



# Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

**Volume 3**

Appendix 15.2 - Surveillance Minimum Altitude Chart  
Analysis

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# Norwich Airport – ATCSMAC Review

## Assessment of ATCSMAC Chart

Date: 3rd December 2021

Author: Ryan Evason under supervision of Chris Latus (APD)

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# Executive Summary

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Osprey CSL have been commissioned by Equinor ASA to assess the potential impact of proposed wind farm extensions at Sheringham and Dudgeon sites on Norwich Airports published ATC Surveillance Minimum Altitude Chart (ATCSMAC).

## Impact on the ATCSMAC

**The proposed wind farm extensions at Sheringham and Dudgeon South would impact the Norwich Airport's ATCSMAC.**

## Impact on the MSA

**The proposed wind farm extensions at Sheringham and Dudgeon South would impact Norwich Airport's MSA's.**

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# 1 Introduction

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## 1.1 Background

Osprey CSL have been commissioned by Equinor ASA to assess the potential impact of proposed wind farm extensions at Sheringham and Dudgeon sites on Norwich Airports published ATC Surveillance Minimum Altitude Chart (ATCSMAC).

## 1.2 Scope of the Assessment

This report examines the potential impact of the wind farm extensions on the published ATC Surveillance Minimum Altitude Chart (ATCSMAC) at Norwich using the latest published chart in the State Aeronautical Information Publication (AIP), as of 2<sup>nd</sup> December 2021. AutoCAD Autodesk, ASD PD Toolkit and ICAO Software was used to evaluate the proposal.

## 1.3 Data Provided by Client

Equinor ASA has informed Osprey that the blade tip height for all wind turbines will be 330m AMSL and also provided the following wind farm site information in the form of a KMZ file (AOI\_WGS1984\_20191122):



Figure 1 – Provided Wind Farm site information - AOI\_WGS1984\_20191122 (Shown in Google Earth)

Using the provided information, the wind farm border coordinates were extrapolated from Google Earth and modelled in AutoCAD.

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Point	Latitude	Longitude
1	53:16:40.460	1:19:9.980
2	53:17:15.110	1:26:5.550
3	53:18:0.200	1:25:39.200
4	53:18:17.430	1:25:24.420
5	53:18:17.800	1:17:51.070
6	53:18:18.180	1:19:28.570
7	53:18:23.000	1:19:18.150
8	53:18:33.980	1:25:3.960
9	53:18:34.640	1:23:20.400
10	53:18:35.080	1:22:55.030
11	53:18:55.490	1:20:33.660
12	53:18:9.280	1:22:13.960
13	53:19:2.650	1:12:19.910
14	53:19:27.380	1:17:16.540
15	53:19:36.080	1:24:8.190
16	53:19:9.770	1:24:23.540
17	53:20:32.500	1:15:58.750
18	53:20:46.300	1:18:7.200
19	53:20:5.290	1:23:59.990
20	53:20:54.100	1:24:1.370
21	53:20:58.850	1:18:37.480
22	53:21:16.870	1:18:58.260
23	53:21:57.800	1:23:24.290
24	53:21:9.220	1:10:11.070
25	53:21:9.550	1:17:32.280

Table 1 – Dudgeon North Coordinates



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Point	Latitude	Longitude
1	53:14:5.350	1:25:52.570
2	53:13:44.720	1:27:26.100
3	53:10:38.840	1:32:6.340
4	53:10:5.820	1:25:33.390
5	53:9:9.190	1:28:22.670
6	53:9:18.480	1:27:22.970

Table 2 – Dudgeon South Coordinates

Point	Latitude	Longitude
1	53:7:20.090	1:17:7.740
2	53:5:8.070	1:15:40.090
3	53:8:58.970	1:10:57.700
4	53:5:47.570	1:13:2.570
5	53:14:44.110	1:5:29.630
6	53:11:4.110	1:2:0.070

Table 3 – Sheringham Coordinates



Figure 2 – Modelled Areas

## 1.4 Orientation



Figure 3 - Orientation to Airport

## 2 Chart Analysis

### 2.1 General

The ATCSMAC Chart assessed is:

AIP Effective 2<sup>nd</sup> December 2021

- ATC SURVEILLANCE MINIMUM ALTITUDE CHART - AD 2-EGSH-5-1 – 15 Jul 2021

### 2.2 ATC Surveillance Minimum Altitude Chart

The Wind Farm sites are located to the North of the Airport outside of the ATCSMAC protection areas.



Figure 4 - ATCSMAC

As the sites are outside of the ATCSMAC main areas they do not affect the ATCSMAC altitude restrictions. However, any obstacle outside of the ATCSMAC areas need to be assessed against the Minimum Sector Altitude (MSA) for the airport.

MSAs are established for each aerodrome and provide at least 300m (1000 ft) obstacle clearance within 25 NM (plus 5NM buffer) of the navigation aid, initial approach fix, or intermediate fix associated with the approach procedure for that aerodrome.

