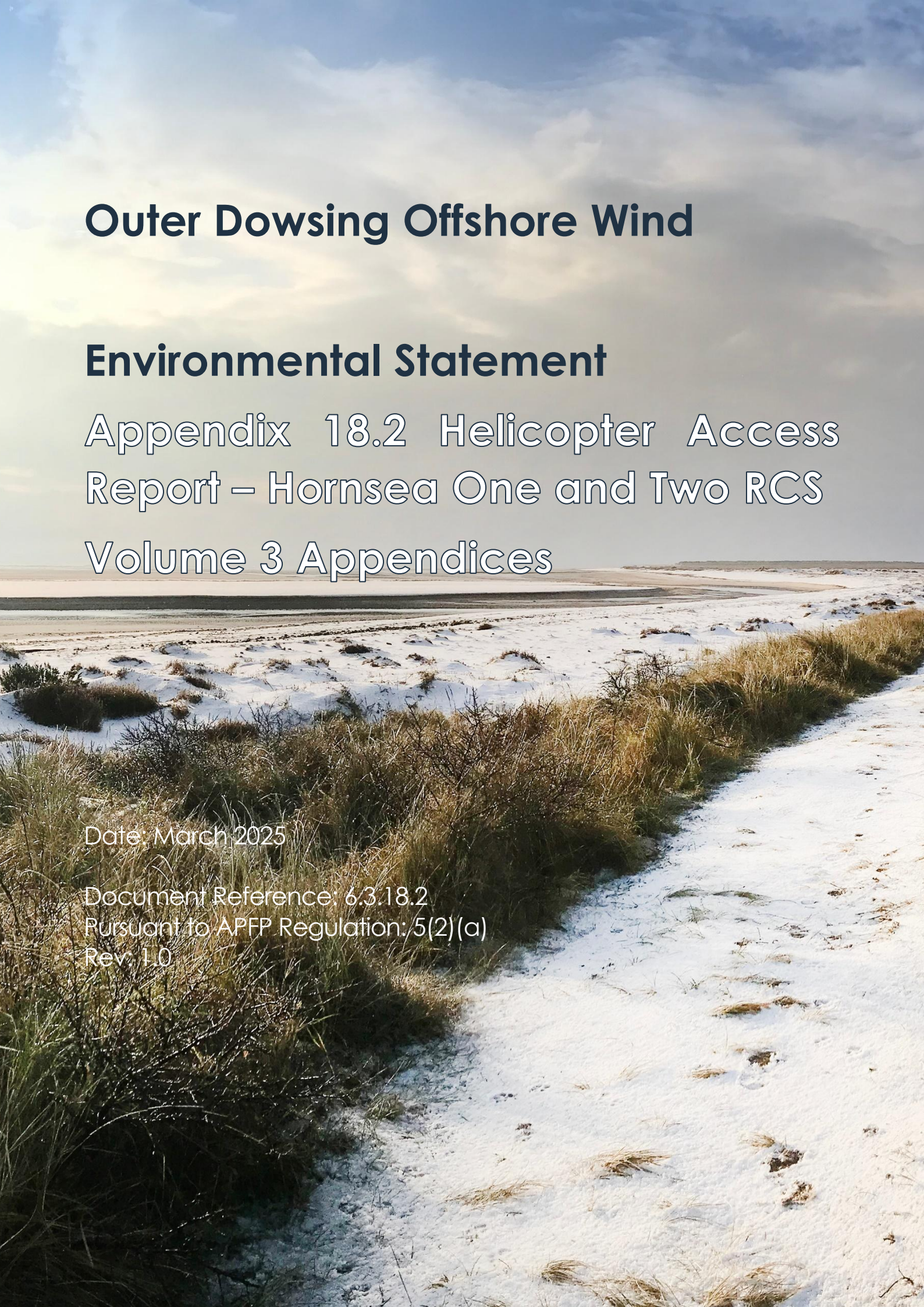

Outer Dowsing Offshore Wind

Environmental Statement

Appendix 18.2 Helicopter Access Report – Hornsea One and Two RCS

Volume 3 Appendices

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1 Background

1. At Deadline Four (REP4-149) and at Issue Specific Hearing 6 of the Outer Dowsing Wind Farm Examination, the Ørsted IPs stated that helicopter access to their Reactive Compensation Stations (RCS) should be considered.

