



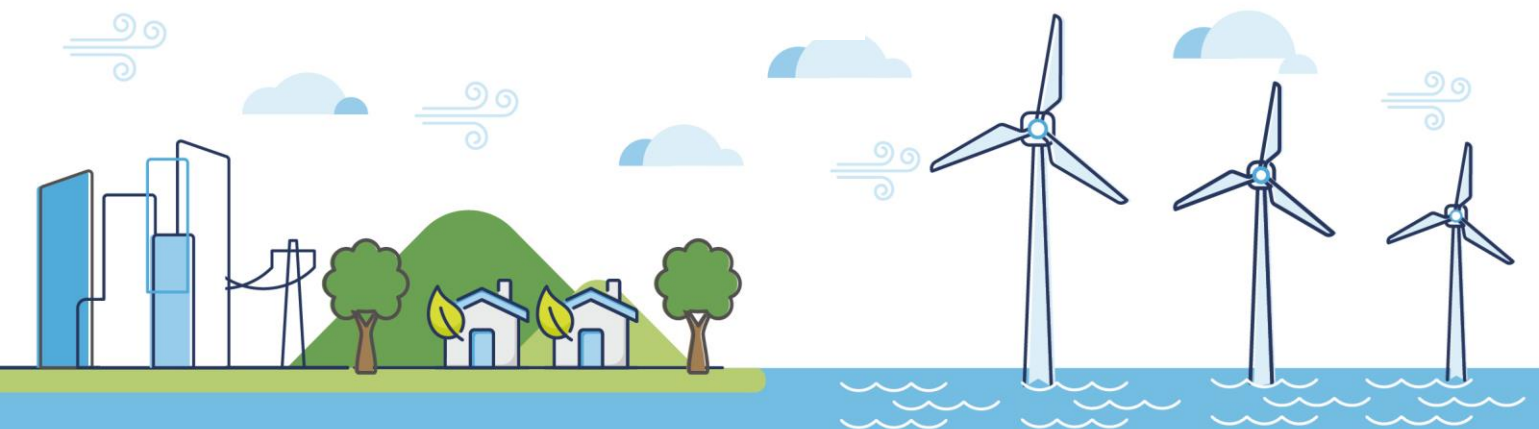
# **Morecambe Offshore Windfarm: Generation Assets Examination Documents**

## **Volume 9**

### **The Applicant's Response to Spirit Energy's Deadline 4 Submission Appendix E: Shipping and Navigation**

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## **MORECAMBE OWF**

# **Technical Note on the Coexistence of Spirit Energy with Morecambe OWF - Shipping and Navigation**

**Morecambe Offshore Windfarm Ltd**

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## ABBREVIATIONS

Abbreviation	Detail
AtoN(s)	Aid(s) to Navigation
CPA	Closest Point of Approach
CRNRA	Cumulative Regional Navigation Risk Assessment
ES	Environmental Statement
MARS	Manchester Advanced Radar Services
MCA	Maritime and Coastguard Agency
nm	Nautical mile
NRA	Navigation Risk Assessment
OWF	Offshore Wind Farm
REWS	Radar Early Warning System
SoCG	Statement of Common Ground
SOLAS	International Convention for the Safety of Life at Sea

<b>VCRA</b>	Vessel Collision Risk Assessment
<b>WR</b>	Written Representation
<b>WTG</b>	Wind Turbine Generator

## 1. INTRODUCTION

This technical note has been prepared by NASH Maritime on behalf of the Applicant (Morecambe Offshore Wind Limited) to summarise Shipping and Navigation impacts to Spirit Energy from the Morecambe Offshore Windfarm (OWF) Project, hereafter referred to as 'the Project', and how the mitigations put in place by the Applicant sufficiently address the concerns raised by Spirit Energy throughout the examination phase of the Project.

This note is based on information and analysis presented within the Environmental Statement (ES), in addition to information later submitted by the Applicant at subsequent deadlines, in response to Spirit Energy's examination submissions.

This report considers:

- The submissions and concerns raised by Spirit Energy throughout the Project's examination; and
- How the Applicant has addressed these concerns to enable the Project to coexist with Spirit Energy, its existing infrastructure and necessary activities.

