17 AVIATION

17.1 Introduction

17.1.1 This chapter assesses the potential for the Proposed Development to affect aviation communications, navigation and surveillance infrastructure in the vicinity of the site, based on consultation with key stakeholders. The following are considered:

- Civil aviation interests, including 'En Route' facilities managed and operated by National Air Traffic Services (En Route) Ltd (NERL), airports, licensed and unlicensed aerodromes, light aircraft landing strips, microlight site, parachute and gliding sites;
- Military facilities including Ministry of Defence (MOD) Airfields and military Air Traffic Control (ATC) facilities, Air Defence Radars, Danger Areas and Ranges and low flying operations; and
- Search and Rescue and other Emergency Helicopter Support Units (EHSUs) including Wales Air Ambulance.

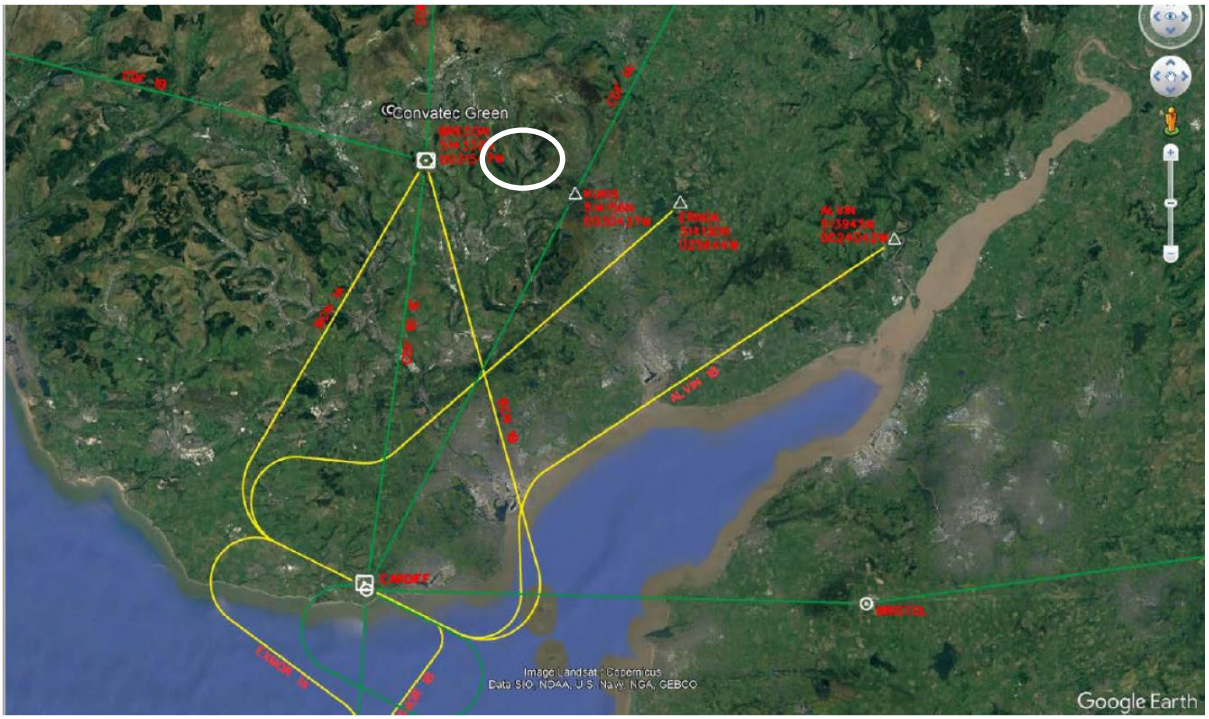

Figure 17.1: Proposed Development location (circled) shown on an airways chart

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17.1.2 The site is located to the west of Rhymney, in Caerphilly, South Wales (Figure 17.1) at the head of the Rhymney River valley on land east of Gelli-Gaer Common and

northeast of Bryn Pyllog Tips. The site is adjacent to the Heads of the Valleys industrial estate, where Convatec UK has a major manufacturing facility, which adjoins the A469 to the east.

