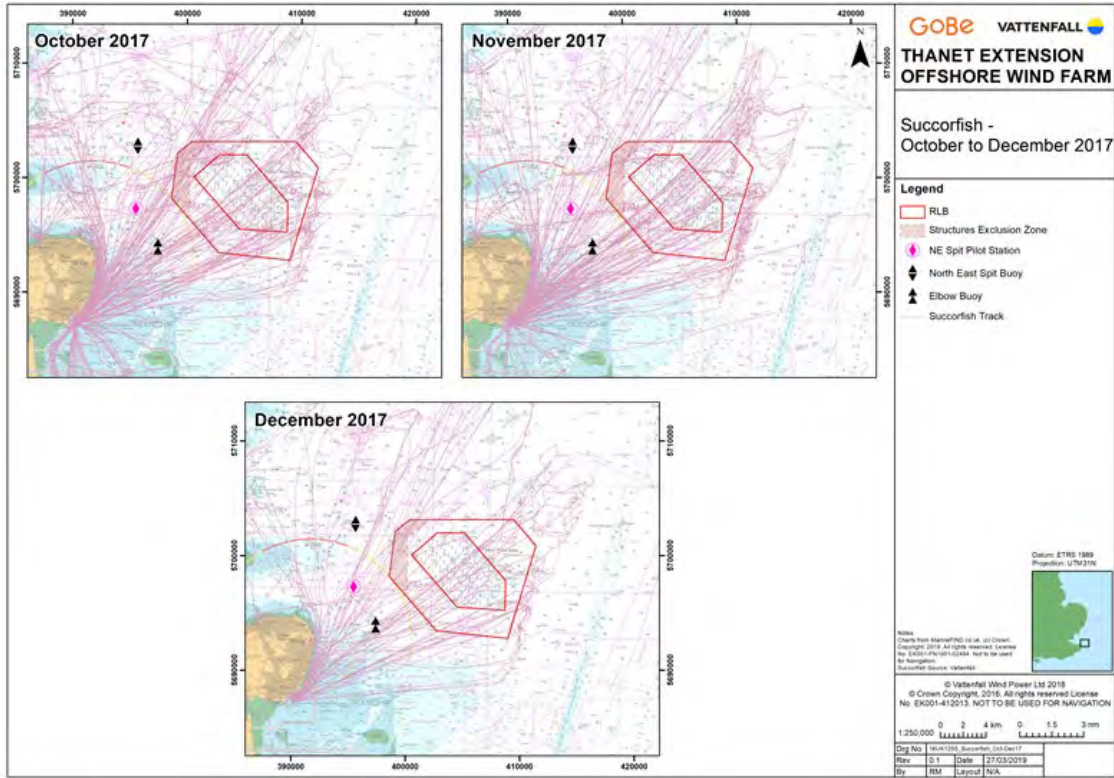


Figure 3 Anonymised Succorfish Data October to December 2017

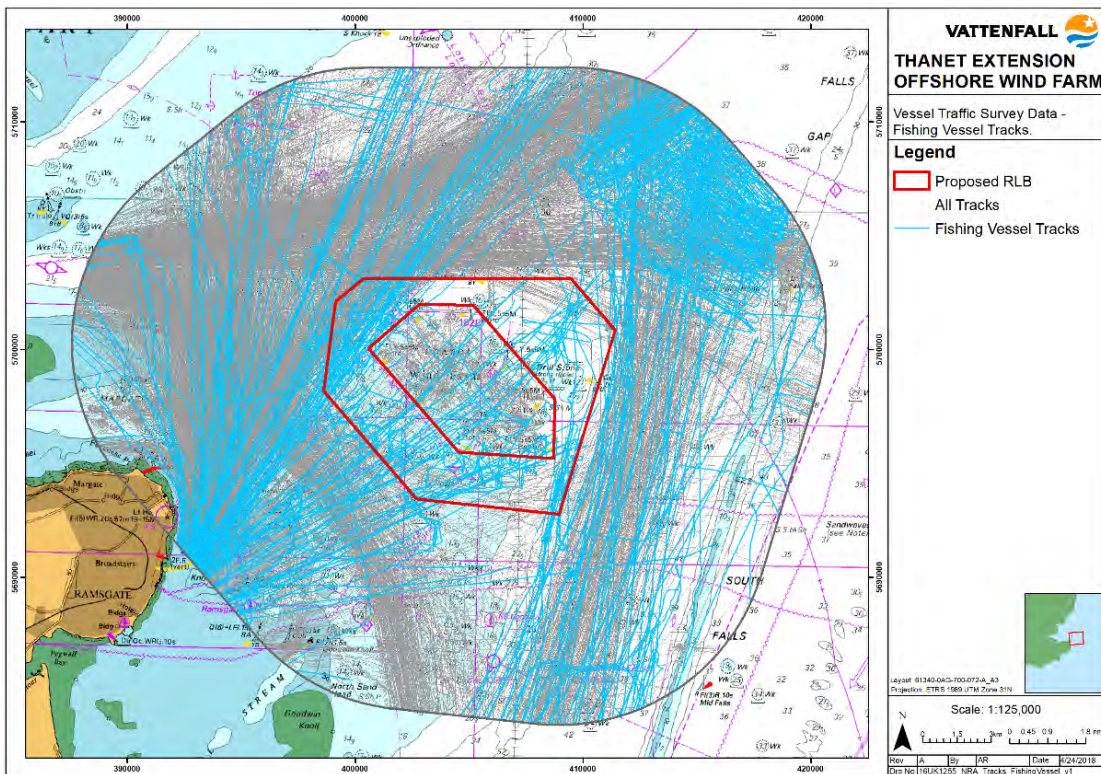


Figure 4 Reproduction of Figure 22 of the NRA: Fishing vessel tracks during the survey periods

5.3 Applicant position following data validation

- 28 It is clear from the above illustrated comparisons of data that commercial fisheries have been considered within the NRA, and the data illustrated within the NRA correlate with the Succorfish data presented in the commercial fisheries chapter. The data from both sources were employed within the NRA but this clear illustrative comparison demonstrates the MGN543 survey data to be robust and an adequate characterisation of the receiving environment.
- 29 With regards both commercial fishing and recreational sailing it is considered that the use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.