## 2. SUMMARY AND RESPONSE TO CONCERNS RAISED BY SPIRIT ENERGY

### 2.1 INCREASED COLLISION RISK

The Applicant notes that, given Spirit Energy's use of the term 'collision' to reference infrastructure collision, in the context of this report, 'collision' is considered equivalent to 'allision' as referred to throughout the Project application documents.

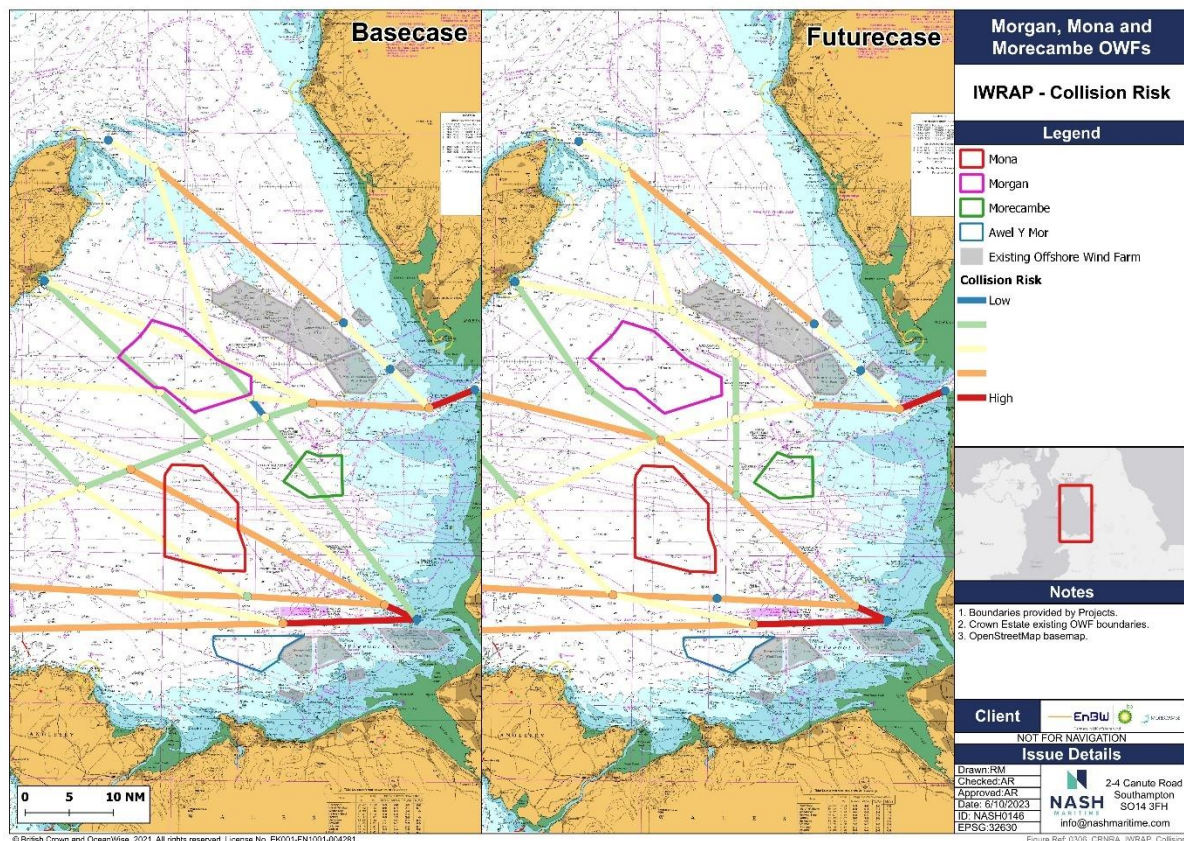
#### 2.1.1 Adequacy of Applicant's Assessment

At Deadline 4 (REP4-069), Spirit Energy note that they are "not satisfied that the Applicant has appropriately assessed and addressed" the "increased collision risk caused by the Proposed Development".