17.2 Legislation, Policy and Guidance

17.2.1 The assessment doesn't take account of the consultation, regulatory, safeguarding and operational requirements as laid down in a number of publications and regulations directly, however, consultees are likely to consider the following:

- Civil Aviation Publication (CAP) 764 Civil Aviation Authority (CAA) Policy and Guidance on Wind Turbines Version 6, Feb 2016;
- CAP 168 Licensing of Aerodromes, Version 12 January 2022;
- CAP 670 ATS Safety Requirements Issue 3/Amendment 1 June 2019;
- CAP 774 UK Flight Information Services, Version 4 December 2021;
- CAP 738 Safeguarding of Aerodromes Version 3 October 2020;
- CAP 793 Safe Operating Practices at Unlicensed Aerodromes Ed 1 July 2010;
- CAP 493 Manual of Air Traffic Services Part 1 Ed 10 March 2022;
- CAP 660 Parachuting Version 5 March 2020;
- UK Military Aeronautical Information Publication (MIL AIP);
- UK Aeronautical Information Publications (AIP); and
- CAA 1:250,000 and 1:500,000 Aviation Charts.

17.2.2 The planning policy document 'Future Wales: The National Plan 2040 (2021) Policy 18 – Renewable and Low Carbon Energy Developments of National Significance' is also relevant.

17.3 Assessment Methodology

17.3.1 The layout used to undertake this assessment consists of three turbines with the details shown in Table 17.1.

Table 17.1: Turbine Location and Parameters

Turbine	Easting	Northing	Tip Height
T1	310265	208115	Up to 150m
T2	309990	208323	Up to 150m
T3	309576	208320	Up to 150m

17.3.2 While the final choice of turbine will be subject to a competitive tendering process, the candidate turbine used in the analysis for this EIA is a Enercon E138 turbine, with a tip height of 150m, a rotor diameter of 138m and a hub height of 81m.

Inclusion Criteria

17.3.3 The study area for aviation assessments is multi-layered and incorporates recommended distances around private land strips and unlicensed airfields. The study area also includes physical safeguarding considerations around military and civil airports, civil airport radars, military airfield radars and the long-range National Air Traffic Services and military air defence radar network. The largest extent of the study area is determined by the radars which have the range to provide air surveillance over the Proposed Development and may be capable of detecting the turbines.

17.3.4 Civil Aviation Publication (CAP) 764 states the distances from various types of airfields where consultation should take place. These distances include:

- Airfield with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1,100 metres – 17 km;
- Non radar licensed aerodrome with a runway of less than 1,100 metres – 5 km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Unlicensed aerodromes with runways of more than 800 metres – 4 km;
- Unlicensed aerodromes with runways of less than 800 metres – 3 km;
- Gliding sites – 10 km; and
- Other aviation activity such as parachute sites and microlight sites within 3 km – in such instances developers are referred to appropriate organisations.

17.3.5 CAP 764 goes on to state that these distances are for guidance purposes only. These ranges are intended as a prompt for further discussion between developers and aviation stakeholders. As well as examining the technical impact of wind turbines on Air Traffic Control (ATC) facilities, it is also necessary to consider the physical safeguarding of ATC operations using the criteria laid down in CAP 168 to determine whether a proposed development will breach obstacle clearance criteria.

Types of Installation Assessed

17.3.6 It is necessary to consider the aviation and air defence activities of the Ministry of Defence (MOD). The types of issues that have been assessed include:

- Ministry of Defence Airfields, both radar and non-radar equipped;
- Ministry of Defence Air Defence Radars;
- Ministry of Defence Meteorological Radars;
- Military Aviation Authority Aerodrome Design and Safeguarding; and
- Military Low Flying.

