PLANNING ACT 2008

The Morecambe Offshore Windfarm Generation Assets Development Consent Order Application

---

Deadline 3 submission by Spirit Energy Production UK Limited

Response to the Applicant's Deadline 2 Submissions

EN010121
Unique Reference: 20049981

Date	22 January 2025

Contents

1. Introduction

1.1 'Spirit Energy' is the trading name used by Spirit Energy Limited and its subsidiaries, including Spirit Energy Production UK Limited, a group which collectively conducts European oil and gas operations.

1.2 Eversheds Sutherland (International) Limited are instructed by Spirit Energy (**Spirit**) in relation to the proposed development consent order application (the **Application**) made by Morecambe Offshore Windfarm Ltd (the **Applicant**) for the proposed Morecambe Offshore Windfarm Generation Assets (the **Project** or **Proposed Development**).

1.3 This submission contains Spirit's responses to the Applicant's submissions at Deadline 2 of the Examination of the Application. Table 1 signposts where Spirit has addressed the Applicant's submissions.

Table 1

Reference	Submission	Addressed
REP2-002	Draft Development Consent Order - Revision 03 (Volume 3) (**dDCO**)	Section 2
REP2-007	Development Consent Order: Schedule 3 Spirit and Harbour Protective Provisions Plan - Revision 01 (Volume 3) (**dDCO Plan**)	Section 2
REP2-025	Combined Examination Progress Tracker and Statement of Commonality - Revision 03 (Volume 8) (Tracked) (**Examination Progress Tracker**)	Section 2
REP2-027	The Applicant's Comments on Written Representations - Revision 01 (Volume 9) (the **Applicant's WR Response**)	Sections 2-7
REP2-030	The Applicant's Response Spirit Energy Deadline 1 Submissions - Revision 01 (Volume 9) (the **Applicant's D1 Response**)	Sections 2-7 and Appendices 1-5
REP2-031	The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report - Revision 01 (Volume 9)	Section 3 and Appendix 2
REP2-032	The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix B: Helicopter Access IMC Corridor - Revision 01 (Volume 9)	Section 3
REP2-033	The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note - Revision 01 (Volume 9)	Section 3 and Appendix 3

1.4 To the extent possible, Spirit has structured its response in parallel with the 'Applicant's Response to the Spirit Energy Deadline 1 Submissions - Revision 01 (Volume 9)' [REP2-030] (the **D2 Response**). However, in order to assist the Examining Authority, Spirit has sought to consolidate topics and responses in this submission. Spirit's has provided a table of responses to the D2 Response [REP2-030] in relation to Aviation and Shipping and Navigation at Appendix 1.

2. Summary of Spirits position and the Applicant's response

2.1 Spirit remains committed to cooperating with the Applicant in respect of the Application, and is ready and willing to work together to secure appropriate mitigation, wherever that is capable of being agreed between the parties.

2.2 This section provides an overarching summary of Spirit's position and addresses the Applicant's responses at Deadline 2.

Summary of Spirit's position

2.3 Spirit requires an aviation buffer of 3.9 nm around the outer extremity of CPC, DP6 and Calder helidecks (the **Aviation Affected Assets**). The area where, in accordance with Requirement 2(1) of Schedule 2 of the draft Development Consent Order submitted at Deadline 2 (**dDCO**) [REP2-002] wind turbine generators can be constructed (and being the area identified as Work No. 1 shown hatched green on the offshore works plan [APP-007]). The area where turbines can be installed has previously been referred to by the Applicant as the **Unconstrained Areas**. Spirit will adopt these terms in the remainder of this submission.

2.4 As Spirit has specified in paragraph 2.10 of its Written Representation dated 26 November 2024 [REP1-116] Spirit requires a minimum unobstructed airspace of 3.9nm between the Aviation Affected Assets and the Unconstrained Areas. This is the minimum distance that is required in order for Spirit to safely take-off using instrument flying rules (**IFR**) from a platform, incur a single engine failure (**OEI**), climb to 1000ft and undertake a 180 degree turn (collectively 2.9 nm) plus the imposition of the legally required 1nm clearance distance from obstacles (the **IFR Manoeuvre**). For full information on this calculation, underlying assumptions and figures that may aid understanding, the Examining Authority is directed to page 26 of the AviateQ Report at Appendix A of Spirit's Written Representation dated 26 November 2024 [REP1-116] (**AviateQ Report**).

2.5 The IFR Manoeuvre represents a scenario that is unlikely but foreseeable and which both parties agree requires safeguarding measures. It must therefore inform the separation distance between turbines and the Unconstrained Areas, for IFR flying to continue to be permitted.

2.6 The Aviation Affected Assets comprise the platforms Spirit owns and operates (or operates only in the case of Calder) that are located at a distance of less than 3.9nm of the Unconstrained Areas. Put simply, and save for what is stated at paragraph 2.13, the IFR Manoeuvre could not be performed safely in an unobstructed airspace area that is less than 3.9nm.

2.7 The continued ability to fly using IFR is integral to safe operations across the South Morecambe Field. Further information on the impact of loss of IFR flying is set out in this submission.

2.8 The counter-argument from the Applicant is that the separation distance between the Aviation Affected Assets and Unconstrained Areas need only be 1.5nm. The protective provisions for the benefit of Spirit securing only an "WTG and OSP aviation buffer zone" of 1.5nm, as secured by paragraph 4 of Part 3 of Schedule 3 of the dDCO [REP2-002] and shown on the Spirit and Harbour Protective Provisions Plan [APP-007].

2.9 The Applicant's rationale for a 1.5nm area of unobstructed airspace is based on an assertion that: a) Spirit does not need any ability to fly in IFR – day or night; b) Spirit does not need any ability to fly at night in visual flight rules (**VFR**); and c) that a residual 1.5nm distance provides adequate unobstructed airspace for day time flying only in VFR.

2.10 Spirit strongly disagrees with the Applicant on each of these matters. However, it is critical that the Examining Authority (and the Applicant) understand Spirit's primary position. This is unambiguous: IFR flying is required from the Aviation Affected Assets. It follows that the IFR Manoeuvre must be capable of being performed from the Aviation Affected Assets. The

consequence is that a 3.9nm unobstructed airspace requirement between the Aviation Affected Assets and the Unconstrained Areas is a necessity for Spirit to safely operate.

2.11 For the avoidance of doubt (and secondary to the primary position set out in the preceding paragraph) it is also intolerable:

2.11.1 For Spirit to lose all ability to fly at night in VFR to the Aviation Affected Assets; and

2.11.2 For a 1.5nm VFR 'buffer' between the Affected Assets and the Unconstrained Areas to be imposed.

2.12 With respect to the 1.5nm buffer, the AviateQ Report has already established (supported by a full calculation and figures) that a 1.9nm buffer is required for VFR (see page 14 of the AviateQ Report). This being the minimum safe distance to perform a safe landing with a tailwind and in order to execute a missed approach in demanding flying conditions (the **VFR Manoeuvre**).

2.13 The Applicant has also sought to discredit assumptions in the AviateQ Report in its D2 Response [REP-030] and Appendix A to the D2 Response [REP-031]. Spirit has responded to all of these technical matters within this submission. It stands behind all the assumptions and calculations in the AviateQ Report, except that it accepts that there may be scope to marginally reduce the 3.9nm buffer distance to 3.76nm (based on calculating the IFR Manoeuvre from Mean Sea Level (**MSL**) rather than Above Take-off Surface (**ATS**) – i.e. the 1000ft climb from sea rather than the platform). This assumption forms a critical part of the Applicant's attempts to discredit the AviateQ Report. In practice it makes a marginal difference to the requisite buffer distance that is required to fly safely in IFR from the Aviation Affected Assets. That said, Spirit acknowledge it and will work with the Applicant to explore a protection on those terms.

2.14 Otherwise Spirit understands that there is consensus on a number of the assumptions that underpin the calculation of unobstructed airspace distances (including wind speed, air temperature and air pressure). The underlying calculations and supporting figures from the Applicant are however omitted: in particular the tables in D2 Appendix C [REP2-033] simply provide the final buffer distances. It is not possible for Spirit (or the Examining Authority) to undertake any comparative analysis with the AviateQ Report on this information.

2.15 With a view to addressing Spirit's concerns, the Applicant has in Appendix B: Helicopter Access IMC Corridor - Revision 01 (Volume 9) [REP2-32] of its D2 Submission proposed a 2nm wide x 4nm long take-off corridor into the prevailing wind (the **IMC Take Off Corridor**). Spirit has provided illustrative examples of the constraints of the IMC Take Off Corridor at Appendix 5.

2.16 The IMC Take Off Corridor is not a credible mitigation. The reasons are set out in Spirit's response to the Examining Authority's Written Questions at Q1CAR6 (submitted in a separate document from this submission). The IMC Take Off Corridor only accounts for take-off from the CPC and does not address: a) landing at the CPC heli-decks using IFR; b) take-off or landing at Calder or DP6 using IFR. With respect to take off at CPC, the IMC Take Off Corridor is based on a head wind requirement that would only facilitate IMC flying within the corridor approximately 22% of the time (when weather conditions are suitable). Further analysis of the IMC Take Off Corridor is provided in this submission and with figures at Appendix 5 providing illustrative examples of the limitations of this proposal.

2.17 Taken together there is nothing in the Applicant's D2 Submissions that materially changes Spirit's primary position.

2.18 Spirit strongly supports the principle of decarbonisation and new offshore renewables development. It also acknowledges that the Proposed Development is 'critical national priority' infrastructure that is subject to a presumption in favour of development consent being granted. However the presumption is not without qualification, and it does not apply

to residual impacts which present an unacceptable risk to, or interference with, human health and public safety[1].

2.19 In accordance with Policy EN-3, paragraph 2.8.344, it is for the Applicant to demonstrate that the Proposed Development can safely co-exist with existing offshore infrastructure and activities. The Applicant has accepted that the Proposed Development will have an impact on the conditions in which Spirit can reach its assets[2]. While the extent of that impact is disputed by the parties, Spirit's position remains that any limitation on the safety of its operations is not acceptable, and that the Applicant has failed to demonstrate (as it must) that the Proposed Development can safely co-exist with existing offshore infrastructure.

2.20 Spirit has made its position clear on the need for a suitable buffer for its operations since the Applicant undertook statutory pre-application consultation[3], since which Spirit has substantiated its position with technical analysis provided by a leading third party expert[4]. The Applicant is however still seeking to install turbines with an area that is too close to existing offshore operations and that will disrupt and cause adverse effects on safety, contrary to Policy EN-3 paragraph 2.8.345. The Applicant has not proposed a solution that mitigates this impact, and disregards the mitigation (in the form of a 3.9nm buffer) that Spirit has proposed.

2.21 By refusing to engage with or acknowledge Spirit's requirement for a 3.9 nm buffer, and instead seeking to discredit the technical analysis that Spirit has provided, Spirit is not satisfied that the Applicant has satisfied its duty to "work with" Spirit as an affected party to minimise negative impacts and reduce risks to as low as reasonably practicable, as required by Policy EN-3 paragraph 2.8.344.

2.22 In taking the current proposed site boundary and unconstrained areas forward, the Applicant has also failed to demonstrate appropriate site selection and good design which should consider "*opportunities for co-existence*" (Policy EN-3 paragraph 2.5.2). The proposed location of the wind farm and inadequate mitigations (as currently proposed) do not provide an opportunity for safe co-existence.

2.23 Policy EN-3 para 2.8.342 - 2.8.348 states that the Secretary of State should not consent a project that poses intolerable risk to safety after mitigation measures have been applied. In the absence of further mitigation, an intolerable risk would exist. Adverse effects on viability and safety of offshore infrastructure and activities must be afforded "substantial weight" by the Secretary of State in decision-making.

2.24 The underlying reasons for the development presenting an unacceptable safety risk have been detailed in Spirit's Relevant Representation and Written Representation, and are further set out in this submission. It bears repeating: the adverse effect on safety would exist, and (in the absence of further mitigation) substantial weight must be applied to that finding.

Protective provisions

2.25 Spirit is liaising with the Applicant on the protective provisions. A full undertaking from the Applicant in relation to the initial forecast costs of drafting and negotiating the protective provisions was received on 20 January 2025. Spirit understands that the Applicant intends to submit an updated DCO and protective provisions at Deadline 4 on 18th February 2025.

2.26 Spirit will liaise with the Applicant to seek alignment on protective provisions in advance of this date and with a view to securing common ground (where possible) for the 18th February deadline.

---

1 Paragraph 4.1.7 of NPS-EN1

2 See section 5 of the Applicant's Response to Spirit's Deadline 1 Submissions.

3 See consultation response from Spirit Energy on 2nd June 2023 at pages 26-28 of Chapter 17 – Infrastructure and Other Users of the Applicant's Environmental Statement [APP-054].

4 See the report and analysis provided by AviateQ in the Appendix A of Spirit's Written Representation [REP1-116].

Statement of Common Ground (SoCG)

2.27 At Deadline 1 the Applicant submitted the initial draft SoCG on behalf of the Applicant and Spirit [REP1-075].

2.28 The SoCG included tracked changes to indicate the changes made by the Applicant shortly before submission of the SoCG at Deadline 1. Spirit subsequently provided an updated version of the SoCG which the Applicant has not submitted.

2.29 Spirit will continue to engage with the Applicant on the drafting of updates to the SoCG to be submitted in accordance with the updated Examination Timetable as set out in the Rule 8 letter [PD-010].

Combined Examination Progress Tracker and Statement of Commonality

2.30 Spirit notes the updated Combined Examination Progress Tracker and Statement of Commonality submitted by the Applicant at Deadline 2 [REP2-025] and clarifies the following points.

2.31 In the Examination Progress Tracker, the Applicant refers to meeting with Spirit to discuss Spirit's Relevant Representation in relation to 'Aviation and Radar', 'Other Offshore Infrastructure and Sea users', and 'Shipping and Navigation'. One meeting has been held between Spirit and the Applicant since Spirit submitted its Relevant Representation. This meeting was in relation to aviation matters only.

2.32 The Applicant has further stated that discussions are ongoing in relation to a revised co-existence agreement between the Applicant and Spirit. This is not accurate. Spirit is not in a position to negotiate a co-existence agreement with the Applicant until the requirements Spirit has requested throughout the examination process are appropriately provided for by the Applicant in protective provisions.

2.33 With regard to Shipping and Navigation, the Applicant has stated that it considers this issue in relation to Spirit 'capable of resolution'. At this stage, this is unclear as its concerns have not been appropriately reflected in protective provisions submitted in the dDCO at Deadline 2. The parties will be liaising further on these matters with the benefit of the undertaking for costs and in anticipation of submissions at Deadline 4 on 18th February.

Further submissions

2.34 Spirit notes that the Applicant intends to submit a more detailed response in relation to the following topics at Deadline 3:

2.34.1 Spirit's Radar Early Warning System;

2.34.2 Additional analysis using updated Vantage flight data provided by Spirit on 4 December 2024;

2.34.3 MNZ and carbon capture utilisation and storage;

2.34.4 Shipping and navigation impact.

2.35 The Applicant's submissions at Deadline 2 focussed on aviation matters. As this document responds to those submissions, it similarly focusses on aviation.

3. **Aviation**

Response to the Applicant's Deadline 2 Submissions

3.1 Spirit has responded below to the Applicant's Comments on Written Representations - Revision 01 (Volume 9) [REP2-027]. It has also provided responses in this submission to a number of specific points raised by the Applicant in the D2 Response [REP2-030] and supporting Appendices A and C to the Applicant's D1 Response [REP2-030, REP2-031 and REP2-032].

Summary points

3.2 Spirit has provided robust justification for the 3.9nm aviation unobstructed requirements based on the Aviate Q Report (subject to the qualification now being provided on a potential 3.76nm buffer). The distance calculations are based on the safe execution of the continuous take off following an engine failure (OEI) on rotation at the Take Off Decision point (TDP) for the AW169 aircraft (i.e the aforementioned IFR Manoeuvre) . Full calculation is provided in the Aviateq Report Section 9.6 and Appendix 4 of this submission. Further information is available at pages 25 – 26 of the AviateQ Report.