The Applicant has outlined within previous examination submissions (e.g., REP2-030) that this risk has been assessed using allision frequency modelling, as detailed in Section 8.4 of the Navigational Risk Assessment (NRA) (APP-073), and Section 7.8 of the Cumulative Regional NRA (CRNRA) (APP-074). Spirit Energy claim within their Written Representation at Deadline 1 (REP1-116) that there is no annual collision frequency evaluation, similar to the Vessel Collision Risk Assessment (VCRA) carried out by Spirit in 2021, within the NRA, CRNRA or Chapter 14 Shipping and Navigation ES Chapter. The allision frequency modelling undertaken provided a total (drifting and powered) allision risk probability for each of the oil and gas assets (see **Table 1**) and the potential consequences were considered when determining the severity of consequence within the impact assessment (Section 14.7.2.3 of Chapter 14 Shipping and Navigation [APP-051] and Section 8.4.6 of Appendix 14.1 Navigation Risk Assessment [APP-073]). The assessment of allision risk undertaken within the NRA is in accordance with guidance and has been agreed with the Maritime and Coastguard Agency (MCA), in the Statement of Common Ground (SoCG) submitted at Deadline 4 (REP4-039), to be in compliance with MGN 654.

At Deadline 3 (REP3-102), Spirit Energy explain that the risk "should be assessed based on the changes to the shipping routes and how they will be affected", and at Deadline 4 (REP4-069), Spirit claim that the required route displacements have "not been considered in the Applicant's assessment of risk". As set out in the Applicant's response to earlier submissions by Spirit Energy (REP3-070) and in Section 8.4 of the NRA (APP-073), the allision risk assessment considers both a 15% estimated increase in traffic, to account for increases in traffic caused by the Project (as highlighted by Spirit Energy within their Written Representation (WR) at Deadline 1 (REP1-116)), and "futurecase (risk with Project in place) scenarios". The Applicant notes that, within both the NRA (APP-073) and CRNRA (APP-074), the term "futurecase scenarios" refers to the future case route deviations that would be caused by the Project, which are illustrated in the right-hand panels of Figure 57 and Figure 55 within the NRA (APP-073) and the CRNRA (APP-074), respectively. For reference, Figure 55 of the CRNRA has been included as **Figure 1** below.





**Figure 1: IWRAP modelling results for collision in the cumulative scenario (Figure 55 of the CRNRA [APP-074])**

The Applicant further refers to Appendix C of the NRA (APP-073) and Appendix B of the CRNRA (APP-074), which present the process and results for both the Project-alone stakeholder hazard workshop, and the cumulative hazard workshop. The Applicant notes that Spirit Energy were present at both of these workshops and scored all hazards as ‘Low Risk – Broadly Acceptable’ or ‘Medium Risk – Tolerable (if ALARP)’ and raised no issues or concerns regarding the assessment methodology presented.

Moreover, it is noted that, given the Applicant’s assessment already fully considers the allision risk to Spirit infrastructure as a result of “displaced traffic”, an additional risk assessment, as Spirit Energy suggest at Deadline 4 (REP4-069), is not required. Although Spirit Energy suggest that the Applicant ‘continues to deflect from this by requesting a copy of a vessel collision risk assessment carried out by Spirit in 2021,’ the Applicant maintains that the concerns raised by Spirit Energy have been appropriately assessed through the NRA and CRNRA. Although the Applicant does not consider additional analysis necessary, within the response to Spirit Energy’s Written Representation (REP2-027), the Applicant presented the option to Spirit Energy for the Applicant to unpack and develop the allision risk modelling embedded in the NRA and provide a quantitative assessment of allision risk for base case and future scenarios. The Applicant’s request throughout this response for Spirit Energy to submit the VCRA was therefore to ensure appropriate comparisons in the event that Spirit Energy requested this development.

## 2.1.2 Impact of Route Deviations

At Deadline 4, Spirit Energy note that concern regarding increased collision risk due to “existing traffic being displaced resulting in further increased traffic in closer proximity to Spirit’s infrastructure.”

