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17 July 2023

Your ref: EN010109

National Infrastructure Planning
Temple Quay House
2 The Square
Bristol, BS1 6PN

Dear Sir/Madam

Application by Equinor for an Order Granting Development Consent for the Sheringham and Dudgeon Extension Projects.

Planning Act 2008 – Section 89 and The Infrastructure Planning (Examination Procedure) Rules 2010

Deadline 8 – Rule 17 Letter Requesting Further Information

Thank you for inviting the Maritime and Coastguard Agency (MCA) to provide additional information to the Secretary of State as part of its assessment of the proposed Sheringham and Dudgeon offshore windfarm extension projects.

Representatives from the MCA's UK Technical Service Navigation Branch have considered the detail of the responses provided by the Applicant, including qualified Master Mariners with relevant expertise, who represent the United Kingdom (UK) in relation to our international obligations for vessel routing and safety of navigation in UK waters. The MCA is acting on our statutory responsibilities and obligations for ensuring that the future of shipping in this area is able to continue to operate safely. The Applicant is required to provide the evidence and justification to support their position and the MCA's role is to provide its expert judgement on whether we believe their approach and methodology is appropriate and whether we are able to support the position that this risk is ALARP. The MCAs remit is as the relevant authority for safety of navigation in UK waters and is independent of any commercial interest. We are not consultants and do not provide the statistical calculations that the Applicant has presented to suggest otherwise. We present our justified qualitative judgement which is considered evidence on the impacts to shipping and navigation.

On this occasion we are unable to reply to every finer point of the Applicant's response where we dispute specific statements due to the length of time this would take and the very short deadline. We would be happy to provide this with more time if necessary, however we would like to focus on the key issues in responding to the Examiner's request for further information.

The Applicant provided three main documents regarding navigational matters at Deadline 7:

- *Cover Letter (Document Reference 21.1)*

- *The Applicant's Responses to the Examining Authority's Fourth Written Questions (Document Reference 21.5)*
- *The Applicant's Comments on the Maritime and Coastguard Agency's Deadline 6 Submission (Document Reference 21.11)*

5. Navigation and Shipping

Shipping Collision Risk and Mitigation

In The Applicant's Responses to the Examining Authority's Fourth Written Questions - Revision A (Document Reference 21.5) at Q4.19.1.1, the Applicant has provided localised results of Navigational Risk Assessment modelling for DEP-North, plus information on a submitted 'without prejudice' Offshore Work Plans for a surface structure free area (see Works Plans (Offshore) (Without Prejudice) - Revision A (Document Reference 2.7.2)), amongst other things.

a) Respond in full to the Applicant's submissions on the matter of navigation and shipping, including if you agree with the analysis and conclusions.

- **Local analysis of DEP North**

  The Applicant responded to ExA Question 4.19.1.1 at Deadline 7 saying that "*focusing in on a localised area in this manner is highly unusual and was only done so at MCA's request*". The Applicant presented the statistical analysis of collision risk for the entire DEP and SEP area and MCA then asked what the localised change in collision risk would be. We would point out that there have been multiple occasions when navigational concerns have focussed in on specific areas of other offshore wind farm boundaries during the planning stages. It is perfectly reasonable and appropriate to question whether the localised hazards have been assessed. In this regard, MCA guidance in MGN654 paragraph 3.2 states:

  > *The recommendations should be used to evaluate all navigational possibilities, which could be reasonably foreseeable, by which the siting, construction, extension, operation and de-commissioning of an OREI could cause or contribute to an obstruction of, or danger to, navigation or emergency response. They should also be used to assess possible changes to traffic patterns and the most favourable options to be adopted, including those of operational site monitoring.*

  MGN654 Annex 1 (NRA methodology guidance), Annex D.4.11 provides an Illustrative Example of an Area Traffic Modelling Process where for the future case with the wind farm:

  > *Key risk areas identified in the marine traffic simulation should be scrutinised and reviewed with respect to the local marine environment and specific navigation simulations.*

  MGN654 Annex 1 (NRA methodology guidance), Annex D.5.1 provides guidance on the Use of Specific Navigation Assessment Techniques:

  > *Specific Traffic Assessment may be required to answer detailed questions about the feasibility and risk associated with specific navigation activities in or around an OREI. Typically, such assessment could be performed in response to:*
  > - *areas of "High Risk" identified by the Area Traffic Assessment*
  > - *the need for an "ALARP declaration" in the hazard log*
  > - *the need to evaluate the effectiveness of a Risk Control in the risk control log*
  > - *a request to evaluate the ability for SAR operations and for emergency response vessels (e.g. emergency towing vessels) to render assistance to vessels, in and around an OREI.*