6 Vessel use of the ‘inshore route’

30 It is recognised that work is ongoing by Interested Parties with regards to the evidential baseline of vessels (and in particular by length and draught) using the inshore route.

6.2 Applicant position at application phase

31 The Applicant position, as put forward in submissions to date, is that the baseline demonstrates that the majority of larger vessels entering/departing the Thames estuary do not utilise the inshore route or transfer a pilot at the NE Spit Pilot Boarding Station due to existing constraints and pilotage directions. Alternative access routes and pilot boarding stations are more extensively used.

6.3 Data analysis

32 This section presents data sourced by the Applicant from the Mar-2017 to Feb-2018 AIS seaplanner data (Table 4) and makes comparison to data at the same ‘inshore route’ locations from the MGN543 vessel traffic survey (Feb-2017 and Jun-2017) in Table 5 and, furthermore, draws upon the selected data as presented by POTLL and DPWLGL at Deadline 3 (Ref EN010084-001223) in Table 6.

33 Comparison of percentage values in Table 4 and Table 5 shows a very strong correlation in distribution by vessel size over both data sources. Importantly it should be noted that in the baseline, all datasets show that less than 1% of vessels transiting the inshore route (and in the transects between NE Spit Buoy and the wind farm and Elbow Buoy and the wind farm) are in excess of 240m LOA and, in reviewing the wider study area with reference to Figure 5 and Figure 6, it can be seen that the majority of vessels of this size are transiting to the north and to the east of the wind farm (with some ‘dipping’ towards the area of NE Spit). It is of note that a single vessel of 333m during the period December 2016 – November 2018 transited the near shore route (based on the combination of existing Applicant data for the period December 2016 – February 2018, and LG/PoT data referred to in their D3 representations for the period November 2017 – November 2018). It is clear therefore that this is a highly infrequent occurrence and represents an extreme worst case maximum vessel size.

34 Breadth of comparison of the PLA provided AIS data is limited due to the presentation of isolated figures in the POTLL and DPWLGL submission although the total vessel count numbers (4114) compares very closely with the values from Table 4 of 3978 and 4981 (a higher value for the latter is anticipated as this gate likely also includes dipping traffic and traffic proceeding to the Margate Roads anchorages).

Table 4 Applicant Vessel Frequency by Lengths between NE Spit Buoy and existing boundary and Elbow Buoy and existing boundary (count and percentage). Data Source: Mar-2017 to Feb-2018

AIS Seaplanner

Elbow Buoy to RLB/SEZ			NE Spit Buoy to RLB/SEZ		
Ship Length [m]	March 2017 - Feb 2018		Ship Length [m]	March 2017 - Feb 2018	
	No	%		No	%
0 – 50	433	11%	0 – 50	554	11%
50 – 90	790	20%	50 – 90	421	8%
90 – 120	1523	38%	90 – 120	1089	22%
120 – 180	885	22%	120 – 180	2049	41%
180 – 240	293	7%	180 – 240	790	16%
240 – 299	44	1%	240 - 299	65	1%
299 – 333	10	0%	299 - 333	13	0%
333 – 366	0	0%	333 - 366	0	0%
366 – 400	0	0%	366 - 400	0	0%
400 -	0	0%	400 -	0	0%
Total	3978		Total	4981	
*180 (<5%) tracks missing length			*126 (<3%) tracks missing length		

Table 5 Applicant Vessel Frequency by Lengths between NE Spit Buoy and existing boundary and Elbow Buoy and existing boundary (count and percentage). Data Source: 28 days Feb-2017 and Jun-2017 MGN543 Vessel Traffic Survey

Elbow Buoy to RLB/SEZ			NE Spit Buoy to RLB/SEZ		
Ship Length [m]	Feb-2017 and Jun-2017		Ship Length [m]	Feb-2017 and Jun-2017	
	No	%		No	%
0 – 50	44	11%	0 – 50	107	18%
50 – 90	78	20%	50 – 90	54	9%
90 – 120	154	39%	90 – 120	110	18%
120 – 180	78	20%	120 – 180	189	32%
180 – 240	36	9%	180 – 240	72	12%
240 – 299	4	1%	240 - 299	5	0%
299 – 333	0	0%	299 - 333	0	0%
333 – 366	0	0%	333 - 366	0	0%
366 – 400	0	0%	366 - 400	0	0%
400 -	0	0%	400 -	0	0%
*28 day survey duration			*28 day survey duration		

Table 6 PLA Vessel Frequency by Lengths using inshore route (count and percentage), Data Source: Dec- 2017 to Nov-2018 AIS Data PLA

Inshore Route*		
Ship Length [m]	Dec 2017 – Nov 2018	
	No	%
0 – 50	n/a	n/a
50 – 90	n/a	n/a
90 – 120	n/a	n/a
120 – 180	n/a	n/a
180 – 240	n/a	n/a
240 - 299	n/a	n/a
299 - 333	At least 7**	0%
333 - 366	0	0%
366 - 400	0	0%
400 -	0	0%
Total	4114	

This is a tabulation of the information provided by PoT/LG within their Deadline 3 representation, and n/a is applied where the information for these size classes was not included by PoT/LG. All size classes have been provided within this table for context and ease of cross reference against Table 4 and Table 5 in the preceding text.

*location of inshore route not defined

**Max vessel 333m LOA

6.4 Applicant position following data validation

- 35 There is consensus between datasets and the Applicant and IPs on the largest vessel navigating the route (or undertaking transfers at NE Spit Pilot Boarding Station (333m LOA) together with the limited number of transits of vessels in the range 299m to 333m LOA.
- 36 The use of the inshore route by all vessels has been adequately characterised within the application documentation, with the exception of a single 333m vessel which transited after the NRA dataset was collected. This vessel has been applied to relevant sea room assumptions presented with this Deadline 4 submission (Appendix 14).

- 37 The use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.