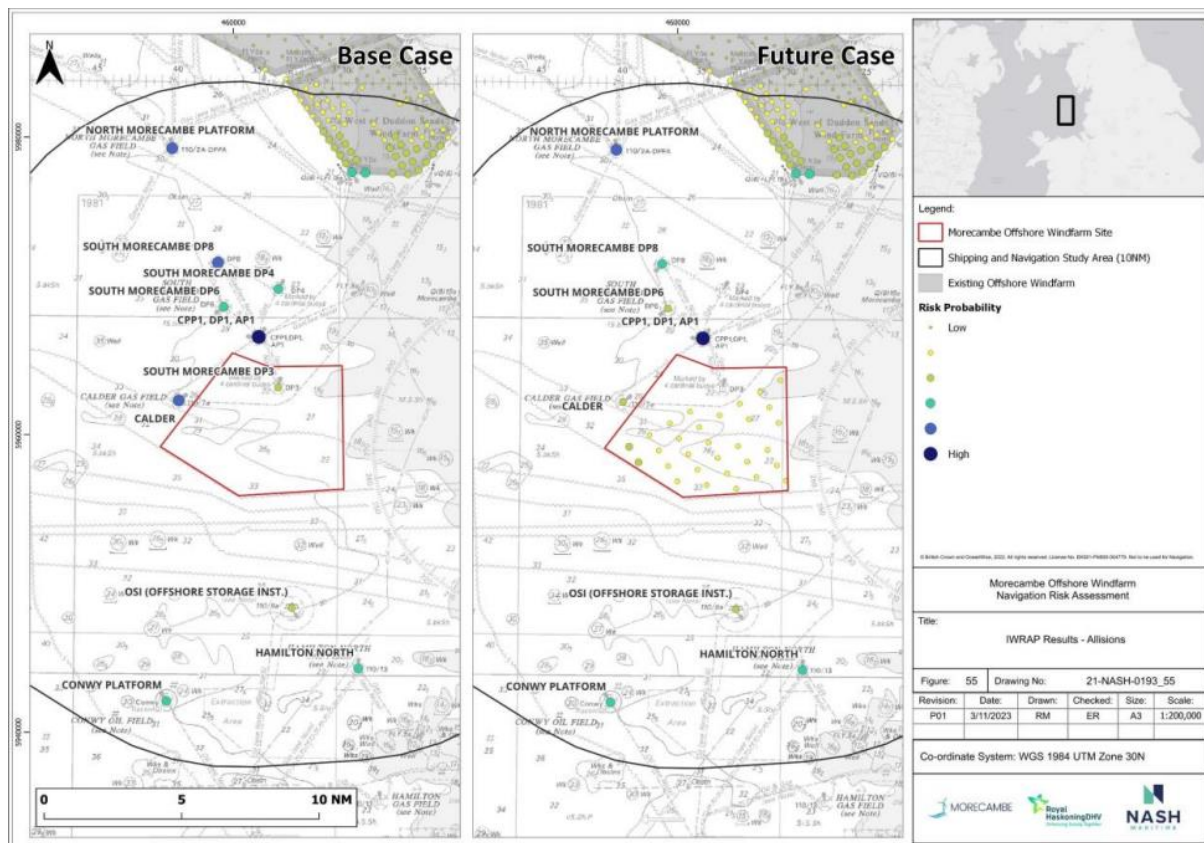
Within Paragraph 3.12 of the WR submitted at Deadline 1 (REP1-116): “Spirit note that the proposed offshore wind farm will impact the vessel traffic routes to/from the ports of Barrow, Heysham and Liverpool.”

With regard to these route deviations, the Applicant has previously outlined in its response to Spirit Energy Deadline 1 submissions (REP2-030) that these shipping route deviations were included within the risk modelling assessment of allision risk undertaken in the NRA (APP-073) and that the overall risk was assessed as acceptable through the NRA process. The Applicant acknowledges that two of Spirit’s South Morecambe assets, DP6 and DP8, are modelled to have a slight increase in allision risk, however, emphasises that the increases in allision risk probability per year are incredibly small:  $5.0 \times 10^{-8}$  and  $3.5 \times 10^{-5}$  for DP6 and DP8, respectively. All other infrastructure is modelled to experience an overall decrease in allision risk as shown in Figure 57 of the CRNRA (APP-074). For clarity, the Applicant has extracted the specific modelled allision risks in the basecase scenario and the futurecase cumulative scenario, and the overall change in **Table 1**.