3.3 In the Applicant's D2 Response at Appendix B: Helicopter Access IMC Corridor - Revision 01 (Volume 9) [REP2-032] the Applicant has proposed a 2nm wide x 4nm long take-off corridor into the prevailing wind (the **IMC Take Off Corridor**). Spirit's primary submission is that aircrafts need to take off and land into the wind – the corridor proposal only provides a potential ability to do this 22% of the time based on metocean data. Under current CAA regulations for take-off and landing, under normal operations the aircraft should approach and take off into head-wind. The Applicant's IMC corridor proposal only accounts for take-off from CPC situations and based on the head wind requirement would only allow flights on this basis for approximately 22% of the time.

3.4 The Applicant has failed to demonstrate how this mitigates: a) landing at the CPC heli-decks using IFR; b) take-off or landing at Calder or DP6 using IFR.

3.5 Spirit awaits the response from the CAA at Deadline 3 (as requested by the Examining Authority) with respect to changes to introduces VMC daytime flying only where offshore oil and gas installations are within 3nm of wind turbines. However, in the event this rule takes effect, the IMC corridor proposal will not be able to provide any mitigation at all for:

3.5.1 IMC take-off and landing to/from CPC, DP6 and Calder platform (the Aviation Affected Assets – located within 3nm of the Unconstrained Area) in both day and night conditions;

3.5.2 VMC take off and landings to/from the Aviation Affected Assets in night conditions.

without a CAA dispensation under the Alternative Means of Compliance (**AtlMoc**) process. Spirit is not aware of such AltMoc being granted elsewhere in the UK in these circumstances.

3.6 The Applicant refers to an "unobstructed" ARC ranging from 263 degrees to 090 degrees clockwise for an aircraft approach and take-off from the CPC platform. However that completely disregards current restrictions that already exist around the CPC heli-decks and the requirement for the aircraft to approach and take off into a potential head wind from all directions.

3.7 For the foregoing reasons, the Applicant has similarly failed to demonstrate that the Project, even with the benefit of the IMC Take-Off Corridor, can satisfy the safety requirements in order to make the Proposed Development acceptable and in compliance with the aforementioned national policy.

Spirit's response to the Applicant's comments regarding AviateQ 3.9nm requirement

3.8 The full calculation of the 3.9nm requirement is provided in the Aviateq Report at Section 9.6 but is also set out in Appendix 4 of this submission. In summary the 3.9nm distance comprises the following elements.

3.9 The distance required to safely execute take off on one engine is:

3.9.1 Section 1: Acceleration from TDP to Vtoss and positive ROC (CTO): Distance required 0.19nm

3.9.2 Section 2: Path 1 Climb from end of CTO to 200ft: Distance required is 0.16n

3.9.3 Section 3: Level Acceleration from Vtoss to Vy at 200': Distance required = 660m or 0.36nm (Graph S4-32.)

3.9.4 Section 4: Path 2 climb from 200ft to 1000ft: Distance travelled is 1.80nm (S4-9 and S4-43)

3.10 The total distance required for OEI TDP to 1000ft would be the sum of the 4 sections namely 0.19nm + 0.16nm + 0.36nm + 1.80nm = 2.51nm.

3.11 Then, 0.35nm distance is added to accommodate a situation that may arise necessitating a 180 turn away form the obstacle - Rate One Turn at 1000 ft (IFR) taking the required distance to 2.86 nm.

3.12 Then the legal obstacle clearance requirement of 1nm is added, taking the total minimum distance requirement to 3.86nm.

3.13 The Applicant is stating the calculation of 3.9nm is incorrect based on certain assumptions. Spirit's view on each of the points is as following:

3.13.1 That there has been a drag factor applied on flight path 1: a drag factor is applied as the aircraft has a fixed undercarriage.

3.13.2 The Applicant is stating that the maximum aircraft mass of 4,800kg should be reduced to allow for fuel burn-off as the flight progresses. This completely disregards operational requirements for efficient offshore NUI shuttling whereby any fuel burn-off is then re-loaded with extra passengers or baggage on CPC. In short, 4,800kg is available as the permitted payload and any reduction in weight for fuel can be utilised for a multitude of other purposes. For the foregoing reasons, the 4,800kg is the appropriate (indeed only) reasonable worst case assumption that can be used. Spirit must ensure safe operations at the maximum take-off weight of 4,800kg.

3.13.3 The Applicant has stated that Aviateq should calculate the climb to 1000ft during Section 2 of the calculation above from Above Mean Sea Level (MSL) instead of Above Take-off Surface (ATS). The Applicant (and AviateQ) acknowledge that this statement is correct and are content for this assumption to be applied. Aviateq have re-calculated the distance for Section 2 in line with this requirement, reducing this part of the calculation by 0.1nm.

3.14 On this basis Spirit is willing to work with the Applicant to agree a protection that reduces the 3.9nm requirement to a 3.76nm unobstructed airspace requirement between the extremity of the Aviation Affected Assets and the Unconstrained Areas.

3.15 The Applicant has not demonstrated any distance below 3.76nm that supports safe take-off and landing operations in both VMC and IMC conditions, nor has it provided any supporting evidence to substantiate the stated distances used in their calculations. It is noted that there appears to be consensus on a number of the assumptions that underpin the calculation of unobstructed airspace distances (including wind speed, air temperature

and air pressure). Where there is some level of disagreement (e.g. on payload) the Applicant appears to have still undertaken calculations based on Spirit assumptions. The underlying calculations and supporting figures from the Applicant are however omitted: in particular the tables in D2 Appendix C [REP2-033] simply provide the final buffer distances. This it is not possible for Spirit (or the Examining Authority) to undertake any comparative analysis with the AviateQ Report.

3.16 In addition, it would seem that the Applicant has misinterpreted the OEM Performance graphs which may have resulted in the reduced distances required for AW169:

3.16.1 The Applicant appears to have used a graph from the Ground and Elevated H/H Take off procedure instead of using the Offshore and Elevated H/H procedure graphs.

3.16.2 The CTO distance of 350m (this is the distance from TDP to achieving Vtoss and a positive rate of climb) is not included.

3.16.3 A head wind factor has been applied to the level acceleration distance when the graph does not allow for it.

3.16.4 The reduced rate of climb factor due to the fixed under carriage and larger sponsons is not included.

3.17 A full response on the Applicant's comments on the AviateQ Report is provided in the Appendix 2 of this document.

Aviation Corridor

3.18 The Applicant has proposed a new 2nm wide x 4nm length take-off access corridor orientated into the prevailing wind, which is principally described in Appendix B: Helicopter Access IMC Corridor - Revision 01 (Volume 9) [REP2-030]. This section comprises Spirit's response to this proposal.

3.19 The IMC Take-Off Corridor proposed by the Applicant in section 5 of the Applicant's Response to Spirit Energy Deadline 1 Submissions [REP-030] fails to meet Spirit's requirement for a 3.9 nm buffer around the full 360 degrees of CPC, DP6 and Calder; any less (with the exception of the potential reduction to 3.76nm previously acknowledged) will have unacceptable impacts on the safety of Spirit's operations.

3.20 Spirit cannot accept the IMC Take-Off Corridor as it will only mitigate instances when the wind is coming from the corridor direction towards CPC. As per GM1 CAT.POL.H.310(c) & CAT.POL.H.325(c) (Take-off and landing) regulations, under normal operations the aircraft should approach and take off into the wind (head wind). The MetOcean criteria data analysis outlines that only 22% of wind comes from the direction of the corridor proposed. The Applicant has failed to demonstrate how this applies to landing at CPC and take off in the remaining 78% when the wind is not from this direction, or how it meaningfully mitigates take-offs and landings at all from Calder or DP6.

3.21 Under the new proposed CAA regulations, the IMC corridor proposal will not be able to provide any mitigation for IMC take-off and landing to/from CPC, DP6 and Calder platform in both day and night conditions or for VMC take off and landings to/from CPC, DP6 and Calder Platform in night conditions without a CAA dispensation under the Alternative Means of Compliance (AtlMoc) process. Spirit is not aware of such AltMoc being granted elsewhere in the UK.

3.22 In addition, the Applicant notes that there is an arc of unobstructed airspace 263 degrees clockwise to 90 degrees around CPC (shown in Figure 3.1 – see further below paragraph 3.46) and that this allows take off and landings within this space in night VMC and IMC to and from this arc. The Applicant asserts that:

3.22.1 this provides adequate flexibility coupled with the proposed corridor in line with predominant wind direction to allow unobstructed take off and landings into this unobstructed airspace to the south west of CPC;

3.22.2 this will collectively provide a distance free of turbines for at least 3nm longitudinally from CPC covering at least 2/3rds of airspace around CPC. The arc also provides lateral clearance of at least 1nm from wind turbines.

3.23 The Applicant's view is misleading for the following reasons.

3.24 Under the proposed CAA regulations (and subject to the response on this matter from the CAA at Deadline 3) Spirit aviation operations will be restricted to no IMC and no night operations which will be enforced due to proximity of the proposed wind farm regardless of the arc sector.

3.25 The Applicant does not take into account current helideck restrictions outlined in the Helideck Certification Agency (HCA) asset plate or the requirements for the aircraft to approach and take off into head wind from all directions pursuant to GM1 CAT.POL.H.310(c) & CAT.POL.H.325(c) (Take-off and landing).

3.26 Although the CAA regulations are expected to change, Spirit would emphasise that the 'arc' does not address Spirit's concerns under the current CAA regulations either. The aircraft approach from the arc sector can be considered in both VMC and IMC conditions, however the Applicant has omitted to consider the subsequent take-off would then have to be performed into the opposite sector of 90 degrees to 263 degrees. which is predominantly covered by the proposed windfarm. Such take-off into the opposite sector would not be viable based on the distances calculated for OEI take-off in both conditions unless 3.9nm is available. By the same token, take off would be possible but landing would not as the aircraft will have to approach from the windfarm direction to take-off into the arc.

3.27 In addition, the Arc of 263 to 90 degrees does not take into account the relative position of the CPC helidecks. Neither does it consider helideck restricted approach sectors based on platform obstacles, and specific wind limitations under the HCA certification.

3.28 As mentioned above, Spirit has provided a plan in Figure 3.1 below showing the arc relative to the existing infrastructure map to illustrate this.

3.29 Spirit has further explained why the aviation corridor proposed fails to address Spirit's concerns and objection in its response to the Examining Authority's First Written Question (**ExQ1**) on the Aviation Corridor (ExQ 1CAR6) submitted at Deadline 3.

Level of Impact on Helicopter Aviation Operations

3.30 The Updated AviateQ Study enclosed in Appendix A of Spirit's Written Representation [REP1-116] demonstrated that any turbine placed within a 3.9nm radius would result in an unacceptable impact to Spirit's aviation operations.

3.31 The original analysis undertaken to support Spirit's Relevant Representation [RR-077], submitted to the Examination Authority on 19th of August 2024, stated that flights impacted as a direct result of the introduction of the Morecambe wind farm was 14% annual average (23% in winter) for CPC, and 23% annual average for a NUI (39% in winter) if turbines were introduced (see paragraph 5.16 and Appendix D, of Spirit's Relevant Representation).

3.32 This impact was significantly different to the Applicant's analysis which references an overall impact as low as 7-8%, calculated from Tables A.1, A.2, A.3, and A.4 from section A.3.1.1, Appendix 17.1 Helicopter Access Study; also stated in paragraph 38, section 5.1.1 in Applicant's Response Spirit Energy Deadline 1 Submissions. As Spirit explained in its Written Representation, this impact is understated due to a misunderstanding by the Applicant of how Spirit operates.

3.33 As an overarching comment Spirit regards the numbers presented by the Applicant throughout the process as being fragmented, isolated and not illustrative of the true impact

in the context of Spirit's operations. In addition, it is unclear whether the Applicant has factored in wind in any of their calculations.

3.34 The Applicant's impact assessment is based on analysis of individual flight sectors within a multi-sector flight plan and assumes that these sectors can be flown regardless of any impact to other sectors within the same flight. This is a flawed assumption. Flight routes are scheduled as a whole and cannot be split. If any part of the flight is impacted by darkness or poor visibility then the whole flight is impacted. By splitting its analysis into sectors, the Applicant fails to assess the full impact.

3.35 The Applicant's analysis also ignores how Spirit operates its NUIs, which require both a morning and evening flight to deliver and collect offshore personnel as required, with enough time in-between for the given work scopes to be completed. If, due to the Project restricting flight routes and flight conditions, there is insufficient time remaining to conduct work on the NUIs, then the flights will be impacted. The Applicant does not make any attempt to factor this into their analysis.

3.36 Moreover, a buffer of only 1.5nm between Spirits assets and the Proposed Development, as proposed by the Applicant in the protective provisions in favour of Spirit in Part 3, Schedule 3 of the dDCO [REP2-002], effectively creates a wind direction restriction whereby flights cannot land or take-off if the prevailing wind is coming from the direction of the Proposed Development (as that would require additional unobstructed airspace). The Applicant's analysis does not account for this additional restriction.

3.37 As Spirit highlighted in its Written Representation submitted to the Examining Authority on 26th November 2024 [REP1-116], Spirit and Harbour Energy met with the Applicant on 31st October 2024 to discuss each party's analysis in an attempt to understand why the results were different despite both using the same data set as the starting point. Spirit and the Applicant committed to revising their analysis based on a better understanding of the other's assumptions. Spirit was expecting the Applicant to subsequently submit new data at Deadline 2 but Spirit has not yet had sight of this data.

3.38 Therefore Spirit has undertaken its own analysis revision to align, to the extent possible, with the Applicant's base assumptions.

3.39 The adjustments to assumptions that Spirit has made include updating the daylight/darkness assumption to Sunset/Sunrise +/-45 minutes to allow for 15-minute flying time to/from Blackpool (compared to the previous assumption based on +/-30 minutes). Spirit has also updated heliport opening hours to 0700-2100.

3.40 Spirit also removed the assumption that if a NUI flight was impacted at the end of the day by darkness or poor weather that it and its corresponding morning flight would be cancelled completely. Instead, Spirit has changed the assumption to the evening flight being brought forward where possible and, in such circumstances, to depart earlier, therefore allowing its corresponding morning flight to proceed. However, Spirit will not fly in the morning if there is a likelihood that personnel would be stranded on the asset as it is only designed as a temporary refuge in unforeseen circumstances.

3.41 These combined changes decrease Spirit's impact analysis, but the impact is still significantly higher than the impact presented by the Applicant. In addition to this, the Applicant has not factored in the additional impact that wind causes. The offshore assets will incur a wind direction restriction, whereby flights cannot land or take-off if the prevailing wind is coming from the direction of the wind farm. The Applicant's analysis does not account for this additional restriction. Accounting for these wind restrictions significantly increases Spirit's NUI winter impact..

3.42 Any reduction in flying will impact on Spirit's ability to liquidate work on this asset which includes Safety and Environmental Critical Elements (SECE) and Non-Safety Critical work, and thus the NUI's ability to comply with the Verification Scheme and Written Scheme of Examination as required by Statutory Regulations.