The MSA for Norwich is based on NDB NWI and is split into four sectors.

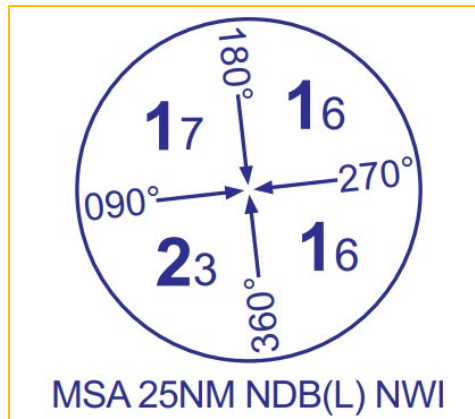


Figure 5 – Norwich MSA

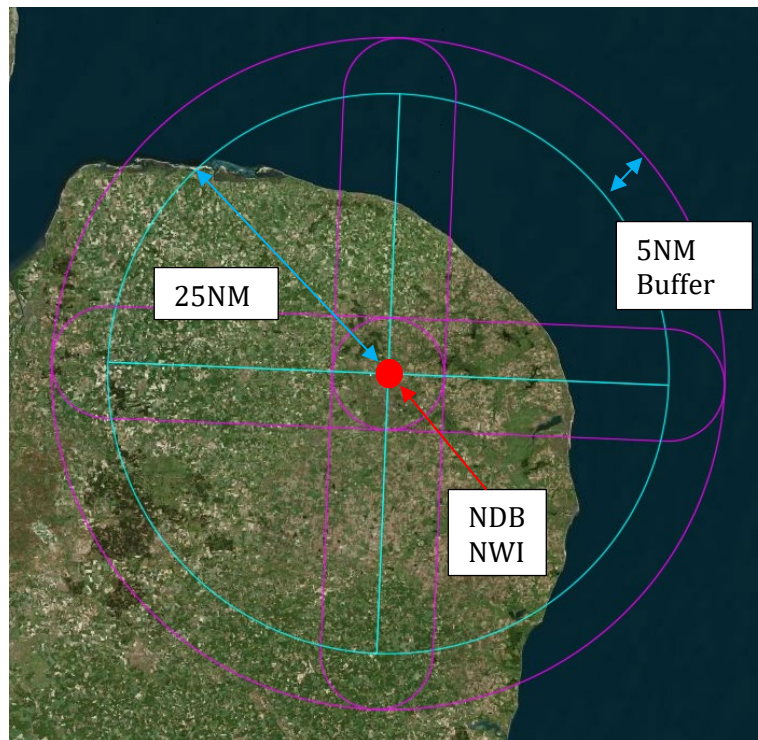


Figure 6 – Norwich MSA Areas

The Sheringham and South Dudgeon extensions are situated in the Northeast 1600ft sector and Sheringham extension is situated in the Northwest 1700ft sector.

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Figure 7 – Wind Farms within Norwich North East MSA Area



Figure 8 – Wind Farms within Norwich North West MSA Area

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With a Blade tip elevation of 330m plus the 300m Minimum Obstacle Clearance (MOC) the resultant Minimum Obstacle Clearance Altitude (MOCA) for the Northeast and Northwest MSA sectors will be 630m or 2067ft rounded up to 2100ft for publications.

**This is above the published MSA values.**

**If the Wind Farms are to proceed the Northeast and Northwest MSA's need to be raised to 2100ft.**

**If the extensions are to go ahead without affecting the MSA values, either the blade tip elevation at Sheringham and Dudgeon South are to be restricted to 187.68m AMSL (1600ft - 300m) or the extensions will need to be restricted to the following areas in green:**



Figure 9 – Extension safe areas (green)

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Point	Latitude	Longitude
1*	53:10:16.176	1:25:34.218
2*	53:9:43.824	1:29:49.014
3	53:10:38.840	1:32:6.340
4	53:13:44.720	1:27:26.100
5	53:14:5.350	1:25:52.570

Table 4 – New Dudgeon South Area Coordinates

\*Points 1 and 2 joined by a 55660m arc centred on NDB NWI (52:40:39.15, 1:17:29.41)

Point	Latitude	Longitude
1*	53:9:57.646	1:6:46.098
2*	53:10:29.771	1:12:10.232
3	53:14:44.110	1:5:29.630
4	53:11:4.110	1:2:0.070

Table 5 – New Sheringham Area Coordinates

\*Points 1 and 2 joined by a 55660m arc centred on NDB NWI (52:40:39.15, 1:17:29.41)

## 3 Conclusions

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### Impact on the ATCSMAC

**The proposed wind farm extensions at Sheringham and Dudgeon South would impact the Norwich Airport's ATCSMAC.**

### Impact on the MSA

**The proposed wind farm extensions at Sheringham and Dudgeon South would impact the Norwich Airport's MSA's.**

**REPORT ENDS**