



APPENDIX 15-7

AVIATION REVIEW STATEMENT

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

Report

Crumhach Wind Farm Aviation Review Statement

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Executive Summary

Ai Bridges Ltd have been commissioned to review the possible impacts of the proposed wind farm on aviation systems in the vicinity of the proposed wind farm development at Crumhach. As part of the review, the following subjects were considered:

- Annex 14 - Obstacle Limitation Surfaces (OLS)
- Annex 15 – Aerodrome Surfaces
- Building Restricted Areas (BRAs)
- Minimum Sector Altitudes (MSA)
- Instrument Flight Procedures
- Existing Wind Farms in vicinity of Proposed Wind Farm
- Communication and Navigation Systems
- Radar Surveillance Sensors
- Flight Inspection and Calibration
- Private Airfields (VFR Flying)
- Aeronautical Obstacle Warning Light Scheme
- Irish Air Corps / Department of Defence Safeguarding
- Garda Air Support Unit (GASU)
- Emergency Aeromedical Service (EAS)

Annex 14 - Obstacles Limitation Surfaces (OLS)

A review shows that the proposed wind farm would be located outside the Outer Horizontal Surface of the Sligo Airport Runway Obstacle Limitation Surfaces, as defined in ICAO (International Civil Aviation Organization) Annex 14.

As the proposed wind farm is situated outside the Outer Horizontal Surfaces and there is no penetration of the take-off or approach surfaces, it is unlikely that there will be any impact to the OLS surfaces for Sligo Airport.

Annex 15 - Aerodrome Surfaces

Following a review of “*Terrain and Obstacle Requirements*” as defined in ICAO Annex 15, turbines at the proposed development would need to be registered if they are more than 100 meters above terrain. The distance from the centre point (ARP – Airport Reference Point) of Sligo Airport to the boundary of Area 1 of the Annex 15 Aerodrome Surface is 45 km. This area encloses the TMA area i.e. Total Maneuvering Area and this is used for circling and maneuvering by aircraft.

Should the proposed wind farm be permitted, the turbines would be within 45 km of Sligo Airport's ARP and would be greater than 100 m in height. Therefore, the turbines would be required to be included in the IAA Electronic Air Navigation Obstacle Dataset.

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Building Restricted Areas (BRA)

A Building Restricted Area is the airspace surrounding an aviation facility that needs to be clear from physical intrusions. The purpose of the safeguarded areas is to identify developments with the potential for causing unacceptable interference to navigation facilities. A review shows that the proposed wind farm is over 8 km from the BRA surfaces at Sligo Airport. At this distance there will be no impact on the BRAs due to the proposed wind turbines at Crumhach.

Minimum Sector Altitudes (MSA)

The Minimum Sector Altitudes (MSA) is the lowest altitude, which may be used to provide a minimum obstacle clearance of 1000 ft above all obstacles within a sector of 25 nautical miles (46 km) from the NDB at Sligo Airport.

The highest of the proposed turbines (T15) would have a turbine tip-height of 1686.4 ft AMSL. This is below the 2100 ft threshold for the applicable MSA Sector; therefore, the MSA Sector will not be affected and there will be no impact on the published MSA altitude figures.

Instrument Flight Procedures

There are nine published Instrument Flight Procedures/Charts for flights to/from Sligo Airport. A detailed instrument flight procedure analysis is outside of the scope of this report, however, an initial review indicates that these flight procedures are highly unlikely to be impacted by the proposed development.

Communications and Navigation Systems

As the proposed wind farm is approximately 15 km from the Localizer and transmitting antennas at Sligo Airport, it is highly unlikely that wind turbines at the proposed development will have any impact on these ATS communications and radio navigational aids.

Radar Surveillance Sensors

For Radar Surveillance Systems, EUROCONTROL Guidelines require a 16 km safe distance from the surveillance radar system (SSR), for a “Zone 4 - No Assessment” condition. It has been highlighted in the analysis that turbines located at the proposed farm would be located at a distance of more than 60 km from the nearest AirNav radar station at Dooncarton, and in Radar Assessment Zone 4 of the EUROCONTROL Guidelines. As turbines at the proposed development would be located in Assessment Zone 4, a detailed impact assessment on Radar Surveillance Systems will not be required by AirNav Ireland.

Flight Inspection and Calibration

Flight checks are conducted annually to ensure that flight procedures and associated navigational aids are safe and accurate. These flight checks are carried out by an IAA / AirNav approved Flight Inspection Service Provider. The checks are carried out during annual inspections consisting of radial and orbital test flights around Sligo Airport for calibration of instrument landing systems.

A desk-top analysis review indicates that the bi-annual Flight Inspection and Calibration procedures will not be impacted by the proposed wind farm development.

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Private Airfields

The nearest private airfield to the proposed development is Bunnyconnellan Airfield. The airfield, consisting of a single airstrip, operates in Class G uncontrolled airspace and is used for light aircraft only. Any pilot flying to/from the airstrip is obliged to fly by Visual Flight Rules (VFR) and in accordance with the IAA Rules of The Air. Wind turbines at the proposed development would be over 15 km from the airstrip. At this distance, there would be no impact due to any of the proposed turbines at Crumhach.

Aeronautical Obstacle Warning Light Scheme

In the event of planning consent being granted, the applicant should be conditioned to contact the IAA to agree to an Aeronautical Obstacle Warning Light Scheme as the proposed development would be considered as an en-route obstacle.

Irish Air Corps (IAC) / Department of Defence (DoD) Safeguarding

The Irish Air Corps position on wind farms / tall structures are outlined in the paper which was published in 2014: “*Air Corps Wind Farm/ Tall Structures Position Paper*”. In the position paper the Irish Air Corps outlines restricted areas where they would object to the installation of wind turbines /tall structures.

The areas defined by the Air Corps have been mapped and analysis shows that proposed wind farm site is located outside the IAC restricted areas. As the proposed wind farm is not located in a restricted area it should have no impacts on the Irish Air Corps activities.

Regarding Military Aviation Lightning, the recommendation is to engage at the early stage in a consented development (subject to planning conditions), to agree on the details relating to the lighting requirements for the IAC.

Garda Air Support Unit (GASU)

The standard concerns that are being raised in recent consultations with the Irish Air Corps also highlight the potential for obstacles that could impact the operations of the Garda Air Support Unit (GASU). An assessment of GASU operations indicates that they are unlikely to be impacted by the proposed wind farm development.

Emergency Aeromedical Service (EAS)

The EAS service in Ireland is operated from two air ambulance bases. One EAS base is located at Custume Barracks in Athlone the other is located at Rathcoole Flying Club, Rathcoole, Co Cork. A review of the EAS operations indicates that they are unlikely to be impacted by the proposed wind farm development.

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Abbreviations

AGL	Above Ground Level
AIP	Aeronautical Information Publication
AMSL	Above Mean Sea Level
ARP	Airport Reference Point
BRA	Building Restricted Area
DME	Distance Measuring Equipment
DoD	Department of Defence
EAS	Emergency Aeromedical Service
GASU	Garda Air Support Unit
GP	Glide Path
HLS	Helicopter Landing Site
ICAO	International Civil Aviation Organization
IFP	Instrument flight Procedure
ILS	Instrument Landing System
OLS	Obstacle Limitation Surface
PSR	Primary Surveillance Radar
RWY	Runway
SID	Standard Instrument Departure Route
STAR	Standard Arrival Route
SSR	Secondary Surveillance Radar
NATS	National Air Traffic Services (UK)
NM	Nautical Miles
OLS	Obstacle Limitation Surface
VOR	VHF Omni-directional Range Station

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1. Introduction

This section provides a brief summary of the proposed wind farm development at Crumhach and of the nearest significant aviation installation at Sligo Airport.

1.1 Wind Farm Site Information

The proposed wind farm development is located at Crumhach in County Sligo, approximately 15.5 km southwest of Sligo Airport. Figure 1 shows the proposed wind turbine locations with respect to Sligo Airport. The coordinates and dimensions of the proposed wind turbines are provided in Table 1.



Figure 1. Location of Proposed Wind Farm

Turbine ID	Co-ordinates (ITM)		Turbine Dimensions	
	X	Y	Rotor Diameter	Tip Height (AGL)
T01	543507	826746	150 m	180 m
T02	543440	827861	150 m	180 m
T03	543602	826404	150 m	180 m
T04	543655	827452	150 m	180 m
T05	543941	826036	150 m	180 m
T06	544012	828489	150 m	180 m
T07	544519	828995	150 m	180 m
T08	545257	828620	150 m	180 m
T09	545425	828224	150 m	180 m
T10	546041	828377	150 m	180 m
T11	546688	828662	150 m	180 m
T12	547272	828806	150 m	180 m
T13	547412	829297	150 m	180 m
T14	547754	828353	150 m	180 m
T15	548292	828210	150 m	180 m
T16	548570	827462	150 m	180 m
T17	548194	827756	150 m	180 m

Table 1. Proposed Turbine Details

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1.2 Sligo Airport

Table 1 below shows the co-ordinates of Sligo Airport and the distance from the Airport reference Point (ARP) to the proposed wind farm site. Sligo Airport operates in Class C controlled airspace with Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) Flight rules.

Location	Installation	Description	Airport Ref. Point ARP	ARP Distance to Proposed Wind Farm
Sligo Airport, Killaspugbrone, Strandhill, Co. Sligo	Regional Airport	Single Asphalt Runway Airspace: Class C	54 16 49 N 08 35 57 W (Mid-point of Runway 10/28).	15.5 km

Table 2. Sligo Airport Details

The aeronautical navigation aids at the aerodrome include DME and NDB.



Figure 2. Sligo Regional Airport

The Operator of Sligo Airport has been contacted in relation to the proposed development at Crumhach. In their response to consultations, the Airport Operator stated that the proposed project would not impact on the operations of the airport. They also requested that the Irish Airport Authority (IAA) be contacted for their observations:

Aviation Stakeholder	Consultation Response
Sligo Airport	<i>"Your proposed Project doesn't appear to have any effect on the operations of Sligo Airport, Could you please contact the IAA (Irish Aviation Authority) for confirmation and observations."</i>

Appendix A.1 of this report contains the full consultation submissions from Sligo Airport. The consultation response from the IAA can be found in Appendix A.2.

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2. Aviation Review

In this section a review of the following Aviation topics is provided.

- Annex 14 - Obstacle Limitation Surfaces (OLS)
- Annex 15 - Aerodrome Surfaces
- Building Restricted Areas (BRA)
- Minimum Sector Altitudes (MSA)
- Instrument Flight Procedures
- Existing Wind Farms in vicinity of Proposed Wind Farm
- Communications, Navigation Systems
- Radar Surveillance Sensors
- Flight Inspection and Calibration
- Private Airfields (VFR Flying)
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2.1 Annex 14 Obstacle Limitation Surfaces (OLS)

A review of the Annex 14 Obstacles Limitation Surfaces (OLS) was carried out by first plotting the proposed wind farm location and the airport obstacle surfaces. The obstacle limitation surfaces for Sligo Airport are plotted based on the following:

- Annex 14 to the Convention on International Civil Aviation Aerodromes Volume I - Aerodrome Design and Operations Seventh Edition July 2016”
- Certification Specifications and Guidance Material for Aerodromes Design CS-ADR-DSN Issue 4, 8th of December 2017

Figure 3 below shows Sligo Airport’s OLS surfaces in relation to the proposed turbines at Crumhach. The distance from the ARP at Sligo Airport to the nearest of the proposed turbines is greater than 15 km.

The analysis of the OLS plots indicates that turbines at the proposed wind farm would not penetrate the Outer Horizontal Surfaces which extend to 15 km from the Airport Reference Point (ARP).