3.43 This will increase the risk of safety events (both process and people) and will increase unplanned production loss events. This will impact the asset's safe gas export to support

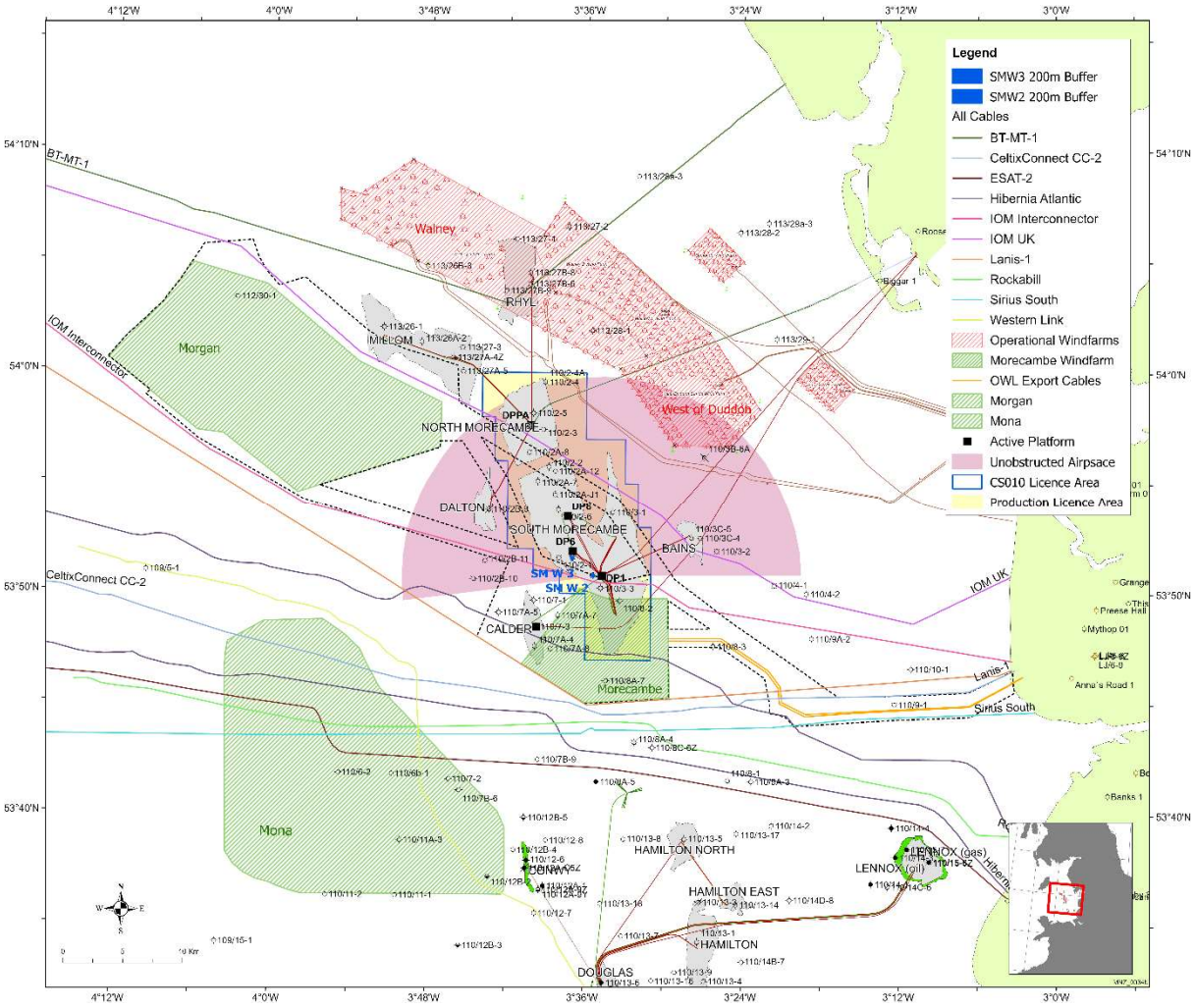
UK energy security, will not be in compliance with the NSTA's Maximising Economic Recovery Strategy and it risks incurring improvement or prohibition notices from the regulator.

3.44 The process of planning for asset management and campaigns work is based on the demands from the management system. The management system plans the manning of the assets and required flights, whilst also considering the available time window for all four seasons. The inference in section 7.1 of the Applicant's Response to Spirit Energy Deadline 1 Submissions [REP2-030] that 'better planning' would mitigate the impacts that Spirit has set out does not recognise that planning for these activities requires accommodating for unforeseen circumstances that might affect advance planning, like the weather, crew and airframe availability, helicopter operational issues, boat offloading operations or similar.

3.45 To be clear, it is Spirit's position that a wind farm within 1.5nm of the offshore assets, as proposed by the Applicant in the protective provisions for Spirit in Part 3, Schedule 3 of the dDCO [REP2-002] will cause intolerable impacts on Spirit's operations.

3.46 By contrast, the impact of the Proposed Development on flights would be significantly reduced, to the extent that Spirit would be able to continue its operations and withdraw its objection, if a 3.9 nm buffer was provided, as detailed in section 2 and the Updated AviateQ Report in Appendix A of Spirit's Written Representation [REP1-116].

Figure 3.1: Arc of 263 to 90 degrees relative to the existing infrastructure



3.47 The aviation impact on CPC is far reaching and would have a detrimental impact on the entirety of Spirit's East Irish Sea operations. CPC landings form more than 50% of overall landings per year. The operational restriction proposed would severely increase the number of landings. To demonstrate the scale of Spirit's operations, please refer to the data in the Table below which summarises EIS operations over the past 7 years.

Years	Number of Flights	Number of Landings	Number of Landings on CPC	Percentage of CPC landings	Flying hours
2018	1240	5133	**2911**	**56.71%**	1086 hrs 56 min
2019	1032	4334	**2465**	**56.88%**	911 hrs 08 min
2020	1195	2160	**1433**	**66.34%**	788 hrs 15 min
2021	1333	2699	**1776**	**65.80%**	1098 hrs 32 min
2022	1139	3716	**2260**	**60.82%**	1148 hrs 32 min
2023	1030	4042	**2384**	**58.98%**	1084 hrs 53 min
2024	1088	4211	**2504**	**59.46%**	1128 hrs 08 min

Safety Impacts of Flights Restrictions

3.48 Spirit has reviewed the Applicant's D2 Response regarding the impacts of the Project on the consequential safety impact of flight constraints on Spirit's operations, and observes that the Applicant has failed to understand or address its concerns.

3.49 Restrictions on aviation have a much more significant impact on the overall number of flights required than rescheduling a flight to a later time. Where there is variability in helicopter operations, this variability is not random. Spirit's helicopter operations are in high demand. They are scheduled well in advance to ensure that all service requirements are met. Any restriction that causes a delay or cancellation therefore has extensive knock-on effects to all of Spirit's aviation operations, creating an unacceptable increase in risk to personnel, fulfilment of Spirit's safety obligations and commitments, and completion of Spirit's Maintenance, Inspection and Testing activities. Flight restrictions because of the proximity of WTGs would significantly compress the productive working day on a NUI, by delaying departure from CPC in the morning, and necessitating early departure from the NUI in the afternoon to ensure the flight can be completed during daylight. The cumulative effect of delayed departure from CPC and early departure from the NUIs would require a significant number of additional flights per year to complete the required Maintenance, Inspection and Testing activities. Since each flight taken exposes passengers to a quantifiable risk, any requirement for additional flights would expose the NUI intervention team to increased individual risk each year.

3.50 The risk acceptability criteria defined by the Health and Safety Executive (offshore Regulator) are based on annual risk exposure, not on the risk associated with individual activities i.e., the Safety Case is accepted on the basis of Individual Risk per Annum (**IRPA**) which is the overall fatality risk to an individual for the working year, and not on the basis of risk associated with any single activity such as a single flight to a NUI; flight restrictions because of the proximity of WTGs requires a quantifiable increase in the number of flights required to be taken by the intervention team per year to execute Maintenance, Inspection and Testing activities, which in turn results in a quantifiable increase in annual risk (IRPA) for those individuals.

3.51 The Applicant continues to downplay the significance of the impact of flight restrictions on individual risk that cannot be mitigated by more efficient maintenance planning; in contrast to the Applicant's analysis that is based on supposition and guesswork, the detailed analysis carried out by Spirit Energy is based on sound evidence and input data[5], and has quantified

[5] Sources include the following industry databases and guidance used to support the MH QRA are as follows:

- Hydrocarbon Release Data, HSE OSD, from HSE on-line database: https://www.hse.gov.uk/hcr3/

the overall impact of flight restrictions on number of NUI intervention flights required, and the consequent impact on IRPA.

3.52 It is not possible to plan '*intervention trips…on days with suitable* weather' because Spirit undertake planned safety & environmentally critical maintenance (along with business critical work) on NUI's in line with a 365 day schedule (annual plan). The annual plan is shared with Spirit's aviation provider and the flying schedule confirmed in advance to maximise efficiency across the field. The planned work includes preventative and corrective maintenance along with inspections, including those required at set intervals by legislation , for example, Lifting Operations and Lifting Equipment Regulations 1998 (LOLER). Spirit has two NUI intervention teams and the 365 plan is designed to campaign work on the NUI's in line with the frequencies set out in our maintenance system. As well as the scopes planned in the 365, the NUI teams are also required to intervene ad hoc where necessary should there be an alarm or trip on any of the remote platforms requiring investigation, repair and reset Many of these scopes require the services of specialist vendors and equipment, requiring Spirt to plan well in advance and to coordinate aviation and marine services to ensure that work is completed on time. Whilst a day or two delay can be expected due to weather or unforeseen technical issues, cumulative delays and deferment will result in delays securing a specialist vendor in good time to complete the work by its due date. As noted a number of these scopes are required under our Safety Case and Legislation and failure to complete on time will have an adverse effect on safely accessing the platforms and potentially leading to Regulator enforcement. As well as the scopes planned in the 365, the NUI teams are also required to intervene ad hoc where necessary should there be an alarm or trip on any of the remote platforms requiring investigation, repair and reset. Failure to execute 6 month LOLER inspections, which will have minimal opportunity to reschedule within the necessary timeframe for items such as lifeboats, helideck or crane inspections will adversely affect platform operation and intervention.

3.53 In contrast to the Applicant's assertion that *'the calculation is highly uncertain due to the thankful paucity of incident data'*, the Health and Safety Executive (offshore Regulator) and other industry bodies carry out research programmes and maintain large incident databases and that inform the industry guidance applied in the quantification of risk carried out in support of offshore Safety Cases. The methodology for the quantification of risk using this guidance is robust and well established as good practice in the highly regulated offshore industry, with acceptability criteria defined by the Regulator. This industry-standard methodology and guidance forms the basis for the quantification of risk in the CPC Safety Case submitted to the Regulator (and accepted by them) in accordance with the Safety Case Regulations. Areas of uncertainty are well understood and accounted for in the assessment.

3.54 The hydrocarbon risk exposure to NUI intervention personnel is higher than their counterparts based on CPC, and has nothing to do with lower well pressures and higher water content. Spirit's concern relates to risk exposure as it currently stands compared to the higher risk exposure for operations carried out with flight restrictions in place. The age of Spirit's assets further exacerbates these concerns and the need for robust safety protocols.

3.55 The Applicant has again failed to understand the extent of the duties imposed by PFEER or that Approved Codes of Practice (**ACoP**). These have a special status in law that require Spirit's compliance, in particular ACoP 203 that requires '*Dutyholders should select means of evacuation on the basis of their contribution to reducing the risks of those who might have to use them to as low as reasonably practicable'*, and ACoP 204 that states *'…There are a number of means of evacuation and the preferred one should be the normal means of getting people to and from the installation, unless the emergency, or the circumstances in which it takes place, makes this impracticable.'* As explained in Spirit's Relevant

- PARLOC 2012: Pipeline and Riser Loss of Containment 2001-2012, Energy Institute
- OGP Risk Assessment Data Directory (e.g. Report No. 434-2 Blowout Frequencies, Report No. 434-6 Ignition Probabilities)
- BLOWFAM 2006: SINTEF Offshore Blowout Database 2006, Scandpower, Report No. 80.005.003/2007/r2
- Ignition Probability Review, Model Development and Look-up Correlations, IP Research Report, Published by Energy Institute

Representation, this is the approach taken for Spirit's assets. Emergency evacuation by helicopter is the established means of accessing the asset, and presents the lowest risk to personnel. Furthermore, successful emergency evacuation by helicopter from CPC is credible given the bridge-linked design of the asset.

3.56 Critical to this point is the credibility of helicopter evacuation from an asset designed as separate bridge-linked jackets. Spirit maintains that successful emergency evacuation by helicopter from CPC is credible given the bridge-linked design of the asset that positions the helideck some distance away from process hazards, thereby reducing the potential for the event to impair the helideck by thermal radiation or smoke. Emergency helicopter evacuations from other offshore assets have been successfully carried out from assets where the helideck has remained unimpaired by the event, most notably from the Rough platform in February 2006 where the central platform was engulfed by fire but the bridge-linked accommodation platform helideck remained unimpaired and able to support successful helicopter evacuation. With the exception of the Mumbai (Bombay) High, the Applicant's examples offered to support their argument are all of a very different platform design that did not offer the same protection of the helideck from the effects of fire as would be the case for a bridge-linked platform; in the case of Mumbai High, the nature of the initial event was so catastrophic that not only the process platform, but also the accommodation platform were quickly engulfed by fire – this was a particularly severe event and not representative of emergency evacuation scenarios on CPC.

3.57 As we have explained at length in previous submissions, the Applicant has once again failed to understand how a fire and explosion event can escalate over time and that some protection is provided by the Temporary Refuge facilities on AP1; these and other events requiring emergency evacuation are well understood, for example fires and explosions may result from releases from topsides process plant, pipelines or a well blowout that originate some distance from the temporary refuge, and other events such as impending ship collision or sever weather posing a threat to life can be detected and effective emergency response initiated prior to impact. The protection provided by the Temporary Refuge buys the crew the time required to achieve a controlled and orderly evacuation before an event can escalate and render the Temporary Refuge ineffective at preserving life. Spirit would therefore pursue helicopter evacuation for as long as it remains a viable means of evacuation from an unimpaired helideck. Every helicopter load during an emergency evacuation represents a group of people exposed to a lower risk than would otherwise be the case for evacuation by lifeboat. The Applicant has also failed to acknowledge that multiple means of evacuation can be deployed for a single event; Spirit would not be solely reliant on its commercial helicopter service provider to evacuate the maximum POB using a single 8-seat AW169. Spirit would also call upon SAR as well as any other helicopter provider able to support the evacuation. Working together these 2 services could complete an evacuation much more quickly, particularly since the normal operational number of persons on board is much less than the maximum allowable. Spirit's analysis has indicated that flight restrictions imposed by the proximity of turbines would have a significant impact on access to commercial helicopter evacuation services, increasing Spirit's reliance on alternative means of evacuation by lifeboat, and hence expose personnel to higher risks during the evacuation than would otherwise be the case for evacuation by helicopter.

3.58 In regard to down manning, Spirit disagrees with the Applicant's statement that only 6% of day and 11% of night flights would be impacted by the windfarm. As a down manning event can potentially occur at any time, the impact to historic flights is not an appropriate metric to use. Instead, the impact to total flying time between Blackpool Airport opening hours should be used. From Spirit's current analysis, a windfarm within the area proposed by the Applicant will result in 15% of previously good flying time)being lost in the Summer months, rising to 42% in Winter. For the purpose of this section good flying time means flyable conditions within the opening hours of Blackpool Airport. This significantly increases the risk that commercial aircraft will not be available to Spirit in the event of a down manning scenario.

3.59 The Applicant states that Spirit is already constrained by Blackpool airport opening hours. Although that is correct, the Proposed Development considerably constrains Spirit further increasing the risk to Spirit operations and personnel. The risk of a commercial aircraft not being available in a downmanning situation is reflected as a percentage in the table below.

Airport Open (7am-9pm)	Overall	Summer	Winter
Current	2%	1%	3%
Post-Windfarm at distance proposed by applicant	28%	13%	43%

3.60 The Applicant's use of the word "rare" is inaccurate. To illustrate this point, Spirit refers to a down man event that took place in October 2022. At that time, the CPC Platform made the decision to undertake a precautionary partial down man of non-essential personnel due to issues with the drainage system impacting part of the accommodation block cabins. Blockages in the AP1 (accommodation platform) drains system meant that the platform had extremely limited toilet and shower facilities on the platform as none of the toilet and shower facilities in the cabins were operational. The POB was reduced from around 120 down to 44 and then to 39. This was sufficient to allow the platform to continue to remain in production safely whilst work took place for 3-4 days to reinstate the required facilities and upman the platform. This is not quite the rare occurrence that the applicant is asserting.