7 Seasonality of vessel traffic movements

7.1 Applicant position at application phase

38 The data used in the NRA was underpinned by an MGN543 compliant vessel traffic survey which included a winter period (Feb) and a summer period (Jun). Whilst February has been agreed as representative of winter traffic, concern has been raised by IPs that June is not representative of peak summer periods which are stated to be in July and August.

7.2 Data analysis

39 The data referred to within Section 6 has been utilised to review the evidence base of seasonality and the temporal seasonal distribution of AIS traffic across the various data sources is demonstrated through Table 7. This shows that, at NE Spit, June was the busiest month (15.8) and greater than July (14.3) and August (14.4). The MGN survey for the same period (pro-rata to reflect the partial month of data collection) shows a larger count than in the seaplanner data. June seaplanner data at Elbow Buoy (12.2) is directly comparable with that of Jul and Aug (12.0 and 12.4 respectively), whilst the vessel traffic survey for Elbow has a slightly greater count (12.5) in vessels. This demonstrates therefore that the June data is comparable with other 'peak' months, and that the MGN survey appropriately characterises the receiving environment.

Table 7 Seasonal Vessel Counts by month: Mean daily transits between NE Spit Buoy and Elbow Buoy and Wind Farm – all data sources

Month	NE Spit Gate Sea Planner Mar 2017 to Feb-2018	NE Spit Gate Sea Planner Dec-2016 - Feb-2017	NE Spit Gate MGN Survey 2017	Elbow Gate Sea Planner Mar 2017 to Feb-2018	Elbow Gate Sea Planner Dec-2016 - Feb-2017	Elbow Gate MGN Survey 2017
Jan	14.2	10.6		10.5	8.9	
Feb	13.4		14.5	10.0		11.2
Mar	13.8			10.1		
Apr	15.4			12.6		
May	14.3			13.0		
Jun	15.8		17.7	12.2		12.5
Jul	14.3			12.0		
Aug	14.4			12.4		
Sep	15.1			12.2		
Oct	14.0			12.7		
Nov	14.2			11.5		
Dec	12.6	11.7		10.0	8.9	

- 40 Table 8 interrogates the same data by vessel type (providing a daily average and percentage distribution) in order to show the composition of the traffic by vessel type and consistency of composition across the various data sources.
- 41 provides further breakdown by vessel type and number for Jun-Aug and the following conclusions are apparent from the data:
- 42 There is good correlation between the seaplanner data and the survey data in regard to vessel count (Table 6) and vessel type (Table 8). In general, there is a larger vessel count within the survey data albeit the pattern is consistent.
- 43 The larger number of counts (Table 9) show that smaller vessels (Tugs, Service Craft and Recreational) are underreported in the seaplanner data whereas larger vessels show good correlation. This may be due to data losses with the seaplanner receiving aerial being further away than the vessel undertaking the traffic survey.
- There is no evidential basis within the AIS data that fishing or recreational vessel types are greater activity levels in Jul or Aug relative to Jun.
 - At NE Spit Buoy gate there is a strong consistency between Jun, Jul and Aug across all vessel types with no outliers of larger counts in Jul and Aug with the exception of 'Passenger' in Jul (1.3 vs 0.5 and 0.4 in Jun and Aug).
 - At Elbow Buoy there is a strong consistency between Jun, Jul and Aug across all vessel although Jun shows circa 20% higher counts of Cargo vessel type and circa 40 – 50% less counts for Tugs, Service Craft & Other and Passenger than for Jul and Aug.
- 44 In order to aid interpretation visually Figure 5 and Figure 6 illustrate the use of the study area by a range of vessel lengths. Figure 6 illustrates the use of the area during the vessel traffic survey (June 2017) whilst Figure 5 illustrates the same suite of vessels (the largest vessels utilising the area) during the period July/August. As is apparent the spatial use of the area does not vary across the area.

Table 8 Seasonal Vessel Counts and percentage by vessel type: Mean daily transits between NE Spit Buoy and Elbow Buoy and Wind Farm - all data sources

Vessels by Type Per Day	NE Spit Gate Sea Planner Mar 2017 to Feb-2018	NE Spit Gate Sea Planner Dec-2016 - Feb-2017	NE Spit Gate MGN Survey 2017	Elbow Gate Sea Planner Mar 2017 to Feb-2018	Elbow Gate Sea Planner Dec-2016 - Feb-2017	Elbow Gate MGN Survey 2017
Cargo	9.0	7.0	8.8	6.7	5.4	6.7
Tugs, Service Craft & Other	1.4	1.5	2.1	3.0	2.5	3.7
Fishing	0.2	0.0	1.2	0.2	0.2	0.1
Tanker	3.0	2.7	3.1	0.8	0.7	0.8
Naval	0.0	0.0	0.1	0.0	0.0	0.0
Recreational	0.1	0.0	0.6	0.3	0.1	0.4
Passenger	0.5	0.1	0.1	0.3	0.0	0.1
No Details	0.0	0.0	0.1	0.4	0.1	0.0
% Vessels by Type Per Day	NE Spit Gate Sea Planner Mar 2017 to Feb-2018	NE Spit Gate Sea Planner Dec-2016 - Feb-2017	NE Spit Gate MGN Survey 2017	Elbow Gate Sea Planner Mar 2017 to Feb-2018	Elbow Gate Sea Planner Dec-2016 - Feb-2017	Elbow Gate MGN Survey 2017
Cargo	63%	62%	54%	57%	60%	57%
Tugs, Service Craft & Other	10%	14%	13%	25%	28%	31%
Fishing	1%	0%	8%	2%	2%	1%
Tanker	21%	24%	19%	7%	7%	6%
Naval	0%	0%	0%	0%	0%	0%
Recreational	1%	0%	4%	3%	1%	3%
Passenger	3%	1%	1%	3%	1%	0%
No Details	1%	0%	1%	3%	1%	0%

Table 9 Vessel Counts and percentage by vessel type for Jun-Aug: Mean daily transits between NE Spit Buoy and Elbow Buoy and Wind Farm - all data sources