  MCA recognises that the area is complex for navigation and that the risk of collision is already high which will only increase with the introduction of DEP. Given the likely squeeze

of traffic when safe passing distances are applied (please see MCA's responses at Deadline 3 and 5), vessels will be constricted into a route 1.3nm wide which, given the high collision risk already present in the area, MCA believes this width is insufficient. Therefore, a calculation on corridor widths was conducted based on Nautical Institute guidance resulting in the required width as 3.24nm. This was based on a 195m length vessel which was the maximum length we found using available MCA records on AIS data in August 2021. It is standard to apply the maximum length in these calculations. Whilst the Nautical Institute guidance uses wind farms on either side of a corridor, the principles of the required widths is applicable to other navigation hazards, including grounding, where vessels should still apply a safety buffer.

- **Controlling Depth – 10m v 15.3m**
  We note the applicant's recognition and acceptance of the width of adequate sea room of 3.24nm (section 2.4.1 of document reference 21.11) so the main matter in dispute is from where the available safe sea room is measured. We strongly dispute the Applicant's assertion that MCA made a "*mistake regarding the controlling depth*" and that it is "*a fundamental error of fact*". At Deadline 5 we provided our assessment on the 15.3m controlling depth, noting there was no vessel draught analysis in either the NRA [APP-198] or the Navigational Safety Technical Note [REP3-031]. Our assessment was based on the following:

  i. The Outer Dowsing Channel is used by various vessel types including tankers, passenger, cargo, dredgers, recreation, fishing and oil and gas support. The deeper draught vessels are dependent on the available depths in the area and the NRA shows that vessels transit on the eastern side of the channel in the deeper water which will minimise the effects of sea state, particularly in adverse weather conditions. The NRA clearly shows that vessels transit east of the 15.3m wreck.
  ii. Vessels will passage plan to avoid areas of shallower water which includes the area with two wrecks in the channel that reduce depths to 14m and 14.5m and the area of 11.3m shallower water to the north. The prevailing traffic will also choose to avoid the 15.3m and 13.2m wrecks (controlling depths) southeast of the Triton Knoll Bank.
  iii. 10m water depth does not provide sufficient depths for vessels with larger draughts in heavier or adverse weather where deeper water is required to accommodate dynamic draught.

  At Deadline 6 the Applicant provided a bar chart in their REP6-024 document to show the breakdown of vessel draughts using the Outer Dowsing Channel and that the mean draught was 6.1m. The chart shows that during the 12-month period in 2019 up to 45% of the vessels had a draught of 6-8m and 8% of the vessels had a draught of 8-10m. It also shows that there were occasions when vessels with draught greater than 10m were present, although the exact frequency is unclear. MCA must consider the impacts to navigation in a worst-case scenario i.e. the largest vessels at all states of tide, and weather and sea state conditions, and to use the mean of 6.1m is inappropriate for us as it would disregard vessels with a larger draught. When passage planning, a vessel's Master and officers must consider the dynamic draught which will include squat allowances, roll/heel allowance, and allowance for zone of confidence of the charted depths. These will be added to the draught of the vessel, the lowest expected height of tide will be subtracted, and a safety allowance is added to calculate dynamic draught of a vessel.

  Using an example of a 183m tanker with 30000GT at 13Kts speed, the 45% of the vessels with a draught up to 8m would have a dynamic draught of up to 10.2m:

Dynamic draught = draught + squat[1] + charting accuracy (Catzoc) allowance[2] + safety allowance[3] – Height of tide
= 8m + 1.2m + 0.6m + 0.5m – 0.1m (LAT)
= **10.2m**[4]

The 8% of vessels with a draught of up to 10m would have a dynamic draught (using the same vessel example) of up to 12.5m:

Dynamic draught = draught + squat + charting accuracy (Catzoc) allowance + safety allowance – Height of tide
= 10m + 1.5m + 0.6m + 0.5m – 0.1m (LAT)
= **12.5m**[5]

The calculation for dynamic draught helps us to understand the depth at which a vessel will run aground which is not a depth an operator would aim for while navigating. A prudent mariner will add an adequate clearance (minimum Under-keel Clearance) on top of the dynamic draught when identifying safe navigable depths.

