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Dear Sirs

Boston Alternative Energy Facility

As you are aware, we are instructed on behalf of The Boston and Fosdyke Fishing Society ("BFFS") in relation to the above matter. We write to you further to our response to the Examiner's Third Written Questions, submitted to the Examination on 1 March 2022.

Further to our response, specifically, to Q3.10.017, we enclose the copy of the Report authored by specialist marine consultants, Marico and commissioned by our clients at their own expense. As the Examiner will note, the Report by Marico was requested as an independent review to assist BFFS (and hopefully the Examination) in assessing the strength of their objections to the proposed Boston Alternative Energy Facility (BAEF). Marico's independence and the fair and unbiased conclusions they have arrived at are hopefully demonstrated by the content of the Report. The Report highlights in various instances those areas where Marico believe that the work carried out by Anatec (on behalf of the Applicants of the BAEF) in respect of the submitted Navigation Risk Assessment (NRA) is adequate and satisfactory. However, it is indisputable that Marico have identified numerous errors and omissions within the NRA, particularly in relation to the accuracy of the underlying data relied on by Anatec. The most immediate and apparent peril of reliance on such inaccurate data is that any Navigation Management Plan ("NMP") will be based on this same flawed data and will, necessarily, be deficient and fail to address the very real concerns raised by our client on navigation safety.

The Report by Marico is clear in highlighting such deficiencies in several areas and these can be summarised as follows (non-exhaustively):

1. The current NRA is not sufficient in (i) the representative fishing vessel data on which it relies, and (ii) the baseline and residual risk assessments on which it also relies. **Section 3.2** of the Report states that, in respect of landings data, "this data likely under-represents the number of vessel movements." **Section 3.4**, again, states that "the landings are likely to be an underestimate."

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2. The current NRA does not address, with sufficient rigour, the change in navigational risk brought about by the DCO (to fully support the DCO).
3. The Report makes clear the need for adequate consideration to be given by all relevant stakeholders to the NMP. This means that the NMP needs to be published prior to the confirmation of the DCO (if it is so confirmed) in order for these relevant stakeholders to assess whether their concerns have been given adequate consideration. To postpone the settlement and publication of the NMP until after the DCO is confirmed is therefore, in our view, entirely unsatisfactory and dangerous given the doubts raised as to the baseline data being flawed in the first place.
4. Additional fishing vessel movement data supplied by BFFS needs to be included within a revised NRA. Both baseline and residual risk assessments are missing from the current NRA and, therefore, any NMP produced in reliance on the current NRA would be deficient.

As can be seen from the conclusion of Marico's Report, it expects its recommendations to result "in a fully considered and representative NRA to meet the challenges of the consent process".

The Examiner will also note the very compelling evidence submitted (which forms part of the Report) by Captain Franklin, whose impressive credentials, particularly include his service as the former Harbour Master for the Port of Boston from 1987 to 1998. Notably, Captain Franklin's evidence highlights not only the dangers from the BAEF proposals as they presently stand but also contradicts the case the Applicant and Anatec have persistently relied on in terms of the claimed number of vessels using the Port during the years of Captain Franklin's service and the manner in which they did so. In fact, the figures suggested by Captain Franklin are much more similar to those that BFFS have been putting forward. It is especially notable that Captain Franklin confirms that no more than 50 ships were turned in the swinging hole each year during the 1980s and 1990s. Even on a conservative estimate, based on the movements purported to be generated by the BAEF scheme, the impact of the additional ships that need to turn would be unsustainable. Captain Franklin kept meticulous records, as he states, and we therefore suggest that the Applicant's stated position is grossly exaggerated where they have compared the previous vessel movements and activities at the Port of Boston to those going to be generated by their proposals.

Due to the issues highlighted above, the findings of the review provided by Marico and Captain Franklin's letter, we respectfully request the Examiner to take these factors into account in considering whether a DCO granted on the basis of the presently submitted NRA would be sound. We believe it would not be and at the very least, the Applicants should be required to submit a revised NRA which takes into account the data from BFFS and Marico which, in turn, will be better representative of the vessel movements and impacts from the proposed scheme. Consequently, this should also require more work to be carried out on a NMP that is workable and better informed after much more consultation and engagement from key stakeholders than has been currently undertaken. We would also stress that the NMP is not a document that can be settled after the confirmation of the DCO (if it is so confirmed). If the DCO was confirmed on the currently submitted evidence put forward by the Applicant, the corresponding NMP would also be wholly deficient and it would be impossible to correct such failures post-consent. These matters relating to safety and navigational risk go to the heart of the consent and we think it only proper that all issues concerning the same are dealt with prior to the conclusion of the DCO process.

We appreciate that the Examiner has decided to proceed by means of written representations and that the previously scheduled in-person hearing on navigation matters has therefore been replaced but given the issues raised above, should the Examiner decide to re-instate a hearing on these matters, BFFS and their consultative team would be very happy to make their representations in person.

Yours sincerely



Shruti Trivedi

Partner

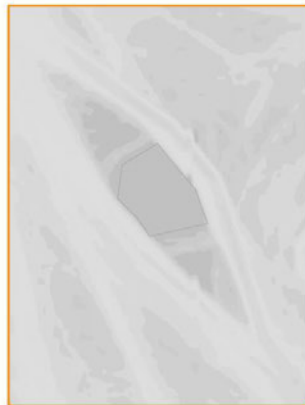
For and on behalf of Roythornes Limited



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BOSTON & FOSDYKE FISHING SOCIETY

**AN INDEPENDENT REVIEW OF THE BOSTON ALTERNATIVE
ENERGY FACILITY NAVIGATION RISK ASSESSMENT**



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EXECUTIVE SUMMARY

The Boston & Fosdyke Fishing Society (BFFS) have engaged Marico Marine to undertake an independent review of the Navigation Risk Assessment (NRA) commissioned by Alternative Use Boston Projects Ltd (AUBP) to support the consenting of the Boston Alternative Energy Facility (BAEF) on The Haven, a tidal river of the Port of Boston (PoB) in Lincolnshire.

With the consenting process for the proposed development ongoing, the BFFS have concerns around how their fishing fleet will operate effectively considering the potential impact from increased shipping on The Haven. Marico Marine have consequently been commissioned to undertake this review.

Anatec Ltd were commissioned to undertake the NRA for the proposed development, and to assess the potential impacts within the vicinity of the swing hole on existing users of the waterways associated with the PoB and its multiple berths upstream of the BAEF Wharf.

In order to provide a comprehensive review of the BAEF NRA, Marico Marine undertook the following:

- I. Desk-based document familiarisation;
- II. Consultation with BFFS (consultation notes are provided in **Annex B**);
- III. Analysis of vessel data provided by BFFS (data are provided in **Annex A**); and
- IV. A systematic, desk-based review of the NRA completed by one of our experienced Master Mariners.

And in general, the BAEF NRA was found to be a well written, considered, and focused report. However, in completing our review it was found to lack sufficient detail in two key areas:

- I. Representative fishing vessel data; and
- II. Evidence of baseline and residual risk assessments

Based on our experience of conducting NRAs to support consent applications around the UK, it is our concern that:

- The BAEF NRA is likely to have underestimated the impact to fishing vessel activity as a result of employing under-representative fishing vessel data.

We recommend that the additional fishing vessel movement data supplied by BFFS should be included and fully considered within a revised NRA in support of the proposed development.