Average Vessels Per Day	NE Spit Buoy to TOW Gate				Elbow to TOW Gate			
	SeaPlanner Mar 2017 to Feb-2018			MGN Survey 2017	SeaPlanner Mar 2017 to Feb-2018			MGN Survey 2017
	Jun	Jul	Aug	Jun	Jun	Jul	Aug	Jun
Cargo	9.9	8.5	9.9	9.3	8.0	6.1	6.4	6.7
Tugs, Service Craft & Other	2.2	1.2	1.1	3.0	2.0	3.4	3.9	4.0
Fishing	0.3	0.2	0.1	0.7	0.3	0.2	0.2	0.1
Tanker	2.4	2.5	2.6	2.7	0.8	0.7	0.5	0.7
Naval	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0
Recreational	0.3	0.5	0.2	1.3	0.7	0.7	0.4	0.8
Passenger	0.5	1.3	0.4	0.3	0.2	0.5	0.6	0.1
No Details	0.2	0.0	0.0	0.3	0.2	0.2	0.3	0.0
Total per Day	15.8	14.3	14.4	17.7	12.2	12.0	12.4	12.5

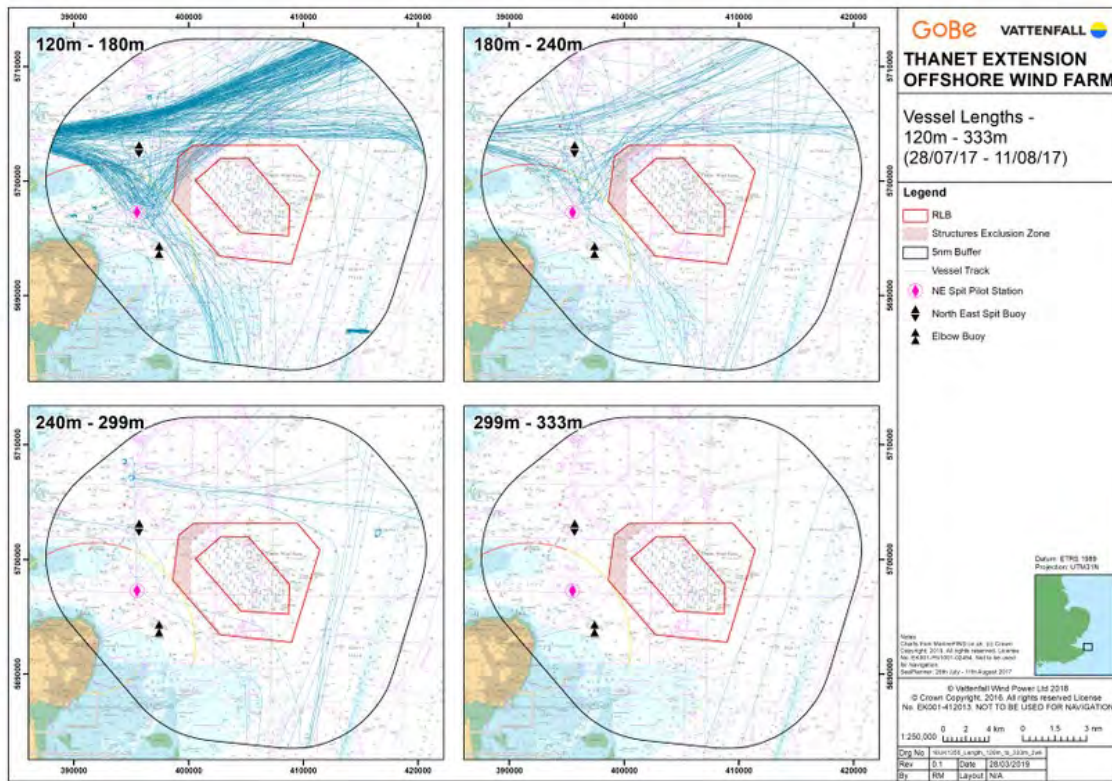


Figure 5 Analysis of July/August 2017

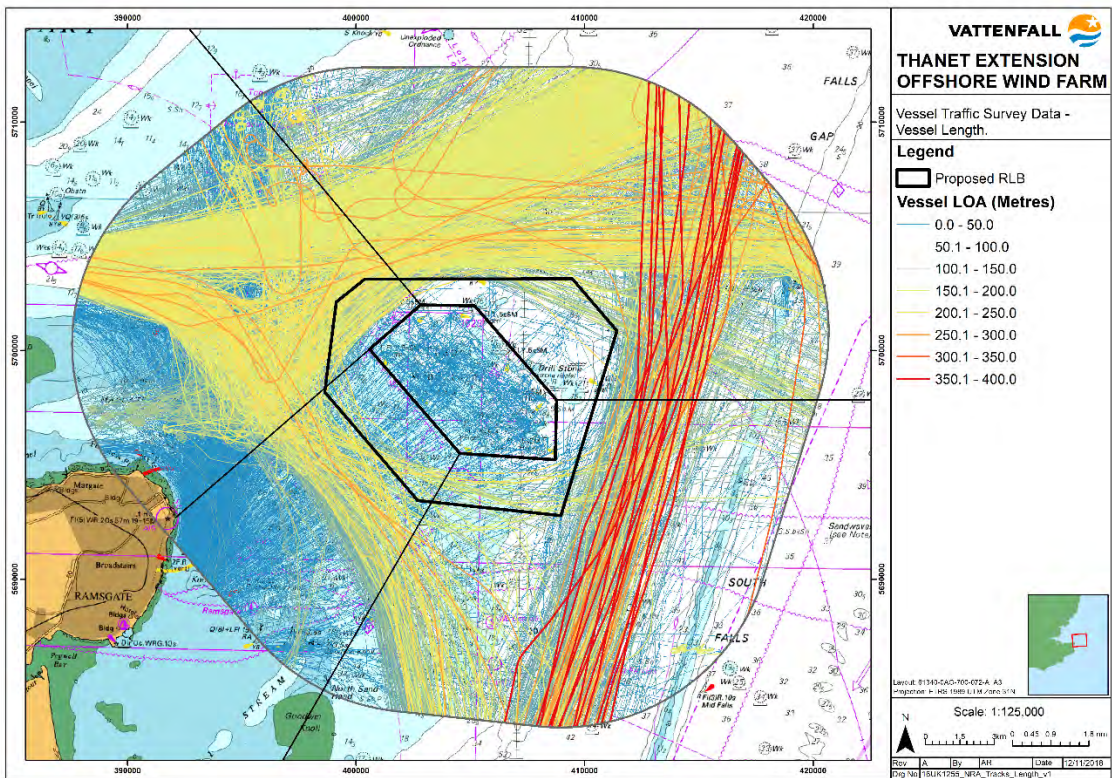


Figure 6 Taken from Figure 31 illustrating vessel tracks by length from winter and summer surveys