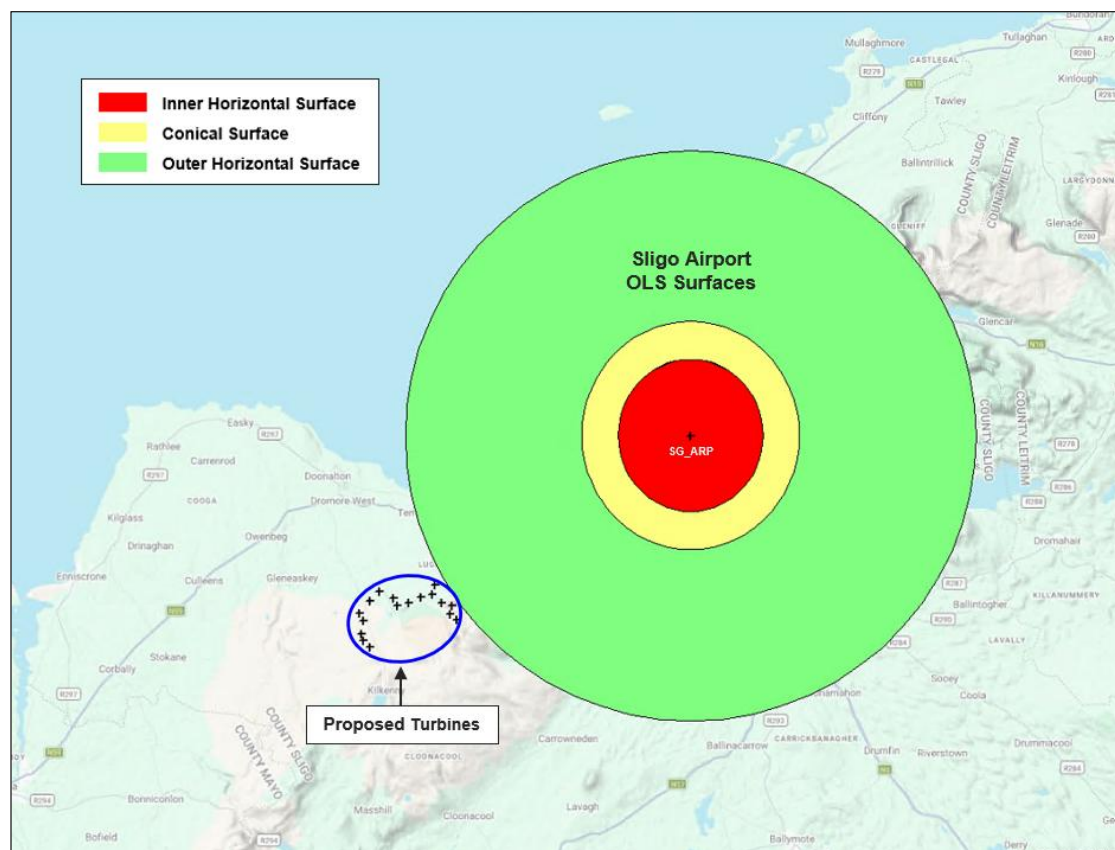


Figure 3. Crumhach Wind Farm in relation to Sligo Airport OLS.

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Annex 14 Obstacle Limitation Surfaces	No action	None

Table 3. Aviation Impact Review - Annex 14 Obstacle Limitation Surfaces

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2.2 Annex 15 Aerodrome Surfaces

Turbines at the proposed wind farm would penetrate the ICAO Annex 15 Aerodrome Surface as shown in Figure 4. The “*Terrain and obstacle requirements Area*” is defined in ICAO Annex 15 as an area of 45 km from the Aerodrome ARP. (An illustration of ICAO Annex 15 Area 1 and Area 2 Surface is provided in Appendix B).

As the proposed wind farm is less than 45 km from the ARP at Sligo Airport, there is penetration of the Annex 15 Surface. All obstacles, if they are more than 100 meters above terrain for a distance of 45 km from Sligo Airport’s ARP, need to be registered in the IAA Air Navigation Obstacle Data Set. This 45 km area is known as the TMA area i.e. Total Maneuvering Area and is used for en-route circling and maneuvering and is shown in Figure 4.

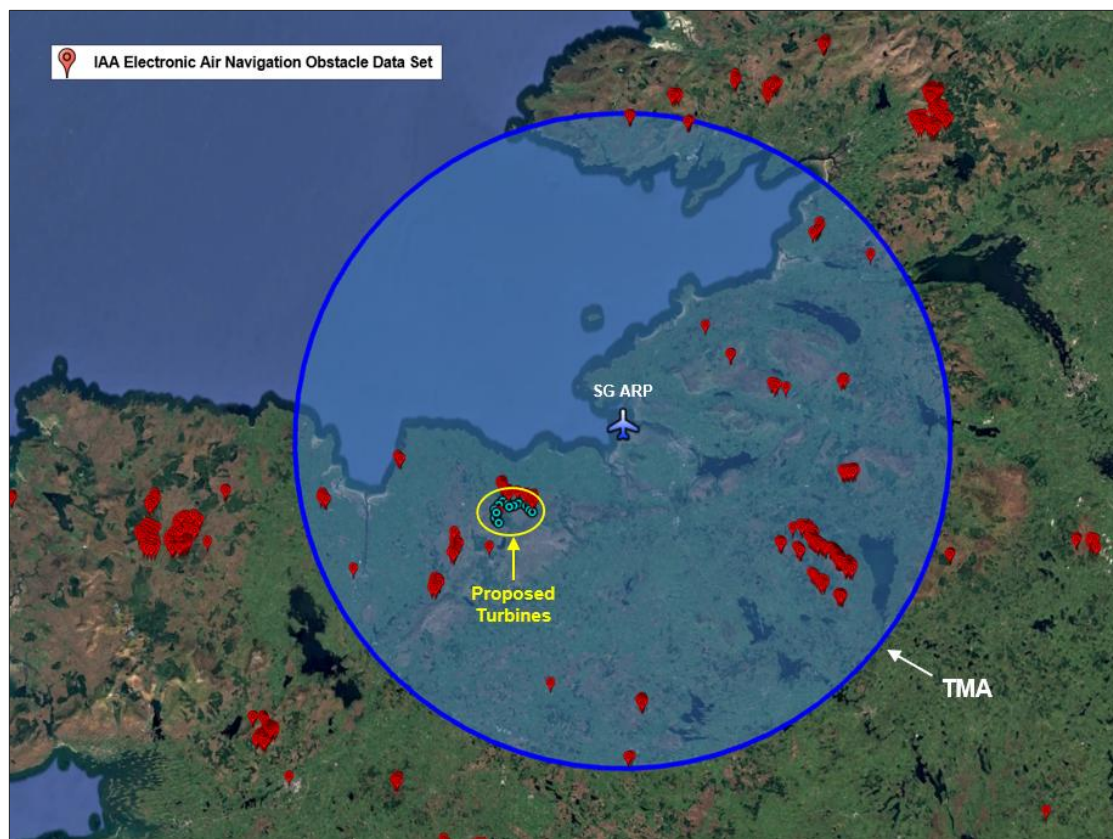


Figure 4. Annex 15 Aerodrome Surface and IAA Electronic Air Navigation Obstacle Data Set

It should also be noted that there are existing tall structures (obstacles) within 45 km of the ARP at Sligo Airport, including the operational turbines at Dunneill and Kingsmountain (which the proposed turbines at Crumhach are due to replace).

The IAA Electronic Air Navigation Obstacle Data Set of permitted obstacles are shown relative to the proposed wind farm in Figure 5.

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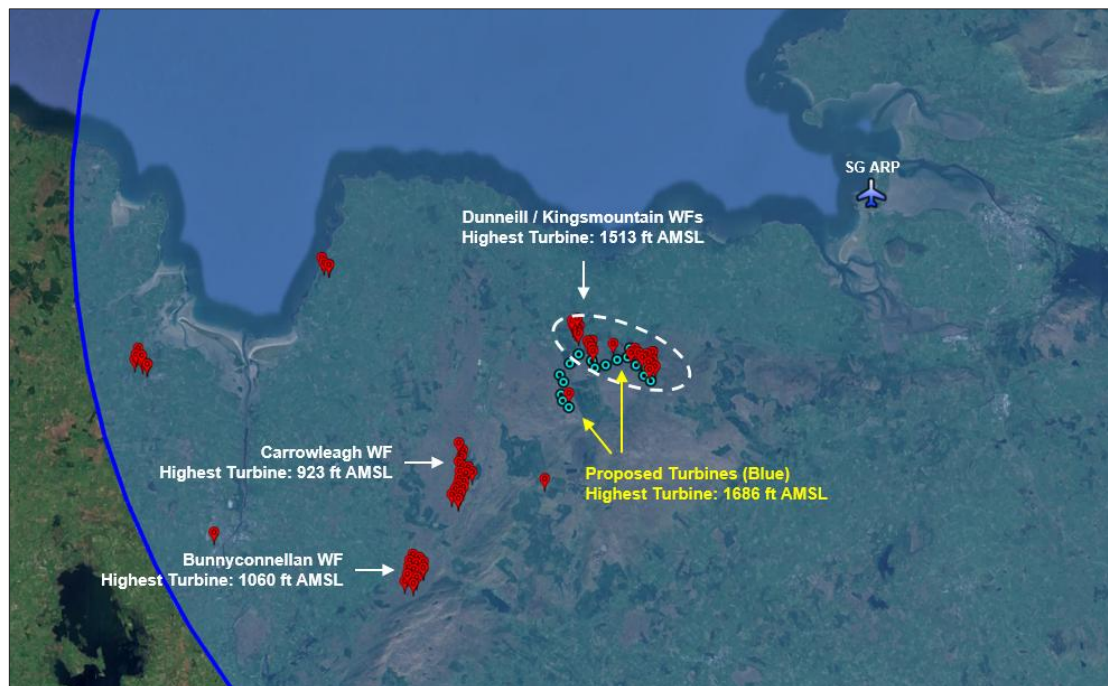


Figure 5. Permitted Obstacles in vicinity of Sligo Airport

Although there are existing obstacles within the TMA area (e.g. existing wind farms at Dunneill, Kingsmountain, Carrowleagh and Bunnyconnellan), all new obstacles must be considered and assessed to see if they cause a “hazard to air navigation”, and all Terrain Obstacle Data (including man-made obstacles) have to be considered by the relevant Aviation Authorities.

As the proposed turbines would be considered to be new obstacles, the Irish Airport Authority have been contacted and been informed of the proposed development. In the consultation response received from the Irish Airport Authority (Ref: Appendix A.1.2), the IAA made the following observations, in which they requested that, in the event of planning consent being granted, the applicant should provide the turbine coordinates and elevations (i.e. so that they could be included in the IAA Electronic Air Navigation Obstacle Data Set):

“It is likely that the following general observations would be proffered by the Authority during formal planning process: In the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to:

- (1) agree an aeronautical obstacle warning light scheme for the wind farm development,*
- (2) **provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and***
- (3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.”*

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Annex 15 Aerodrome Surfaces	In the event of planning consent being granted, the applicant should provide the IAA with as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location (for inclusion in the IAA Obstacle Dataset).	None

Table 4. Aviation Impact Review - Annex 15 Aerodrome Surfaces

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2.3 Building Restricted Areas (BRA)

A Building Restricted Area is the airspace surrounding an aviation facility that needs to be clear from physical intrusions. The purpose of the safeguarded areas is to identify developments with the potential for causing unacceptable interference to navigation facilities.

The navigation facilities to be considered at Sligo Airport are the ILS Localisers, Glidepaths and DMEs that provide guidance for aircraft landing on runway 16. The minimum safeguarded areas for these facilities are defined by the International Civil Aviation Organisation (ICAO) in the document ICAO EUR DOC 015, Section 7. The BRA parameters as specified by the ICAO are provided in Appendix B of this report.

Figure 6 below illustrates that the proposed turbines at Crumhach are over 8 km from the BRA at Sligo Airport. At this distance, turbines at the proposed wind farm will have no impact on the navigation facilities associated with the Building Restricted Area for Sligo Airport.