**Table 1: IWRAP modelling - Allision Risk Probability per Year for the Cumulative Scenario (presented spatially in Figure 57 of the CRNRA [APP-074])**

O&G Asset	Allision Risk Probability per Year			Risk Change
	Base Case	Future Case	Difference	
DP4	1.72E-05	1.72E-05	0.00E+00	Decrease
Calder	5.38E-05	1.86E-05	-3.52E-05	Decrease
Millom	0.001029212	1.79E-05	-1.01E-03	Decrease
DP8	2.35E-05	5.70E-05	3.35E-05	Increase
CPP1	7.06E-05	7.04E-05	-2.06E-07	Decrease
North Morecambe DPPA	1.26E-04	6.61E-05	-5.95E-05	Decrease
DP6	1.85E-05	1.86E-05	4.99E-08	Increase
Total	1.34E-03	2.66E-04	-1.07E-03	Decrease

The modelled allision risks in the basecase scenario and futurecase, project-alone scenario is also presented spatially in **Figure 2** (Figure 55 of the NRA [APP-073]). **Figure 2** shows that, in the Project-alone scenario, there is an overall decrease in allision risk to most oil and gas assets, including Calder, DP6 and DP8, and a negligible change to other platforms.



**Figure 2: IWRAP allision results for the Project-alone, 30 turbine indicative layout  
(Figure 55 of the NRA [APP-073])**

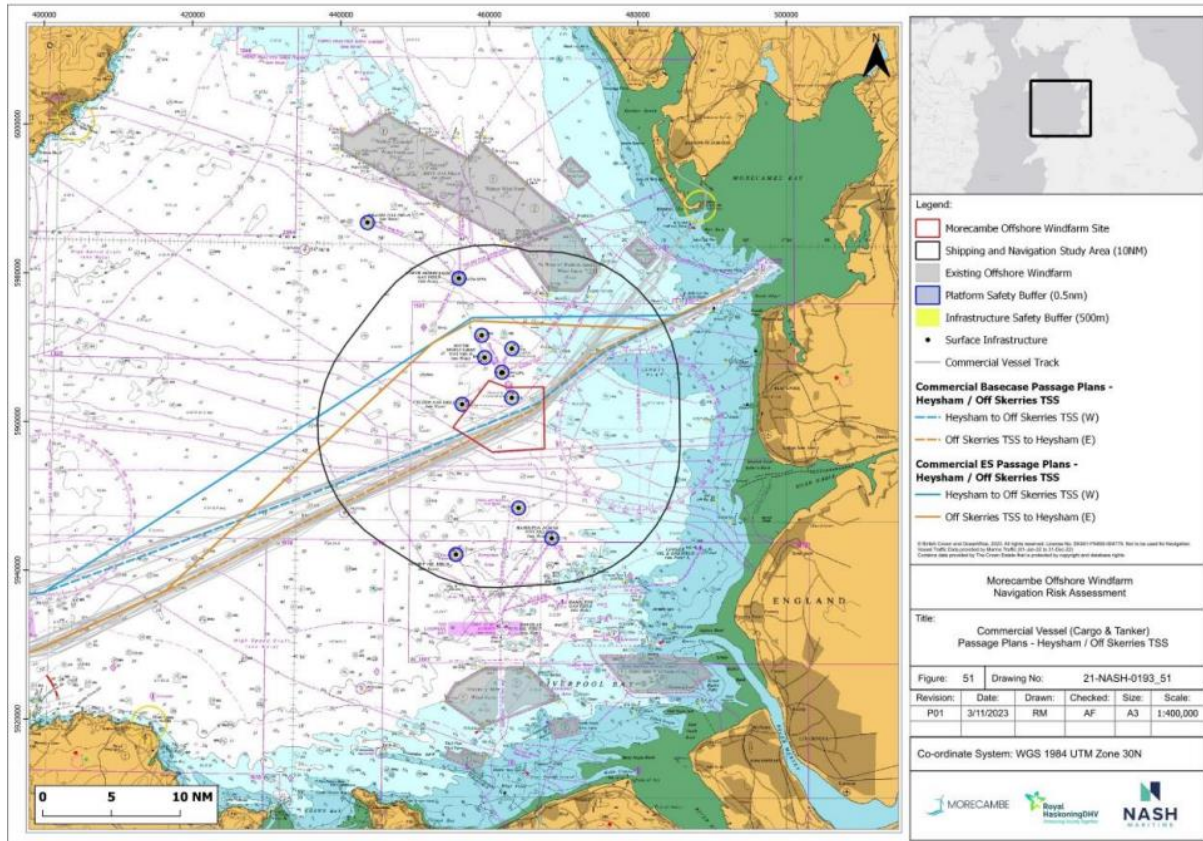
The Applicant further refers to Figure 50, 51 and 52 of the NRA (APP-073) which present the existed and deviated commercial route passage plans to/from the ports of Liverpool, Heysham, and Barrow, respectively – collectively defined as the “futurecase scenarios” within the IWRAP modelling at Section 8.2 of the NRA. As demonstrated by Figure 50 and also noted by Spirit Energy themselves within the WR (REP1-116), “the majority of vessel routes from the Port of Liverpool will be directed further away from the existing Morecambe Hub Installations to the west. Thereby further reducing the likelihood of vessel collision with the offshore platforms...”.