- The BAEF NRA in its current form does not address the change in navigational risk brought about by the development with enough rigour to fully support the consent process.

We recommend that a revised NRA for the proposed development be delivered that evidences both baseline and residual risk assessments as they are both missing from the current BAEF NRA. This would also provide an opportunity to include and fully consider the additional fishing vessel data supplied by BFFS (as recommended above).

It is our expectation that these recommendations, alongside the opportunity for additional key stakeholder engagement, will result in a fully considered and representative NRA to meet the requirements of the ongoing consent process.

CONTENTS

Executive Summary.....	ii
Contents.....	iv
1 Introduction.....	1
2 Scope of Review.....	1
2.1 Study Area.....	2
2.2 Review Methodology.....	2
3 Data Analysis.....	3
3.1 BAEF NRA Data.....	3
3.2 BFFS Data.....	3
3.3 AIS Data.....	4
3.4 Fishing Vessel Movements.....	4
4 NRA Review.....	8
5 Summary.....	13
6 Conclusion.....	15

FIGURES

Figure 1 – Site Location.....	2
Figure 2 – Required departure time from the Port of Boston to arrive at specific sand banks within the cockle season two hours either side of high water (0).	4
Figure 3 – Maximum Arrival and Departure times to and from the Port of Boston either side of high water within the cockle season.	5
Figure 4 - Number of BFFS movements by month across all 8 years of data provided.	6
Figure 5 - Number of BFFS movements per month separated across all 8 years of data provided.6	
Figure 6 – Average number of BFFS movements per day per month across 2019 (pre-covid).	7

TABLES

Table 1 – Total Landings.....	A-2
Table 2 – Required arrival and departure times to different parts of the sand banks where high water is 0 minutes.....	A-2

ANNEXES

Annex A	Data Provided by BFFS	A-1
Annex B	BFFS Consultation Notes.....	B-1
Annex C	Captain B Franklin’s Letter	C-1

ABBREVIATIONS

Abbreviation	Detail
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
BAEF	Boston Alternative Energy Facility
BFFS	Boston and Fosdyke Fishing Society
CHA	Competent Harbour Authority
Eastern IFCA	Eastern Inshore Fisheries & Conservation Authority
DCO	Development Consent Order
FSA	Formal Safety Assessment
HW	High Water
kt	Knot (unit of speed equal to nautical mile per hour, approximately 1.15 mph)
LW	Low Water
LWA	Lightweight Aggregate
m	Metre
Marico Marine	Marine and Risk Consultants Ltd
MMO	Marine Management Organisation
MCA	Maritime and Coast Guard Agency
nm	Nautical Mile
NMP	Navigational Management Plan
NRA	Navigation Risk Assessment
NtM	Notice to Mariners
NUC	Not Under Command
PoB	Port of Boston
PMSC	Port Marine Safety Code
RA	Risk Assessment
RDF	Refuse Derived Fuel
SHA	Statutory Harbour Authority
UKC	Under Keel Clearance
VTS	Vessel Traffic Service

1 INTRODUCTION

The Boston & Fosdyke Fishing Society (BFFS) have engaged Marico Marine to undertake an independent review of the Navigation Risk Assessment (NRA) commissioned by Alternative Use Boston Projects Ltd (AUBP) to support the consenting of the Boston Alternative Energy Facility (BAEF) on The Haven, a tidal river of the Port of Boston (PoB) in Lincolnshire.

With the consenting process for the proposed development ongoing, the BFFS have concerns around how their fishing fleet will operate effectively considering the potential impact from increased shipping on The Haven. Marico Marine have consequently been commissioned to undertake this review.

Part of the infrastructure for the proposed BAEF is a new 400m wharf, which will have three berthing points to receive vessels. The area for this development is a tidally restricted waterway providing access to the PoB. Two of the berths will be dedicated to the delivery of refuse derived fuel (RDF); one berth will be dedicated to the loading of lightweight aggregate (LWA).

The anticipated size of vessels to be used for the handling of the materials to/from the facility will be comparable to the commercial vessels that currently use The Haven, with an anticipated length of between 90m and 100m. Construction of the BAEF is anticipated to create an additional 580 vessel arrivals per year, equating to an extra 1160 transits of the river.

All vessels will be required to access the facility at or around High Water (HW). Vessels are expected to depart on the following tide and all vessels will be piloted. There is no means of turning the vessels at the facility. Therefore, there will be a requirement to turn the vessels either in the wet dock or at the swing hole at the PoB.

Anatec Ltd were commissioned to undertake the NRA for the proposed BAEF and to assess the potential impacts within the vicinity of the swing hole on existing users of the waterways associated with the PoB and its multiple berths upstream of the BAEF Wharf.

This document is an independent review of the BAEF NRA.

2 SCOPE OF REVIEW

This document is not an NRA. It is a review of the published Anatec NRA (Ref: PB6934-RHD-ZZ-XX-RP- 4040) and is only concerned with those aspects of the proposed development that relate directly to navigational safety. It does not concern itself with commercial or social considerations.

2.1 STUDY AREA

The Haven is the tidal river of the port of Boston, Lincolnshire in England. It provides access for shipping between Boston Deepes in The Wash and the town, particularly, the dock. It also serves as the outfall into the sea, of the River Witham and of several major land drains of the northern Fens of eastern England, which are known collectively as the Witham Navigable Drains.

Figure 1 shows the review study area and highlights the location of the Boston Fishing Berth in relation to the proposed development as well as the swing hole and the wet dock.