7.3 Applicant position following data validation

- 45 The collection of additional data and reference by count, type and month of the year (specifically Jun-Aug inclusive) and vessel type do not demonstrate significant or material change to the characterisation of the baseline traffic profile and the use of data from July or August or a longer term data set would not alter these findings.
- 46 It is therefore the Applicant's position, on the basis of the data presented above, which draws on 12 months of AIS data in addition to the primary MGN vessel traffic survey that the use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.

8 Seasonality and distribution of pilotage operations

8.1 Applicant position at application phase

- 47 The Applicant has drawn upon MGN543 compliant vessel traffic survey (Figure 7) and seaplanner data from Dec-2016 to Feb-2017 (Figure 8) for transits undertaken by ESL Pilot transfer vessels (operating from Ramsgate). This data is utilised as an initial indication of the extent of area in which pilotage operations are undertaken in the vicinity of North East Spit pilot boarding area.
- 48 Whilst there have been no fundamental concerns raised on utilising this data, IPs submit that this does not represent the full extent of area required for pilot transfers and also with commentary on the representation of summer peak periods by June data.

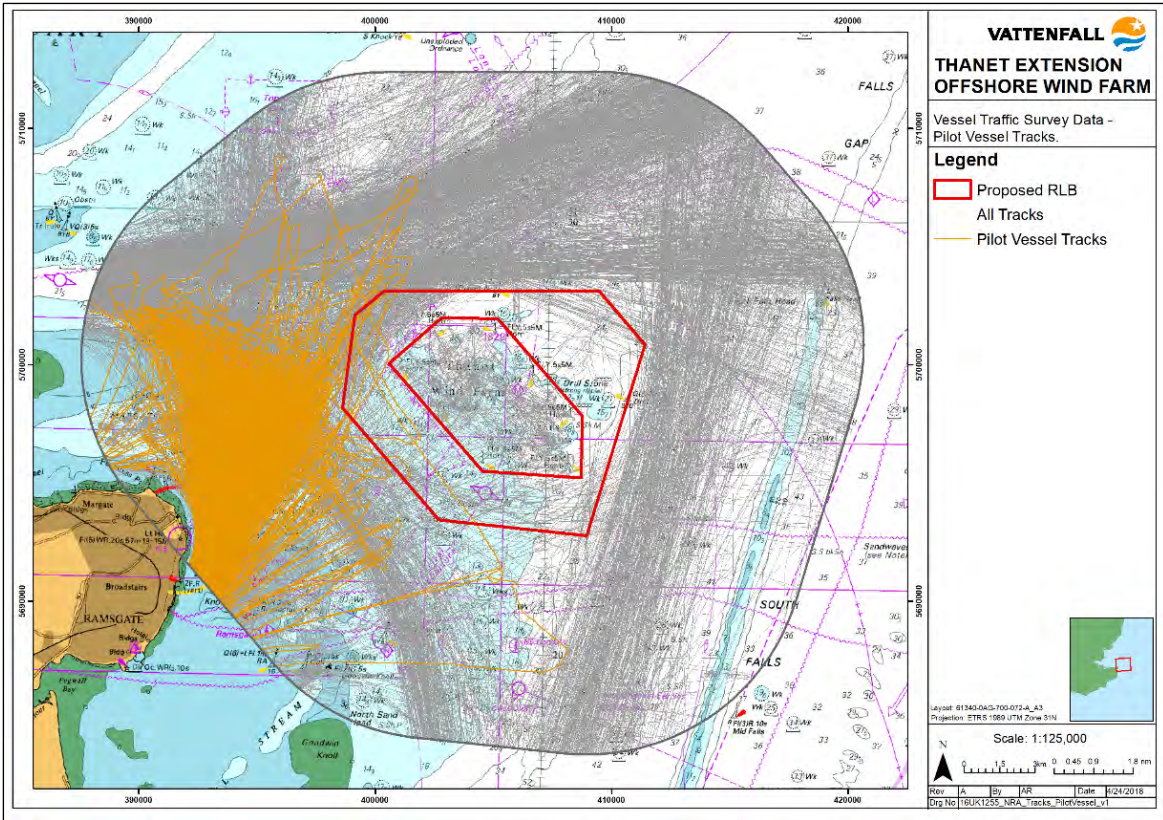


Figure 7 Pilot Vessel Tracks. Data Source: Feb-2017 and Jun-2017 MGN543 Vessel Traffic Survey