17.3.7 It is also necessary to consider the possible effects of wind turbines upon NERL radar systems – a network of primary and secondary surveillance radars and navigation facilities around the country.

Consultation Methodology

17.3.8 Consultation has been undertaken in accordance with the guidance as described above. The consultation included the Ministry of Defence (Defence Infrastructure Organisation (DIO)), Cardiff Airport, Wales Air Ambulance, Search & Rescue Helicopters (Bristow), Rhigos Aero Club, and the NERL.

17.4 Consultee responses

17.4.1 Aviation consultation responses are detailed in Table 17.2. The comments received from consultees have been listed. The responses to consultee comments and recommendations on next steps have also been detailed.

Table 17.2: Aviation Consultation Responses

Consultee	Date	Comments	Response to issue raised
Planning Inspectorate		Awaiting scoping opinion. Estimated Mid February.	TBC
MOD DIO	29 January 2024	The MOD assessment response confirmed that they may have concerns about the proposal, due to the turbines potentially having an impact on low flying operations. It was also stated that it's probable the MOD will request the turbines to be fitted with MOD accredited visible or infrared aviation safety lighting.	Appropriate aviation lighting should be installed on the Proposed Developments' turbines. A Lighting and Marking Plan (LMP) should also be considered. Further detail on aviation lighting is provided in Chapter 5.
Cardiff Airport	December 2023/ January 2024	Dec 2023: Cardiff airport requested that a TOPA report is prepared to	Mitigation measures are currently being developed via ongoing consultation with Cardiff Airport.

		enable further assessment. Jan 2023: The TOPA report has concluded that there will be an impact on airport operations. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated.	
NERL Technical and Operational Assessment (TOPA) TOPA SG36746		The terrain screening available will not adequately attenuate the signal. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated. The NATS' Airport Operational Assessment has concluded that the there will be an impact on Cardiff Airport operations.	Consultation with Cardiff Airport is recommended to agree on mitigation required.
Wales Air Ambulance	29 January 2024	The Proposed Development is 3nm east of Prince Charles hospital so it has been confirmed the turbines should not pose any issues for our take-off and landing at the site.	No objection
Search and Rescue (Bristow)	2 February 2024	The Chief Pilot for Search and Rescue (Bristow Helicopters) didn't object to the turbine development. However, lighting and the listing of the turbines on maps was suggested as they tend to use the A465 as a poor weather route.	No objection A detailed Lighting and Marking Plan (LMP) will be agreed with all the relevant aviation stakeholders pre-construction. A request for the Proposed Development to be included on aviation charts was also recommended.
Rhigos Aero Club	5 December 2023	No objection, due to amount of wind turbines already within the area.	No objection

17.5 Baseline Conditions

17.5.1 The site is located at the confluence of six different Control Areas (CTA) within the local airspace. These include Cardiff, Bristol, Berry Head, Strumble, Nilton and the Cotswolds CTAs as shown in Figure 17.2.