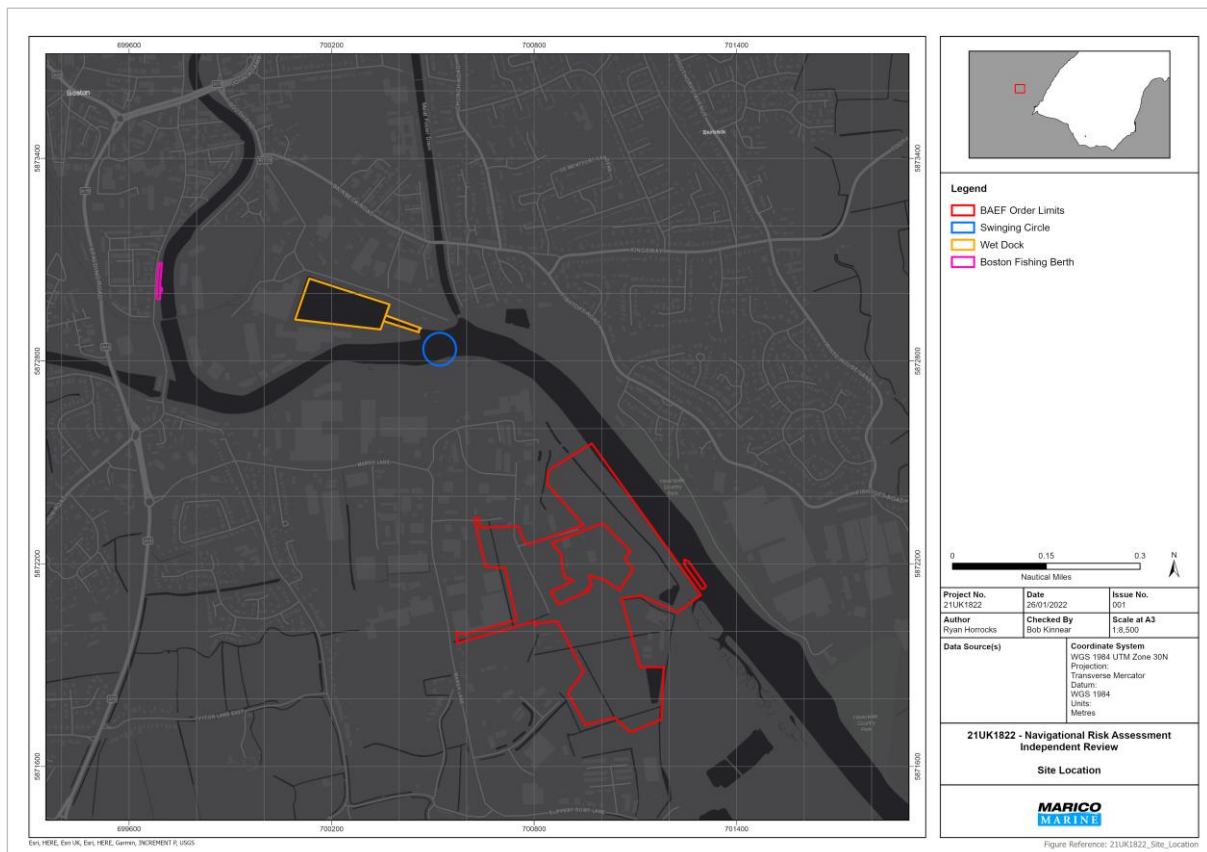


Figure 1 – Site Location

2.2 REVIEW METHODOLOGY

In order to provide a comprehensive review of the BAEF NRA, Marico Marine undertook the following:

- V. Desk-based document familiarisation;
- VI. Consultation with BFFS (consultation notes are provided in **Annex B**);
- VII. Analysis of vessel data provided by BFFS (data are provided in **Annex A**); and
- VIII. A systematic, desk-based review of the NRA completed by an experienced Master Mariner and ex-Harbour Master.

3 DATA ANALYSIS

Having raised concerns that fishing vessel activity may have been under-represented within the BAEF NRA, the BFFS undertook to supply Marico Marine with additional fishing vessel movement data in order that additional vessel traffic analysis could be completed. To Marico Marine's knowledge, this data was not provided to Anatec for the original NRA. The data provides an improved understanding of fishing vessel movements throughout the year. The results of that work are detailed below.

3.1 BAEF NRA DATA

The BAEF NRA identifies that AIS data alone significantly underrepresents fishing vessel activity. Therefore, two visual fishing vessel surveys were conducted to gather necessary additional intelligence on fishing vessel activity within the study area. These surveys were carried out on the 18 August 2020 and 21 September 2021:

- Visual survey log outbound: identified 18 vessels after high water during a 45-minute period.
- Visual survey log inbound: identified 18 fishing vessels before high water over an hour period.

3.2 BFFS DATA

Data supplied by the BFFS provides more accurate and concise timings of departures of the fishing fleet over a given period. This data was obtained from three sources:

- Fishers' logbooks;
- The Eastern Inshore Fisheries & Conservation Authority (Eastern IFCA); and
- Captain B Franklin's Letter.

The data supplied by the BFFS provides an overview of the movements of fishing vessels in the vicinity of the study area. Landings data was provided by the Eastern IFCA, this data likely under-represents the number of vessel movements as the dataset only contains records from the Eastern IFCA. However, the data provides an improved picture of non-AIS fishing vessel movements on The Haven and adds validity to the data recorded in the visual surveys by the BAEF for the cockle and mussel seasons.

Analysis of this data has identified the tidal window that BFFS vessels employ to safely transit The Haven. Furthermore, investigation of the data revealed:

- Departure times from the Port of Boston to reach the low and high parts of all 28 sands that can be fished during the cockle season;
- Maximum departure times from the Port of Boston in the cockle season; and
- Number of landings per month across an 8-year period (2014-2021).

3.3 AIS DATA

No new AIS data was considered as part of this review. Data was re-used from the BAEF NRA and provided the following:

- 24 months of AIS data from 2019 and 2020; and
- Historical AIS data to assess use of the swing hole (turning circle).

The information available for review within the BAEF NRA highlighted the number of commercial vessel movements and average time taken to turn a vessel within the turning circle (all less than 15 minutes.)

3.4 FISHING VESSEL MOVEMENTS

Figure 2 shows the tidal window necessary (two hours before and two hours after high water) for vessels to transit safely on The Haven. All times accurately represent the safest departure periods, but these times can vary depending on tidal and weather conditions. On average, only two or three sands will be accessible to the fishers per year as the Eastern IFCA limits the number of landings to certain cockle beds to protect the integrity and reduce the impact of fishing on those environments.

Figure 2 shows the necessary departure times from the Port of Boston to reach the low and high parts of all 28 sands that can be fished during the cockle season. To navigate the sands safely, fishers will depart between one hour before high water and high water for all 28 sands. For 12 sands, departure before high water is crucial for a safe transit. 16 sands allow for a departure after high water depending on what area of the sand is to be fished. Therefore, most movements when departing occur before high water.

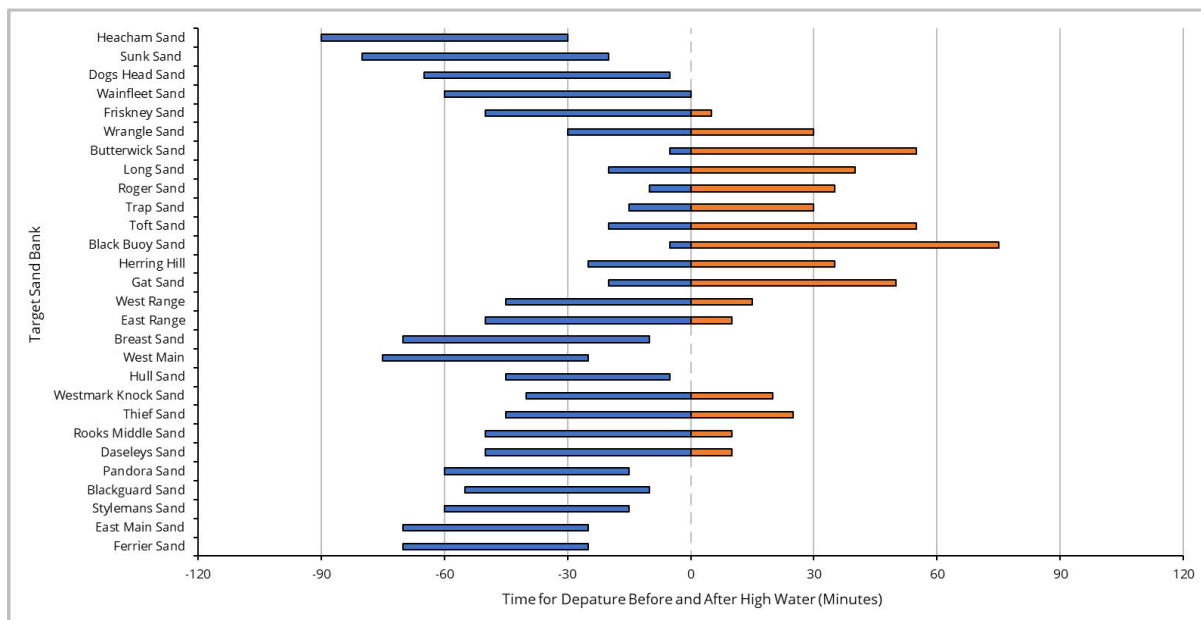


Figure 2 – Required departure time from the Port of Boston to arrive at specific sand banks within the cockle season two hours either side of high water (0).