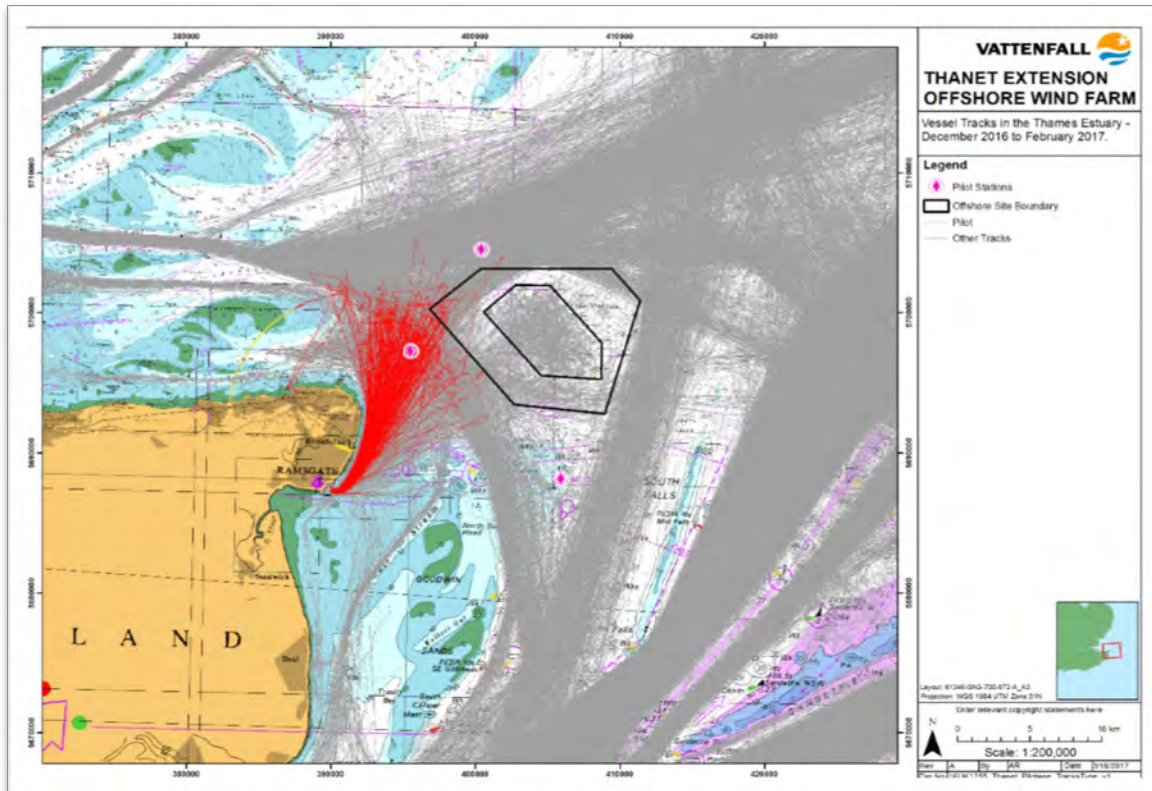


Figure 8 Pilot Vessel Tracks Data Source: Dec-2016 to Jan-2017 AIS seaplanner

8.2 Data analysis

49 Figure 9 shows transits of ESL Pilot Launch tracks from the Mar-2017 to Feb-2018 seaplanner data and whilst a denser plot due to 12 months of data being illustrated there is a clear visually comparative characterisation of transits with Figure 6 Figure 7 and Figure 8.

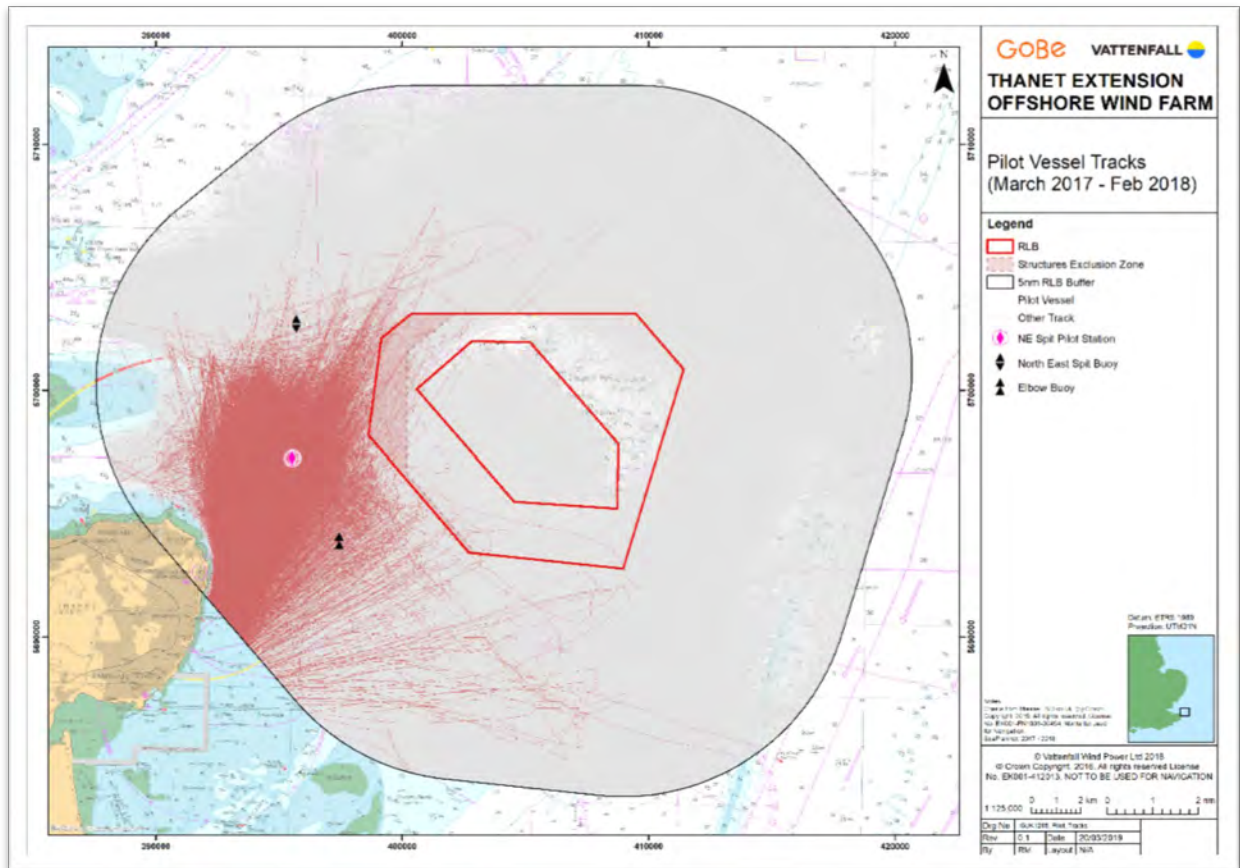


Figure 9 Pilot Vessel Tracks. Data Source: Mar-2017 to Feb-2018 AIS seaplanner

50 Figure 10 shows indicative location and density concentration of areas of pilotage operations by filtering two different speeds (SOG) of the pilot launch - demonstrating locations where pilot vessel speeds are reduced to less than 10kts and 7kts.