2. This document provides clarification on the Commercial Air Transport (CAT) helicopter access to the RCS, applying aviation regulations and best practice. Aviation Regulations are explained in depth in the Helicopter Access Study (APP-175), so it is not intended to repeat the requirements in this Technical Note.

3. The HA-Z01 RCS is equipped with a helideck. The HB-Z01 Normally Unmanned Installation (NUI) is 0.3 nautical miles (nm) away but is not equipped with a helideck. As the two installations are effectively co-located, this assessment is applicable to both installations, noting that helicopter access to the HB-Z01 platform will only be available using helicopter hoist operations.

4. This Technical Note will follow the same methodology adopted in APP-175. The same methodology was applied by Ørsted during the consenting process for the Hornsea Project Three and Four Wind Farms.

2 Reactive Compensation Stations

5. The closest of the two RCS is located 5.7nm from the Outer Dowsing Wind Farm Boundary, shown in red in Figure 2.1.

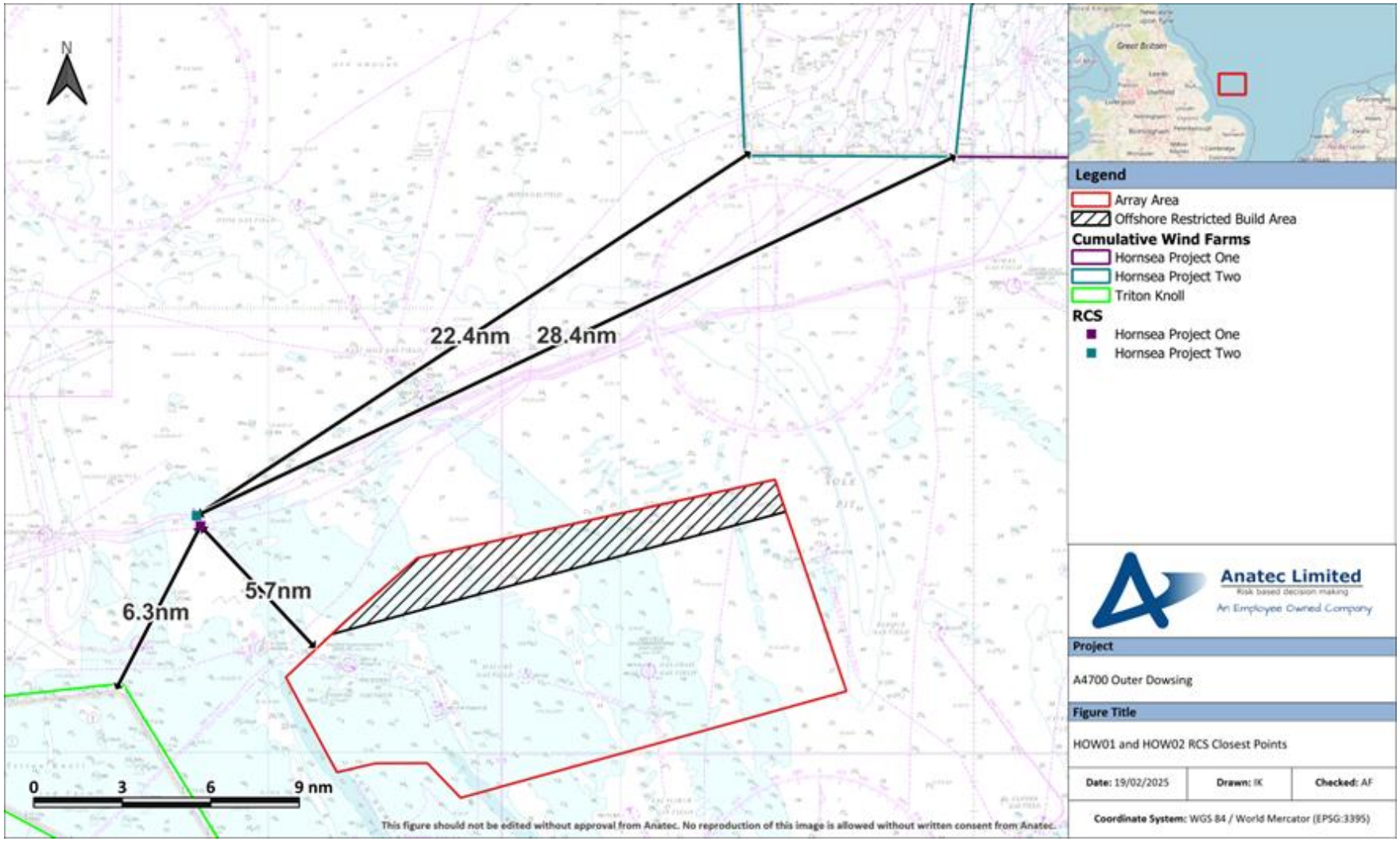

Figure 2.1: Location of the RCS in Relation to Nearby Wind Farms

6. The Helideck Certification Agency (HCA) helideck information plate for the HA-Z01[1] states there are wind turbines within 5nm. This is incorrect, with currently the closest wind turbines being 6.3nm away within the Triton Knoll wind farm.