Figure 3 represents the maximum departure times from the Port of Boston in the cockle season. The departure times range between 1h 30m before high water to 1h 15m after high water. Maximum departure times can be seen to spread an hour either side of high water.

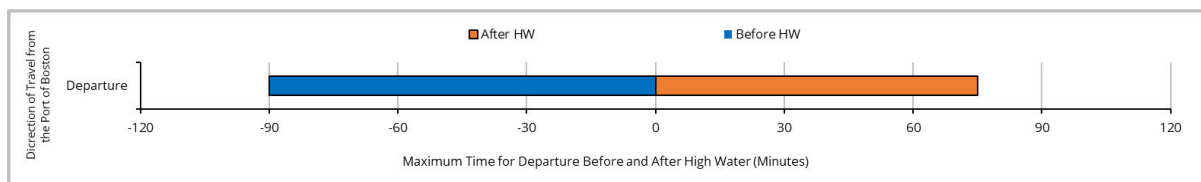


Figure 3 – Maximum Arrival and Departure times to and from the Port of Boston either side of high water within the cockle season.

Movements (Landings) data in Figure 4, Figure 5, and Figure 6 was provided by the Eastern IFCA. The data provided shows the number of landings per month across an 8-year period (2014-2021). Landings data can be found in Annex A. As fishing vessels are only permitted to land once in a 24-hour period, vessel movements can be calculated by multiplying landings data by a factor of two.

The data only represents cockle and mussel fishing under the WFO regulated fisheries and does not include other fisheries data such as shrimp or whelk. The Eastern IFCA data only contains data recorded by the IFCA and does not include any other sources. The landings are likely to be an underestimate given the IFCA often have several missing returns. The cockle and mussel season typically ranges from May to December depending on the year, which is well illustrated within the figures. Vessel movements have been visualised in the figures as opposed to vessel landings.

Figure 4 shows the total number fishing vessel movements across all 8 years of data provided (2014-2021). A total of 15,902 movements were made across the 8-year data period. On average, 2,583 movements were recorded across the typical cockle season. The highest rate was in July which recorded 4,434 movements.

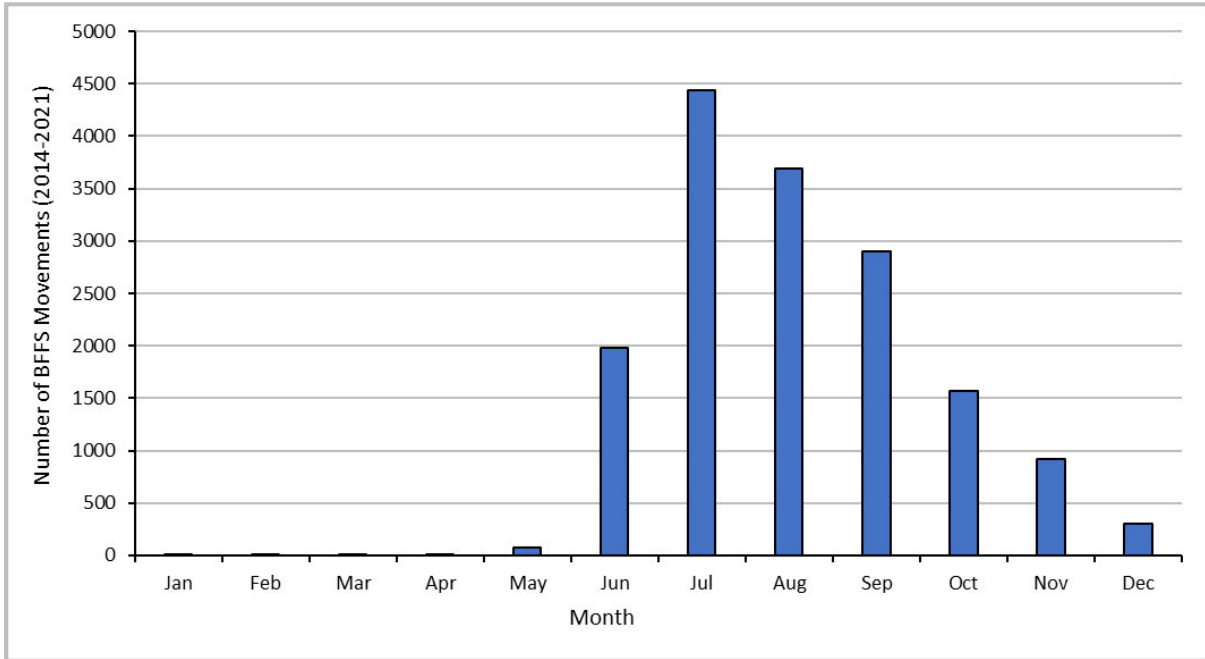


Figure 4 - Number of BFFS movements by month across all 8 years of data provided.

Figure 5 represents the number of BFFS movements per month separated by all 8 years of data provided. An average of 1,988 movements were made per year with 2016 having the highest number at 2,444. Over 95% of all movements from Eastern IFCA data per year were made in the cockle season. The highest number of movements in a single month was August of 2016 with 688 movements, accounting for 28% of all movements that year.

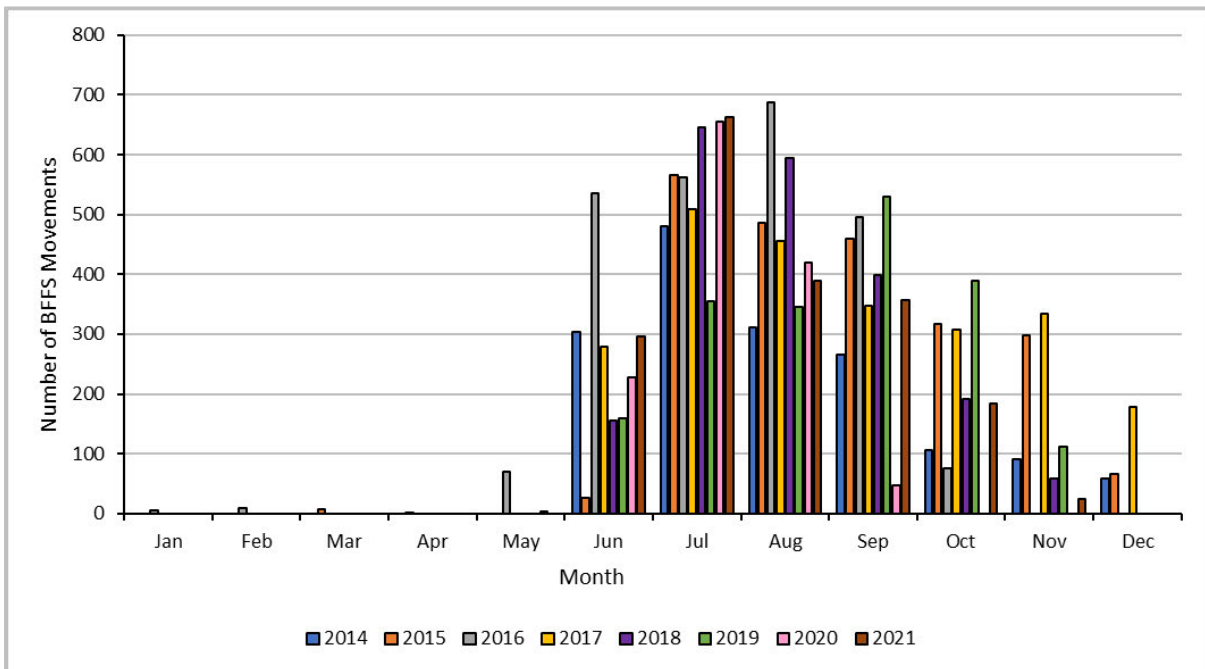


Figure 5 - Number of BFFS movements per month separated across all 8 years of data provided.