Figure 6. Proposed Wind Turbines relative to Sligo Airport BRA

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Building Restricted Areas	No action.	None

Table 5. Aviation Impact Review - Building Restricted Areas

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2.4 Minimum Sector Altitudes

A review of the Minimum Sector Altitudes (MSA) shows that the proposed wind farm is within 25 nautical miles of the NDB at Sligo Airport. The MSA provides a minimum obstacle clearance of 1000 ft above the highest obstacle within specified sectors. The wind turbines would be located within the southwestern Sector (MSA 3100 ft), as shown in Figure 7. According to the wind farm location, the maximum construction height for the site would be 2100 ft / 640.1 m AMSL (3100 ft MVA minus 1000 ft).

The highest of the proposed turbines is T15, with a tip-height of 1686.4 ft AMSL. This is below the 2100 ft threshold, therefore the MSA would not be affected and there will be no impact on the published MSA altitude figures for Sligo Airport.

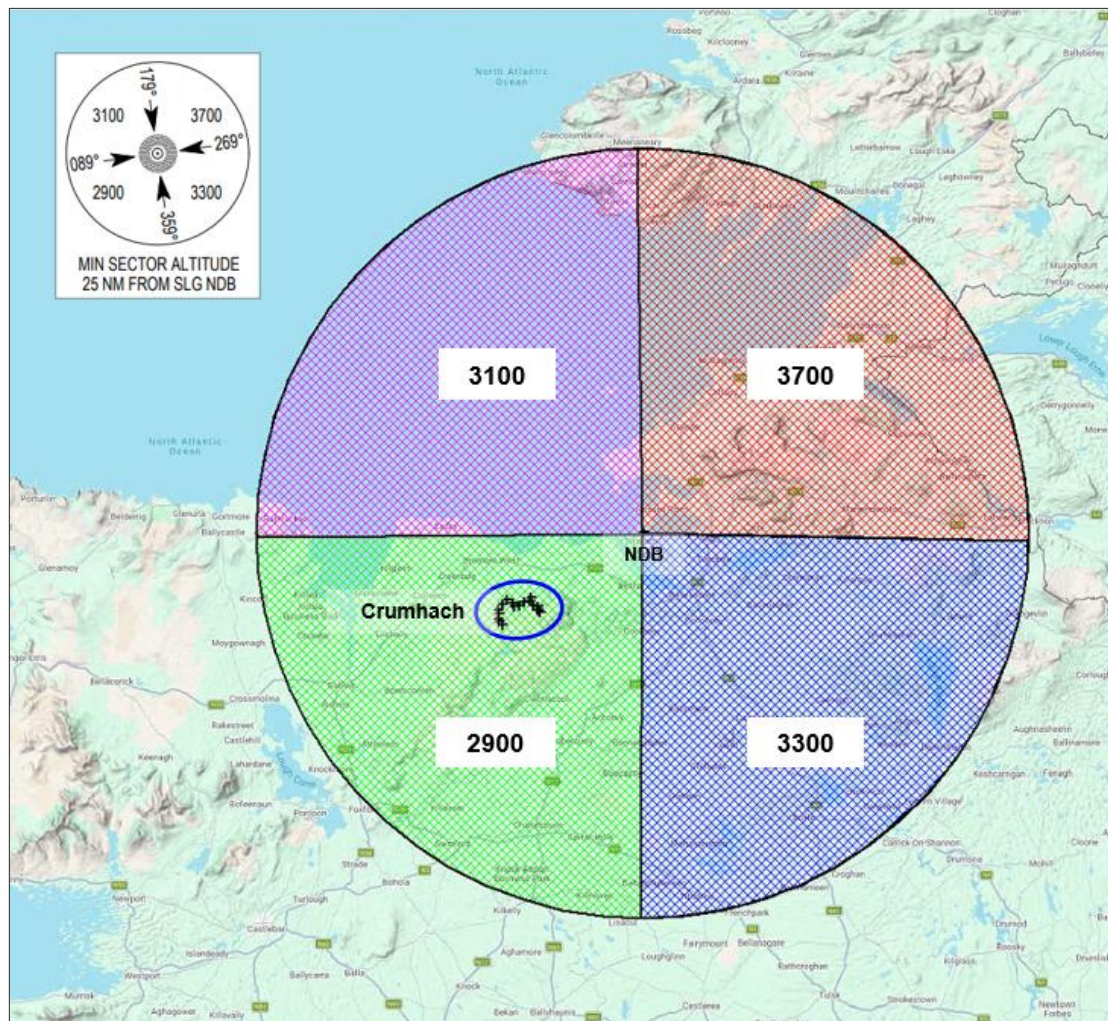


Figure 7. Sligo Airport (EISG) Minimum Sector Altitudes

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Minimum Sector Altitudes	No action	None

Table 6. Aviation Impact Review - Minimum Sector Altitudes

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2.5 Instrument Flight Procedures

There are 9 published Instrument and Visual Flight Procedures / Charts for arrivals to and departures from Sligo Airport. These Instrument Flight Procedures / Charts are listed below in Table 7.

Aerodrome	Aerodrome Procedure	Chart ID	Likely WF Impacts
Sligo	Aerodrome Chart – ICAO	EISG AD 2.24-1	No impacts.
Sligo	Aerodrome Obstacle Chart RWY 10/28– ICAO TYPE A	EISG AD 2.24-2	No impacts.
Sligo	Instrument Approach Chart RNP Y RWY 10 CAT A, B – ICAO	EISG AD 2.24-7	No impacts, based on initial screening.
Sligo	Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO	EISG AD 2.24-8	No impacts, based on initial screening.
Sligo	Instrument Approach Chart NDB Y RWY 10 - CAT A, B ICAO	EISG AD 2.24-9	No impacts.
Sligo	Instrument Approach Chart NDB Z RWY 10 - CAT A, B ICAO	EISG AD 2.24-10	No impacts.
Sligo	Instrument Approach Chart RNP RWY 28 CAT A, B – ICAO	EISG AD 2.24-11	No impacts.
Sligo	Instrument Approach Chart NDB RWY 28 - CAT A, B ICAO	EISG AD 2.24-12	No impacts.
Sligo	Visual Approach Chart – ICAO	EISG AD 2.24-16	No impacts.

Table 7. Instrument and Visual Flight Procedures – Sligo Airport

An initial review of the Instrument Flight Procedures (IFPs) indicates that they are unlikely to be impacted by the proposed development. However, the proposed turbines would be located relatively near to two flight routes as set out within the IFP charts, including:

- Instrument Approach Chart RNP Y RWY 10 CAT A, B – ICAO (EISG AD 2.24-7)
- Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO (EISG AD 2.24-8)

A review of these two IFP charts is provided in Section 2.5.1 and Section 2.5.2 below. The remaining IFPs do not specify flight paths over/near the proposed development site, and therefore these IFPs/Charts would not be impacted by the proposed development and on this basis, these charts have not been reviewed as part of this screening assessment

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2.5.2 Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO (EISG AD 2.24-8)

Figure 9 shows the proposed wind turbine locations overlaid on Chart EISG AD 2.24-7. The chart indicates that CAT A, B aircraft on approach to Runway 10 from the south would fly over the vicinity of the proposed wind farm development.

However, the chart indicates that the aircraft must have a minimum altitude of 3000 ft at Waypoint SG201. At this altitude there would be no impact on the published flight procedure due to the proposed development.

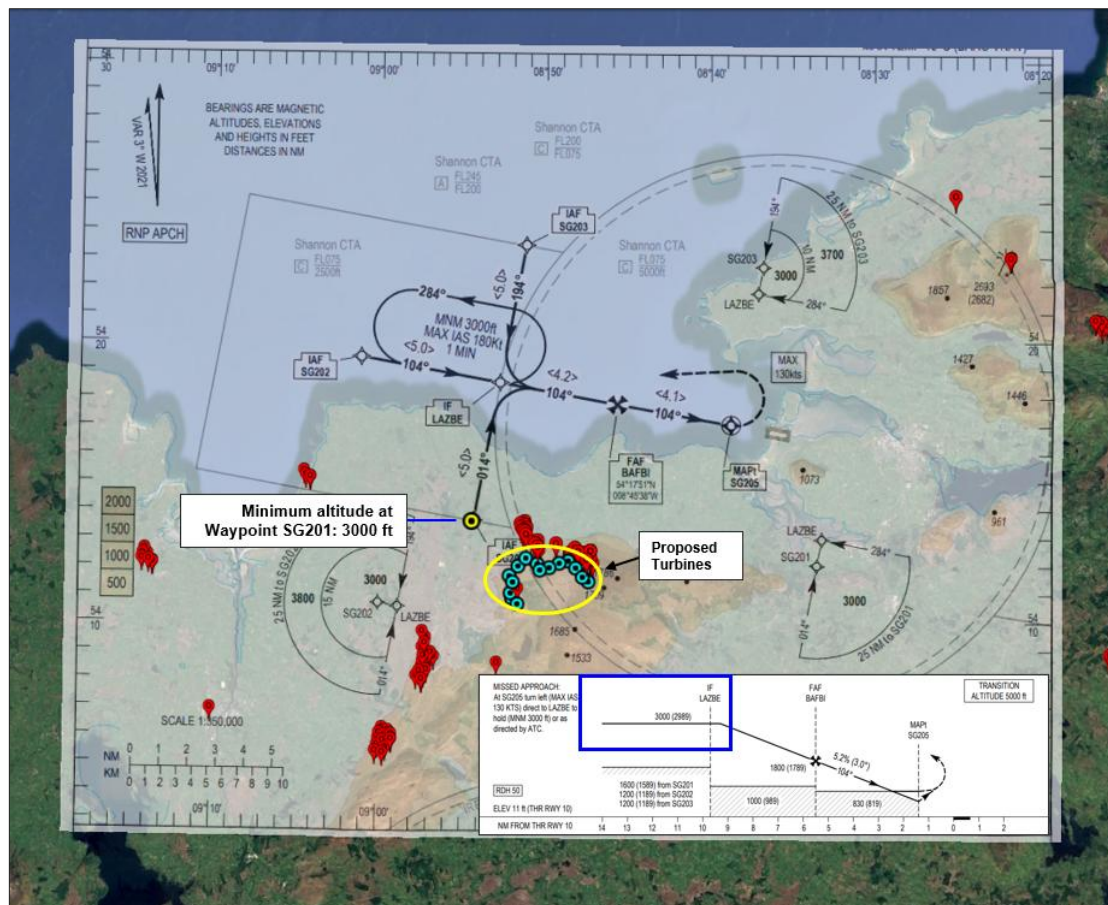


Figure 9. EISG AD 2.24-8 – Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO

Aviation Impact Review	Observations
Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO (EISG AD 2.24-8)	No Impacts, based on initial screening.

Table 9. Aviation Impact Review - Instrument Approach Chart RNP Z RWY 10 CAT A, B – ICAO (EISG AD 2.24-8)

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2.6 Existing Wind Farms in Vicinity of Proposed Wind Farm

The existing wind farms in the vicinity of the proposed wind farm development are shown below in Table 10.

Wind Farm	Planning Reference	Description
Dunneill	https://www.sligococo.ie/planning/	Operational Wind Farm
Kingsmountain	https://www.sligococo.ie/planning/	Operational Wind Farm
Lackan	https://www.sligococo.ie/planning/	Operational Wind Farm
Carrowleagh	https://www.eplanning.ie/MayoCC/	Operational Wind Farm
Bunnyconnellan	https://www.eplanning.ie/MayoCC/	Operational Wind Farm

Table 10. Existing Wind Farms in vicinity of proposed Wind Farm

All of the above wind farms are operational and do not have an operational impact to the instrument flight charts for Instrument Approach and Standard Departures to/from Sligo Airport.

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2.7 Communication and Navigation Systems

The AIP document EISG_AD_2 provides information for communication and navigation facilities for Sligo Airport. The table below shows the channel frequencies for the ATS communications Facilities and the Radio Navigation and Landing Aids for the airport.