[1] https://www.helidecks.org/certificates/HA-Z01%20-%20Plate.pdf

3 Helicopter Access Requirements

7. APP-175 Section 2 identifies the meteorological limits for access under Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC), both by day and night.

3.1 Visual Meteorological Conditions

8. Under Day VMC, an obstacle free radius of 5.7nm is sufficient for unimpaired access. For example, the Protective Provisions for the Johnston Wellheads inside the Hornsea Four Wind Farm provide an obstacle free radius of 1600 metres (m) (0.86nm) for day VMC.

9. Night VMC requires a larger obstacle free radius, as the helicopter will typically be stabilised by 2nm from the helideck facing into wind. However, 5.7nm is sufficient for unimpaired night VMC access.

3.2 Instrument Meteorological Conditions

3.2.1 Approach in Instrument Meteorological Conditions

10. Instrument approaches to offshore installations are currently flown using the Airborne Radar Approach (ARA) profile: the profile is shown in APP-175 Figures 2.1 and 2.2. For the purposes of this assessment, it is assumed a 9nm approach arc clear of obstructions is required for an ARA. This distance will allow a helicopter to conduct a direct approach, descending from the Minimum Safe Altitude overhead any wind turbine generators (WTGs) to achieve the Initial Approach Fix at 1,500 feet (ft), or to conduct an arc approach maintaining a 1nm lateral separation distance from the WTGs.

3.2.2 Take-off in Instrument Meteorological Conditions

11. For a take-off in IMC, account must be taken of a single engine failure occurring as the helicopter departs the helideck. A single engine failure will result in a reduced rate of climb, and hence a longer take-off distance is required. Although the probability is low, less than 1 in 20 million per take-off has to be demonstrated, this event is foreseeable and must be considered. The Protective Provisions for the Babbage Platform, near the Hornsea Four array, included an obstacle free radius for take-off of 3.14nm. Based on the Protective Provisions for the Babbage Platform, a take-off distance of 5.7nm is sufficient in IMC.

3.3 Summary

12. The distance of 5.7nm is sufficient for day and night VMC. The distance of 5.7nm between the RCS and the Outer Dowsing Boundary is also sufficient for a take-off in IMC. Therefore, the only constraint on access to the RCS is the available approach arcs for access in IMC, and the percentage of time that IMC is present.

3.4 Meteorological Data

13. APP-175 used meteorological data from the West Sole Alpha Platform, covering the period 1 January 2016 to 31 December 2021. The West Sole Alpha is 9nm north east of the RCS and so

would experience the same weather conditions as the RCS. The results from this data set were consistent with other meteorological data assessed for similar projects in the region.

14. Table 3.1 is extracted from the Helicopter Access Report (APP-175). It shows that the majority of day and night is VMC and so there would be no restrictions on access. It is standard practice to limit visits to Normally Unmanned Installations (NUI), such as the RCS, to good weather to prevent staff being stranded overnight on an installation not designed for permanent habitation.

Table 3.1: West Sole Alpha Day and Night VMC and IMC Access

Year	*Day VMC*	*Day IMC*	*Night VMC*	*Night IMC*
2016	86.8%	13.2%	80.6%	19.4%
2017	93.3%	6.7%	86.3%	13.7%
2018	84.3%	15.7%	75.6%	24.4%
2019	85.3%	14.7%	80.7%	19.3%
2020	89.8%	10.2%	81.7%	18.3%
2021	85.6%	14.4%	74.5%	25.5%
Mean	87.5%	12.5%	79.9%	20.1%

15. The data indicates that a Mean of 87.5% of day conditions will be VMC and 79.9% of night conditions VMC. These periods will be without any restrictions.

3.4.1 Day IMC

16. Figure 3.1 shows the wind conditions when day IMC existed in 2016 to 2021. It can be seen that the predominant IMC wind conditions lie on a south-west – north east axis.