Figure 6 shows the average number of BFFS movements per day across the months of 2019 for cockle and mussel fishing only. As movements within the Covid-19 pandemic era were, on average, 20% lower than movements outside the pandemic era, a 2019 case study was used to illustrate movements per day. In 2019, a total of 1,892 movements were recorded across the year, all of which were recorded in the cockle season. The month with the highest movements per day was September with an average of 17.67. The lowest was November with an average of 3.73 movements per day.

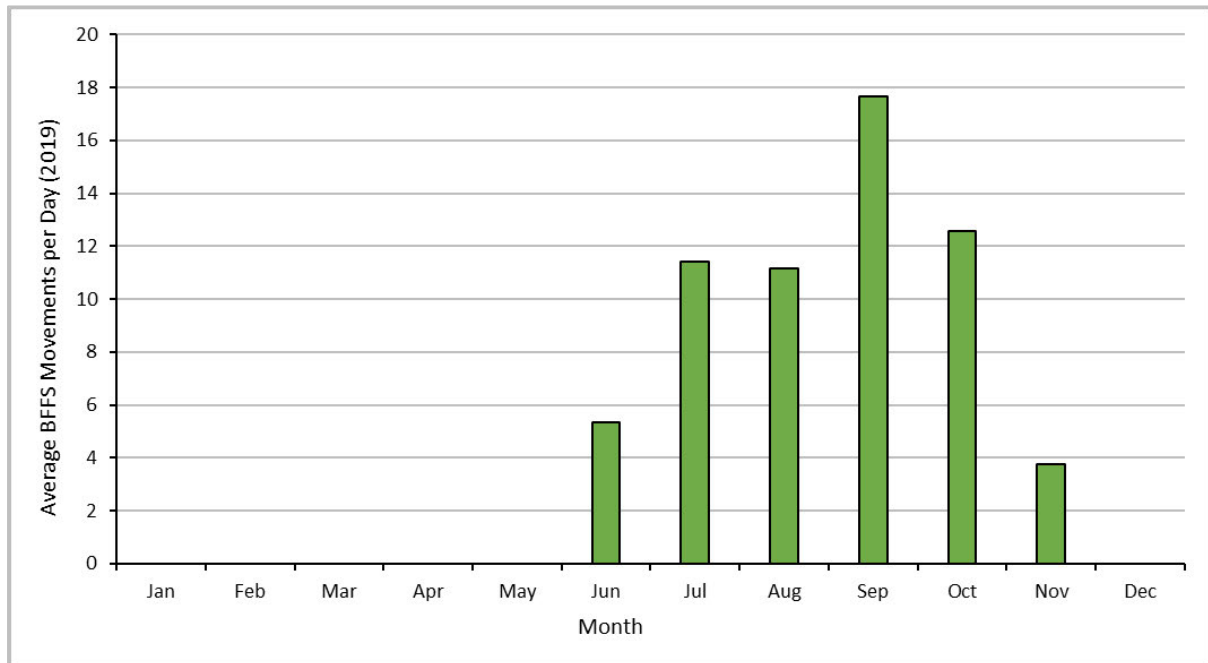


Figure 6 – Average number of BFFS movements per day per month across 2019 (pre-covid).

4 NRA REVIEW

Anatec NRA Ref	Anatec NRA Narrative	Marico Marine Comment
Chapter 1 Introduction	<p>Introduction</p> <p>Anatec Ltd were commissioned to undertake a Navigation Risk Assessment (NRA) for the BAEF to assess the potential impacts within the vicinity of the swing hole on existing users of the waterways associated with the PoB.</p>	<p>To provide a full assessment of the potential impacts to shipping and navigation, it is our opinion that the BAEF NRA should have reviewed the extent of The Haven pilotage district.</p>
Chapter 2 Regulatory Context	<p>Regulatory Context with reference to:</p> <ul style="list-style-type: none"> • Port Marine Safety Code; • PoB Standing Notice to Mariners; • The International Regulations for Preventing Collisions at Sea; and • SOLAS V 	<p>No comment.</p>
Chapter 3 Methodology	<p>3.1 Impacts Assessed</p> <p>Potential Impacts have been identified and concerns related to use of the swing hole:</p> <ul style="list-style-type: none"> • Disruption / Delay caused by use of turning circle and transit of BAEF vessels. • Increase in safety risk and subsequent commercial impacts; and • Safety impact if BAEF vessels are unable to turn due to time or tidal constraints. 	<p>Additional assessment required. Whilst relevant impacts have been considered at a high level, it is our opinion that more detail is needed to full consider the potential impact of additional BAEF ships on The Haven, and their potential use of the swing hole. Marico Marine would expect to see a baseline assessment completed initially, followed by a second assessment addressing the same hazards but instead using the forecasted increase and change in vessel traffic and operations.</p>
Chapter 4 Consultation	<p>Consultation</p> <p>Undertaken with the PoB, and the BFFS.</p>	<p>No comment.</p>
Chapter 5 Data Sources	<p>5.2 Visual Surveys</p>	<p>BAEF visual surveys of fishing vessel transits agree with data provided by the BFFS in fishing vessel numbers and</p>

	<p>Visual observation data has been collected via surveyors stationed alongside The Haven on:</p> <ul style="list-style-type: none"> • 18 August 2020 • 21 September 2021 	<p>departure times. The BFFS have informed Marico Marine that the arrival times occur between 2 hours before HW and HW lining up with observations made. Marico Marine found that the numbers recorded on each visual survey were slightly lower than the IFCA data over the 6-year period prior to the Covid-19 pandemic averaging at 1 vessel per day lower.</p>
<p>Chapter 6 Project Overview</p>	<p>6.2 Vessels</p> <p>Anticipated BAEF vessels to be between 90 and 100m LOA, and between 3.5m and 4m draft, with up to an extra 580 BAEF vessels visits per year.</p>	<p>Whilst the BAEF vessels will be comparable in size to the present commercial vessels, an additional 580 visits represent a considerable increase in vessel transits on The Haven. The PoB will require an effective traffic management strategy to accommodate this increase. The recommendation of a Navigation Management Plan (NMP) is a good one, but adequate consideration needs to be given to it by all relevant key stakeholders.</p>
<p>Chapter 7 Existing Environment</p>	<p>7.1 Port Control</p> <p>Port Control is not manned on a 24-hr basis, only around HW. It does not have a dedicated AIS, or Radar based vessel monitoring / management system.</p>	<p>Marico agree that <i>additional monitoring capability via dedicated AIS and radar traffic monitoring at Port Control</i> is required in order to facilitate enhanced vessel traffic surveillance and in turn navigational safety on The Haven.</p>
<p>Chapter 8 Marine traffic Analysis</p>	<p>8.1.2 Vessel Type</p> <p>Breakdown of vessel types, cargo vessels 66%, Other 31%, Tankers 2%, Fishing vessels < 1%.</p>	<p>Already highlighted within the BAEF NRA, fishing vessel activity is under-represented within AIS data as most fishing vessels do not carry AIS equipment. Therefore, with 26 fishing vessels operating on The Haven, this breakdown is likely inaccurate.</p>