Aerodrome	ATS communications Facilities Channel Frequency	Radio Navigation and Landing Aids Channel Frequency	Approximate Distance to Localizer and Transmitting antennas	Impacts of wind farm
Sligo	122.100 MHz	384 kHz – 109.0 MHz	15 km	No impacts

Table 11. Impacts on Communications and Navigation Systems

As the proposed wind farm is approximately 15 km from the Localizers and transmitting antennas, it is very unlikely that turbines at the proposed wind farm will have any impact on these ATS communications and radio navigational aids. Typically, interference to VHF communications systems will only occur when obstacles are in close proximity to the VHF transmitter e.g. less than 500 m.

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Communication and Navigation Systems	No action	None

Table 12. Aviation Impact Review - Communication and Navigation Systems

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2.8 Radar Surveillance Sensors

The tables below show the EUROCONTROL Guidelines Assessment Zone arrangement for the two types of aviation radar surveillance systems; Primary Surveillance Radar (PSR) and Secondary Surveillance Radar (SSR).

Zone	Description	Assessment Requirements
Zone 1	0 - 500m	Safeguarding
Zone 2	500m - 15km and in radar line of sight	Detailed Assessment
Zone 3	Further than 15km and in radar line of sight	Simple Assessment
Zone 4	Not in radar line of sight	No Assessment

Table 13. PSR Zone Arrangements

Zone	Description	Assessment Requirements
Zone 1	0 - 500m	Safeguarding
Zone 2	500m - 16km but within maximum instrumented range and in radar line of sight	Detailed Assessment
Zone 4	Further than 16km or not in radar line of sight	No Assessment

Table 14. SSR Zone Arrangements

The EUROCONTROL Guidelines require a 16 km safe distance for a “Zone 4 - No Assessment” condition and detailed assessments are required for any proposed wind within 16km of a secondary surveillance radar.

It should be noted that in the UK, NATS (Air Traffic Control) safeguards SSR to a distance of 10 km. The guidelines used by NATS (*CAP 764: Chapter 2: Impact of wind turbines on aviation*) state that:

“Wind turbine effects on SSR are traditionally less than those on PSRs but can be caused due to the physical blanking and diffracting effects of the turbine towers, depending on the size of the turbines and the wind farm. These effects are typically only a consideration when the turbines are located very close to the SSR i.e. less than 10 km.”

A review of the potential impact of the proposed wind farm on Radar Surveillance Sensors is presented below in Section 2.8.1. The review shows that AirNav Ireland should not require a radar assessment, as turbines at the proposed development would be located in Assessment Zone 4 for all of their radar installations (PSR and SSR).

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Radar Surveillance Sensors	No action	None.

Table 15. Aviation Impact Review - Radar Surveillance Sensors

AiBridges <i>Total Communications Solutions</i>	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.8.1 AirNav Ireland Radar Surveillance Sensors

To determine which Radar Assessment Zones are applicable to the proposed wind farm, a desktop assessment was carried out.

The nearest radar surveillance site to the proposed wind farm development is the AirNav radar station at Dooncarton in County Mayo. An assessment of the potential impact due to the proposed wind farm on this radar installation is provided in Section 2.8.1.1.



Figure 10. Nearest AirNav Ireland Radar Surveillance Site relative to Crumhach Wind Farm.

AiBridges <i>Total Communications Solutions</i>	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.8.1.1 Dooncarton Radar Assessment

The radar surveillance site at Dooncarton consists of a SSR system located in the six-story circular reinforced concrete communications tower shown in Figure 11. The SSR antennas are housed in the dome-shaped structure at the top of the tower. The radar station is over 60 km from the proposed turbines at Crumhach.



Figure 11. Dooncarton Radar Station

Table 16 below shows the (EuroControl) assessment zone applicable to the turbines at the proposed development. The applicable assessment zone for Crumhach has been based on distance from the Radar Station and whether radar line-of-sight conditions exist.

Wind Farm ID	Distance to nearest PSR / SSR Radar Station	EuroControl Radar Assessment Zone	Radar LOS Assessment (EuroControl Guidelines)
Crumhach	> 60 km	Zone 4	Detailed Assessment Not Required

Table 16. EuroControl Safeguarding Guidelines – Dooncarton Radar Station

As the table above shows, the turbines at the proposed wind farm would be located in Radar Assessment Zone 4, as specified by the EUROCONTROL guidelines, which indicate that a detailed technical assessment would not be required for the impact on the SSR radar station at Dooncarton.

AiBridges <i>Total Communications Solutions</i>	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.9 Flight Inspection and Calibration

Flight checks are conducted annually to ensure that flight procedures and associated navigational aids are safe and accurate. These flight checks are carried out by an AirNav approved Flight Inspection Service Provider (FCSL). The checks are carried out during annual inspections consisting of radial and orbital test flights around Sligo Airport for calibration of instrument landing systems (ILS).

It is unlikely that the Flight Inspection Procedures will be impacted as the proposed wind farm development is sufficiently far from the airport runways and the flight inspection procedures should already account for the existing obstacles (e.g. terrain and existing wind turbines).

The flight path of the latest publicly available FCSL Inspection/Calibration flight is shown below in Figure 12.

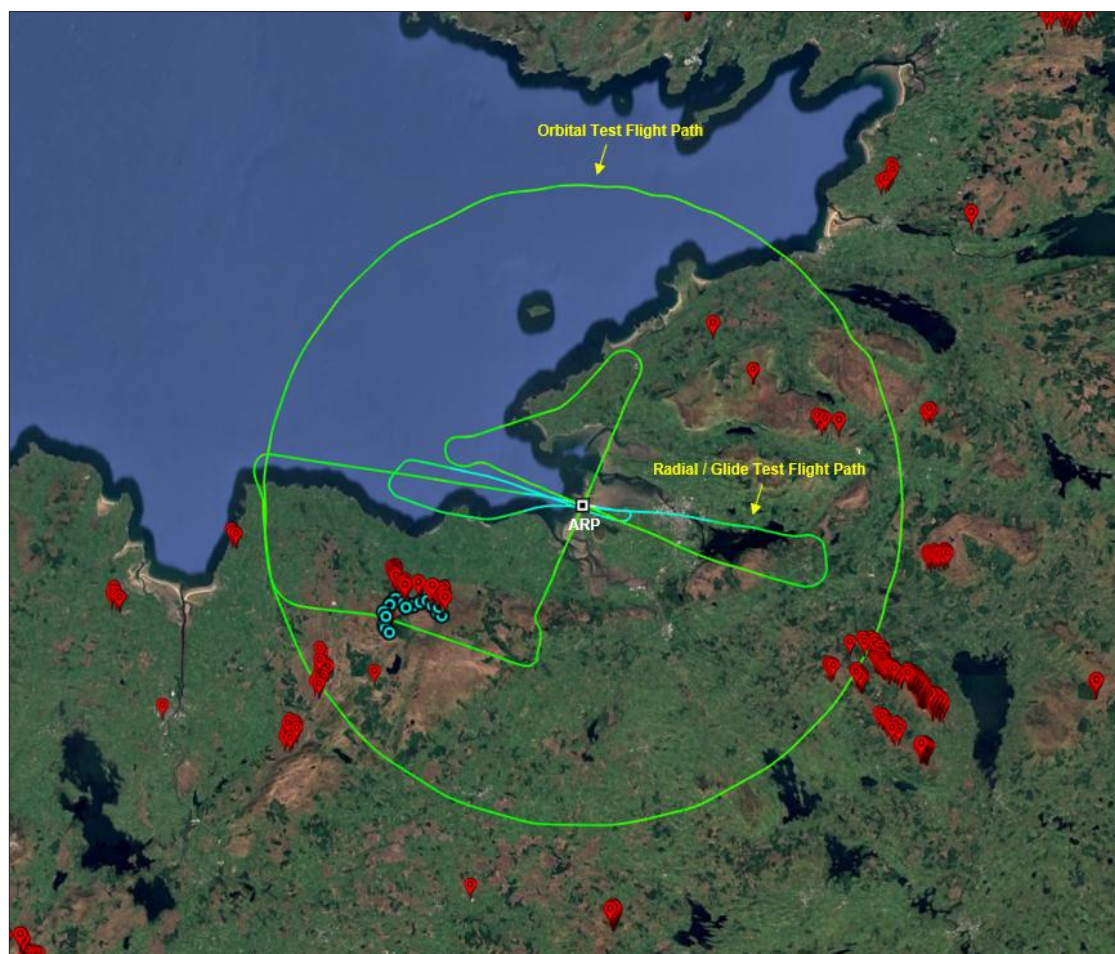


Figure 12. FCSL Flight Route - 05th January 2024

As can be seen in the Figure above the FCSL flight route did fly over the site of the the proposed wind farm development. To further assess the FCSL flight route, the test aircraft altitude has been plotted and shown relative to the proposed turbines at Crumhach.

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Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

Figure 13 below shows a Close-up view of the FCSL aircraft on its test flight for Sligo Airport. The altitude of the aircraft as it passes over the proposed development site is 3900 ft. This distance is over 2000 ft higher than the tip of the highest of the proposed turbines at Crumhach. At this distance it is highly unlikely that there would be any impact to the Inspection/ Calibration Test Flights.



Figure 13. Altitude of FCSL Flight Route - 05th January 2024

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Flight Inspection and Calibration	No action	None.

Table 17. Aviation Impact Review - Flight Inspection and Calibration

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.10 Private Airfields (VFR Flying)

For due diligence purposes, private airfields in the vicinity of the proposed development have been considered, and it was found that there is one private airfield within 15 km of the proposed wind farm site: Figure 14 below shows the location of this airfield relative to the proposed wind farm development.

Airfield	Description	Airspace Classification	Published Flight Procedures	Permitted Air Traffic Type (IFR/VFR)	Distance to proposed wind farm
Bunnyconnellan	Private landing strip for light aircraft only.	Class G (Uncontrolled)	None	VFR Only	14.9 km

Table 18. Private Airfields within 15 km of proposed wind farm



Figure 14. Private Airfield(s) in the vicinity of proposed development

The nearest private airfield to the proposed development is Bunnyconnellan Airfield. The airfield consists of a single airstrip which is used for light aircraft only. The airstrip is 14.9 km away from the nearest turbine at the proposed development. At this distance, there would be no impact due to any of the proposed wind turbines.

In addition, the airfield is privately owned and operates in Class G uncontrolled airspace. As the airfield is located in Class G uncontrolled airspace, any pilots flying to/from the airfield are obliged to fly by Visual Flight Rules (VFR) and in accordance with the *IAA Rules of The Air*.

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The Irish IAIP contains the IAA Rules of The Air Order 2004, which outline the Visual Meteorological Conditions (VMC) minima for aircraft flying under Visual Flight Rules. The requirements for flying by VFR rules in Class G uncontrolled airspace are:

Flights below 3,000 ft AMSL required to remain clear of cloud and in sight of the surface at all times. with a minimum flight visibility of 5 km. (This visibility minimum is reduced to 3 km for aircraft operating at an indicated airspeed of 140 knots (kts) or less and 1 km for helicopters operating below 1,000 ft.)

VFR flight are not permitted in conditions worse than the stated minima. If visibility conditions change pilots should adjust their route in accordance with regulation.

VFR pilots operating in the Class G uncontrolled airspace are legally obliged to avoid obstacles (e.g. turbines) by 500 ft.

VFR pilots operating in the Class G uncontrolled airspace are ultimately responsible for their own terrain and obstacle clearance.

As the Rules of the Air state, in Class G uncontrolled airspace, it is the pilot's legal responsibility to be aware of and avoid any obstacles in his/her flight path and therefore he/she would be required to be aware of wind turbines if flying to/from the airfield in question. This can be achieved by prudent flight planning by the VFR pilot prior to flight.

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Private Airfields (VFR Flying)	No action	None.

Table 19. Aviation Impact Review - Private Airfields (VFR Flying)

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.11 Aeronautical Obstacle Warning Light Scheme (Civil Aviation)

In the event of a grant of planning consent the AirNav-ANSP would require the lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed development may be considered as an en-route obstacle. The developers of the proposed turbines would intend to implement an aeronautical obstacle warning lighting scheme.