51 This data has been analysed carefully in preparation of the SEZ and in defining suitable spatial areas for pilotage - integrating methodological guidance and spatial definitions provided by IPs – particularly LPC and ESL.

52 A pilot launch service speed is circa 20kts (dependent on the launch) and therefore a filter at 10kts provides an indication of when the launch is operating at a lower speed and akin to the speed of the ship when manoeuvring prior to transfer. Whilst this provides an indication of area of consideration utilised for transfer associated operations it should be noted that there may be other reasons for a pilot vessel slowing - such as to manage arrival time on station - and so this footprint is precautionary in nature and can be considered to characterise the searoom required for pilotage operations in the broader sense rather than for transfers alone. A 7kts filter provides an indication of movements closer to the time of transfer itself when both the launch and ship further slow prior to the pilot transferring between vessels.

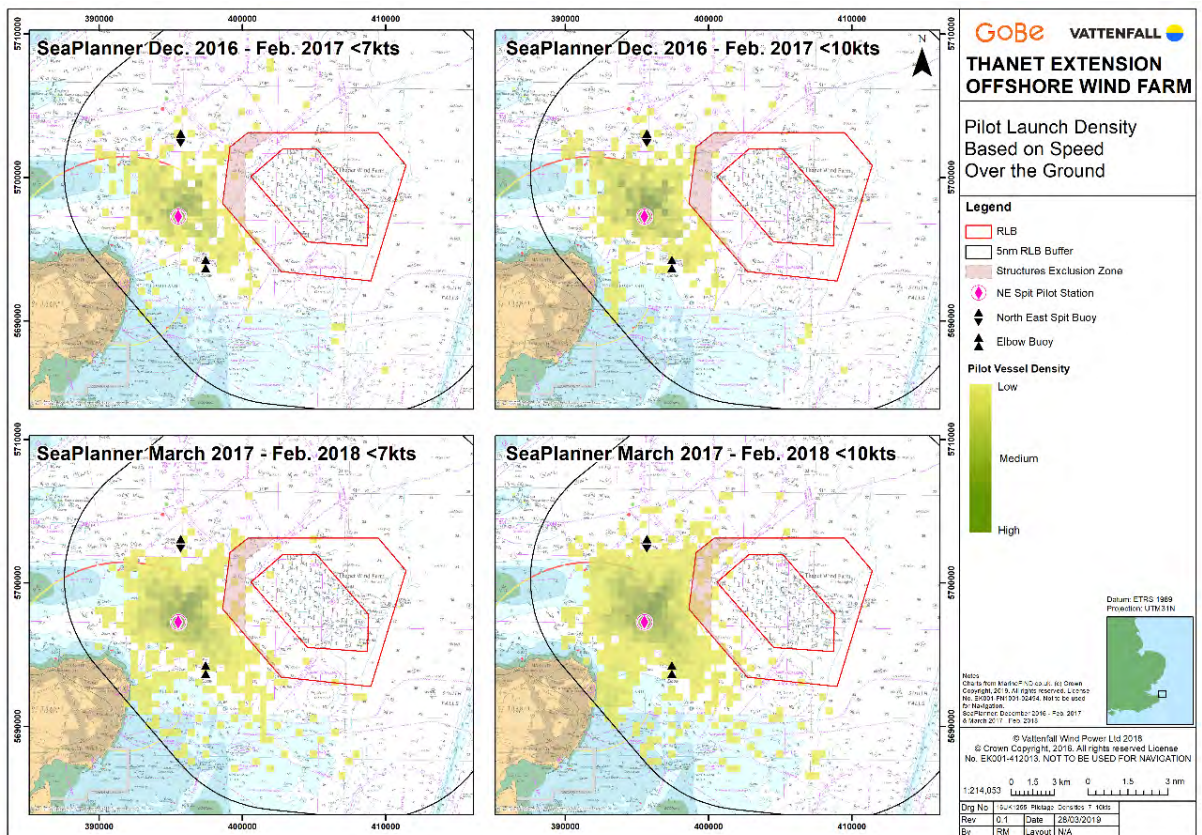


Figure 10 Pilot Vessel Density (SOG derived). Data Sources: Dec-2016 to Feb-2017 and Mar-2017 to Feb-2018 AIS Seaplaner

53 Figure 11 shows filtered speeds of the pilot launch, by month, for June to September inclusive. The figures show a slight variance in spread in distribution at the margins of the areas (with June and August showing more spread than July and September) although importantly the distribution in close proximity to the pilot diamond (and the greatest concentration of pilot transfer activity, shows strong correlation.