3.61 This is a recent example of where Spirit have had to down man the platform quickly for reasons other than a major accident hazard. NHV flights were utilised to get the POB off and also to transport supplies for the remaining crew onboard. It was important to get the non-essential POB off the platform as soon as practicable as Spirit had insufficient welfare facilities for them to use and the risk to their health and hygiene are obvious. This is one example of the circumstances in which restrictions limiting and delaying Spirit's flights could have serious consequences, albeit a non-emergency.

3.62 This type of event is not low on Spirit's risk assessment matrix. Rather, it is a mid-level risk with a history of causal occurrence across the sector.

3.63 Flight restrictions imposed by the proximity of turbines that reduce access to commercial helicopter services would have a significant impact on our ability to respond effectively to a medical emergency. This would also have a knock-on effect on emergency response. Current practice is to utilise commercial air transport for emergency medical evacuation, which can be mobilised quickly from Blackpool. The national Search and Rescue (SAR) service is located much further away and would consequently take some time to respond. If flight restrictions precluded use of commercial air transport, reliance on SAR for emergency medical evacuation could significantly delay casualty access to much needed specialist medical support and ultimately affect their prognosis for survival.

3.64 Additionally, as Spirit has explained at length in previous submissions, it maintains that there is a credible scenario, particularly for late life assets that significant restrictions in flight access could compromise our ability to execute the Safety and Environmental Critical Elements Maintenance, Inspection and Testing (SECE) strategy and complete scheduled maintenance that supports SECE function, inspection that could detect early warning signs of degradation and testing of correct function – initial minor degradations will likely accumulate and worsen over time, with the potential to introduce an ever-widening risk gap that could ultimately become intolerable and necessitate more extensive intervention to rectify, and expose the organisation and its people to increased risk and regulatory enforcement action.

4. Shipping and Navigation Safety

4.1 Spirit notes the Applicant's Response Spirit Energy Deadline 1 Submissions [REP2-030] (the **Applicant's D1 Response**) and the Applicant's Comments on Written Representations [REP2-027] (the **Applicant's WR Response**) and responds to these as follows.

Shipping routes

4.2 Spirit remains concerned about the increased collision risk caused by the Proposed Development and is not satisfied that the Applicant has appropriately assessed and addressed this risk.

4.3 In its submissions, the Applicant acknowledges that the presence of the windfarm site will change shipping routes, which can result in a change in encounters resulting in a change in collision risk. It has used collision frequency modelling to assess the risk based on a 15% estimated increase in traffic (paragraph 88, the Applicant's D1 Response). However, the impact is not due to increased traffic: it is due to the presence of the Proposed Development causing vessels to re-route and thereafter be in closer vicinity and increasing the risk of collision with Spirit's assets. The risk of collision should be assessed based on the changes to the shipping routes and how they will be affected by the presence of the Proposed Development, not port freight tonnage.

4.4 The Applicant has suggested that a 1.5nm marine buffer zone and a 1 nm corridor between CPC and Calder will mitigate the collision risk highlighted by Spirit (paragraph 89, the Applicant's D1 Response). This proposed buffer does not mitigate impact from the vessels on the collision course with the platform. A buffer will not mitigate the risk of collision due to vessels re-routing to avoid the wind farm as this risk is caused by vessels having to re-route in the vicinity of CPC and Calder. It remains for the Applicant to commit to suitable mitigation for this risk and demonstrate that the Proposed Development can safely co-exist with existing offshore infrastructure in accordance with Policy EN-3, paragraph 2.8.344.

4.5 Moreover, as Spirit is the operator of Calder, the marine buffer proposed by the Applicant must be provided for Calder within the protective provisions in favour of Spirit. The marine buffer also does not cover any relief wells within the Order Limits of the Proposed Development, a requirement further detailed by Spirit in its Written Representation [REP1-116].

Vessel Collision Risk Assessment (VCRA)

4.6 Spirit is considering the Applicants request to review the East Irish Sea (**EIS**) VCRA. It will provide an update to the Examining Authority at Deadline 4.

Walk to Work (W2W)

4.7 Spirit notes that the Applicant has incorrectly simplified the W2W practicalities at WR-116-63 of the Applicant's Response to Spirit's Written Representation.

4.8 Drilling units cannot be considered in the same way as fixed structures and have their own operational restrictions including attending vessel displacement limits and minimum airgap required for drilling operations, and as a result the required access elevation of the gangway system of 32-40m which is not achievable by the majority of the gangway systems. The W2W gangway system cannot be installed on any suitable vessel not only due to stability issues, but due to the passenger transportation Class notation (SPS / IP Class notation). As a result of such limitations, there are only few vessels on the global market which may access such high elevation and stay within the drilling rig attending vessel displacement limit.

4.9 It would also result in additional requirements on the rigs Safety Case. Making a material change to the Safety Case for contracting of such rigs would have to be done in advance to allow additional time (6+ months) to make the changes and to consider any additional costs associated with such change.

4.10 The Installation Safety Case outlines the primary and secondary means of evacuation. Under approved W2W operations the W2W may be confirmed as a primary means of evacuation and helicopter as secondary. Use of lifeboats or "escape to sea" is considered as a last resort of evacuation for the offshore installation.

4.11 In brief, the Applicants comments do not address Spirit's concerns; instead it is relying on proposed unviable changes to the way Spirit operates.

Radar Early Warning System (REWS)

4.12 Spirit awaits the Applicant's detailed response regarding Spirit's Radar Early Warning System. In relation to the Applicant's specific comments on the implications of impacts on REWS for Emergency Response and Response Vehicles (**ERRVs**) (see WR-116-67 of the Applicant's WR Response), Spirit notes that for drilling operations within the Proposed Development, ERRV sharing with the rest of offshore installation will not be feasible due to the inability to demonstrate the rescue and recovery performance standard for such sharing and the limitations introduced by the windfarm.

Protective Provisions

4.13 The Applicant has referred to the protective provisions it has proposed in a number of its responses. See section 2 of this submission for Spirit's position on the protective provisions.

5. Decommissioning

5.1 Spirit maintains the concerns it has expressed in its Revant Representation [RR-077] and Written Representation [REP1-116] regarding impacts of the Proposed Development on its decommissioning obligations.

5.2 In its response to Spirit's Deadline 1 Submissions [REP2-030], the Applicant has responded that it considers these concerns resolved by the protective provisions that it has proposed in favour of Spirit in Schedule 3 Part 3 of the draft DCO [REP2-002].

5.3 However, the proposed aviation and marine buffer zones and corridors proposed in those protective provisions do not address the needs or meet the requirements set out by Spirit in section 5 of its Written Representation. Spirit maintains the position set out in section 5 of its Written Representation [REP1-116], including that the Project creates a lack of 'sea room' generally regardless of a 1.5nm buffer zone around Spirit Energy installations. The presence of the wind farm presents a restricted space for vessels to manoeuvre around infrastructure which may be required, for example, to stand off in an emergency.

5.4 The Applicant further suggests it is common practice for pipelines to be left *in-situ* however it is important to note that it is not a given. Under OPRED's Guidance Notes for Decommissioning of Offshore Oil and Gas Installations (November 2018), a clear seabed is the base case and operators carry out a comparative assessment to determine the appropriate decommissioning solution through submitting a decommissioning programme (paragraphs 1.1 and 10.2). Any pipelines that remain *in-situ* (such as those at DP3) are done so under an approved decommissioning programme and it is operator's responsibility *in-perpetuity* to ensure that these do not present a hazard to other sea users. This requires surveys in agreement with OPRED for a period of time post-decommissioning to ensure that there are no changes. Where changes to pipelines have occurred and these may present a hazard to other users of the sea, remediation may be required. Remediation would likely be spot rock deposit. Surveys for that are conducted by pipe tracker and ROV to determine depth of burial.

5.5 With regard to costs, Spirit has previously stated that it expects the cost impact in relation to flight impacts on decommissioning alone to be in excess of £10 million. This number is an indicative number that may increase depending upon the detailed engineering plans, marine and aviation buffers distance and the vessel type and day rates for the time in question. The day rates applied are commercially sensitive. It was calculated by translating the flight disruption as a direct result of the introduction of the Project into additional days that would be required to complete the decommissioning campaign of the vessels executing the various elements such as rig to P&A wells, barge preparation work for topside and jacket removal and heavy lift vessels.

5.6 The Project continues to present a risk to Spirit's ability to comply with its decommissioning obligations and presents a significant cost impact. The Applicant has failed to propose suitable mitigation for these concerns.

6. Morecambe Net Zero (MNZ)

6.1 Spirit notes that the Applicant did not consider it necessary to respond to Spirit's submissions in relation to MNZ in its Relevant Representation [RR-077] and Written Representation [REP1-116] as it required further understanding of Spirit's position of this "future project proposal at an early stage" (see paragraph 94 of [REP2-030]).

Status of MNZ's Licence

6.2 The Applicant fails to recognise the significance of MNZ and stage of its development, along with the policy backing for MNZ which means this is not merely a proposal.

6.3 MNZ is the most advanced carbon storage licence in the UK from the awarded licences in September 2023. Spirit's licence, CS010 is in the cohort of NSTA's first carbon storage licensing round, following on from only a handful of licences issued since 2021.

6.4 MNZ is an integral and essential part of the government's strategy to meet carbon budget 6 under the Carbon Budget Order 2021 for the period 2033-2037. The Committee on Climate Change (**CCC**) have described Carbon Capture Utilisation and Storage (**CCUS**) as '*a necessity, not an option*' to deliver the UK's legally binding net zero commitments in their report Net Zero: The UK's Contribution to Stopping Global Warming (May 2019).

6.5 Spirit has set out the details of this licence and the activities permitted and required by it in section 8 of its Revant Representation [RR-077] and section 4 of its Written Representation [REP1-116]. In response to the Examining Authority's First Written Question (**ExQ1**) [PD-011] on Spirit's carbon storage licence (ExQ1, Question 1OOI7), Spirit has further detailed the status of this licence. As detailed there, CS010 requires Spirit to undertake a programme of work agreed with the NSTA. That programme of work has been underway since 2023, with numerous milestones already reached and further deadlines imminent – all established with the NSTA and undertaken by Spirit to ensure that this critical project remains on track.

6.6 Spirit's carbon storage licence continues through three periods: the Appraisal Term for exploration of carbon storage sites, followed by the Operational Term and Post-closure Period during which carbon dioxide may be stored and installations established and maintained for these purposes subject to Spirit being granted a storage permit under the MNZ Licence. The first ever storage permit was issued on 10 December 2024, just 6 weeks prior to this Deadline 3 submission. It was awarded to Endurance, the East Coast Cluster CCUS project which was one of the first-ever carbon storage licences issued in 2021. Evidently, not having obtained a carbon storage permit yet should not be perceived as MNZ being a 'future project proposal'. Rather, as one of the most advanced carbon storage projects, Spirit has completed 2 years of technical development for MNZ under its carbon storage licence, as well as investing over £25 million to date as part of a circa £50 million investment to reach the storage permit stage. The licence conditions hold Spirit to a detailed programme of work resulting in a storage permit application as part of a package of licencing over a four-year period of which Spirit is approximately halfway through. The licence requirements are built around technical and project development with a series of gates to be passed over the four year process, which lead up to the storage permit, obtaining which is further assured by the approval of all intermediate steps to date and the plan agreed with the NSTA under the licence up to the end of the licence period. Delay or challenge to this licence risks a breach of the licence requirements and creates a material risk to the project that has a total estimated magnitude of around £2 billion investment in MNZ.

6.7 Accordingly, MNZ is not merely a "future project proposal at an early stage". It is one of the most advanced carbon capture projects in the UK, with activities required and scheduled under its licence already underway, with significant investment already made.

MNZ and the Proposed Development

6.8 To date, Spirit has given, and continues to give, significant consideration to the Proposed Development to facilitate co-location of the Proposed Development and the MNZ carbon store. Spirit has already designed elements of MNZ with the Proposed Development in mind

and is committed to engaging with the Applicant on project specific requirements. A summary of some of the considerations already designed into the project can be found below.

6.8.1 Store phasing: Both the north and south stores (depleted reservoirs) are within the boundary of the carbon storage licence. There is an obligation for Spirit to undertake the licence commitments on both sites. Together the stores can provide storage for 1 Gigatonne (GT) of CO_2. The larger South Morecambe gas field (MSF) has a theoretical capacity of 850MT CO_2 sequestration with North Morecambe gas field the remaining 177MT CO_2 sequestration. Current engineering design works is underway to assess the optimal phasing for filling the stores including consideration of other sea users in the area. Due to optimising the development and infrastructure installation it is likely the larger south store will be developed first or at the same time as the north store.

6.8.2 Well locations: The expectation is that MNZ will require two or three injection platforms on South Morecambe over the course of its life and one on North Morecambe over the course of its life, each requiring connection to new power cables and pipelines. It is likely that the platforms would be installed one at a time with months or years between each installation with pipeline and power cable installation in the same timeframe. A location has already been discounted as it is within the boundary of the Proposed Development. This leaves two potential locations for such facilities, one of which is in close proximity to of the Proposed Development order limit and therefore may also need to be discounted on logistical grounds.

6.8.3 The pipeline route is dependent on the location of the CO_2 sources, likely initial CO_2 source being from the Peak Cluster and therefore approaching the injection platform from the south of the East Irish Sea. The basecase pipeline position is routed to the east of the Proposed Development. The cable route is dependent on power availability, with the aim to minimise cable route length, therefore likely approaching the injection platform from the east (most likely from Blackpool or Heysham).

6.8.4 Monitoring: A carbon store Monitoring Plan is required for the carbon storage permit, covering the pre-development, operational and the post-closure period. Given the presence of the Proposed Development over the southern part of the carbon store, Spirit will not be able undertake 3D seismic monitoring due to limitations in operating seismic streamer cables between the turbines. Instead, as a direct result of the Proposed Development, Spirit has had to look to other monitoring technologies such as 4D gravity (which is Spirit's primary monitoring technology to fulfil the carbon storage permit monitoring requirement), seabed sampling, well based monitoring and possibly 2D seismic acquisition, all of which can be undertaken within the Proposed Development between the turbines.

6.9 The documentation issued as part of the DCO process has provided additional information on the Proposed Development which has allowed additional consideration of colocation. These are set below.

Construction and survey schedules

6.10 MNZ is currently planning FID in 2028 followed by 3 years of offshore facilities construction throughout 2028 to 2031 for first injection in 2031. MNZ has surveys schedule during the summer windows from 2025 – 2031. As set out in Section 3 of the Applicant's Response to Actions arising from Preliminary Meeting and Issue Specific Hearing 1 (ISH1) [REP1-086], the Proposed Development expected scenario has a construction window starting towards the end of Q1 2028 for operation in 2030. The Proposed Development delayed scenario has installation in Q2 2031 with operation at the end of 2032. Based on the MNZ current schedule both the expected and delayed scenarios introduce construction conflicts which will require cooperation between the parties to manage.

Infrastructure and well locations

6.11 Well construction and well modification activities would be carried out from a jack-up rig positioned alongside the injection platforms. Transport of personnel to and from the jack-up rig would normally be by helicopter as would any precautionary down-manning of the unit should that become necessary. Likewise helicopter access to the platforms will be required during the operational phase. Thus, albeit centred around the SMW3 or SWM2 location, the helicopter constraints being considered for current Morecambe gas production operations are relevant to the future MNZ project, for both the construction and the operation phases. Typical flight activity for the construction phase is four flights per week.

6.12 Also relevant is the discussion regarding vessel activity for the current Morecambe operations and decommissioning operations. The jack-up rig operating at the MNZ wellhead injection facility would have a supply vessel or two regularly running back and forth between the rig and the shore base. Likewise vessel access (supply vessels and walk to work for maintenance) to the platforms will be required during the operational phase.

6.13 Note that to position the rig alongside the platform would require the use of anchors extending from the rig by approximately 1700m. Once in position there would be a 500m safety zone around the injection platform and the jack-up rig, thereby extending the injection platform's safety zone in the region of 75m in the direction of the rig.

6.14 The MNZ pipeline and cable routes are likely to cross the cable for the Proposed Development. Where crossings are required they will be designed to typical good practice and standards. To minimise the impact of those crossings (for Spirit and the Applicant), Spirit will require the cables to be buried and protected sufficiently to optimise the crossing. The details will need to be provided once both the Proposed Development and MNZ designs are at sufficient maturity. Note also that the existing 36" export lines (PL-144 and PL-985) will be re-purposed for CO_2 rather than being decommissioned.