Both dynamic draught calculations exceed 10m which does not support the Applicant's assessment that the 10m controlling depth line is appropriate. Therefore we must assume that the width of adequate safe sea room must be measured from a point deeper than 10m. Given the way points to the north of the Outer Dowsing Channel, other water depths in the channel and wrecks off DEP-N that need to be considered when passage planning, it is logical to use the 15.3m wreck as a controlling depth since the depths to the east of the 10m contour line in parallel to the direction of travel is 11.4m which is less than 12.5m (dynamic draught of a 10m vessel). The next available depth on the chart after that (whilst still paralleling the 10m contour line and the direction of travel) is 15.3m which is where vessels will set their western limit. This is supported by the vessel tracks identified in the NRA traffic survey and shown in Figure 7.2 of the Navigational Safety Technical Note [REP3-031] where all but one of the transits passed east of the 15.3m wreck. Whilst there are areas of sea in the Outer Dowsing Channel where depths are less than 15.3m, the deeper draught vessels will aim to transit in the deeper water on the eastern half of the channel. The DEP North will impede this route forcing vessels to deviate into more constricted sea space with shallower water depths where there will be an increased risk of grounding.

MCA has suggested that either the red line boundary is reduced or an 'exclusion area' is created up to a line between the Mid Outer Dowsing buoy and Dudgeon Buoy. The distance between this line and the 15.3m wreck is 3.2nm which is consistent with the width of adequate sea room calculation of 3.24nm.

- **Safe passing distances**
  Whilst there are no mandatory safe passing distances and that vessels will determine the distance based on their own risk assessments, the use of 1nm is not an unreasonable or

[1] Based on standard industry block coefficient and squat calculation formula (Squat = C_b x V^2 /100).
[2] Based on UKHO NP231- Guide to practical use of ENC. The mobile seabed could increase this value.
[3] Minimal value to allow for pitch, roll and heave.
[4] MCA guidance on Under Keel Clearance over subsurface OREI devices in MGN654 Annex 3 is more cautious and uses a greater safety allowance of 30% which would increase the dynamic draught to 12.48m.
[5] MCA guidance on Under Keel Clearance in MGN654 Annex 3 would increase the dynamic draught to 15.6m.

unrealistic figure. In MCA guidance in MGN654 Annex 2 it indicates passing distances of less than 1nm is either high or very high risk. In the guidance document titled *Guidelines for Offshore Marine Operations,* owned and endorsed by Norwegian Shipowners' Association, Norwegian Oil and Gas Association, Netherlands Oil & Gas Production Association, Danish Shipowners Association, Oil & Gas UK and United Kingdom Chamber of Shipping, (available from https://g-omo.info/?page_id=2) in Chapter 8.15 (Collision Risk Management) it recommends that passages should be planned so that vessels pass at least 1nm from a facility and any operations. In our Deadline 3 response we applied localised vessel data to the PIANC guidance to highlight the safe passing distance between a shipping route and a wind farm. This was calculated as 1.2nm, although in subsequent calculations we have used the lesser figure of 1nm.

MCA recognises that in some instances some vessels pass closer to wind farms than others and of the "*extensive evidence of several* [four] *wind farms*" the Applicant provided [REP5-050]:

- The traffic passing between West of Duddon Sands and Barrow do so to avoid the longer route and passage time to Belfast by transiting south of Walney wind farm. The traffic here is very much established where Stena is the regular operator, and the only other traffic is mainly smaller support and fishing vessels.
- The traffic around Humber Gateway passes closer than 1nm due to vessels entering the TSS and avoiding other vessels using the pilotage area. It can be noted that the area is inside the Humber Vessel Traffic Services area which acts as an additional mitigation measure for collision and allision avoidance.
- The traffic to the east of Rampion that is mostly smaller commercial vessels and fishing vessels pass closer to the wind farm do so to avoid crossing the Dover Strait TSS which is not shown in the image.

For more localised examples which would provide more of an indication of the preference of local vessels passing wind farms, the NRA shows vessels passing 1.5nm east of Sheringham Shoal, 1.4nm east of Triton Knoll and the vast majority passing west of Dudgeon is more than 1nm.

- **Calculations for Sensitivity Modelling**

The Applicant has placed substantial weight to their statistical analysis of the navigational risk. As explained in ISH7 there are several tools and techniques available in a Navigation Risk Assessment and often a combination of some or all is used. These include expert judgement, qualitative assessment, quantitative calculations, simulations, trials, and analysis of the real-world situations.