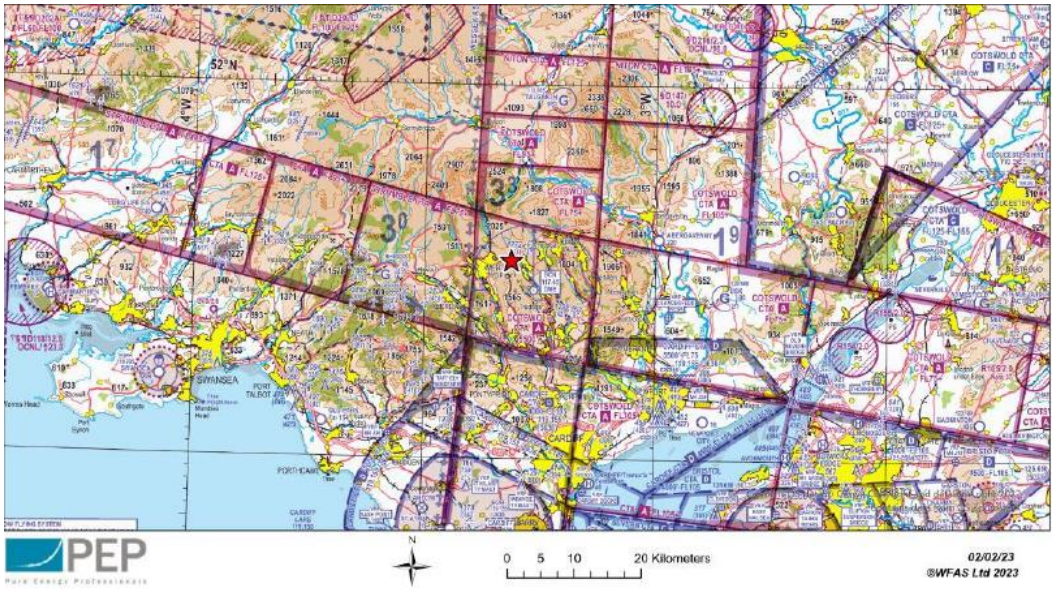

Figure 17.2: South Wales airspace up to 19,500 ft, adapted from a CAA 1:500k aviation chart extract. Taken from IPR (WFAS 2023)

17.5.2 The closest radar equipped licensed aerodrome is at Cardiff International Airport, 41km to the south.

17.5.3 There are no licensed aerodromes that are unequipped with radar, within or near consultation distance of the Proposed Development

17.5.4 There are no other known civil aviation facilities that are within consultation distance or likely to be affected by the Proposed Development.

17.5.5 NATS En Route Ltd (NERL) operates a network of long-range ATC radars throughout the country in addition to other communications, navigation and surveillance systems. Whether or not they would object to any turbine development depends upon whether the turbines show on the radar and what type of airspace is above the site or if the turbines will be likely to infringe upon the technical safeguarded criteria for other systems. In this case, the closest radar is located at Clee Hill, 70km south-west.

17.5.6 The nearest military radars are located at Raf Shawberry, Hartland Point and Manobier.

17.5.7 The closest radar equipped military airfield is MOD Saint Athan, St Athan CF62 4JD, 40km to the south south-west of the site. The Proposed Development is not within a Met Office radar safeguarded area.

17.5.8 In regard to MOD Low Flying areas, a green area is defined as one with 'no military low flying concerns', with would typically not constrain turbine development.

17.5.9 SAR and Air Ambulance EHSUs are not constrained by the normal rules of the air, which allows them to decide upon the most appropriate flight path, for the mission being carried out. Main roads in the area, such as the A465 are used as poor weather routes if required.

17.5.10 The closest Met Office radar systems are located at Crug-y-Gorllwyn and Clee Hill. The two sites are located 50 miles (82 km) and 55 miles (87 km), respectively, from the Proposed Development.

17.6 Assessment of Potential Effects

17.6.1 When assessing the impact on the Cardiff airport radar through the Airport Radar Assessment, NATS TOPA has determined '*that the terrain screening available will not adequately attenuate the signal, and therefore this development is likely to cause false primary plots to be generated. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated*'.

17.6.2 Although the Proposed Development's turbines are located outside the safeguarded Obstacle Limitation Surfaces (OLS) of Cardiff Airport, it is expected that Cardiff Airport will require an assessment to assess whether its Instrument Flight Procedures (IFPs) will be affected. Consultation with Cardiff Airport is ongoing to identify solutions to these issues.

17.6.3 The MOD response stated that a possible 'concern' was based upon the impact of the Proposed Development on low level flying. However, the Proposed Development is an area marked Green on the UK Wind Farm low flying consultation maps. Therefore, there will be no impact on any MoD low flying area operations.

17.6.4 Radar modelling against all possible military and civil air traffic control systems was assessed at the following CMB en-route radars as part of the NATS TOPA report; Burrington, Claxby, Clee Hill, Debden, Pease Pottage.