Monitoring

6.15 As part of the permit conditions for the MNZ CCUS project, there will be a requirement to monitor for the possibility of gas leakage from the storage complex. Technologies that Spirit will have in its monitoring plan are 4D gravity, seabed sampling, well based monitoring and possibly 2D seismic acquisition. Gravity monitoring is the primary monitoring technology that Spirit will use to fulfil the carbon storage permit monitoring requirement.

6.16 4D Gravity Monitoring will be undertaken at regular intervals during the storage project and the technology requires the permanent placement of concrete pads on the seabed and temporary deployment of instrumentation on the concrete pads using a vessel ROV. Currently Spirit don't have precise details of where the concrete pads will be located, but a number of these will be required within the area of the Proposed Development. Spirit intends to work with the Proposed Development operator to ensure optimal design / layout of these concrete pads to allow coexistence with the Proposed Development. Once the pads have been deployed, Spirit will require access to each pad within the Proposed Development area using a vessel and ROV for deployment of the monitoring instrumentation. To design an operable monitoring plan Spirit need to understand the proximity the vessel and ROV can be positioned to the turbines and other associated windfarm infrastructure and define the associated constraints.

6.17 In addition, vessel access to the Proposed Development area may be required to take seafloor sediment samples or possibly undertake 2D seismic acquisition should there be evidence of CO_2 leakage. The exact location and requirements for these monitoring technologies cannot be defined until the operational stage.

6.18 The highest risk of leakage is via legacy wells that penetrate the underground store. Spirit will require vessel access to monitor the legacy surface well head locations within the Proposed Development area. Should there be any evidence of leakage then remedial action may be required to stop the leak from the legacy well. That may be achievable via a relief well from an offset location but for most wells would require intervention from the surface well head location using a jack-up rig. In such circumstances, a 1nm access corridor to the rig location, a 500m safety zone around the well head, and helicopter access will be required. Although this scenario is unlikely, Spirit's carbon storage permit will require a

corrective measures plan to address such an event. The coordinates for the legacy and relief well tophole locations are provided in the following table.

Legacy and relief well tophole locations

Well	UTM-X (m)	UTM-Y (m)	Latitude	Longitude
DP3 (C1)	463127.8	5963416.1	53°49'0.6155"N	3°33'36.1013"W
110/3-3	461777.5	5965739.0	53°50'15.4200"N	3°34'50.9700"W
110/8-2	463380.9	5964662.3	53°49'40.9985"N	3°33'22.7997"W
110/8A-7	462197.7	5957977.2	53°46'4.3984"N	3°34'24.5556"W
110/8-2 Relief	463380.8	5965162.33	53°49'57.1774"N	3°33'23.0190"W
110/8a-C5 Relief	462650	5964650	53°49'40.4140"N	3°34'2.7666"W

6.19 The plan provided by the Applicant on page 21 of their Response to Spirit's Deadline 1 Submissions [REP2-030] (Ref: FLO_MOR_GIS_PRJ001_MORConstraintes_Rev001) (the **Applicant Plan**) shows a constrained area around the pipeline from CPC to DP3. It appears that this would protect access to the wellhead location for the abandoned DP3 wells (although not with a 1nm access corridor), the 110/8-2 and 110/3-3 exploration wells (which are within the platform 1.5nm buffer) and the relief well locations provided in the eventuality any remedial work is required. It is unclear whether there would be a 500m radius / safety zone from the wellhead to the nearest turbine.

6.20 The 110/8A-7 well is in an unconstrained area, therefore a 1nm access corridor, a 500m safety zone, and helicopter access would be required around the well head location.

6.21 There is a requirement at all rig and platforms locations that there are at least two access/egress corridors to allow safety access and evacuation of the supply vessel and an Emergency Response and Rescue Vessel (ERRV).

Project colocation, construction and simultaneous operations

6.22 To develop an integrated plan, including simultaneous operations, to allow the Proposed Development and MNZ to progress together the following information would be required:

6.22.1 Detailed project plan

6.22.2 Infrastructure drawings including turbine, cable and all associated infrastructure locations

6.22.3 Construction methods and sequencing

6.22.4 Confirmation of ROV access to concrete pads within the Proposed Development

6.22.5 Confirmation of rig access to well locations in the event of remedial activity

6.22.6 Collaboration on optimisation of routing, crossing locations and crossing designs

6.23 With reference to the Applicant Plan, Spirit would be grateful if the Applicant could confirm if turbines will not be installed in the two areas between the platform 1.5nm buffer zone and the Calder pipeline constrained area. This would provide greater buffer between MNZ infrastructure installation, construction, drilling, operations and survey activities and the Proposed Development activities.

7. **National Policy Statements**

7.1 For the reasons set out above, Spirit contends that the Proposed Development does not comply with NPS EN-3.

7.2 Policy EN-3 para 2.8.342 - 2.8.348 states that the SoS should not consent a project that poses intolerable risk to safety after mitigation measures applied and adverse effects on viability and safety of offshore infrastructure and activities should afforded "substantial weight" by SoS in decision-making. The underlying reasons for the development presenting an unacceptable safety risk are set out in the preceding parts of this response.

8. Spirit would further comments:

8.1.1 Policy EN-3 paragraph 2.52 - states that good design should consider "opportunities for co-existence". The location of the wind farm and associated mitigations are inadequate and fail that test – they do not allow for safe co-existence.

8.1.2 Policy EN-3 paragraph 2.8.261 - 262 - for the reasons set out in this submission, the Applicant has failed to "work with" Spirit as an affected party to minimise negative effects and reduce to ALARP.

APPENDIX 1

Spirit's Response to the Applicant's D1 Response [REP2-030] in relation to Aviation and Shipping and Navigation

Section	Paragraph Number	Applicant comment	Spirit Response
2	7	The Aviation Corridor would allow for the majority of aviation access in IMC conditions to be retained (see section 5 below), and addresses the suggestion by Spirit Energy of extending the current proposed 360 degree aviation buffer from 1.5nm to 3.9nm	The aviation corridor proposed by the Applicant in section 5 of the Applicant's D1 Response fails to meet Spirit's requirement for a 3.9 nm buffer around the full 360 degrees of all of its affected assets, including Calder, any less (subject to the aforementioned 3.76nm adjustment) Spirit maintains will have unacceptable impacts on the safety of Spirit's operations. Spirit cannot accept the IMC Take Off Corridor as it will only a mitigate instances when the wind is coming from the corridor direction, which allows take off from the CPC platform under current CAA regulations. If the wind from another direction, then access to the CPC platform may be restricted either by the windfarm or by the restricted wind sectors of the CPC helideck. The MetOcean criteria data analysis outlines that only 22% of wind comes from the direction of the corridor. With the proposed corridor, there is still no mitigation to retain full night flying operations or IMC operation under the proposed new CAA ruling without the use of an AltMoC.
3.2	18	As outlined in Section 5 below the Applicant has proposed additional mitigation, in the form of the Aviation Corridor (see paragraphs 31-32 below), to be secured as protective provisions in favour of Spirit Energy (see also Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2)). The Aviation Corridor would allow for the majority of aviation access in IMC conditions to be retained. The combination of the Aviation Corridor and the existing unobstructed airspace would also allow the helicopter operator to demonstrate an alternative means of compliance with the CAA regulatory change, should it come into force	The IMC Take Off Corridor proposed by the Applicant does not allow for the majority of aviation access in IMC conditions as per above, the wind is only in the right direction 22% of the time. The use of Alternative Means of Compliance is not a standard practice, it's the exception and would be seen as a reduction in safety.
5	25	The Applicant undertook an assessment of the distances required	Spirit request that the Applicant confirms how it arrived at the

		for approach and take-off in visual meteorological conditions (VMC) and instrument meteorological conditions (IMC). This is described in detail in Volume 5 Appendix 17.1 Helicopter Access Study (APP-081) which concluded that approaches in day VMC require a distance of 1.26 nm, based on a stabilisation point at 0.75nm from the landing site. The required distance for take-offs in day VMC ranges between 1.14nm to 1.38nm for the AW169 helicopter depending on take-off mass and wind speed, based on the one engine inoperative scenario.	figures of 1.26, 1.14, and 1.38nm.Spirit received advice from Spirit's Aviation Technical Authority which states that the calculations for the graphs used by the Applicant relate to the Ground and Elevated Heliport/Helideck Takeoff procedures whereas the Offshore and Elevated Heliport/Helideck procedure graphs should be used instead. Other points of concern are as follows: 1. There is no mention of the 350m CTO (Rate of Climb) distance required, which is the distance from the Take-Off Decision Point (TDP) to achieving Vtoss and a positive rate of climb. 2. The Applicant has applied a headwind factor to the level acceleration distance used, when Figure S4-31 of the OEM graph does not account for a reduction for headwind. If such a reduction were allowed, it would have been reflected in the graph like all other performance figures. 3. The graphs do not mention or include the reduced rate of climb due to the fixed undercarriage and larger sponsons for the Spirit aircraft. 4. The radius of turn figure is incorrect as Spirit Aviation Technical Authority and the aviation provider have both calculated the radius of turn figure using correct performance graphs and calculated this to be 0.35 instead of the Applicant's 0.43nm. Furthermore, it appears as if the Applicant has applied a headwind factor to the level acceleration distance in Graph S4-32 Distance Required for level acceleration from Vtoss to Vy, which the graph does not permit.
5	26	A buffer of 1.5 nm is therefore considered sufficient for day VMC flights to and from CPC-1. An obstruction free distance of 1.26nm around the Waveney Platform was identified in the Protected Provisions for the Dudgeon and Sheringham Shoals Extension Project DCO1. Shorter distances are applied on daily flights to helidecks within and adjacent to wind farms, some as low as 0.65nm (1,200m).	Referencing another windfarm DCO process is not applicable to the Morecambe Windfarm Generation Asset DCO process because information on the type of offshore installation, type of operation, aircraft specifications and any potential agreed compensation method is omitted from the statement of accepted distance.

5	29	Although it should be noted that at present flight at night are already constrained by the opening hours of Blackpool Airport (7am to 9pm), and that Spirit Energy do not have an out of hours contract to allow flights outside of these opening hours.	Spirit Energy operations from Blackpool are performed within the airport opening hours 0700 – 2100. During winter month the outside daylight hours conditions are experienced within the airport opening hours where darkness can be observed at around 3 pm.
5	39	Night access was assessed for CPC-1 on a monthly basis, as it is part of a manned cluster	Spirit request the Applicant to clarify what this assessment entails. Reference made only to legacy years (2021-2022) and COVID pandemic conditions and does not take into account present operations.
5.1.2	43	The Vantage data shows that a limited number of night flights occur to the DP6 NUI, with a maximum of four-night flights (1.3%) occurring in 2022. The percentage of unaffected flights, i.e. day VMC, is between 91.3% and 97.0%.	This is not a true reflection of the whole data set, selecting singular year (COVID pandemic year) can miss the bigger picture. In 2022, DP6 had a daylight-only restriction on the helideck due to failed lighting which is now removed.
6	48-49	In its Relevant Representation (RR-077) and Written Representation (REP1116) Spirit Energy set out that the United Kingdom (UK) North Sea Operators working group and the CAA have discussed incorporating a number of tighter flying restrictions to and from oil and gas platforms that are located within 3nm of offshore wind turbines. As stated in Section 3 of the Updated AviateQ Report these restrictions, which would include limiting flights to daylight flying only, could be implemented through a change to CAA Policy and Guidelines on Wind Turbines (CAP 764). Although it should be noted that an updated version of CAP 764 which was issued for consultation in March 20243 did not incorporate those changes. Through their own discussions with the CAA the Applicant has received confirmation that any changes to the meteorological or operational limits will be at the level of Guidance Material or Acceptable Means of Compliance (AMC) (see Section 6.1.1 below). To date there has been no consultation with the wider offshore industry, including the renewables sector, on these changes and as noted above the most recent update to CAP 764 did not incorporate those changes. Therefore, it is not clear to the Applicant that the regulatory change could be secured in 2025 as stated by Spirit Energy.	Initially, AviateQ informed Spirit that these changes were intended for CAP764. However, Spirit has since received information from NHV and the CAA that the changes will actually be incorporated into the Specific Approval for Helicopter Offshore Operations (SPA.HOFO) Regulation. Through Spirit's engagement with the CAA offshore lead, it has been advised that these regulations will be implemented in Autumn 2025. It would be helpful to understand who the Applicant contact at the CAA was and which department they are in. This could help Spirt better understand the source of their information and ensure that Oil & Gas and renewables departments within CAA are aligned. The CAA response on this matter is awaited at Deadline 3 in any event.

6.1	ALL	Alternative means of Compliance sections	The use of Alternative Means of Compliance is not a standard practice, it is the exception and would be seen as a reduction in safety. Application of Alternative Means of Compliance to the regulations which are not yet introduced cannot be considered as viable mitigation.
6.1	53	Helicopter operators have already discussed the use of an AltMoC for wind turbines placed within 3nm oil and gas platforms to provide electric power to those platforms.	An isolated WTG is not classed as a wind farm and is seen as an isolated obstacle. There are no examples in UKCS confirming AltMoC Operation. There is no evidence provided for application of the AltMoC process in support of offshore operations in vicinity of windfarms and it cannot be seen as a "normal" aviation practice. Spirit is not aware of any example of this being used. Spirit request that the Applicant provides any examples it is aware of, and further explains why it believes that the CAA would permit this kind of AltMoC operations.
6.1	54	Currently, and even following construction and operation of the Project, there is existing unobstructed airspace in an arc from 263° clockwise to 90^0 around the CPC-1 platform as shown on Figure 6.1. This would allow landings from, and take-offs into this unobstructed airspace in both night VMC and IMC to/from the arc from 2630 clockwise to 900. As outlined in Section 5 above the Applicant has also proposed additional mitigation, in the form of the Aviation Corridor centred on 2200 in line with the predominant wind direction. This would allow unobstructed landings from and take-offs into this unobstructed airspace to the southwest of the CPC-1 platform.	The aircraft approach from the arc sector can be considered in both VMC and IMC conditions, however the Applicant has omitted that the subsequent take-off would then have to be performed into the opposite sector of 90 degrees to 263 degrees. which is predominantly covered by the proposed Windfarm. Such take-off into the opposite sector would not be viable based on the distances calculated for OEI take-off in both conditions unless 3.9nm is available (subject to the aforementioned 3.76nm adjustment). By the same token, take off would be possible but landing would not as the aircraft will have to approach from the windfarm direction to take-off into the arc. As per GM1 CAT.POL.H.310(c) & CAT.POL.H.325(c) Take-off and landing - under the normal operations the aircraft should approach and take off into head wind. The arc does not take into consideration helideck

			restrictions and relative location of the helidecks on the platforms.
6.1	55	Taken together the effect of the existing unobstructed airspace and the Aviation Corridor would be to provide an approach and take-off distance free of wind turbines for at least 3nm longitudinally, measured from CPC-1 in an arc covering at least two thirds of the airspace around CPC-1. This arc also provides a lateral clearance of at least 1nm from wind turbines. Helicopter operators may obtain an AltMoC which will provide an equivalent level of safety to current operations, whilst expanding the IMC and night VMC access	Spirit requests that the Applicant prepares an AltMoC request that would demonstrate how an equivalent level of safety could be obtained. Ref Comments Paragraph 54.
6.1	56	Applying an AltMoC does not lead to a reduction in safety. Some regulatory regimes, such as the Health and Safety Executive (HSE) adopt a goal setting regime. For example, under the Prevention of Fire and Explosion, and Emergency Response Regulations it is a requirement to show a "good prospect of rescue" following a helicopter ditching but with no defined targets.	There is a clear performance standard outlined for Rescue and Recovery of the ditching helicopter and other scenarios under Asset Safety Case and OEUK ERRV Management Guidelines, Section 4.2.2.3 - Helicopter Ditching - In the event of a helicopter ditching within the 500m zone, up to 21 personnel shall be rescued and taken to a place of safety within 2 hours.
6.1	57	In summary, applying an AltMoC for approaches in IMC to CPC-1 post any CAA regulatory change, if it were to occur, is consistent with aviation practice, aimed at maintaining safety levels whilst providing flexibility.	There is no evidence provided for the application of the AltMoC process as an equivalent level of safety compliance in support of offshore operations in vicinity of windfarms and it cannot be seen as a "normal" aviation practice. Spirit is not aware of any example of this being used. Spirit requests that the Applicant provides any examples they are aware of, and further explains why it believes that the CAA would permit this kind of AltMoC.
7.1	63	The helicopter operations at Morecambe already have a high degree of variability: for example, monthly landings on CPC-1 in 2021/22 vary between 83 and 235. This variability is even higher when considering that many flights are just associated with crew change for CPC-1 (drops to 59 and 205 without this). Over the same period, the number of monthly visits to (for example) Rev 01 Page | 22 of 37 Doc Ref: 9.35 DP6 varied between 0 and 28. This shows that the MIT effort on the NUIs is variable and there is no direct	As per paragraphs 39 and 43 above, highlighting single years and specific NUI platform does not take into account the field wide maintenance program for other platforms. There were certain months when we didn't reach DP6 in those years because we were actively engaged in Maintenance, Inspection and Testing (**MIT**) on other NUIs. All of our NUIs will be impacted by the new proposed CAA rules as they are being serviced by CPC1 platform, and there hasn't been a single month where Spirit haven't conducted flights to a NUI.