<p>Chapter 8 Marine traffic Analysis</p>	<p>8.2.1 Vessel Counts</p> <p>The estimated total number of vessels during 2019, (414), 2020 (412)</p>	<p>Between 2019 and 2020 an average 413 vessels visited the PoB which represents over 2 movements a day; therefore, with an anticipated additional 580 BAEF vessels per year this represents an increase of 140%. The PoB will require an effective traffic management strategy to accommodate this increase. The recommendation of a NMP is a good one, but adequate consideration needs to be given to it.</p>
<p>Chapter 8 Marine traffic Analysis</p>	<p>8.3.2.1 / 8.3.2.2 Visual Surveys</p> <p>Two visual surveys were held.</p> <p>On the 21 September 2021 – 18 fishing vessels were recorded. All fishing vessels transits occurred within a 50-minute window, beginning 40 minutes after HW.</p> <p>A preliminary survey was undertaken on the 18 August 2020, 17 fishing vessels were observed inbound all arriving an hour before HW.</p>	<p>Our data analysis agrees with the typical number of fishing vessel transits per day. However, we believe BFFS's data improves the granularity of data and highlights a peak period of fishing vessel activity two hours before and after HW.</p>
<p>Chapter 8 Marine traffic Analysis</p>	<p>8.3.3 Consultation</p> <p>The peak period of fishing vessel activity is two hours before and two hours after high tide.</p>	<p>This agrees with our findings.</p>
<p>Chapter 9 Modelling</p>	<p>9.1 Tidal Assessment -Commercial Vessels</p> <p>The majority of overall commercial vessel transits occurred within the hour before HW.</p>	<p>This agrees with our findings.</p>
<p>Chapter 9 Modelling</p>	<p>9.3.4 Summary of Turning Circle Use</p>	<p>We note that the <i>Summary of Turning Circle Use</i> does not give any indication of</p>

	Three instances of use of the swing hole identified, turns all took less than 15 minutes.	the time +/- HW in which the vessels turned in the swing hole.
Chapter 10 Embedded Mitigation	Embedded Mitigation The FSA undertaken assumes certain mitigation will be in place. It is noted that the FSA approach identifies the need for additional mitigation.	It is assumed that these additional mitigations would be formalised in the recommended NMP, to be produced by the PoB.
Chapter 11 Impact Assessment	Vessel Turns It is likely that one turn of a BAEF vessel will be undertaken in the swing hole per tide and this will be in the hour before HW.	BFFS data indicates that all fishing vessel departures will occur +/- 2 hrs HW. BFFS suggested that all arrivals occur between 2 hours before HW and HW which may result in a conflict of interest between fishing vessels and BAEF vessels.
Chapter 11 Impact Assessment	11.1.3 Increased Commercial Vessels Movements Associated with BAEF Although BAEF will result in an increase of 580 vessel arrivals per year when this is considered against peak commercial vessels arrivals the actual increase would be 0.5 vessels per day from 2.2 – 2.7 vessels per day based on a peak of 800 vessels per day in 1996.	Whilst this suggests that the proposed increase in vessel traffic will be tolerable, there is no indication of how many of these vessels turned in the swing hole. Annex C suggests that no more than 50 vessels per year utilized the swing hole in the 1980s and 1990s including the peak of commercial traffic in 1996.
Chapter 11 Impact Assessment	11.2 Impact 2 – Increase in safety Risk and Subsequent Commercial Impacts Increase in risk to fishing vessels transiting The Haven earlier in the tidal cycle to avoid BAEF vessels Movements resulting in increased safety risks associated with water depths, grounds, and encounters (including interactions)	The use of the swing hole would likely take place in the hour before HW. BFFS data shows that the fishing fleet depart +/- 2 hrs HW, with the majority of sands transiting 1 hour before HW, hence increasing the likelihood of encounters. More interaction with PoB Port Control will be required.

<p>Chapter 12 Summary</p>	<p>Table 12.1: FSA Summary</p>	<p>The approach taken to risk assessment within the BAEF NRA appears 'lite-touch'. Whilst there is very good material around impact assessment etc. We would expect to see a greater range of potential hazards identified and listed out in ranked hazard lists / risk registers. This does not appear to feature anywhere in the document. Therefore, it leads us to believe that the NRA contains insufficient detail. Where are the baseline and residual risk assessments that we would expect to see, for example? Currently, we are unable to verify their 'workings'.</p>
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5 SUMMARY

Marico Marine have been engaged by the BFFS to undertake an independent review of the NRA commissioned by AUBP to support the consenting of the BAEF on The Haven, a tidal river of the PoB in Lincolnshire.

With the consenting process for the proposed development ongoing, the BFFS have concerns around how their fishing fleet will operate effectively considering the potential impact from increased shipping on The Haven. This review has found that the BAEF NRA requires additional work to fully address these concerns.

To ensure Marico Marine have undertaken a complete and independent review of the BAEF NRA, we have undertaken additional consultation, further data analysis to better understanding fishing vessel activity within the study area, and finally a desk-based review of the document to consider elements relevant to safety of navigation and risk assessment. Our findings follow:

5.1 DATA

- AIS and visual data used within the BAEF NRA under-represented the level of fishing vessel activity present on The Haven.
- Whilst there was good agreement between the BAEF and BFFS data with regards to number of vessels transiting per day, the resolution of departure was better in the BFFS dataset. Even though the visual data used for the BAEF NRA aligned with the IFCA data, the visual surveys had relatively little data to be fully indicative of fishing vessel movements.
- AIS data had already been identified within the BAEF NRA report as underrepresenting fishing vessel activity.

5.2 REVIEW

- The BAEF NRA was limited in scope by its focus on impacts within the vicinity of the swing hole. In our opinion, the BAEF NRA should have reviewed the extent of The Haven pilotage district or at least considered an NRA split into two focussed areas - the swing hole and the proposed wharf, for example.
- Marico Marine's approach to this NRA would have been as follows:
 - Complete a baseline NRA for commercial, fishing and recreational vessels covering at least collision, contact and grounding.
 - A second NRA would have addressed the same identified hazards, but instead use the forecasted increase and change of traffic and operations.
 - Finally, we would have compared the baseline with the forecast NRA and assess the change between the two navigation risk profiles. This is what determines whether change is acceptable and supports the proposal of additional risk control measures.

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- There is little information within the BAEF NRA that suggests a potential change of risk profile has been assessed. However, the relevant ranked hazard lists and risk registers that we would expect to see within the report are not present.
 - Furthermore, the absence of a forecast or residual risk assessment questions whether sufficient consideration has been given to assessing the full impact of an additional 580 BAEF vessels per year on The Haven.
 - Whilst our analysis suggests there may be a conflict between BAEF and fishing vessels as a result of their departure timings, without that assessment of change between the baseline and forecast navigation risk profiles, it is difficult to understand the impact here and on risk.
 - The recommendation for PoB to produce a Navigation Management Plan and formalise current and future risk control measures, is supported. Aimed at all marine users within the study area and with the potential to facilitate enhanced vessel traffic surveillance and in turn navigational safety on The Haven, this is viewed as a positive measure (assuming full consultation is undertaken with all relevant stakeholders).