It is recommended that lighting requirements should be in accordance with Chapter Q – Visual Aids for denoting Obstacles; CS ADR.DSN.Q.851 and GM.ADR.DSN.Q.851 (Pages 729/730) of the EASA Easy Access Rules for Aerodromes (Reg (EU) No. 139/2014) where it states that

“Applicability: When considered as an obstacle a wind turbine should be marked and/or lighted.”

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Aeronautical Obstacle Warning Light Scheme	In the event of planning consent being granted, the applicant should be conditioned to contact the IAA to agree to an Aeronautical Obstacle Warning Light Scheme	None

Table 20. Aviation Impact Review - Aeronautical Obstacle Warning Light Scheme

As stated earlier in this report the Irish Airport Authority have been contacted and been informed of the proposed development at Crumhach. In the consultation response received from the Irish Airport Authority (Ref: Appendix A.1.2), the IAA made the following observations, in which they requested that, in the event of planning consent being granted, the applicant should be conditioned to contact the IAA to agree an Aeronautical Obstacle Warning Light Scheme:

*“It is likely that the following general observations would be proffered by the Authority during formal planning process: **In the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to:***

- (1) agree an aeronautical obstacle warning light scheme for the wind farm development,**
- (2) provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and*
- (3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.”*

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

2.12 Irish Air Corps / Department of Defence Safeguarding

The Irish Air Corps (IAC) Position Paper “*Air Corps Wind Farm/ Tall Structures Position Paper*” published on 08th August 2014 (Appendix D), states that the Air Corps are likely to oppose any wind farm / tall structure in the following restricted areas:

- Lands underlying military airspace for flying activity. (Areas contained in Danger Areas EI-D1, EI-D5, EI-D6, EI-D13, EI-D14, Restricted Areas EI-R15, EI-R16 within 20 NM of Baldonnel, MOAs 3 and 4 within 20 NM of Baldonnel.
- Low Flying Training Areas within MOA 4 in the areas of; Blessington, Edenderry/Allenwood/Rathangan, Kilmeague/Newbridge.
- Low Flying Training Area West – LFTA WEST.
- A distance of 5 NM or less from military installations.
- Critical low level flying routes in support of Air Corps operation requirements as described in Figure 15 below.

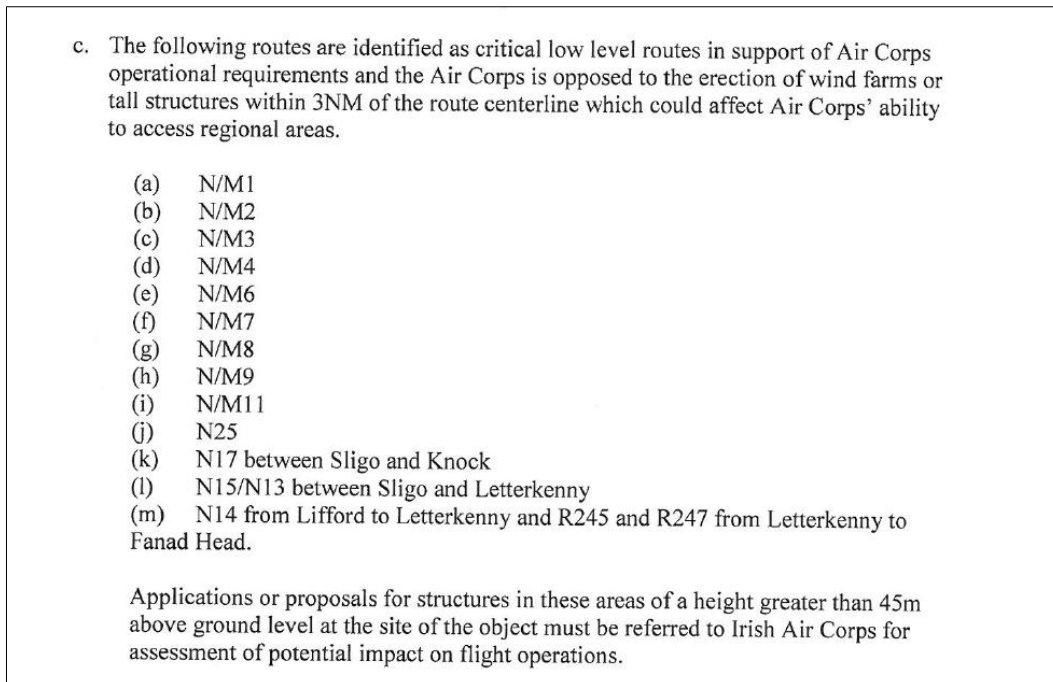


Figure 15. Irish Air Corps – Critical Low-Level Flight Routes

In addition to the restricted areas, as outlined above, the IAC have specific aviation lighting requirements for wind farm developments. In Section 2.11 and Section 2.11.2, reviews of the IAC Restricted Areas, and the Military Aviation Lighting requirements are provided.

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2.12.1 IAC Restricted Areas

The nearest of the Air Corps restricted areas to the proposed wind farm sites is the 3 NM restricted area around the N17 National Primary Road, as shown in Figure 16 below. As the proposed turbines at Crumhach would be located outside the restricted area, there should be no impacts on Irish Air Corps activities.

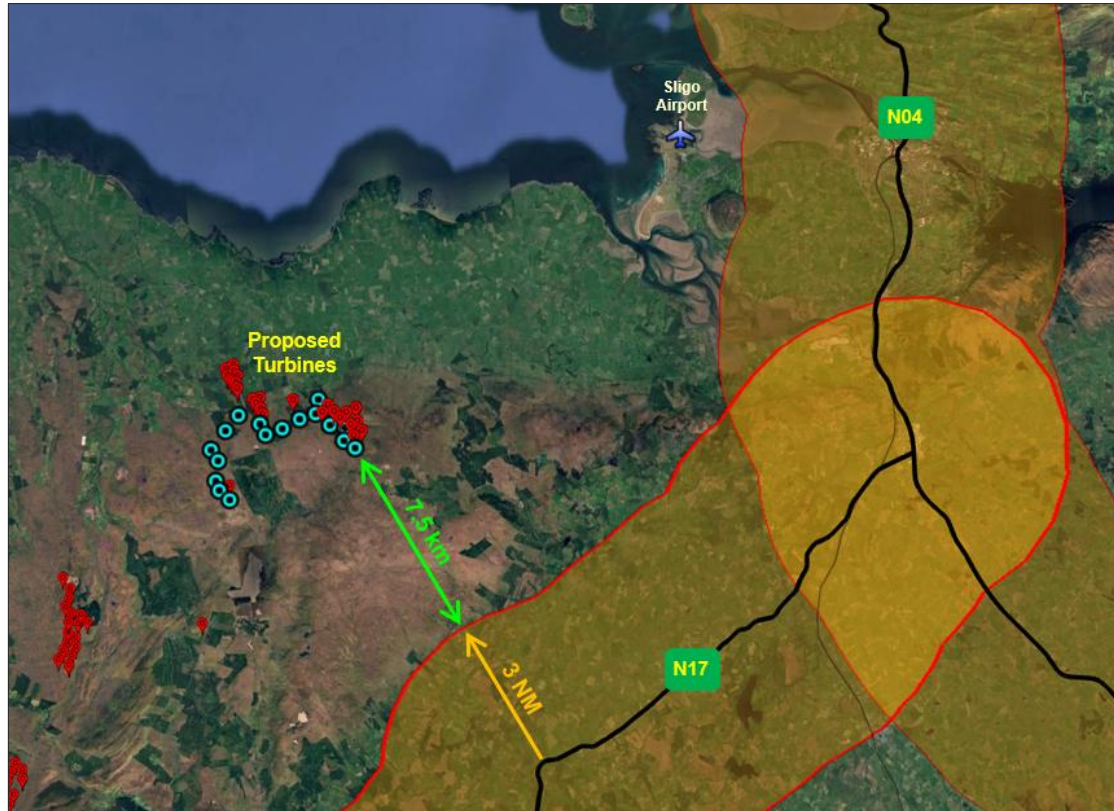


Figure 16. Proposed Turbines relative to nearest IAC Critical Low-Level Flight Route (N17)

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
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2.12.2 Military Aviation Lighting

A consultation response has been received from the Department of Defence in relation to the proposed development at Crumhach. In the consultation response, the DoD made the observations highlighted below regarding military aviation lighting requirements.

Appendix A.3 of this report contains the full consultation submission from the DoD.

"I refer to your email below, dated 05 September 2024, in relation to the EIA Scoping Request for Proposed Crumhach Renewable Energy Development, Co. Sligo.

I wish to advise at the outset that any determination in relation to a planning consent is solely a matter for the planning authorities and/or ABP, as appropriate. Therefore, the following observation is made on a non-prejudicial basis, and is not intended to be used to rely on for a prospective planning application, nor is this observation to be relied on in the event of any commercial transaction pertaining to such lands and it is not to be relied on in the event of any contract exchange pertaining to same.

As a matter of practice, the Department of Defence does not provide observations or advice in the scoping process, except where the relevant parties have been directed by a planning authority to seek the Department's views.

Based on the information supplied and following consultations with the subject matter in the Irish Air Corps, the Department of Defence wishes to make the following observations:

- ***All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.***

Any Irish Air Corps (IAC) requirements for are separate to Irish Aviation Authority (IAA) require We would appreciate if you could keep us informed on any progress relating to this proposed development.

Nothing in the above observation shall be taken as a binding response by the Minister for Defence in the event that a planning application is made. The Minister reserves the right to comment on an actual planning application as and when it is submitted in accordance with the provisions of the planning regulatory code."

For Military Aviation Lightning, it is recommended is to engage at the early stage in a consented development (subject to planning conditions), to agree on the details relating to the lighting requirements for the DoD/IAC.

Aviation Impact Review	Observations
Irish Air Corps / Department of Defence Safeguarding	The desktop screening indicates that wind turbines at the proposed development would not be located in an IAC restricted area and would not have any impacts on Irish Air Corps activities. Regarding Military Aviation Lightning, the recommendation is to engage at the early stage in a consented development (subject to planning conditions), to agree on the details relating to the lighting requirements for the DoD/IAC.

Table 21. Aviation Impact Review - Irish Air Corps / Department of Defence Safeguarding

AiBridges <i>Total Communications Solutions</i>	Procedure: 001	Rev: 2.0
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2.13 The Garda Air Support Unit (GASU)

The Garda Air Support Unit is based at Casement Aerodrome, Baldonnell and is typically deployed to incidents in the following cases:

- Immediate threat to life
- Incidents of a criminal, terrorist or other nationally important nature
- Immediate threat of serious public disorder
- Tasks leading to the prevention or detection of crime
- Evidence gathering
- Intelligence gathering
- Photographic tasks
- Traffic Management/Monitoring

The unit consists of one fixed-wing aircraft (a de Havilland Canada-6 Twin Otter Guardian 400 aircraft) and two helicopters (Eurocopter EC 135 T2).



Figure 17. GASU - de Havilland Canada-6 Twin Otter Guardian 400 aircraft



Figure 18. GASU - Eurocopter EC135 T2

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Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

The proposed wind farm development is located in an area that is sparsely populated and on forested / boggy terrain. For these reasons, it is highly unlikely that the proposed wind farm development would have any significant impacts on GASU operations.

In the unlikely event of GASU operations in the general area, it should be noted that all modern aircraft are equipped with a range of Global Navigation Satellite Systems (GNSS), e.g. GPS, GLNASS, Galileo, etc. These GNSS systems provide pilots with accurate navigation information including data to avoid obstacles during VFR operations. Should the proposed wind farms be permitted the associated turbine locations would be submitted to AirNav Ireland and aviation charts and GNSS databases would be updated accordingly.