		impact on safety for these activities for a delayed, or rescheduled flight as there is already this variability in flights. The risk exposure from carrying out a MIT activity a few days, or few weeks later is negligible and not quantifiable.	Spirit is following NUI 365 maintenance plan which dictates which NUIs are being maintained in each month.
7.1	64	Similarly, the amount of time spent on a NUI varies considerably. Over the same 2-year period for DP6, from Vantage Data it is estimated that time spent on the platform for each visit varies between just over an hour to just under 12 hours. As a proportion of the work done, the flying risk is >10 times higher for the short visit, but this is a risk that is already deemed acceptable by the Operator, HSE and other relevant bodies.	These short trips 1-hour trips are typically due to production or safety related issues on the platform (platform trips etc), making it crucial for us to fly there promptly to address and resolve them.
7.1	65	If the amount of time on the platform was restricted due to flying hours, additional visits may be needed, and this would lead to increased risk. However, this is likely to already be within the working pattern of the installations as outlined above and would be a small change. In addition, the overall risk to personnel working offshore is dependent on several hazards: including fires and explosions, ship collisions, day to day occupational risk and helicopter risk. Helicopter risk will only be increased if additional maintenance visits are required. With effective maintenance planning it should be possible to minimise any additional flights. The Applicant therefore considers that any overall risk change to personnel working on the NUI will not be significant and within the variability already seen.	Any increase of NUI intervention operations and amount of additional flights will result in an increase of HSE exposure to the NUI personnel. For NUI's such as DP6 there is an annual unattended landings limit of 120 landings per year imposed by the CAA. Any increase in the number of flights to these NUIs will subsequently reduce the ability to perform planned maintenance within the allowed number of landings.
7.1	71	For the reasons outlined above there should be no need to significantly increase flights assuming that work is planned effectively. Effective planning means not visiting NUI platforms when poor weather or high sea states are forecast. The tolerability criteria would not be threatened by any such change, or even larger change in transportation risk	Spirit has an annual 365 NUI maintenance plan taking into account all required safety, production and planned maintenance required for each offshore installation to ensure Asset compliance with regulatory requirements. The plan does not take into account changes to the weather forecast (which can be hourly), crew sickness, aircraft availability, and reactive maintenance requirements which cannot be planned.
7.1	77	Downmanning only refers to CPC-1 as NUIs, for example the Calder platform or DP6, are only temporarily manned and only	Helicopter availability is never truly guaranteed and technical issues can be experienced at any time.

		manned when it can be guaranteed that helicopters are available to take personnel off the installation.	
9	88	The Applicant acknowledges that the presence of the windfarm site will change shipping routes, which can result in a change in encounters resulting in a change in collision risk. As a result, this risk was assessed using collision frequency modelling based on a 15% estimated increase in traffic, as detailed in Section 8.5 of the Navigational Risk Assessment (NRA) (APP-073).	Reference is made to the increased vessel traffic of 15% due to increase of national freight tonnage, and not as a result of the windfarm placement. The impact should be based on the changes of the shipping routes rather than projected increase in port freight tonnage. The Applicant only refers to the potential increase of traffic due to increase of freight tonnage, however never assessed the potential increase of passing traffic in close proximity of Spirit's installations in the area after the windfarm placement
9	89	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) marine buffer around the CPC-1 platform which will be clear of WTGs, offshore substations and temporary surface infrastructure. Spirit Energy 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. 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 marine corridor, again clear of WTGs, offshore substations and temporary surface infrastructure, between the CPC-1 platform and the Calder platform.	The Applicant only refers to a marine buffer zone of 1.5nm around CPC platform and to the 1nm wide corridor between CPC and Calder platforms. The outlined provisions by the Applicant do not take into account a marine buffer zone of 1.5nm required around the Calder platform.
9	90	There is a far higher risk of emergency production shutdowns due to vessels on collision course with platforms or breakdowns caused as a result of emergency shutdowns and waiting for repairs (paragraph 6.8 of the Spirit Energy Relevant Representation (RR-077)). The Applicant refers to paragraph 90 above, which sets out that mitigation requested by Spirit in relation to these matters has been secured in the updated protective provisions.	The set out mitigation of additional 1.5nm marine buffer zones and 1.0nm corridor between CPC and Calder does not mitigate impact from the vessels on the collision course with the platform. Awaiting response from the Applicant on REWs assessment to provide potential mitigation.
9	92	The protective provisions in Part 3 of Schedule 3 of the draft DCO only secure a 1.5nm buffer between the "active" AP-1, DP-1 and Calder "heli-decks" (which may be removed or change location). A 1.5nm marine	The Applicant only refers to a marine buffer zone of 1.5nm around CPC platform and to the 1nm wide corridor between CPC and Calder platforms. The outlined provisions by the

		buffer zone must therefore be secured independently of any corresponding aviation related buffer zone (paragraph 6.17 of the Spirit Relevant Representation (RR077)). The Applicant refers to paragraph 90 above, which sets out that mitigation requested by Spirit in relation to these matters has been secured in the updated protective provisions.	Applicant do not take into account a marine buffer zone of 1.5nm around the Calder platform. The proposed marine buffer zones cannot be referenced to the "active" helidecks and should be applied to the affected platforms - CPC and Calder.
9	93	That wind turbines near Spirit Energy's REWS can interfere with its performance (with consequential risk to safe operations) (paragraphs 6.18-21 of the Spirit Energy Relevant Representation (RR-077) and paragraphs 3.3750 of the Spirit Energy Written Representation (REP116)). As noted in Section 1, analysis of Spirit Energy's comments in relation to REWS is ongoing, and detailed responses are not included in this response but that the Applicant intends to submit an updated REWS assessment at Deadline 3 addressing the comments made by Spirit Energy.	Awaiting responses from the Applicant on REWS comments.
11	95	The Applicant has updated the protective provisions in favour of Spirit Energy in Schedule 3 Part 3 of the draft DCO (Document Reference 3.1) which secures aviation and marine buffer zones and corridors and a commitment to pay additional costs due to impaired helicopter access which the Applicant considers resolves Spirit Energy's concerns in this regard.	Spirit will work with the Applicant to agree protective provisions for marine and aviation buffer zones and corridors, and compensation for helicopter access. Spirit does not deem safety concerns arising from impaired helicopter access (as acknowledged) capable of being resolved by a commitment to pay additional costs. That said, Spirit notes the Applicant's updated protective provisions now seek to cap the recovery of costs to a currently undefined sum.

APPENDIX 2

Spirit's Response to Appendix A of the Applicant's D1 Response [REP2-031]

In responding to Appendix A of the Applicant's D1 Response [REP2-031] AviateQ on behalf of Sprit has attempted to replicate the Applicant calculations for AW169 distances. It would seem that the applicant has misinterpreted the OEM Performance graphs which may have resulted in the reduced distances required for AW169:

- The Applicant appears to have used a graph from the Ground and Elevated H/H Take off procedure instead of using the Offshore and Elevated H/H procedure graphs.
- The CTO distance of 350m (this is the distance from TDP to achieving Vtoss and a positive rate of climb) is not included.
- A head wind factor has been applied to the level acceleration distance when the graph does not allow for it.
- The reduced rate of climb factor due to the fixed under carriage and larger sponsons is not included.

Comment ID	Applicant Comment	Spirit Response
3.2	The Applicant has taken an evidence-based approach, applying current and proposed future aviation regulations, guidance material and industry best practice. A similar evidence-based approach resulted in Protected Provisions for the Waveney Platform in the Dudgeon and Sheringham Extension Project1 of 1.26nm for day Visual Meteorological Conditions (VMC) operations. Since the Sumburgh Helicopter Accident in 2013, helicopter operators have contributed to the HeliOffshore working groups producing guidance on best practices, which is then followed by all the operators. For example, the Flightpath Guidance document includes the 0.5nm stabilisation point for a day VMC approach. The differences between operators tend to be minor in nature and not safety related.	Evidence is based on the wrong aircraft type with a different OEI continued take off profile. The correct aircraft type is AW169. Referencing another windfarm DCO process is not applicable to the Morecambe Windfarm Generation Asset DCO process because information on the type of offshore installation, type of operation, aircraft specifications and any potential agreed compensation method is omitted from the statement of accepted distance.
3.3	The Minutes from the NSHO WG appear to try and differentiate operations into 3 groups: ▪ Operations inside wind farms ▪ Operations to oil and gas platforms near wind farms ▪ Operations to oil and gas platforms which have placed their own wind turbines nearby (North Sea electrification) As the hazards will be common in each case, then the same criteria will apply. To try and differentiate between the operations and cherry pick is not valid. The Civil Aviation Authority (CAA) is due to consult on any proposed changes to the regulations (as listed in 2 above). As part of this process, the CAA has been given contact details at Renewables UK (RUK), who represent interested parties.	The Aviateq aviation study is based on operations to an Oil and Gas platforms located near wind farms. The study does not consider operations inside the windfarm nor the operation to Oil and Gas platforms with their own wind turbines installed by the Oil and Gas Operator
3.4	Performance Based Navigation (PBN) approaches, such as PinS approaches,	The Applicant applies Performance Based Navigation (PBN), however this approach

	have not been considered by the Applicant in the initial helicopter access report. However, it is a potential mitigation for a number of reasons: ▪ The AW169 and AW139 helicopters are already certified for PBN approaches. ▪ Pilots are training for PBN operations post 2020. ▪ The space required for an approach can be significantly less than required for an Airborne Radar Approach (ARA). ▪ The CAA has supported modifying the basic ARA profile since May 2010 (Ref. i). A Point in Space approach is unlikely to provide significant benefits, but a Localiser Performance with Vertical Guidance (LPV) would enable an autopilot coupled approach to be flown to lower minima. The CAA has conducted research into individual helicopter manufacturers' systems, which is a follow-on from their SBAS Offshore Approach Procedure.	has not been approved by the regulator (UK CAA) and it is unclear when it may be approved.
3.5	It is understood that any changes to the SPA HOFO will be at the level of Acceptable Means of Compliance and Guidance Material, i.e. "soft law". Acceptable Means of Compliance (AMC) adopted by the CAA are means by which the requirements in the UK Regulation (EU) 2018/1139 (UK Basic Regulation) and it's Implementing Rules can be met. Since requirements can be met by other means, regulated persons and organisations may apply for permission to use alternative means to comply with the law by the use of Alternative Means of Compliance (AltMoC). For the CAA to accept AltMoC the applicant will need to demonstrate that the alternative approach nonetheless maintains compliance with the law. An operator will be able to propose an AltMoC, as shown in CAP 1721. Applying an AltMoC does not lead to a reduction in safety. Aviation regulations adopt a prescriptive approach, which frequently lag advances in technology or operational procedures. However, to prevent innovation being stifled, variations from the regulations are permitted where an equivalent or better level of safety can be demonstrated. An AltMoC is an example of this approach to permit innovation whilst maintaining an acceptable level of safety. An example is the AW169 helicopter used by IPs in the Morecambe Bay gas fields. The AW169's Type Certificate Data Sheet shows that six Special Conditions were applied during certification and 11 Equivalent Safety Findings were applied. A Special Condition is applied when the certifying authority finds that the airworthiness	No information on if or when this sort of approach will be approved by the regulator. Spirit does not accept that AMC will be attainable in this context, and requests that the Applicant provides reasons and examples of the CAA permitting AMC for offshore operations near windfarms. Spirit requests that the Applicant provides meaningful mitigation options against the expected regulation changes by the CAA. Distance is very much based on aircraft type as can be seen by the differing OEI continued take off profiles of the AW139 and AW169. AviateQ have demonstrated why the distances calculated by Anatec are incorrect, please see information above.

	regulations for an aircraft or aircraft engine do not contain adequate or appropriate safety standards, because of a novel or unusual design feature. An Equivalent Safety Finding is another way to meet the certification requirements, usually through an Alternative Means of Compliance. In summary, applying an AltMoc for approaches in Instrument Meteorological Conditions (IMC) to CPC-1 post any CAA rule change is consistent with aviation practice, aimed at maintaining safety levels whilst providing flexibility. The distance required for an approach will depend on the airspeed flown and is independent of the aircraft type. The distance required for a One Engine Inoperative (OEI) take-off depends on the helicopter's rate of climb, not type. The Applicant has calculated required approach and take-off distances in Section 4 of The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3). The S92 has not been used in the Morecambe Bay Gas Fields.	
4.2c	The applicable AW169 RFM (Rotorcraft Flight Manual) profiles and engine ratings have been applied. The meteorological data provided by Spirit Energy showed the Mean temperature for IMC was 10.3ºC, with a Median temperature of 9.8ºC. For this assessment a conservative approach has been taken and a temperature of 15ºC used. The Mean windspeed was 17.0kts and the Median was 15.8kts. Factored windspeeds of 10kts, 15kts and 20kts were used. Windspeed is factored by 50% to take a precautionary approach. The AviateQ report used Sea Level (1013 hPa) air pressure, which is the same value applied by the Applicant.	Spirit Energy aviation operator use 100% of the wind factor for performance calculations. The Applicant has only considered 50% of the wind factor. In addition, the CPC-1 helideck has a wind restricted sector which requires 0% wind factor under 20 kts wind speed.
4.5i	An obstacle free radius of 1.26nm has previously been agreed with an operator, applying a stabilisation point at 0.75nm.	The agreed distances are irrelevant to this study as different aircraft is used for operation. No information is provided for type of operation and compensation agreed between the parties.
4.5iii	The HAR applies a climb to 500ft above sea level before turning; this height above sea level has previously been agreed with the helicopter operators for other projects. The AviateQ Report applies a climb to 500ft above helideck height which results in a different OEI take-off distance depending on the helideck height. In the case of the South Morecambe Platform this will require a climb to 684 ft for the CPC-1 helideck (500ft + height of the helideck, 184ft)	Agree with comment. Aviateq calculations are based on the OEM performance graphs which use surface take off, however Aviation Operators normally climb to the 500/1000ft from the take off location above mean sea level. This makes a small difference of between 0.1 and 0.14nm to the required distance depending on wind speed.