6 CONCLUSION

In general, the BAEF NRA was found to be a well written, considered, and focused report. However, in completing our review it was found to lack sufficient detail in two key areas:

- III. Representative fishing vessel data; and
- IV. Evidence of baseline and residual risk assessments

Based on our experience of conducting NRAs to support consent applications around the UK, it is our concern that:

- The BAEF NRA is likely to have underestimated the impact to fishing vessel activity as a result of employing under-representative fishing vessel data.
 - It is therefore our opinion that further data analysis is required in order to better represent fishing vessel activity on The Haven and within the study area.
 - **We recommend** that the additional fishing vessel movement data supplied by BFFS should be included and fully considered within a future or revised NRA in support of the proposed development.
- The BAEF NRA in its current form does not address the change in navigation risk brought about by the development with enough rigour to fully support the consent process.
 - We suggest that if baseline and residual risk assessments have been undertaken, that they are introduced into the document for completeness, clarity and stakeholder comment.
 - **We recommend** that a final NRA for the proposed development be delivered that evidences both baseline and residual risk assessments as they are both missing from the current BAEF NRA. This would also provide an opportunity to include and fully consider the additional fishing vessel data supplied by BFFS (as recommended above).

It is our expectation that these recommendations, alongside the opportunity for additional key stakeholder engagement, will result in a fully considered and representative NRA to meet the challenges of the consent process.

Annex A Data Provided by BFFS

Table 1 – Total Landings recorded by the Eastern IFCA.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
2014						152	240	156	133	53	45	29	808
2015			4	1		13	283	243	230	158	149	33	1114
2016	3	5			35	268	281	344	248	38			1222
2017						139	254	228	174	154	167	89	1205
2018						78	323	297	199	96	29		1022
2019						80	177	173	265	195	56		946
2020					2	114	328	210	24				678
2021						148	331	195	178	92	12		956
Grand Total	3	5	4	1	37	992	2217	1846	1451	786	458	151	7951

Table 2 – Required arrival and departure times to different parts of the sand banks where high water is 0 minutes.

Area	Transit Time (h/min)	Transit Time (min)	Required arrival time to high sands (min)	Required arrival time to low sands (min)	Required departure time from Boston to the High sands (min)	Required departure time from Boston to the low sands (min)
Ferrier Sand	2h 40m	160	90	135	-70	-25
East Main Sand	2h 40m	160	90	135	-70	-25
Stylemans Sand	2h 30m	150	90	135	-60	-15
Blackguard Sand	2h 25m	145	90	135	-55	-10
Pandora Sand	2h 30m	150	90	135	-60	-15
Daseleys Sand	2h 20m	140	90	150	-50	10
Rooks Middle Sand	2h 20m	140	90	150	-50	10
Thief Sand	2h 15m	135	90	160	-50	25
Westmark Knock Sand	2h 10m	130	90	150	-40	20
Hull Sand	2h 15m	135	90	130	-45	-5
West Main	2h 30m	150	75	125	-75	-25

Breast Sand	2h 25m	145	75	135	-70	-10
East Range	2h 5m	125	75	135	-50	10
West Range	2h 0m	120	75	135	-45	15
Gat Sand	1h 40m	100	80	150	-20	30
Herring Hill	1h 40m	100	75	135	-25	35
Black Buoy Sand	1h 5m	65	60	140	-5	75
Toft Sand	1h 20m	80	60	135	-20	55
Trap Sand	1h 45m	105	90	135	-15	30
Roger Sand	1h 40m	100	90	135	-10	35
Long Sand	2h 5m	125	105	165	-20	20
Butterwick Sand	1h 5m	65	60	120	-5	55
Wrangle Sand	1h 45m	105	75	135	-30	30
Friskney Sand	2h 5m	125	75	130	-70	5
Wainfleet Sand	2h 15m	135	75	135	-60	0
Dogs Head Sand	2h 35m	155	90	150	-65	-5
Sunk Sand	2h 50m	170	90	150	-80	-20
Heacham Sand	2h 45m	165	75	135	-90	-30

Annex B BFFS Consultation Notes

Consultation Notes - Boston & Fosdyke Fishing Society

Client: Boston & Fosdyke Fishing Society
Project: 21UK1822_Boston_NRA
Venue: MS Teams
Date of Meeting: 07-Jan-2022 at 10:00-11:30

Present:	Marico Marine	Ryan Horrocks (RH) Paul Hanson (PH)
	BFFS	Lee Doughty (LD) Wayne Brewster (WB)

Notes

Marico Marine and the Boston & Fosdyke Fishing Society both attended a Teams meeting on 7 January 2022 to discuss the potential impacts associated with the increase in vessels from the development of multiple berths down river from the swing hole, as a result of the commissioning of the navigational risk assessment independent review by the Boston & Fosdyke Fishing Society. The meeting considered the increased use of the swing hole and addressed the fishers' concerns.

Item	Action item / Notes for the record	Action
General items of discussion	<ul style="list-style-type: none"> WB stated that the Port of Boston Harbour Master is Richard Walker, contact details will be emailed to PH. LD has provided an email chain between himself and Richard Walker detailing the Anatec report is only a draft. WB added that Richard Walker is due to step down in May. PH asked about the wet dock expansion works – LD stated the gate is getting widened. PH asked about the swinging circle duration – LD stated that the swinging circle is not in use at the minute and therefore does not affect business. LD also stated the turning circle has not been used for ships to turn and proceed back down the river as they would need to when the new facility is built. LD stated that the facility will be up and running within 3-4 years. By which, the wet dock expansion will be completed. LD stated he was informed that the Anatec NRA was only a draft version. LD mentioned a notice to mariners which stated it was dangerous for smaller boats to overtake larger vessels. LD then proceeded to say fishing vessels rarely overtake larger vessels as the only way 	WB

	<p>they could is if the larger vessels reduced their speed below the 6kt speed limit.</p> <ul style="list-style-type: none"> • LD mentioned that “passing ships” refers to two vessels travelling in opposite directions, not overtaking. • LD suggested a system must be implemented to control predicted number of vessels. • LD stated all ships will turn in the hour to HW and could take 30 – 40 minutes to turn in the dock basin. • LD stated up to 3 ships will travel per tide. • LD stated there is no rule as to how to turn the ships. • LD stated vessels can travel 8kt on a flood tide but are restricted by the 6kt speed limit. • LD stated no management plan would be made until the development was to be passed. 	
Concerns	<p>Concerns raised</p> <ul style="list-style-type: none"> • PH mentioned the 50% split between ships turning in the wet dock and turning circle – LD stated they were unsure if this was 50% of vessels per day split between tides or 50% of vessels per week where the turning circle was to be used on specific days. • PH asked about VTS – LD stated there was no VTS, only a channel 12 and notices. Control is only operational between the 4 hours around high tide. • LD stated there was no management plan for the development and requested one be made. • LD stated that the Port of Boston has not produced an NRA for the works. • LD stated Anatec have unvalued the volume of traffic that comes with the new development. • LD mentioned ships will be arriving and departing with each tide and these vessels can only pass past the cooperation point in the channel. Causing more time constraints. • LD mentioned that the wet dock will only have one gate and will therefore only be able to open when the water is at a certain level. Vessels are more likely to use the turning circle. • LD mentioned the turning circle has been dredging for 7 months and has not produced any results as the hole gets refilled on the flood tide. • LD stated when ships depart from the dock before 1.5 hours before HW it can cause difficulties because lack of water depth and narrowness of the river channel. 	
Data	<ul style="list-style-type: none"> • LD will provide Marico Marine with logbook data across both summer and winter periods for seasonal variation with logs before covid to compare the numbers. Data was also provided on the 06/01/2022 which included transit times for maximized fishing time. 	LD

Annex C Captain B Franklin's Letter

Captain B Franklin



Boston

Dear sir.