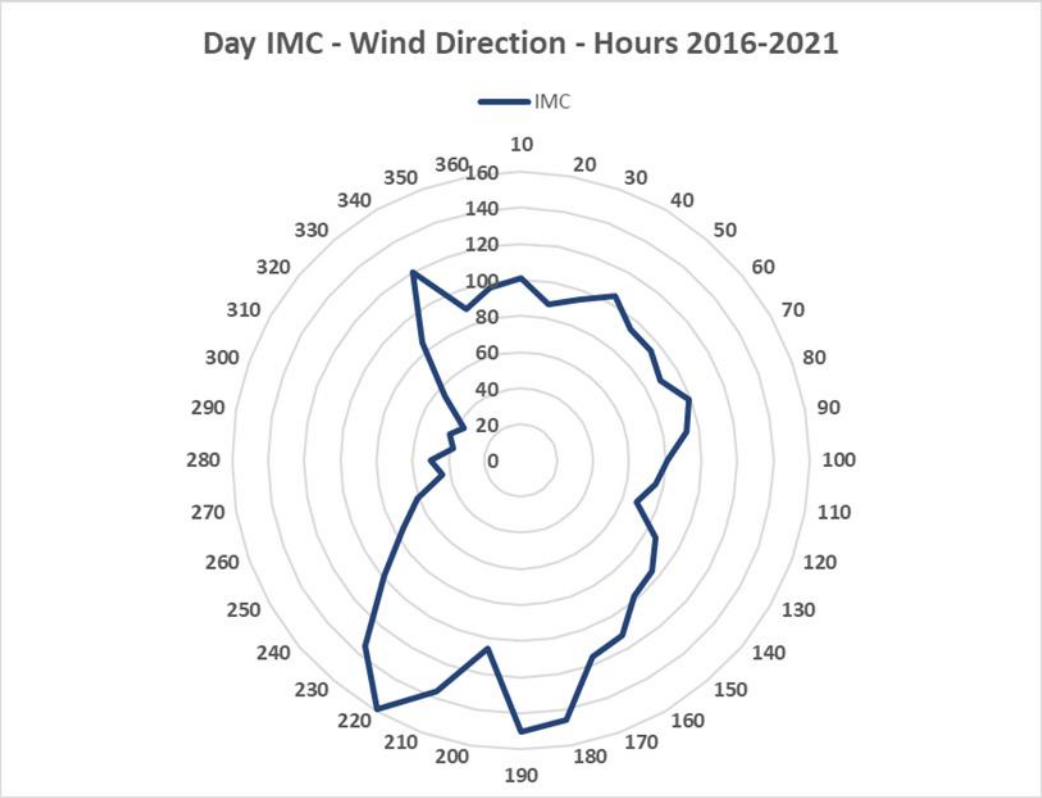

Figure 3.1: Wind Direction for Daylight Hours When IMC -2016 to 2021

3.4.2 Day IMC Operational Impact

17. As shown in Section 3.2 it is only the need for a 9nm approach arc for an ARA that will have any impact on the RCS, as there is sufficient distance for an IMC take-off in any direction. One of the requirements of an IMC approach is to avoid all objects by a lateral distance of 1nm. When a 1nm lateral buffer is applied to the boundary of the Project, approaches from an angle between 080° clockwise to 165° will be inhibited. However, as has been agreed with helicopter operators during previous projects[2], an ARA can be made up to 30° out of wind providing the helicopter drift angle remains less than 10°. Applying the ability to fly an ARA up to 30° out of wind results in a reduced obstructed arc of 110° (080° + 30°) clockwise to 135° (165°-30°). The arc of 110°-135° covers where an approach cannot be flown from. As approaches are flown towards the wind, when the wind blows from the reciprocal of this arc is when approaches will be inhibited, i.e. wind from 290° clockwise to 315°. Wind blowing from the arc 290° clockwise to 315° occurred for 171 hours when day IMC, which was 5.2% of all day IMC hours. As Table 3.1 shows that day IMC occurred for an average of 12.5% of all daylight hours, then 5.2% of this results in an overall impact of 0.7% (12.5% x 5.2%) of all day IMC approaches being inhibited.