	whilst a take-off from the DP-1 helideck, at the other end of the South Morecambe platform, will only require a climb to 594ft (500ft + height of the helideck, 94ft). Furthermore, as the current day VMC limits permit a cloud base as low as 600ft above sea level, a climb from CPC-1 to 684ft would result in a climb into IMC. Even applying the proposed CAA rule change of a minimum cloud base of 700ft would result in the helicopter climbing within 100ft of the cloud base and so being IMC – see the AviateQ Report 4.3 c) that states: "*when remaining clear of cloud and in sight of the surface in accordance with VFR requirements, the minimum vertical distance between the helicopter and the cloud base has been set to 100ft*". For consistency with other projects, and in accordance with standard practice, all heights used in the report should be above sea level and not above helideck height.	
4.5v	As no helidecks are located inside the wind farm, it is not understood why this profile is required. A spiral descent does not meet the standard stabilised approach criteria and so should not be used.	The information for the circling descent to the facility embedded into the windfarm was included in the report when the proposed windfarm Order Limit had Calder platform embedded into the windfarm. The report states that it is not normal practice and not used by any operator in the UK.
5.1	This is contradicted by the Hornsea Four DCO where access to the Johnston Wellheads includes turns. The Johnston Wellheads access corridors were agreed with Harbour Energy. As these flights will be under day VMC a dog leg in a transit lane is not an issue.	Straight line of sight corridors have been agreed between aviation operators in the Feb 2023 meeting. Reference to other DCO without a context on type of operation, type of aircraft and agreed compensation cannot be used as a justification.
5.2	It is agreed that at least one operator uses 0.3nm as their stabilisation point and that 0.5nm is the distance applied in industry guidance. A more conservative distance of 0.75nm has been assumed in the HAR. This results in an obstacle free radius of 1.26nm as stated in the Protected Provisions for the Waveney Platform in the Dudgeon and Sheringham Shoals Extension Project DCO. Further details of this calculation are provided in the response to Comment ID 8.2 and Section 4 of The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3).	Not enough detail to assess the distances calculated. ie. no examples of graph, type of aircraft, type of operation, conditions, etc. Please see above Aviateq`s comments on use of performance graphs and calculations.
8.3	The take-off mass applied in the AviateQ Report was 4800kg. However a more realistic take-off mass is 4650 kg or lower. The Applicant identifies the take-off distances required for a range of	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when

	aircraft mass and wind conditions in 4.2 and 4.3 in The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3.	planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
8.3	**Section 2** shows drag penalties (**Graph S4-6**) are applied to the AviateQ Flightpath 1 climb performance calculations. Flightpath 1 requires the landing gear to be lowered and so this is not correct. The Applicant's calculations of the take-off distances required for a range of aircraft mass and wind conditions are shown in The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3).	Disagree. Path one does not require the undercarriage to be down. The first action after gaining a positive rate of climb at the start of Path 1 is to raise the gear. Used AW169 has fixed undercarriage and additional drag factor should be applied.
9.6.1	The AviateQ report has incorrectly applied a drag penalty to Flightpath 1. The Flightpath 1 profile requires the landing gear to be lowered, and so the additional drag from the landing gear has already been taken into account in the performance graphs. Therefore, the resulting distance will be shorter than calculated by AviateQ.	Disagree. Path one does not require the undercarriage to be down. The first action after gaining a positive rate of climb at the start of Path 1 is to raise the gear. Used AW169 has fixed undercarriage and additional drag factor should be applied.
9.6.1	This will be flown into wind and so the wind speed of 15kts assumed in the AviateQ Report will result in a shorter distance.	Irrelevant as the OEM states a fixed distance of 350m, with no allowance for wind.
9.6.1	The maximum aircraft mass of 4,800kg used by AviateQ in their calculations is unlikely. A mass of 4600kg and lower is more probable, as there is no offshore refuelling capability the helicopter's take-off mass will continue to decrease as the flight progresses. If eight passengers are carried from Blackpool Airport to CPC-1, then any subsequent take-offs from CPC-1 will be at 4,650kg or lower. A fuller explanation of the take-off mass is shown in Section 4.3 of The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3)	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
10.1.2	In the AviateQ report calculations a take-off mass of 4800kg has been assumed, which is an absolute worst case approach and not likely to be applicable for many flights.	Spirit's aviation provider still needs to ensure safe operations during these operations at these weights.

APPENDIX 3

Spirit's Response to Appendix C of the Applicant's D1 Response REP 2-033

Summary of Spirit's Response to Appendix C of the Applicant's D1 Response:

- Information on the proposed UK CAA changes to operations within 3nm of a windfarm covers wind turbines to power offshore production platforms which is used as a justification for wind farm placement within 2nm of the affected helideck without impact. CAA position on the windfarm is that it consists of 3+ WTGs rather that an isolated WTG.

- OWL approach and take-off distance calculations for IMC are based on the incorrect information from the AW169 helicopter Flight Manual and required distances are considerably less than what is being calculated by AviateQ and NHV. VMC approach distances are being challenged by the Applicant and this distance does not allow a non-test pilot with passengers onboard any time to stabilise the aircraft at the SAP point.

- Proposed application of an additional operational requirement for a specific installation under specific approach direction for missed approach scenario may compromise safety of the whole field operations. Ref. paragraph 41 in table below.

- Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight.

- Proposed aircraft upgrade only provides minimum improvements to the aircraft`s OEI performance which do not change the take off profiles. Such modifications have minimal impact on the type of operations undertaken by Spirit Energy and are primarily applicable for helicopter hoisting operations in the Renewables Industry.

The document summarises supporting information in relation to Commercial Air Transport (CAT) operations, however it has multiple misleading statements covering Day VMC minima, nautical twilights, AW139 vs AW169 performance, wind factors, night VMC/IMC. Full summary is outlined in the table below:

Section	Paragraph	Comment
2.2	2.2.1	There is a poor understanding of AMC2 SPA.HOFO.120 regulation - this is in relation to offshore alternate helidecks not minima for Day VMC offshore.
2.3	All	The information is only for direct ARA approach, and the aviation operator is conducting a circling ARA approach in the EIS due to the cluttered environment and general wind direction, circling minima is higher than stated, generally this is 300ft for the Calder. The current operator use a deck height plus 100ft as a minimum descent height.
2.4	17-18	Irrelevant information on nautical twilight to represent longer operational days as UK CAA refers to Civil twilight (ref. CAP 694).
3	20	Reference made to the wind turbines to power offshore platforms. Such information is used as a justification for wind farm placement within 2nm of the affected helideck without impact. A windfarm consists of 3+ WTGs rather than a single WTG which can be considered as an isolated obstacle.
4.2	37	The proposed distance does not allow the non-test pilot with passengers onboard any time to stabilize and assumes the aircraft is stable the second it completes the turn and roles out on final approach at the SAP. Calculations for aircraft VMC landing distances are available within the submitted Spirit Energy Aviation study by AviateQ.
4.2	38	Reference made to Dudgeon and Sheringham Shoals Extension Project DCO and distances accepted there. Information on the type of offshore installation, type of operation, and agreed compensation method is omitted from the statement of accepted distance.
4.4	41	Suggestion to allow pilots to turn only to the right whilst it is a pilot's discretion to manoeuvre the aircraft to either side during the missed

		approach. Such approach restricts pilots to a specific approach as well as needing a specific procedure for each facility which becomes dangerous. Operations within "one field" with multilple installations should ensure standardisation for all approaches to all facilities. The suggested approach does not take into account the position of the helideck in relation to the facility. Also having only ability to turn right from CPC platform during missed approach scenario into prevailing wind will result in aircraft heading towards DP6 installation. No information available for Calder platform
4.3	45	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
4.3	53	Misleading statement that AW139 has similar performance as AW169. Based on manufacturer`s information (Leonardo) performance graphs the AW139 has significantly better performance than AW169.
4.3	54	Reference to aircraft upgrades and other offshore operator servicing renewables industry. The enhanced performance kit offers slightly more power but is heavier so the considered difference is marginal. Such upgrade is irrelevant to current type of operations.
4.3	55	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
4.3	56	All Leonardo performance graphs already have the 50% credit for HW included into their graphs. No need to apply separately.
4.3	57	It would seem that the applicant has misinterpreted the OEM Performance graphs which may have resulted in the reduced distances required for AW169: - A graph from the Ground and Elevated H/H Take off procedure used instead of using the Offshore and Elevated H/H procedure graphs. - The CTO distance of 350m (this is the distance from TDP to achieving Vtoss and a positive rate of climb) is not included. - Application of a head wind factor to the level acceleration distance when the graph does not allow for it - The reduced rate of climb factor due to the fixed under carriage and larger sponsons is not included.
4.3.1	59	Leonardo performance graphs talk about heights ATS and not ASL. RFM profile shows a climb to 1000ft. Still an incorrect understanding of VMC at 600ft for offshore ops. Barometric altimeter does not show height above the sea.
4.3.1	Table 42	Based on the comment for Paragraph 57, the calculated distance should be following; 4400KG - 1.5 & 1.46 4600KG - 1.6 & 1.54
4.3.1	60	Referenced information for the Dudgeon and Sheringham Shoals Extension Project Development Consent Order (DCO) and the accepted distances. Information on the type of offshore installation, type of operation, and agreed compensation method is omitted from the statement of accepted distance.
4.3.2	62/Table 4.3	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
4.3.3	64	Used AW169 payload is smaller (4650kg) than what payload should be accounted for AW169 aircraft MTOW of 4800kg. Spirit Energy currently

		accounts for maximum payload of 4800kg when planning NUI shuttling flights when the aircraft is leaving Blackpool with minimum payload to enable a full payload for NUI flight. Any fuel burned off allows for extra baggage capacity.
4.3.4	67	See comment for paragraph 54.
4.3.4	68	Such approach is not standard and subject to a dispensation.
4.3.4	69	Information is available in the proposed IMC Corridor document response
4.3.4	70	Provision of the offshore re-fuelling facility and frequent use of it is generating another HSE hazard offshore and HSE exposure should be separately assessed under Asset Safety Case.
5	73-74	With respect to means of evacuation, the Applicant has failed to understand the credibility of emergency evacuation from an unimpaired helideck. Evacuation is only considered with SAR aircrafts. CAT helicopter evacuation has been successfully used in several real major accident events (including events involving fire & explosion) in recent years where, due to the platform design the helideck remained unimpaired by the event. CPC is a bridge linked platform with 2 x active helidecks (AP1 and DP1) located away from main producing platform. in accordance with PFEER Spirit Energy have identified helicopters as our preferred means of emergency evacuation as this presents the lowest risk to personnel.
5	76	There are no guarantees that SAR helicopter will be available as there may be multiple emergencies at the same time in the area.
6.1	79	Disagree. If it was IMC conditions experienced onshore more than likely IMC operations required offshore and then aircraft would not take off from Blackpool. Operator makes very little use of cloud break procedure in Blackpool.
6.2	81	Based on weather data alone (not actual flights) Spirit Energy calculated 98.2% access for daylight conditions (95.4% VFR and 2.8% IFR). For night - 97.0% access (88% VFR and 9% IFR).
6.2	82	AW169 requires 1.84nm for OEI Take-off so statement is incorrect. Calculations available in the Spirit Energy aviation study by AviateQ.
6.2	83	Percentage of flights impacted has been presented by Spirit Energy
6.2	84	Reference to the comments on the proposed IMC take off access corridor document (The Applicant's response to Spirit Energy Deadline 1 submissions Appendix B: Helicopter IMC access corridor) above.
6.2	85	Under the proposed UK CAA regulation changes the operations within 3nm will be restricted to Day VMC only.
6.3	89	Based on weather data alone (not actual flights) Spirit Energy calculated 98.2% access for daylight conditions (95.4% VFR and 2.8% IFR). For night - 97.0% access (88% VFR and 9% IFR).

APPENDIX 4

AviateQ Calculation

Full calculation is provided Aviateq report Section 9.6 and also the summary is referenced below.e distance required to safely execute a continued take off on one engine following an engine failure on rotation at the Take-off Decision Point (TDP) in the AW169 has been calculated based on the following 4 sections of take-off profile based on the OEM (Original Equiment Manufacturer) graphs:

Section 1: Acceleration from TDP to Vtoss and positive ROC (CTO)

9ft drop down due head wind factor. (Graph S4T-D15)

Distance required is 350m or 0.19nm. (Performance data – OEI Continued Take-off Distance)

Section 2: Path 1 Climb from end of CTO to 200ft

Speed – Vtoss 45kts IAS (30kts G/S)

Height to climb – 209ft (200ft + 9ft drop down)

Climb at 2 ½ minute power with reduced gradient due to 'Fixed Undercarriage' and 'Life rafts in extended sponsons'

Drag factor – 0.6 (Graph S4-6)

Distance required is 0.16nm (Graph S4-7 and S4-22)

Section 3: Level Acceleration from Vtoss to Vy at 200'

Accelerating from 45kts to 75kts

Maintaining 2 ½ minute power

Distance required = 660m or 0.36nm (Graph S4-32.)

Section 4: Path 2 climb from 200ft to 1000ft

Speed – Vy 75kts IAS (60kts G/S)

Climb gradient at MCP with reduced gradient due to 'Fixed Undercarriage' and 'Life rafts in extended sponsons'

Drag factor – 0.6 (Graph S4-6)

Distance travelled is 1.80nm (S4-9 and S4-43)

The total distance required for OEI TDP to 1000ft would be the sum of the 4 sections namely 0.19nm + 0.16nm + 0.36nm + 1.80nm = **2.51nm.**

Rate One Turn at 1000 ft (IFR) - 0.35nm

In the event of an abnormal or emergency situation arising whilst enroute, the pilot may need to execute a 180° turn inside the corridor. The space required is determined by calculating the radius of the turn which depends on both the rate of turn (bank angle i.e. how quickly the heading changes) and the airspeed.

An accepted formula for calculating rate of turn is, $r = V^2/g \tan Ø$, where:

r = radius of turn (m)

g = 9.81 m/s^2
V = True airspeed (kt)
Ø =Angle of bank (°)
).
A graph can also be found in Section 9-Supplemental Performance Information of the AW169 Rotorcraft Flight Manual *Figure 9-49 Aircraft Turn Radius*. Based on an airspeed of 80kts and a 15° angle of bank (Rate One Turn of 3° per second based on autopilot function) the radius of turn would be 647m (0.35nm).

The total distance required from TDP / OEI to 1000ft and 180° turn taking into consideration the displaced apex of the Rate one Turn = **2.86 nm.**

Minimum distance required would need to include the legal obstacle clearance requirement of 1nm for IFR flight and therefore minimum distance required is **3.86nm.**

APPENDIX 5

CPC platform landing approach and take-off sectors

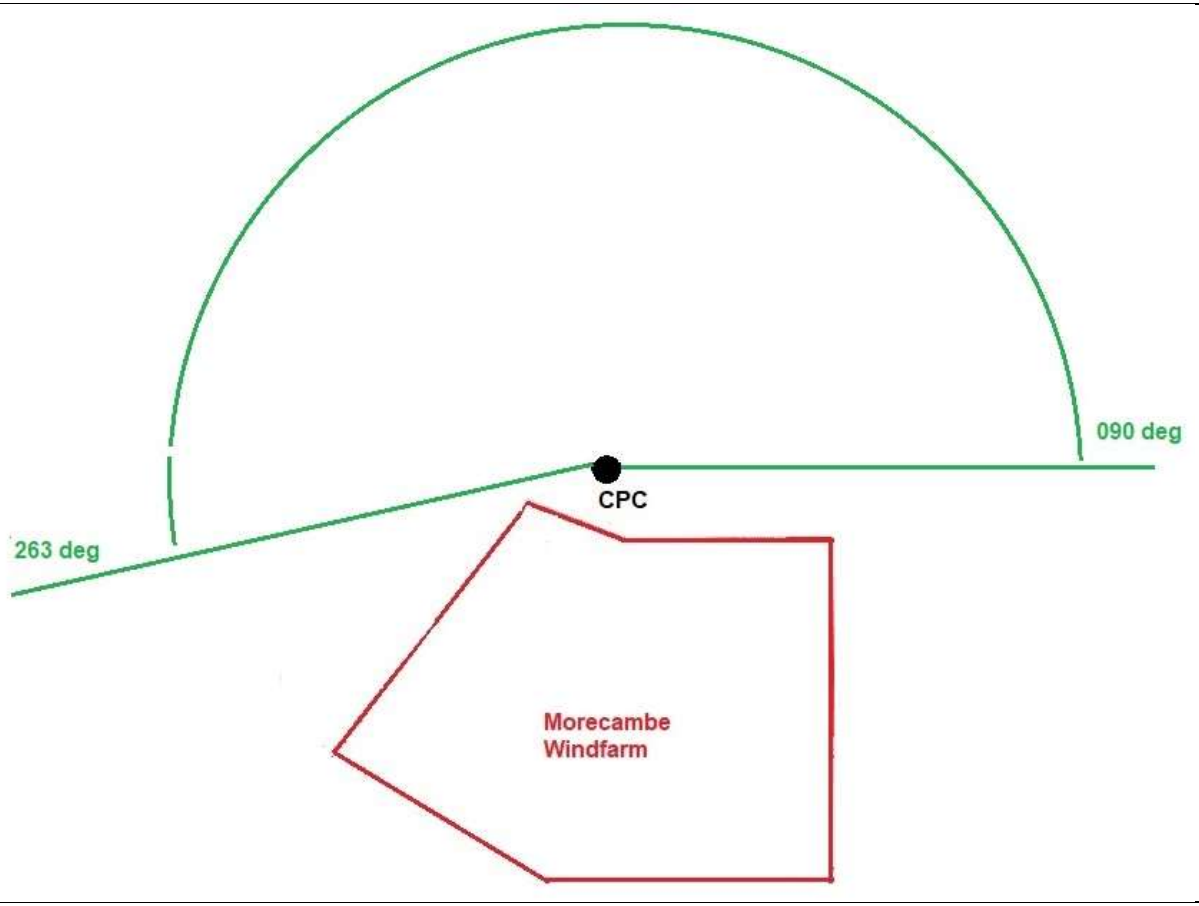
The Applicant notes that there is an "arc" of "unobstructed" airspace 263 degrees clockwise to 90 degrees around CPC at paragraphs 54-56 of the Applicant's D1 Response [REP2-030] and that this allows take off and landings within this space in night VMC and IMC to and from this arc.