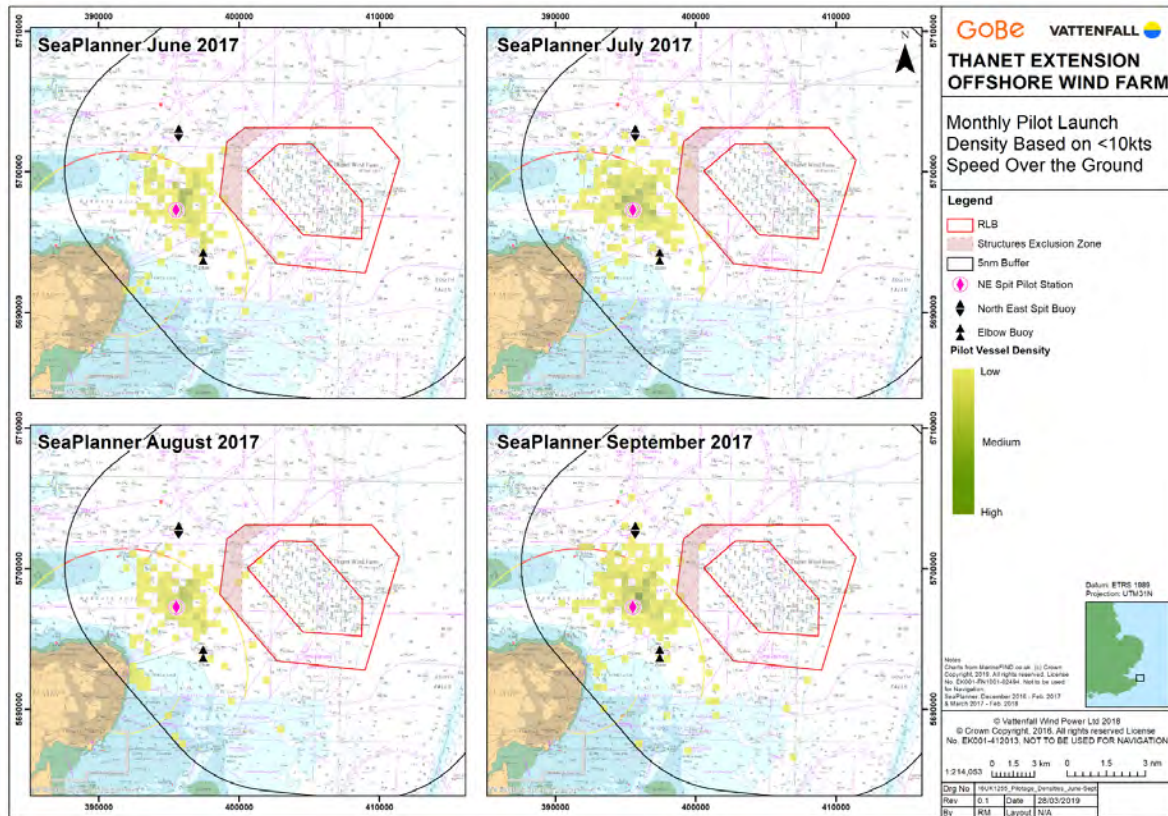


Figure 11 Pilot Vessel Density (SOG derived) for June – September 2017. Data Source: Mar-2017 to Feb-2018 AIS Seaplaner

8.3 Applicant position following data validation

- 54 The two AIS datasets correlate very closely, with the area of highest activity density around, and just to the north, of the NE Spit pilot diamond being consistently reflected in both datasets. It is noted that ‘spread’ in the larger 1-year dataset is greater and this is to be expected due to the larger period, however the boundary of the wider spread relates to a very low number of pilot operations and the predominant densities are comparable in both datasets.
- 55 With regards to seasonality sensitivity, the central density distribution is also consistent between the summer seasonal months of June to September.
- 56 It can be concluded that the data used in the NRA correlates with the additional dataset and this comparison demonstrates the NRA data to be robust, representative and an adequate characterisation of the receiving environment.
- 57 The use of July - September data, or a longer-term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.

9 Summary of conclusions

- 58 The Applicant acquired an MGN543 compliant dataset using marine traffic surveys in February 2017 and June 2017. Whilst the February 2017 data has been accepted by most IPs as being representative (PLA / ESL response to Deadline 3), concerns have been raised regarding the June 2017 survey.
- 59 The Applicant has sourced additional vessel traffic data to benchmark and validate the characterisation data being used in the application and the representations being provided through examination.
- 60 The Applicant has demonstrated that the data used in the Navigation Risk Assessment is representative of the shipping traffic in the study area in terms of annualised, monthly and daily vessel numbers; identifying the main shipping routes and the breakdown of vessels using the study area; and the extent and density of pilot transfers in and around the NE spit pilot boarding station. The NRA therefore demonstrably represents a robust characterisation of the receiving environment.
- 61 Table 10 presents a summary of the conclusions reached through this data validation exercise.

Table 10 Summary of data validation conclusions

Theme	Data validation finding	Conclusion
Study area	The extent of the study area has been agreed with the MCA.	The study area is considered to be adequate, and this is agreed with the relevant statutory authorities. <i>An extended study area would not materially alter the findings of the NRA and this is agreed with the MCA.</i>
Recreation and Fishing data adequacy	Fishing and recreational traffic vessel types have been identified through the vessel traffic survey and recreational traffic supplemented by a RYA provided vessel intensity dataset. Within this report additional anonymised fishing data (Succorfish data) is presented to further demonstrate the robustness of the NRA dataset.	Fishing and recreational activities are adequately characterised within the application documentation. <i>The use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.</i>
Inshore Route.	There is broad agreement between the Applicant and IPs on the data showing the frequency and characteristics of the largest vessels in this area. This document takes the opportunity to validate this with the additional data set and does not identify any inconsistency with the data raised to date.	The use of the inshore route by all vessels has been adequately characterised within the application documentation, with the exception of a single 333m vessel which transited after the NRA dataset was collected. This vessel has been applied to relevant sea room assumptions presented with this Deadline 4 submission (Appendix 14). <i>The use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.</i>

Theme	Data validation finding	Conclusion
<p>Seasonality and annualization of vessel traffic movements.</p>	<p>The Applicant maintains that seasonality has been considered in the assessment with respect to a compliant MGN survey in Feb and Jun. Notwithstanding this, the additional 12 months of AIS derived data has been procured and presented to supplement this and provide a full year of coverage. A review of this across Jul and Aug has shown that the Jun data is comparable with Jul/Aug and can be considered characteristic and representative.</p>	<p>The seasonal variation of vessel transits has been adequately characterised within the application documentation. The annualization of the survey data has been found to be a slight over estimate and a suitable basis therefore for a precautionary assessment.</p> <p><i>The use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.</i></p>
<p>Pilotage Operations</p>	<p>The Applicant has undertaken significant study to develop an understanding of the complexity of the spatial distribution and characterisation of pilotage (specifically transfers at NE Spit Pilot Boarding Station). The Applicant has revised the boundary with the SEZ which (as per separate deliverable) is located to ensure that sea room considers representation made by IP's, agreed methodological guidance and the data demonstrating where transfer occur. The additional 12 months of AIS data concurs with the spatial spread of pilot transfers identified through the NRA data</p>	<p>The seasonal variation of pilot operations has been adequately characterised within the application documentation. The spatial variation across 12 months has been applied to relevant sea room assumptions presented with this Deadline 4 submission (Appendix 14)</p> <p><i>The use of July/August data, or a longer term survey, would therefore make no material change to the characterisation of the receiving environment and would not alter the findings of the NRA.</i></p>