Whilst we recognise that the model assumes a conservative view of the collision frequency, this in itself is not evidence to show that the increase in collision risk has not been underestimated since it is the results that the model produced that did not meet our expectations on the likely increase of the full navigational risk, including allision and grounding. The sensitivity analysis assumes a 100% accuracy of the model which suggested that the removal of the northwestern extent of DEP-North would reduce collision risk by approximately 3%. However, MCA does not believe this is a reasonable conclusion as the future extent of the traffic (future channel width) has not been represented with both safety buffers and more condensed traffic, and we are testing it against qualitative factors of good seamanship and compliance with COLREG i.e. collision avoidance in head on and converging traffic situations. The narrowing of the channel limits mariners' options for taking early and substantial avoiding action if a collision scenario is identified, which is particularly relevant for a southbound deeper

draught vessel. Collision risk change for the entire area is more than 11% and we would expect a higher change of collision risk than 3% off the DEP North area.

- **Questions in the Applicant's Cover letter (Document Reference 21.1)**
  The Applicant put forward some questions in their cover letter:

  1. *Would the MCA accept that whilst some vessels may plan for safe passing distance of 1nm, that there is substantial evidence that not all vessels do and that there is no mandatory safe passing distance?*
     MCA Response: See above. MCA agrees there are no mandatory safe passing distances. These will be determined by the vessel's Master through their own risk assessments and there is evidence to show vessels leave 1nm and more passing distances. MCA guidance in MGN654 Annex 2 indicates passing distances of less than 1nm is either high or very high risk.

  2. *Does the MCA now accept that the controlling depth in the Outer Dowsing Channel is 10m as confirmed by Trinity House?*
     MCA Response: See above. MCA does not agree the controlling depth is 10m as evidenced by the dynamic draught calculations.

  3. *If so, does the MCA accept that this undermines its argument that the PIANC guidance supports its proposed 'buoy to buoy' exclusion zone?*
     MCA Response: N/A

  4. *Does the MCA accept that the PIANC guidance it has sought to apply was intended to apply where ships are passing between two wind farms, which is not the case here?*
     MCA Response: See above. The PIANC guidance was applied to show safe passing distances between localised traffic and a wind farm, not the distance between two wind farms. The Nautical Institute guidance was used to indicate the width of adequate sea room which can be applied to scenarios with navigation hazards on both side of a route, not solely wind farms.

  5. *Given that the MCA agreed at ISH7 that the scenario presented represented the worst case for collision and allision, does this not address their initial concern regarding whether the worst-case constriction of traffic had been assessed?*
     MCA Response: It does not address our concerns as it is the statistical results that does not correspond to our understanding of the likely impacts on sea room constrictions using our professional and expert judgement on seafaring and good seamanship.

  6. *What new information prompted their concern regarding the red line boundary of DEP-N at Deadline 1 in February 2023, given that it had had multiple opportunities to raise that concern before and did not do so?*
     MCA Response: As explained in our Deadline 6 response, we reviewed the NRA at PEIR and noted that key elements of the assessment were missing i.e. the full traffic survey and results of the Hazard Identification (HAZID) workshop. These would have informed the NRA and as noted in our PEIR response further comments would be provided when the NRA was updated. It is important to review both the Hazard Log and remaining sections of the NRA together and this was only provided after the PEIR stage. MCA provided comments on the final NRA after acceptance at Deadline 1.

b) Specify if the Applicant's revised 'without prejudice' proposal addresses your concerns and changes your position if the risk to navigation would be as low as reasonably possible (ALARP), and if the policy requirements in NSP EN-3 (including Paragraph 2.6.165) are met.

MCA Response:
In the Applicant's response to ExAQ4 they state that "*an alternative without prejudice surface structures free area*" was provided in the Offshore Works Plans (Without Prejudice) [document reference 2.7.2], submitted at Deadline 7 to shows a surface structures free area that complies with the MCA's calculation for adequate sea room to allow four vessels to safely pass each other in the Outer Dowsing Channel. The images in this document are not presented on a navigational chart and are without calculations on the sea room so they are inadequate for graphically representing that sea room is sufficient.

MCA's opinion has not changed since our representations were made at Deadline 5. The MCA considers the increase in collision risk in the DEP North area to be unacceptable. This takes into consideration the local effect of the DEP North extension and the already high collision risk associated with the naturally confined waters of this part of the North Sea.

c) If your concerns are not alleviated with the Applicant's revised 'without prejudice' proposal, confirm if your proposed wording for the dDCO in your letter dated 6 July 2023 and the accompanying diagram (Figure 1) is your final position, or provide alternative wording and diagram.

MCA Response:
In light of no alternative wording proposed by the Applicant, the wording in our letter dated 6 July 2023 and accompanying diagram (Figure 1) is our final position.

Yours faithfully,

Nick Salter
Offshore Renewables Lead
UK Technical Services Navigation