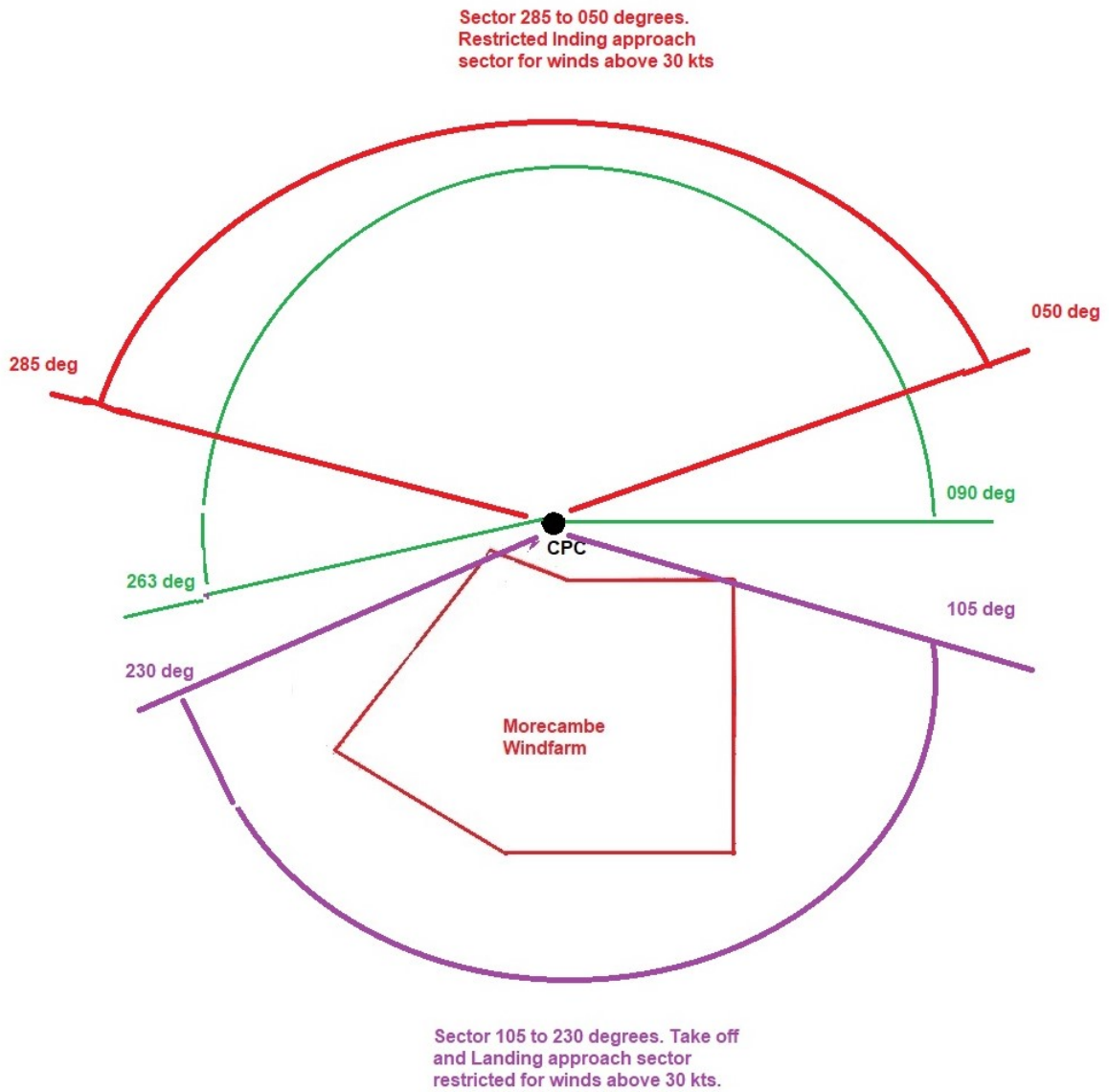
The Applicant asserts that:

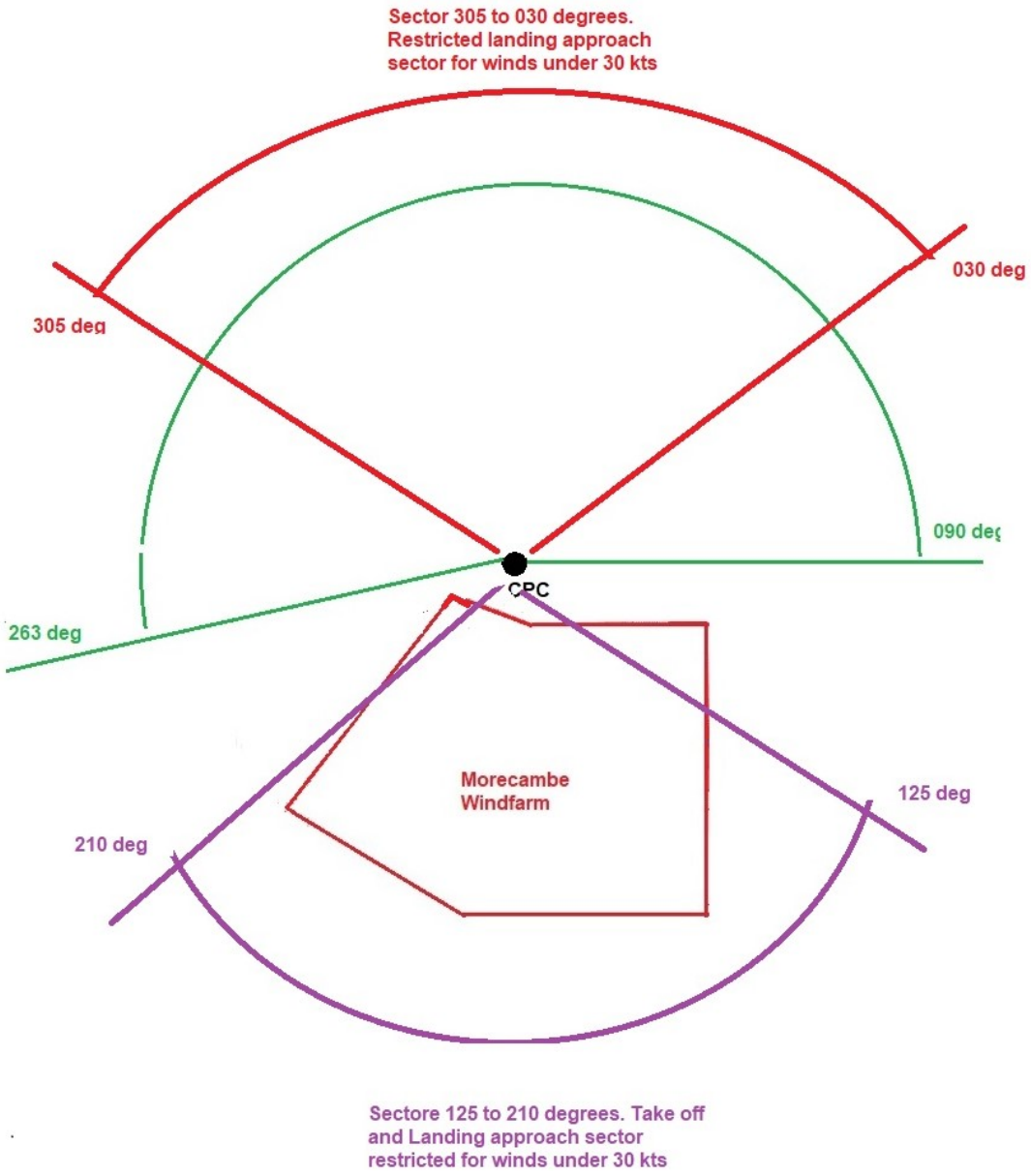
1. this provides adequate flexibility coupled with the proposed corridor in line with predominant wind direction to allow unobstructed take off and landing into this unobstructed airspace to the south west of CPC;

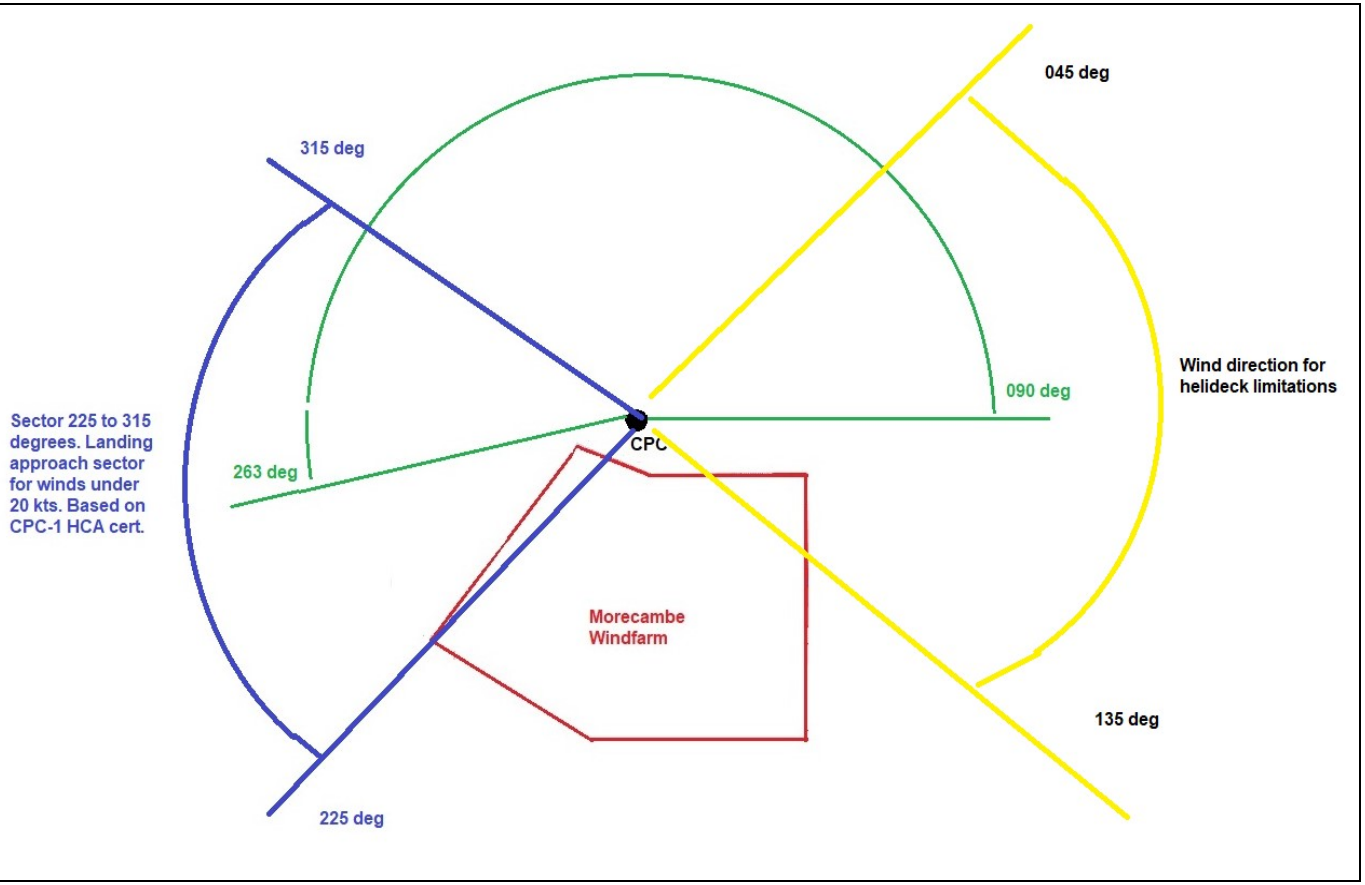
2. this will collectively provide a distance free of turbines for at least 3nm longitudinally from CPC covering at least 2/3rds of airspace around CPC. The arc also provides lateral clearance of at least 1nm from wind turbines.

The below diagrams demonstrate why the arc does not provide the extent of unobstructed space asserted by the Applicant.

1	This image illustrates the Arc sector of 263 degrees to 090 degrees clockwise as defined by the Applicant.	

2	This image illustrates why there is not an unobstructed arc as asserted by the applicant in the case of winds above 30 kts. With the proposed wind farm Order Limit the sector of 105 degrees to 230 degrees clockwise (purple) is obstructed by the wind farm. **Take-off** will be restricted into the purple sector without a 3.9nm buffer zone due to proximity of the windfarm. Due to the fact that you should land and take off into the wind, this means that the landing approach sector of 285 to 050 clockwise (red) could not be used. **Landing** approach will be restricted from the purple sector due to the requirement that the aircraft will need to fly over the wind farm (overflying) and make a stabilised approach. Due to the fact that you should land and take off into the wind, this means that take-off into the red sector could not be performed.	

3	This image that illustrates why there is not an unobstructed arc as asserted by the applicant in the case of winds under 30 kts. The sectors could reduce for winds under 30 kts both sectors (purple and red) can be reduced by +/-20 degrees to the following: Purple sector – 125 to 210 degrees Red sector – 305 to 030 degrees	

4	In addition to the constraints imposed by the windfarm described above, we also need to factor in helideck limitations. The CPC helideck has an operational limitation outlined on the HCA (Helideck Certification Agency) plate certificate. When the wind direction is coming from the 045 degrees to 135 degrees clockwise area (yellow) then operations are limited in wind speeds of over 20 kts and flights should only be performed under extreme caution or in an emergency only due to possible turbulence. This then results in a wind speed restriction of under 20kts to the landing approach from the 225 to 315 degrees sector (blue). Landing approach from other directions is not limited to 20 kts wind speed.	

5	This illustration demonstrates all of the earlier point restrictions on the one slide. Application of the CPC helideck limitations (blue) and the restricted landing approach and take-off sectors (red and purple) for the scenario with winds under 20 kts illustrates how severely the CPC helideck will be impacted by the proposed wind farm. Note: For the winds above 30 kts the approach sectors will be further reduced. Please see diagram no.2 above The proposed unobstructed arc of 263 degrees to 090 degrees clockwise has a very limited application to the aviation operations to/from CPC helideck taking into account the helideck limitations and the proposed wind farm Order Limit. Taken in totality it is clear that the unobstructed arc referenced is indeed far more obstructed than portrayed by the applicant.