GASU Aircraft	Impact of proposed wind farms - Opinion
Fixed-wing Airplane (Pilatus Britten-Norman BN 2T-4S Defender 4000)	Low – Fixed-wing aircraft are unlikely to be deployed in low level activity in the subject areas. In addition, the aircraft would be equipped with modern communications systems and navigational equipment. Should the wind farm be permitted, the turbines would be fitted with aeronautical lighting and would be clearly marked in aviation charts.
Helicopter (Eurocopter EC135 T2)	Low – Helicopter landings in the subject area would not occur as the proposed wind farm located in forested / boggy terrain. In addition, the aircraft would be equipped with modern communications systems and navigational equipment. Should the wind farm be permitted, the turbines would be fitted with aeronautical lighting and would be clearly marked in aviation charts.

Table 22. Impact of proposed wind farm on GASU Operations

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Garda Air Support Unit (GASU)	No action	None

Table 23. Aviation Impact Review - Garda Air Support Unit (GASU)

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
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2.14 The Emergency Aeromedical Service (EAS)

The air ambulance service in Ireland is known as the Emergency Aeromedical Service (EAS). The EAS crew (which include National Ambulance Service (NAS) paramedics) deal with time-critical emergency callouts to major emergencies such as road collisions and urgent medical events. The EAS currently operate two air ambulance helicopters operating from two bases:

- Custume Barracks, Athlone, Co Westmeath.
- Rathcoole Aerodrome, Rathcoole, Mallow, Co Cork.

The helicopter borne emergency air ambulances consist of an Air Corps operated aircraft based at Custume Barracks in Athlone, and an aircraft located at Rathcoole Aerodrome in North County Cork. The nearest EAS base to the proposed wind farm development at Crumhach is the base in Athlone. The flight times from the EAS base at Athlone are shown in Figure 19.

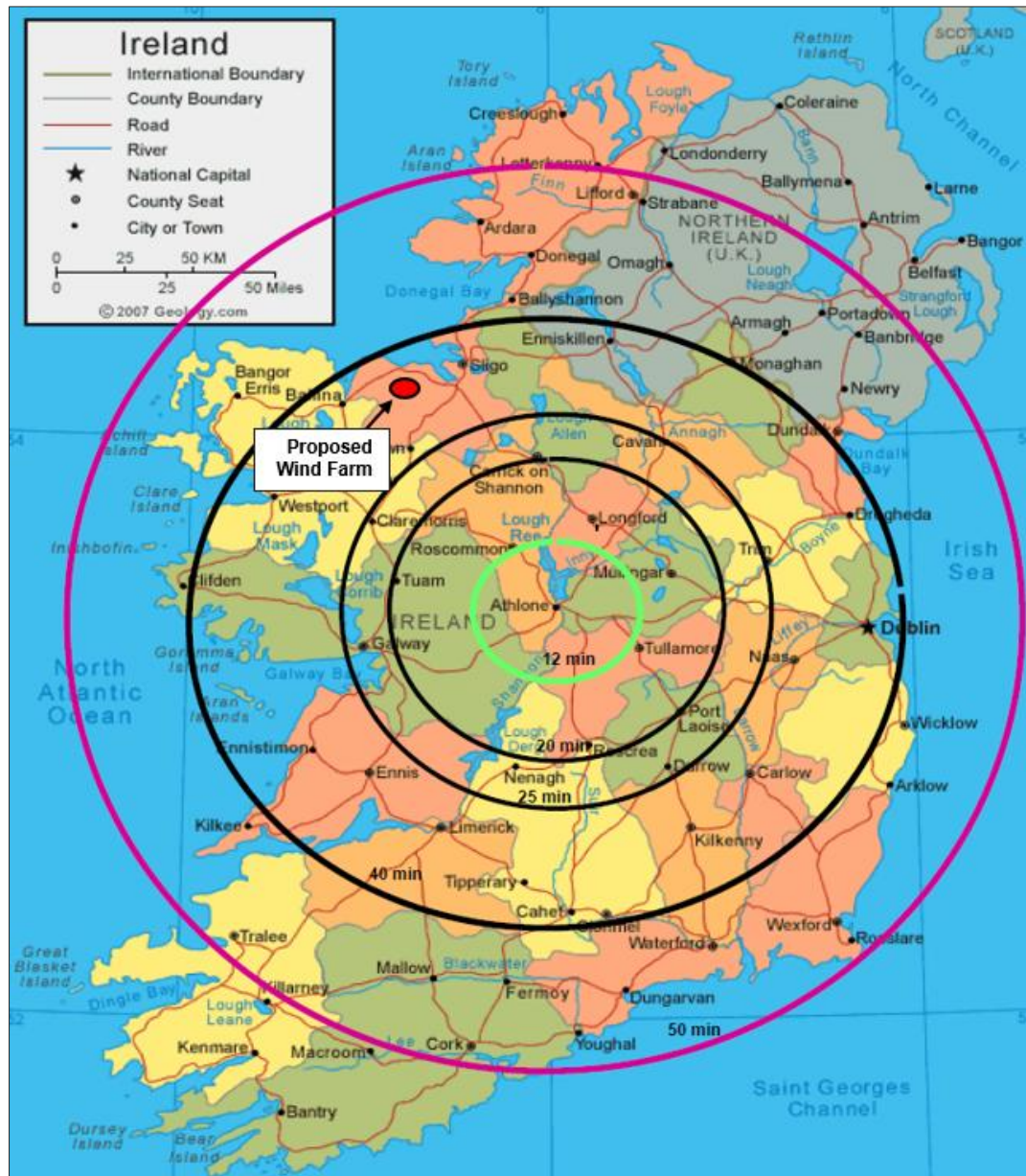


Figure 19. EAS – Flying Times from Custume Barracks, Athlone

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Helicopter landings are highly unlikely to occur in the subject area due to the forested / boggy terrain of the proposed site.

Also, should the proposed wind farms be permitted the associated turbine locations would be submitted to AirNav Ireland and aviation charts and GNSS databases would be updated accordingly. EAS helicopters would also be fitted with GNSS systems which would clearly identify any potential objects in the operational area (e.g. wind turbines).

In addition, the footprint of the proposed wind farm development is small and any flight diversions for EAS operations would have negligible time impacts. For these reasons, turbines at the proposed wind farm should have no impact on EAS flights from Athlone.

EAS Aircraft	Impact of proposed wind farms – Opinion
Helicopter (Eurocopter EC135)	Low – Helicopter landings at the subject area are highly unlikely to occur as the proposed wind farm site is located on forested / boggy terrain. In addition, the aircraft would be equipped with modern communications systems and navigational equipment. Should the wind farm be permitted, the turbines would be fitted with aeronautical lighting and would be clearly marked in aviation charts.

Table 24. Impact of proposed wind farm on EAS

Aviation Impact Review	Mitigation Measure Action	Residual Impact
Emergency Aeromedical Service (EAS)	No action	None

Table 25. Aviation Impact Review - Garda Air Support Unit (GASU)

AiBridges <i>Total Communications Solutions</i>	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

3. Summary

A summary of the aviation review for the proposed wind farm at Crumhach is provided in Table 26 below.

Item	Impact	Summary
Annex 14 - Obstacle Limitation Surfaces (OLS)	None	Turbines at the proposed wind farm site would be located outside the OLS Surfaces for Sligo Airport.
Annex 15 - Aerodrome Surfaces	Observation	The proposed turbines would penetrate the ICAO Annex 15 Aerodrome Surface. All obstacles, if more than 100 meters above terrain for a distance of 45 km from center point of Sligo Airport, need to be registered in the IAA Air Navigation Obstacle Data Set. In the event of planning consent being granted, the applicant should provide the IAA with as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location (for inclusion in the IAA Obstacle Dataset). It should be noted that other existing tall structures in the vicinity of the proposed wind farm development (e.g. existing turbines at Dunneill, Kingsmountain, Carrowleagh and Bunnyconnellan) are also located within the ICAO Annex 15 Aerodrome Surface and are already listed in the IAA Aeronautical Electronic Obstacle Data Sets.
Building Restricted Areas	None	A review shows that the proposed turbines at Crumhach are more than 8 km from the BRAs for Sligo Airport. At this distance there would be no impact due to the proposed wind farm.
Minimum Sector Altitudes (MSA)	None	A review of the Minimum Sector Altitudes (MSA) shows that the proposed wind farm is within 25 nautical miles of the NDB at Sligo Airport. The maximum allowable structure in the applicable sector is 2100 ft (AMSL). Turbines at the proposed wind farm would not exceed the 2100 ft applicable threshold, therefore the MSA of the sector will not be affected and there will be no impact on the published MSA altitude figures.
Instrument Flight Procedures	None	A review shows that the instrument flight procedures for Sligo Airport are unlikely to be impacted. Based on the initial screening review.
Communication and Navigation Systems	None	As the proposed wind farm is approximately 15km from the Localizer and transmitting antenna at Sligo Airport, it is very unlikely that the proposed development will have any impact on these ATS communications and radio navigational aids.
Radar Surveillance Sensors	None	Turbines at the proposed wind turbines would be located in Assessment Zone 4 (EuroControl guidelines) for SSR and PSR instruments and a detailed Radar Impact Assessment should not be required by AirNav Ireland.
Flight Inspection and Calibration	None	A review of the Flight Inspection and Calibration Procedures indicates that there will be no impacts due to the proposed wind farm development.
Private Airfields (VFR Flying)	None	The nearest private airfield to the proposed development is Bunnyconnellan Airfield. The airfield consists of a single airstrip and is used for light aircraft only. The airstrip is 15 km away from the nearest of the proposed turbines. At this distance, there would be no impact due to the proposed development.
Aeronautical Obstacle Warning Light Scheme (Civil)	Observation	In the event of planning consent being granted, the applicant should be conditioned to contact the IAA to agree to an Aeronautical Obstacle Warning Light Scheme.

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Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

Irish Air Corps / DoD Safeguarding	None	The proposed wind farm is not located in an IAC restricted area, and it is highly unlikely that turbines at the proposed site would have any impact on IAC aviation activity. Regarding Military Aviation Lightning, the recommendation is to engage at the early stage in a consented development (subject to planning conditions), to agree on the details relating to the lighting requirements for the IAC.
Garda Air Support Unit (GASU)	None	A review of GASU operations indicates that they are unlikely to be impacted by the proposed wind farm development.
Emergency Aeromedical Service (EAS)	None	A review of EAS operations indicates that they are unlikely to be impacted by the proposed wind farm development.

Table 26. Crumhach Wind Farm – Aviation Review Summary

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

APPENDIX A – Aviation Stakeholder Consultations

The consultation responses received from: Sligo Airport, The Irish Aviation Authority (IAA) and The Department of Defence (DoD) are provided below in Sections A.1 to A.3.

A.1 Consultation Response - Sligo Airport

From:	noeljennings@sligoairport.com
Sent:	Friday 6 September 2024 13:08
To:	Brandon Taylor; airportmanager@sligoairport.com
Cc:	opsmanager@sligoairport.com
Subject:	RE: 230841: EIA Scoping Request for Proposed Crumhach Renewable Energy Development, Co. Sligo

You don't often get email from noeljennings@sligoairport.com. [Learn why this is important](#)

Caution: This is an external email and may be malicious. Please take care when clicking links or opening attachments.

Hi Brandon

Your proposed Project doesn't appear to have any effect on the operations of Sligo Airport, Could you please contact the IAA (Irish Aviation Authority) for confirmation and observations.

Regards

Noel Jennings

Noel Jennings, Accountable Manager
Sligo Airport, Strandhill, Co Sligo, F91W53K
 Phone: 071 9168280, **Mobile: 087 7727006**
 Web: www.sligoairport.com
 Email: noeljennings@sligoairport.com or airportmanager@sligoairport.com



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Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

A.2 Consultation Response – Irish Aviation Authority (IAA)

From: Planning <planning@iaa.ie>
Sent: Friday 6 September 2024 11:54
To: Brandon Taylor
Cc: Christophe O'BRIEN; Planning
Subject: RE: 230841: EIA Scoping Request for Proposed Crumhach Renewable Energy Development, Co. Sligo

Caution: This is an external email and may be malicious. Please take care when clicking links or opening attachments.