My name is Captain Brian Franklin, I am a Master Mariner FG. I gained my master's Certificate In 1960 and have been a Navigating Officer and cable laying officer -Post Officer submarine branch, Atlantic and Pacific Oceans. I have been Cross Channel Ferries Chief Officer, Berthing Master in Southampton supervising large passenger and cruise liners berthing. King Fahad industrial Port, Jubail, Saudi Arabia the largest Petro chemical port in the middle east Harbour Master. New build. Setting up marine compliance schemes, overseeing £65 billion contract. Chief Officer IOW ferries. Lastly, I was Harbour Master for the port of Boston from 1987 to 1998 when I retired.

I am writing to you to give my expert opinion on some of the navigational issues I can foresee with the increase in shipping relating to the new BAEF project. As Harbour Master I took meticulous records of all the shipping movements at the Port of Boston during the late 80's and 90's, this includes the shipping on the riverside berths and the number of ships that used these berths and how many ships were turned in the swinging hole. In the mid 90's the port had its busiest period around 800 ships in 1996 visiting the port, these vessels mainly used the wet dock but some did use the riverside berths and Witham Wharf, but there were never more than 50 ships a year using the swinging hole and for many years it was considerably less, these ships would be swung on arrival and reversed to the riverside berths or reversed out and swung on departure, this procedure is much different to the process which the new BAEF ships will be doing, were ships will come up to the port, swing and then proceed back down the river to the new proposed wharf, or to leave port if they have previously been unloaded, there will be up to 580 ships swinging rather than the maximum we ever turned of 50 in the peak years for the port in the 1990's.

The port of Boston has suggested it could swing as many as 50% of these extra ships in the wet dock, but I have concerns as to how this will be achieved, the Port is having a new single gate installed to the entrance to the wet dock, this will replace the existing lock which has two sets of gates, the lock has always been a great asset to the port because as Boston has a relatively short tidal window the lock enables ships a greater flexibility to arrive and leave the port without effecting the water level in the wet dock, when the single gate is installed, the port will lose this ability which will shorten the tidal window for shipping movements in and out the wet dock, this then will make it very difficult for the port to swing many if any of the BAEF vessels in the wet dock. The loss of the lock is also a loss of a berth in the wet dock as this has always been used as an extra unloading berth and waiting area for a ship to make a quick departure. The new single gate will also cause issues with the manoeuvring of vessels in the wet dock, the port will not want the water level in the wet dock to drop too low as vessels will not be able to move berths, or in relation to the grain berth the ships will not be able to move forward or aft to fill the ship level, this is yet another reason why the wet dock is unlikely to be used to swing the BAEF ships and the 50% figure quoted is massively exaggerated. Also, with the length of ship's being proposed for the BAEF vessels it would be unlikely for a ship of this size to be swung in the wet dock, when the north and south wet dock berths are occupied, the West end berth in the wet dock is around 140m wide and narrower as you come towards the lock end of the wet dock so if there is a vessel on the north quay wet dock berth and a vessel on the south quay berth it would be difficult to turn a ship safely, and not something you would do quickly

if it was done. I find it very hard to believe the port would want to have this volume of shipping turning in the wet dock and all the extra problems that this could bring, plus the longer time it takes when there is a newly dug turning circle. The Port says it will turn the ships in the wet dock when it can, in my experience this will not be very often, and with a single gate even more unlikely. In my experience it can take up to 30 minutes to swing a ship in the swinging hole and longer in the wet dock and with as many as 3 ships per tide requiring to be turned, I cannot understand how this will be done.

I can foresee many other navigational issues; it had been suggested that the swinging hole would not be maintenance dredged once the EA has finished the installation of the new tidal gates, this would be very dangerous as my experience has shown me the river can silt up very quickly and if a ship was to run aground while turning it could be disastrous blocking the river for days or worse result in the loss of a ship as happened at Sutton bridge some years ago. With so many ships arriving and swinging I have grave concerns to how the fishing fleet will fit it to the process, there have been incidence in the past, I recall the loss of a fishing vessel when it was involved in a collision with a ship at the end of the river in Aug of 1989, fortunately the crew of the vessel were picked up by the ship but the fishing vessel sunk and was a total loss. I can see problems when fishing vessels are returning to port with a following tide especially on spring tides, to be met with a ship swinging and possibly another leaving the wet dock and maybe another ship close behind them, they will have nowhere to go while they wait for the ship to swing and proceed to the BAEF berth or depart.

I also have great concern with the ships berthed on the new BAEF wharf, these ships will be under a lot of pressure to leave this wharf as soon as possible to make sure that the berths are vacant for the incoming vessels, this creates its own issues as the earlier these ships leave these berths the more dangerous it is for any vessel coming the other way, whether it is a pleasure vessel or a fishing vessel. The Haven is very narrow especially early in the tide and a ship has to stay in the middle of the river this leaves very little depth of water or width of river either side of the ship, ships of this size would just suck the water away from any passing vessel (vessels going in the opposite direction not overtaking) and cause them to ground or even roll over, the narrow channel would be like a funnel, the Port of Boston Annual Standing Notice to Mariners No 11 Interaction: does state that if a fishing vessel overtakes a ship that " there is a serious risk of interaction sucking the smaller vessel in to the larger vessel, turning the smaller vessel broadside to the river and therefore causing risk of collision and capsizing " this relates to overtaking vessels but is equally relevant to vessels passing in opposite directions. The port has said it does not expect the BAEF ships to operate outside of the times that vessels work now but there will be immense pressure to get vessels away from the BAEF wharf and if vessel masters received a local exemption certificate which allows them to transit the river without a pilot there would be a high probability of interaction between a fishing vessel and a ship, I believe for safety if this facility is approved there should be time restrictions on when vessels can leave the BAEF wharf to prevent this type of interaction.

Finally, I would like you to consider what would happen if a BAEF vessel were to transit to the port and not have time to complete its turn and reach the new BAEF wharf to be unloaded if the ship were to be in the wet dock to turn and didn't have time to leave to reach the BAEF wharf. I can see this being a real possibility, then the only way to keep the shipping flowing would be to unload the vessel on the riverside berths or in the wet dock, this would mean the RDF would have to be transported by road to the facility, this would create over a hundred lorries per ship going over the Haven bridge in Boston and all the related issues that come with that. Any delay in the unloading at the BAEF facility could also result in this scenario, I consider that this may happen 2 or 3 times a week, shipping needs to keep moving not unlike the aviation industry, there is significant costs if

ships are not in the right place at the right time. I hope you will consider the points I have made, I had to set the record straight on the shipping movements at the Port in the 80'S and 90'S, I was the Harbourmaster at this time and kept meticulous records, the swinging hole was only used for ships on the riverside berths and no more than 50 times a year.

YOURS FAITHFULLY