Spirit Energy acknowledge the Applicant’s evaluation of routing scenarios to/from Barrow and Heysham and note that “there are no regulatory requirements for commercial shipping to follow proposed route”. While the Applicant acknowledges this, the Applicant notes that, while the vessels would take a different route as a result of the Project, the vessel masters would be equally likely to transit in accordance with international regulations (e.g. SOLAS) and therefore maintain an adequate closest point of approach (CPA) to Spirit’s infrastructure. The necessary route deviations therefore do not guarantee that commercial vessels will transit in closer proximity to Spirit’s infrastructure.

In addition, the Applicant refers to Section 8.3.2 of the NRA (APP-073) that notes that all of these routes where deviation would be required are minor routes, with fewer than one vessel per day transiting them. As a result, in the worst-case scenario that every vessel on both routes was to transit closer to Spirit’s infrastructure, there would be a maximum of an additional two vessels per day. However, given that most vessels will seek to maintain an adequate CPA



from Spirit's assets and that vessels transiting to/from Heysham (Figure 51 of the NRA [also included as **Figure 3** below]) are currently free to route past Spirit assets as they see fit in line with regulatory requirements and transit within 1nm of South Morecambe DP3, the Applicant considers that very few vessels will transit any closer to Spirit assets.



**Figure 3: Heysham/Off Skerries TSS commercial route basecase and futurecase passage plans (Figure 51 of the NRA [APP-073])**

## 2.2 RESTRICTIONS ON USE OF LARGER VESSELS

Throughout examination, particularly within their Relevant and Written Representations (RR-077, and REP1-116, respectively), Spirit Energy have raised the concern that a lack of sea room will place restrictions on the use of larger vessels, such as drilling rigs, and crane barges. As a result, Spirit state that there will be a new requirement for designated access paths and exclusion areas in addition to the 500m exclusion zone around each platform. They therefore requested that a 1.5nm marine buffer zone must be secured independently of any corresponding aviation related buffer zone. On a similar basis, Spirit also states within their Written Representation (REP1-116) that they need a 1nm (1.8km) 'Rig access corridor' for vessels, together with a 1790 m 'unobstructed zone for deployment of anchors', to allow access for a jack-up barge if any remedial works were required to the wells following their plug and abandonment.

To address this concern, the Applicant refers to the updated (Deadline 4) Protective Provisions for the protection of Spirit Energy Production UK Limited (Item 3(1) of Schedule 3 Part 3 of the draft DCO (Document Reference 3.1)). The Applicant has included, as requested by Spirit

Energy (paragraph 6.17 of the Spirit Energy Relevant Representation (RR-077)), a 'one point five nautical mile (1.5 nm)' 'WTG and OSP marine buffer zone' around the CPC-1 platform which will be clear of WTGs, offshore substations and temporary surface infrastructure. Spirit Energy also requested a 1nm access corridor to the East and West of both the CPC-1 platform and the Calder platform. This will be secured by the marine buffer zone. In addition, the Applicant has also included, as requested by Spirit Energy at paragraph 6.17 of the Spirit Energy Relevant Representation (RR-077), a one nautical mile (1 nm) wide 'WTG marine corridor', again clear of WTGs, offshore substations and temporary surface infrastructure, between the CPC-1 platform and the Calder platform.