Dear Mr Taylor,

Thank you for your scoping report and request for comments in relation to the proposed Crumhach Wind Farm containing 25 wind turbines (indicative blade tip height of 180m) at Crowagh or Dunneill Mountain and adjacent townlands, Co. Sligo.

The development appears to be approximately 18km Southwest of Sligo Airport and 30km North of Ireland West Airport, as such, it is recommended that the developer engage directly with Sligo Airport and Ireland West Airport and the air navigation service provider Air Nav Ireland to make them aware of the proposal and ensure appropriate screening from an aviation safety perspective.

It is likely that the following general observations would be proffered by the Authority during a formal planning process: In the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to: (1) agree an aeronautical obstacle warning light scheme for the wind farm development, (2) provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and (3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

Best Regards,

Dave

AiBridges Total Communications Solutions	Procedure: 001	Rev: 2.0
Crumhach Wind Farm – Aviation Review Statement	Approved: KH	Date: 06/08/2026

A.3 Consultation Response – Department of Defence (DoD)

From: Defence Property Management Planning <PropertyManagementPlanning@defence.ie>
Sent: Monday 7 October 2024 14:30
To: Brandon Taylor <btaylor@mkoireland.ie>
Cc: Defence Estatemanagement1Brigade <Estatemanagement1Brigade@defence.ie>; Defence Estate Management 2Brigade <Estatemanagement2Brigade@defence.ie>; Sarah Kelly (Defence) <Sarah.Kelly@defence.ie>
Subject: RE: 230841: EIA Scoping Request for Proposed Crumhach Renewable Energy Development, Co. Sligo

Caution: This is an external email and may be malicious. Please take care when clicking links or opening attachments.

Without Prejudice

Dear Mr. Taylor,

I refer to your email below, dated 05 September 2024, in relation to the EIA Scoping Request for Proposed Crumhach Renewable Energy Development, Co. Sligo.

I wish to advise at the outset that any determination in relation to a planning consent is solely a matter for the planning authorities and/or ABP, as appropriate. Therefore, the following observation is made on a non-prejudicial basis, and is not intended to be used to rely on for a prospective planning application, nor is this observation to be relied on in the event of any commercial transaction pertaining to such lands and it is not to be relied on in the event of any contract exchange pertaining to same.

As a matter of practice, the Department of Defence does not provide observations or advice in the scoping process, except where the relevant parties have been directed by a planning authority to seek the Department's views.

Based on the information supplied and following consultations with the subject matter in the Irish Air Corps, the Department of Defence wishes to make the following observations:

- All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.

Any Irish Air Corps (IAC) requirements for are separate to Irish Aviation Authority (IAA) require

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We would appreciate if you could keep us informed on any progress relating to this proposed development.

Nothing in the above observation shall be taken as a binding response by the Minister for Defence in the event that a planning application is made. The Minister reserves the right to comment on an actual planning application as and when it is submitted in accordance with the provisions of the planning regulatory code.

Kind Regards,
Gillian

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APPENDIX B - ICAO Annex 15 Area 1 and Area 2 Surfaces.

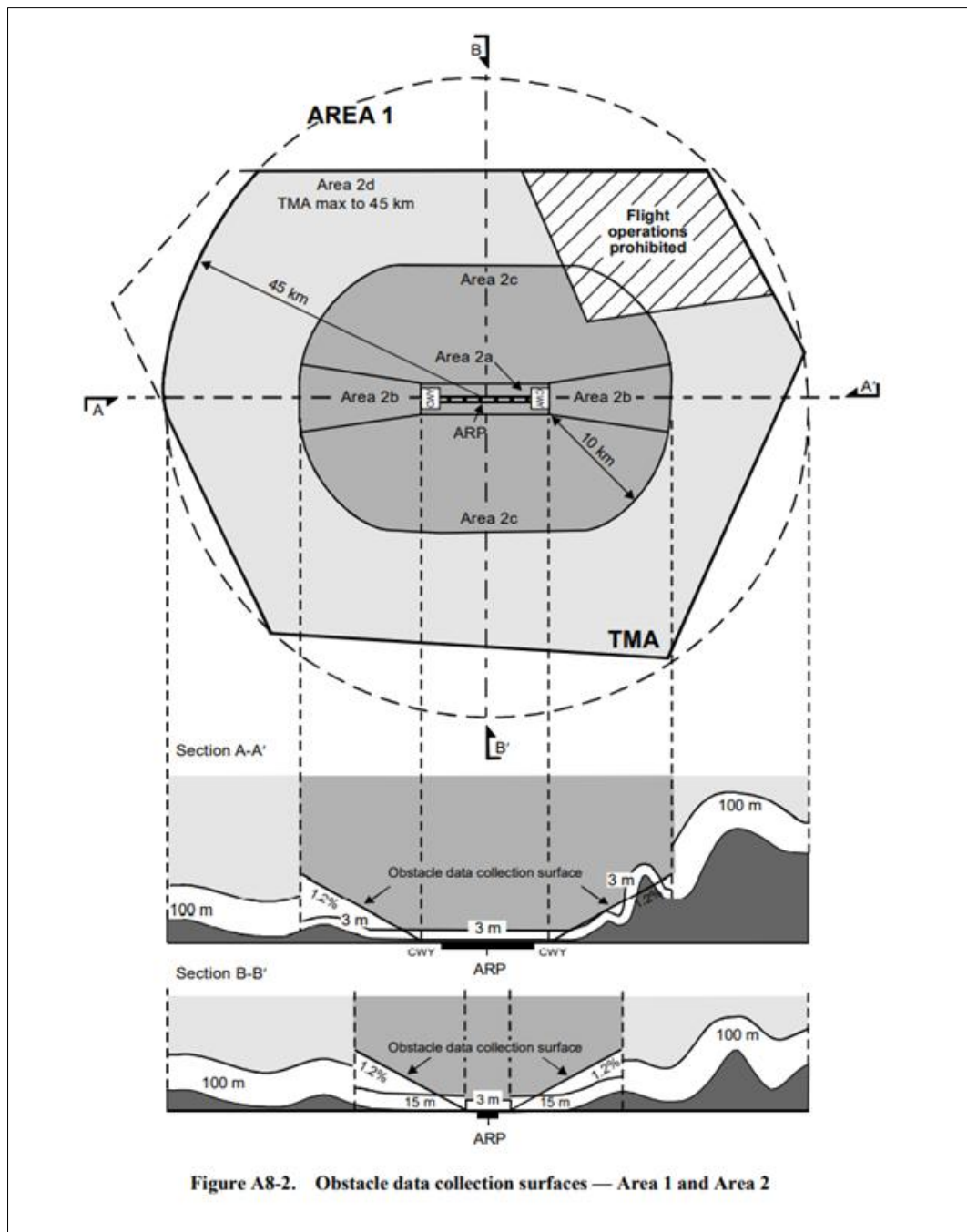


Figure B1. ICAO Annex 15 Area 1 and Area 2 Surfaces.

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APPENDIX C - ICAO Building Restricted Areas

Figure C1 below shows an example BRA shape for directional facilities. Table B1 provides harmonized guidance figures for the directional navigational facilities in accordance with Figure C1.

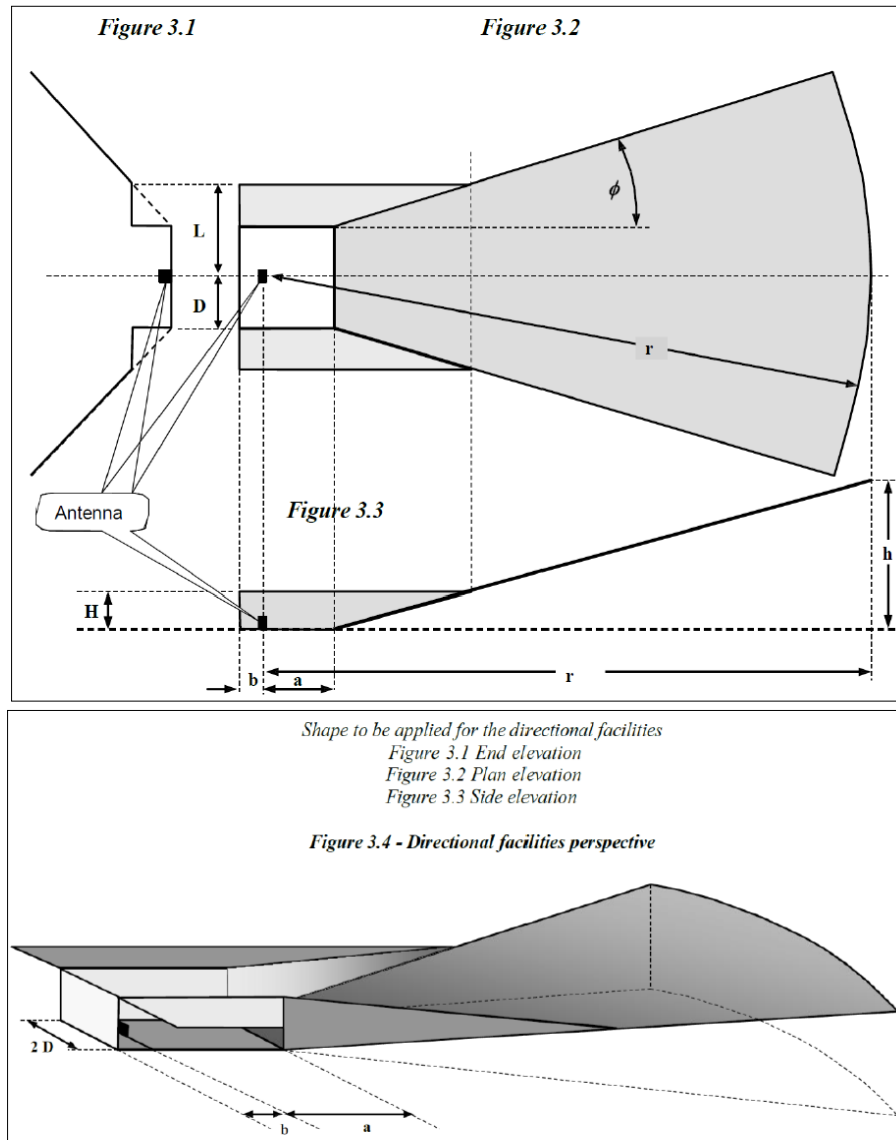


Figure B1 - Example BRA shape for directional facilities (ICAO EUR DOC 015 Figures 3.1-3.4)

Type of navigation facilities	A (m)	b (m)	h(m)	r (m)	D (m)	H (m)	L (m)	ϕ (°)
ILS LLZ (medium aperture single frequency)	Distance to threshold	500	70	a+6000	500	10	2300	30
ILS LLZ (medium aperture dual frequency)	Distance to threshold	500	70	a+6000	500	20	1500	20
ILS GP M-Type (dual frequency)		800	50	6000	250	5	325	10
MLS AZ	Distance to threshold	20	70	a+6000	600	20	1500	40
MLS EL		300	20	6000	200	20	1500	40
DME (directional antennas)	Distance to threshold	20	70	a+6000	600	20	1500	40

Table C1 - Harmonized guidance figures for the directional navigational facilities (ICAO EUR DOC 015 Table 2)

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APPENDIX D – Air Corps Wind Farm / Tall Structures Position Paper, August 2014

 Óglaigh na hÉireann DEFENCE FORCES IRELAND	Ceanncheatru an Aer Chór <i>Air Corps Headquarters</i> 08 August 14
GOC AC  <u>Air Corps Wind Farm/Tall Structures Position Paper</u>	
Sir, 1. The attached is the draft Air Corps Position Paper agreed and developed in concert with the flying units under the auspices of CAS Ops. 2. It is recommended that it be forwarded to the Directorate of Operations for transmission to the Department of Defence. 3. The AC position contained within this paper should be notified to planning authorities including An Bord Pleanála. It should also be forwarded to the Department of the Environment, Heritage and Local Government to inform its policies and guidance in respect of wind farms.	
 Raymond Martin, Lt Col CATSO	
CATSO, Ceanncheatru an Aer Chór, Aerodrom Mhic Easmuinn, BAC 22. CATSO Air Corps Headquarters, Casement Aerodrome, Baldonnell, Dublin 22 Ph +353 (0)1 403 7513 Fax: +353 (0)1 403 7850	

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Ceanncheatru an Aer Chor
Air Corps Headquarters

Air Corps Wind farm/Tall Structures Position Paper.