[2] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-001859-%C3%98rsted%20Hornsea%20Project%20Three%20(UK)%20Ltd%20-%20Appendix%2030%20-%20Aviation%20Workshop%20Draft%20Minutes%20%E2%80%93%20Helicopter%20Operators.pdf

3.5 Night IMC

18. Figure 3.2 shows the hours of night IMC for the period 2016 to 2021.

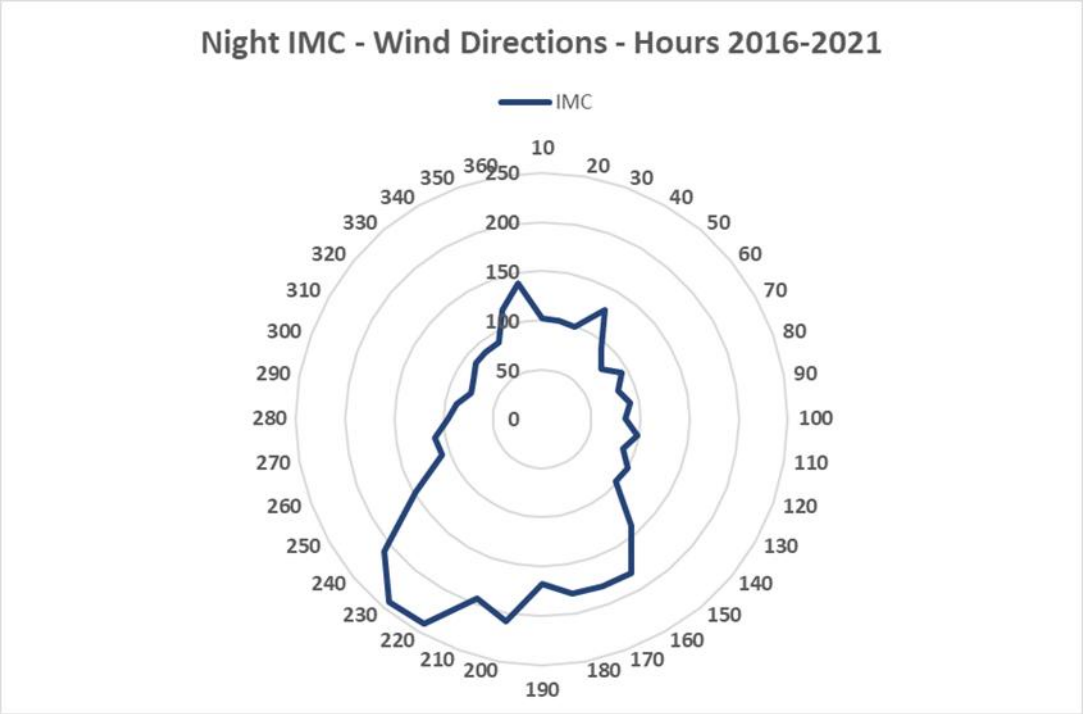

Figure 3.2: Wind Direction for Night Hours When IMC -2016 to 2021

3.5.1 Night IMC Operational Impact

19. Wind blowing from the arc 290^{o} clockwise to 315^{o} occurred for 333 hours when night IMC conditions existed, which was 7.4% of all night IMC hours. As Table 3.1 shows that night IMC occurred for an average of 20.1% of all night, then 7.4% of this results in an overall impact of 1.5% (20.1% x 7.4%) of all night IMC approaches being inhibited.

4 Conclusions

4.1 Day and Night VMC

20. The Project will have no impact on the RCS under day or night VMC. This is because 5.7nm is in excess of the day and night approach and take-off distances required.

4.2 IMC Take-off

21. The distance of 5.7nm is sufficient for a take-off into IMC, taking account of the reduced climb performance of a helicopter following a single engine failure.

4.3 IMC Approach

22. A distance of 9nm is required to conduct the industry standard Airborne Radar Approach. Assessing the approach arc blocked by the Project, and the historic meteorological data for the area, results in a conclusion that the impact on access to the RCS will be minimal. Historically the day IMC access lost would be 0.7% of day IMC and 1.5% of night IMC.

23. Normally flights to NUIs are conducted in good weather to reduce the risk of personnel being stranded overnight on an installation not designed for permanent habitation. Therefore, the actual operational impact on the RCS are likely to be less than the 0.7% day or 1.5% night calculated.

4.4 Cumulative Impact

24. There is expected to be an existing impact on access to the RCS due to the presence of the Triton Knoll Wind Farm, 6.3nm to the south east of the RCS. However, the reduced day and night IMC access caused by the Project is minimal, and so the cumulative impact is also expected to be minimal.