The Applicant further notes that the Project considers that there will need to be jack-up barges on site to undertake major maintenance activities, on average every five years, and that there will be multiple large vessels, including jack-up barges, on-site during construction. Therefore, given that the sea room proposed is considered sufficient for large Project vessels to navigate safely, and that these sorts of vessels typically undertake work for both renewables and oil and gas, the Applicant suggests that the available sea room is also sufficient for Spirit Energy. Further comments in response to Spirit's request for the access corridor and the anchor deployment zone are presented within the Applicant's Response to Spirit Energy's Deadline 4 Submission Appendix E: Decommissioning (Document Reference 9.59.5).

In Section 4 of their submission at Deadline 4 (REP4-069), Spirit provides an update on the technical discussions and protective provisions, noting that, while technical discussions remain ongoing, these discussions surround aviation safety and are not related to shipping and navigation safety concerns.

## 2.3 IMPACT OF WIND TURBINES ON REWS AND EMERGENCY PRODUCTION SHUTDOWNS

Spirit Energy noted within their examination submissions (RR-077 and REP1-116) that the presence of wind turbines near Spirit Energy's Radar Early Warning System (REWS) could interfere with its performance, with consequential risk to safe operations. For example, they also note within their submissions (RR-077 and REP1-116) that there is a far higher risk of emergency production shutdowns due to vessels on an allision course with platforms, or of breakdowns caused as a result of emergency shutdowns and waiting for repairs. These incidents would be as a result of the REWS impacts. Spirit also state within their Relevant Representation (RR-077) that Calder has an aid to navigation (AtoN) marking and has a duty to provide collision guard cover during the AtoN's non-availability and servicing period. Spirit claim that they will no longer be able to continue to use their Emergency Response and Rescue Vessel (ERRV) as a guard vessel cover if the EERV is engaged in the monitoring of the REWS system, and therefore Spirit will be forced to contract an additional guard vessel for the period of the AtoN's failure or maintenance.

Following consultation with oil and gas operators, the Applicant commissioned Manchester Advanced Radar Services (MARS) to update the Radar Early Warning Systems Technical Report which was submitted as an Appendix (Appendix 17.2) to Chapter 17 Infrastructure and Other Users of the ES (REP3-034) which considered the effects of the Morecambe Generation Assets on the ability of REWS to detect vessels within the vicinity of the windfarm and the effect of rerouted traffic on the REWS alarm rates. This updated report showed that the impact of the Morecambe Generation Assets in isolation and the cumulative impact of the Morecambe Generation Assets with Mona Offshore Wind Project and Morgan Generation Assets on

detection performance of nearby REWS installation is expected to be low and will be manageable without the need for further mitigation measures.

However, taking Spirit's additional REWS concerns (RR-077 and REP1-116) into account, the Applicant commissioned and submitted an updated REWS assessment by MARS at Deadline 3 (REP3-034). As outlined within a previous response from the Applicant to Spirit Energy's Deadline 1 submissions (REP3-070), the updated REWS Report presents additional modelling results to assess the impact of shadowing in more detail to assess the detection and tracking performance of the REWS within the radar shadow regions. Following this, the Applicant maintains, as per the comments on Written Representations (REP2-027), that the small effects will largely be resolved by the built-in advanced tracking techniques within the REWS, in addition to AIS data and, therefore the ERRV is not required to monitor this system. The Applicant considers that no credible reason is given for an additional ERRV (and none is postulated by the Operator). An ERRV is provided dependent on the number of persons that may evacuate, with clear industry guidance on this.

The Applicant's present understanding, based on Spirit Energy's submission at Deadline 4 (REP4-069) is that Spirit Energy has noted and accepted the updated Environmental Statement Appendix 17.2 Radar Early Warning System Technical Report – Revision 02 (REP3-034) submitted by the Applicant at Deadline 3.

### 3. SUMMARY

In summary, the information presented above supports the statements below:

1. The Applicant has sufficiently assessed the risk of collision with the Application;
2. The Applicant has updated the Protective Provisions, to include multiple measures requested by Spirit Energy to address their concerns, such that
3. The Morecambe Offshore Windfarm: Generation Assets Project can coexist with the existing infrastructure owned by Spirit Energy Production UK Limited.

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