1. Objective:

This position paper is intended to ensure that

- a. Air Corps operations and training may be accomplished in a safe and economical manner;
- b. Baldonnel remains a viable aerodrome for IFR and VFR traffic;
- c. The ability to train military flying skills is protected;
- d. Vital navigation routes to and from the regions to Baldonnel and the Dublin area are protected to safeguard the ability of the Air Corps to fulfill its role.

2. Statement of position.

- a. The Air Corps is opposed the erection of wind farms or other obstacles which will affect its ability to train and operate in a safe and economic manner.
- b. The Air Corps is opposed to any wind farms or tall structures in the following areas:

(1) Lands underlying military airspace used for flying activity

- (a) The area contained in Danger Area EI-D1.
- (b) The area contained in Danger Area EI-D5.
- (c) The area contained within Danger Area EI-D6.
- (d) The area contained within Danger Area EI-D13.
- (e) The area contained within Danger Area EI-D14.
- (f) The area contained within Restricted Area EI-R15.
- (g) The area contained within Restricted Area EI-R16 within 20NM of Baldonnel.
- (h) The area contained within Military Operating Areas, MOAs 3 and 4 within 20NM of Baldonnel.

(2) Areas wherein military flying occurs at low level as identified in the annexes listed below.

- (a) Annex A: Low flying training areas within MOA 4 in the areas of
 - a. Blessington
 - b. Edenderry/Allenwood/Rathangan
 - c. Kilmeague/Newbridge
- (b) Annex B: low flying training area West (LFTA WEST).

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(3) A distance of 5NM or less from military installations.

- c. The following routes are identified as critical low level routes in support of Air Corps operational requirements and the Air Corps is opposed to the erection of wind farms or tall structures within 3NM of the route centerline which could affect Air Corps' ability to access regional areas.

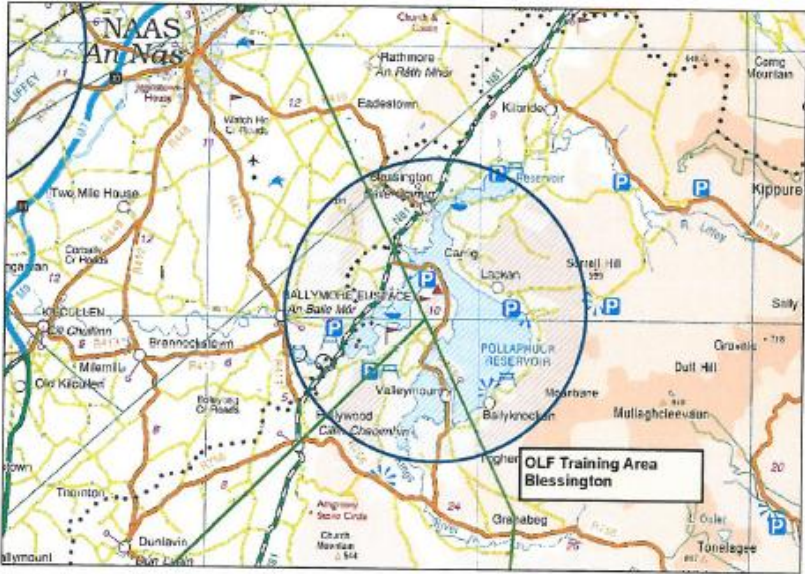
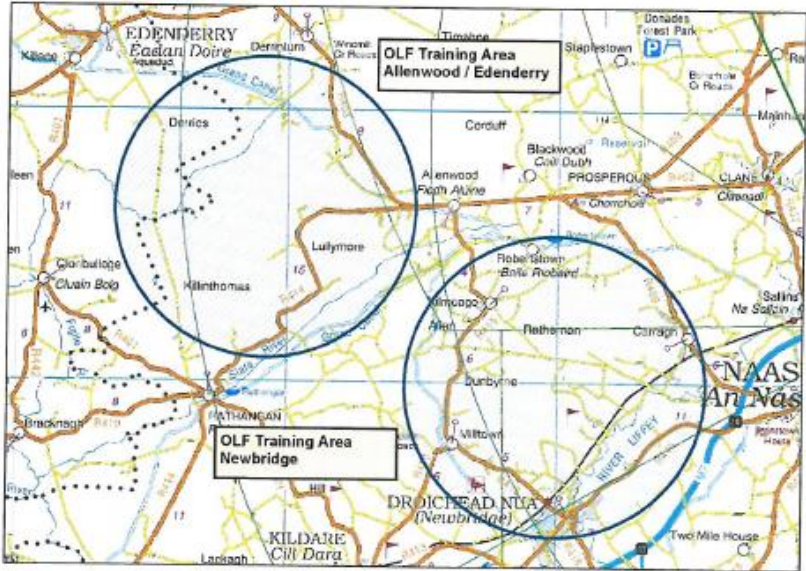
- (a) N/M1
- (b) N/M2
- (c) N/M3
- (d) N/M4
- (e) N/M6
- (f) N/M7
- (g) N/M8
- (h) N/M9
- (i) N/M11
- (j) N25
- (k) N17 between Sligo and Knock
- (l) N15/N13 between Sligo and Letterkenny
- (m) N14 from Lifford to Letterkenny and R245 and R247 from Letterkenny to Fanad Head.

Applications or proposals for structures in these areas of a height greater than 45m above ground level at the site of the object must be referred to Irish Air Corps for assessment of potential impact on flight operations.

- d. In MOA 4 outside of the areas identified in b.(1) (2) and (3), and in MOA 5, applications or proposals for objects of a height greater than 45m above ground level at the site of the object must be referred to the Irish Air Corps for assessment of potential impact on flight operations.
- e. In all locations where wind farms or masts are permitted it should be a condition that they meet the following lighting requirements
- (1) Single turbines or structures, or turbines delineating corners of a wind farm, should be illuminated by high intensity strobe lights (Red).
 - (2) Obstruction lighting elsewhere in a wind farm will be of a pattern that will allow the hazard be identified and avoided by aircraft in flight.
 - (3) Obstruction lights used should be incandescent or of a type visible to Night Vision Equipment. Obstruction lighting fitted to obstacles must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.

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Annex A
Low Flying Areas - MOA 4



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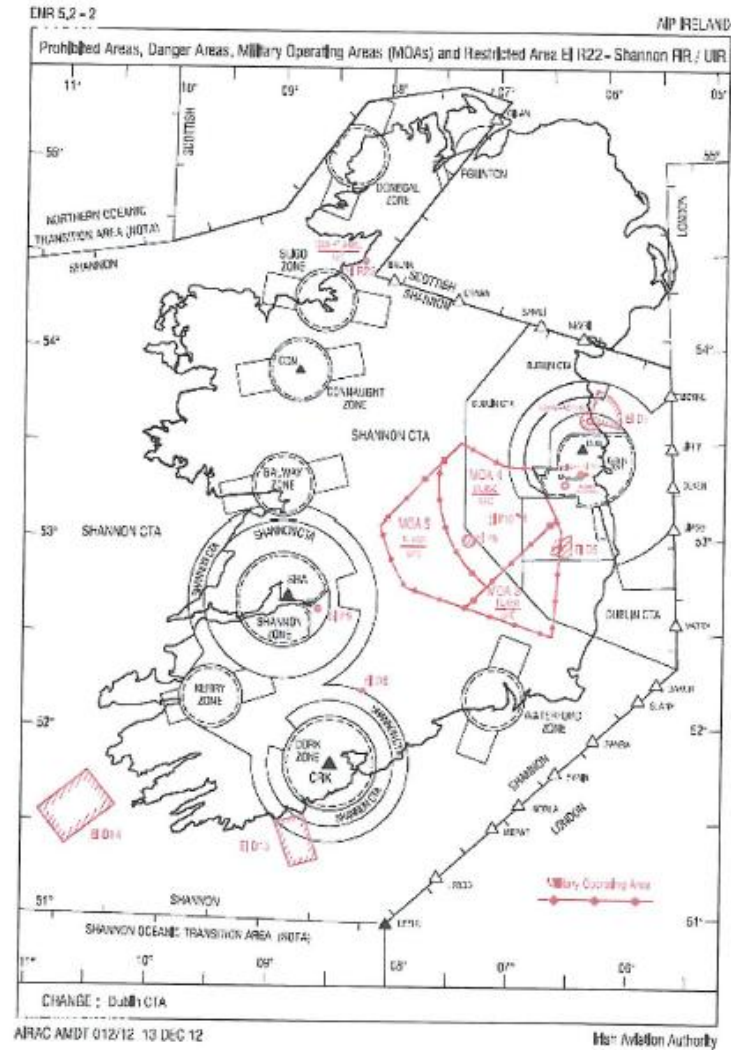
Annex B

Low Flying Area – LFTA WEST

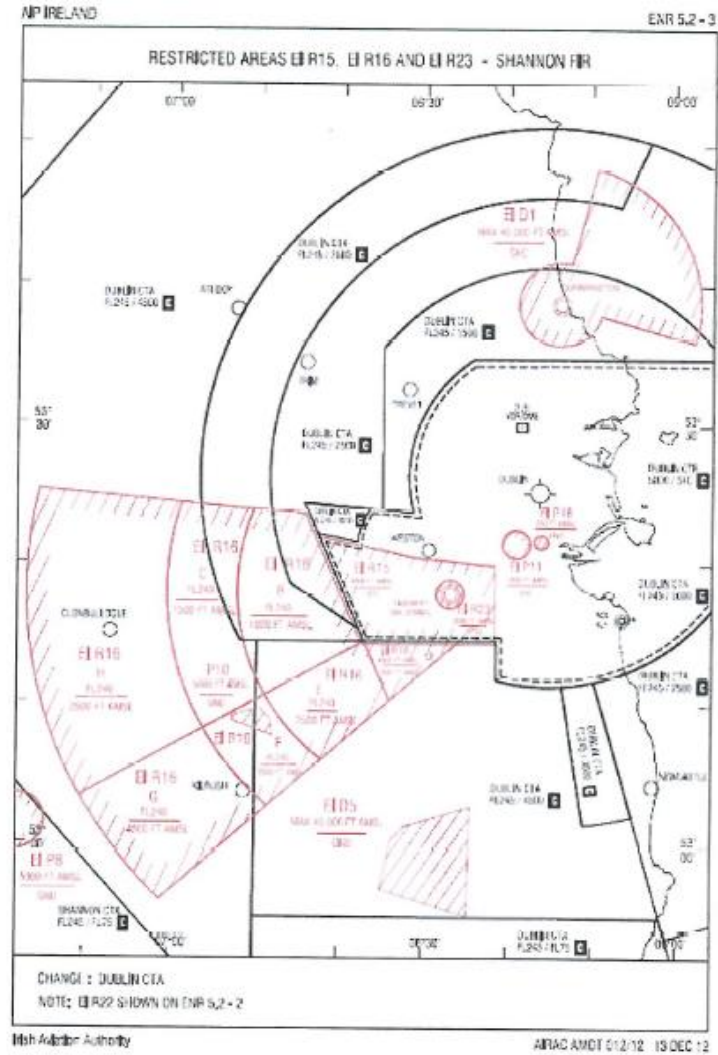
1. Area contained within the following grid L6972; L6945; M0745; M0772
2. Routes are primarily within valley areas.
3. Applications for wind farms/masts should be referred to Air Corps Operations for assessment against low flying routes.

Annex C

Designated Airspace Restricted Areas, Danger Areas and Military Operating Areas



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