17.6.5 An en-route navigational aid assessment was also undertaken for the Brecon DVOR/DME infrastructure as detailed in the NATS TOPA report. NATS have confirmed that the Brecon DVOR is expected to be decommissioned at the end of the year. However, the site is likely to retain the DME beacon, which will generally be less affected by turbines. Therefore, we can conclude that no adverse impact is expected for the Rhymney site.

17.6.6 NATS En Route Ltd (NERL) have concluded that no impact is anticipated on NATS' en-route radar, NATS' en-route navigation aids and NATS' en-route radio communications infrastructure.

17.6.7 The Site is located over 80 km from the two closest Met Office radars and is therefore outside the 20 km safeguarding area stipulated by the Met Office.

17.7 Mitigation

17.7.1 A number of measures and management plans will be required to reduce the potential for impacts on radar and aviation receptors once they have been agreed with Cardiff Airport and other stakeholders. There will be a commitment to implementing required measures, which will likely be best secured through appropriate planning conditions. For structures of more than 91.4 m in height, it is mandatory they are charted on aeronautical charts and reported to the Defence Geographic Centre (DGC), which maintains the UK's database of tall structures (Digital Vertical Obstruction File). This must be provided at least ten weeks prior to construction.

17.7.2 Consultation with the Civil Aviation Authority (CAA) and Ministry of Defence (MoD) is required prior to agreement of the Light Management Plan (LMP). The LMP will be a condition of the Application. These measures will be adopted to ensure that the potential for risk of aircraft collision with the Proposed Development is minimised.

17.7.3 Temporary obstacles of more than 91.4 m in height are to be alerted to aircrews by means of the Notice to Airmen (NOTAM) system.

17.7.4 Consultation with the CAA will be required to ensure that temporary obstacles of more than 91.4 m are identified to aircrews by NOTAM. Therefore, a notification of temporary obstacles will be a condition of the Application. NOTAM measures will be adopted to ensure that the potential for risk of aircraft collision during construction is minimised to acceptable levels.

17.7.5 Approval and implementation of a Lighting and Marking Plan (LMP) is required to mitigate the risk of aircraft collision. The LMP will set out specific requirements in

terms of aviation lighting to be installed on the turbines, as required under CAA (2016). CAP 393, Air Navigation: The Order and the Regulations (2016).

17.7.6 It is intended that the LMP will be prepared in consultation with the CAA and MoD and will consider requirements for aviation lighting as specified in Article 223 of the UK ANO, 2016 and changes to ICAO Annex 14 Volume 2, Chapter 6, paragraph 6.2.4, 2016.

17.7.7 It is proposed that the production and approval of a LMP should be secured via a planning condition.

17.7.1 It is advised that the turbines are illuminated using infra-red lights, as part of a LMP, which are invisible to the naked eye. This form of mitigation will conform to the MOD technical specification and would aid all SAR and Air Ambulance EHSUs with navigation.

17.8 Residual Effects

17.8.1 Effects of Proposed Development will be minimised, as industry standard risk control measures would be put in place during the construction and operational phases of the wind farm. Therefore, it is expected that the residual effects would be negligible (not significant).

17.8.2 As part of the consultation with Cardiff Airport, mitigation conditions will be agreed, and these will be resolved prior to construction.

17.9 Summary

17.9.1 The following sensitive receptors which require mitigation have been identified from the baseline conditions study:

- Potential impact on Cardiff Airport operations (IFPs);
- Potential impact on Cardiff Airport ATC Radar; and
- Potential impact on military low flying and civilian SAR (EHSU) operations.

17.9.2 Consultation with Cardiff Airport is ongoing, and it is intended that mitigation measures are secured via planning conditions to be agreed and resolved prior to construction.

APPENDICES

Appendix 1 - Convatec Green Manufacturing Hub Wind Farm - TOPA Issue 2

Appendix 2 - Appendix 3_MOD Response Letter