

Chapter 14: Aviation and Radar

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Technical Appendices

- Technical Appendix 14.1: Aviation Impact Assessment
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14. Aviation and Radar

14.1. Executive Summary

Introduction

- 14.1.1. This chapter describes the potential impacts and effects of the Proposed Varied Development on aviation and radar infrastructure during the construction, operation, and decommissioning phases. The proposed mitigation measures to reduce the impacts of the Proposed Varied Development and good practice measures are also provided.
- 14.1.2. Additional information to support the assessment includes **Technical Appendix 14.1: Aviation Impact Assessment** and **Technical Appendix 14.2: Aviation Lighting Assessment**.

Baseline Conditions

- 14.1.3. The Proposed Varied Development is within Low Flying Area (LFA) 14T, one of the UK's Tactical Training Area (TTA) where significant military low flying activities are undertaken. The TTA corresponds with Restricted Area EGR610A from the ground to 5,000ft. No General Aviation (GA) flights are permitted within Restricted Areas when active. EGR610A is a Notice to Air Missions (NOTAM) activated Restricted Area which is activated only when the military is conducting low flying activities.
- 14.1.4. From ground level to Flight Level (FL) 195 (approximately 19,500ft) is Class G uncontrolled airspace, where aircraft may fly where they like when EFR610A is not active, subject to a set of simple rules. Although there is no legal requirement to do so, many pilots notify Air Traffic Control (ATC) of their presence and intentions and pilots take full responsibility for their own safety.

Identified Effects

- 14.1.5. The impact magnitude upon civil aircraft, helicopter operations, and military low flying is considered to be **major**. The sensitivity of these receptors is considered to be **medium**.
- 14.1.6. The resulting significance of effect is substantial, which is significant in EIA terms.

Conclusion

- 14.1.7. A **Minor** and **Not Significant** effect is predicted on surrounding civil aircraft, helicopter operations, and military low flying aircraft flying under Visual Flight Rules (VFR) due to the implementation of aviation lighting and the turbines being marked on the relevant aeronautical charts.

14.2. Introduction

- 14.2.1. This chapter describes the potential impacts and effects of the Proposed Varied Development on aviation and radar infrastructure during the construction, operation, and decommissioning phases. The proposed mitigation measures to reduce the impacts of the Proposed Varied Development and good practice measures are also provided.
- 14.2.2. Additional information to support the assessment includes **Technical Appendix 14.1: Aviation Impact Assessment**, and **Technical Appendix 14.2: Aviation Lighting Scheme**.
- 14.2.3. This chapter has been prepared by Pager Power Limited.

14.3. Scope of Assessment

- 14.3.1. An EIA Scoping Report for the Proposed Varied Development was submitted to the Energy Consents Unit (ECU) (**Technical Appendix 3.1**). Based on the EIA Scoping Opinion received, potential impacts on aviation and radar scoped into the assessment are listed in **Table 14.1**.

Table 14.1: Potential impacts scoped in

Potential Impact	Justification
Physical obstruction to aircraft flying under VFR	<p>Article 222 of the UK Air Navigation Order 2016 requires medium intensity (2000 candela) steady red aviation warning lights to be mounted as close as possible to the top of all structures at or above 150m above ground level. This lighting would be required to be visible at night.</p> <p>The tip height increase means that the Proposed Varied Development will be required to abide by this requirement, where the Consented Development was not.</p>

Impacts Scoped Out

- 14.3.2. The potential impacts on aviation and radar scoped out of the assessment are listed in **Table 14.2**.

Table 14.1: Potential impacts scoped out

Potential Impact	Justification
Physical obstruction to aircraft flying under IFR	<p>Aircraft flying Instrument Flight Rules (IFR) were assessed at a high-level for the Consented Development by considering the Inverness Airport Surveillance Minimum Altitude Chart (SMAC) and published Instrument Flight Procedures (IFP).</p> <p>The Area Minimum Altitude (AMA) provides the minimum obstacle clearance above all obstacles in the area so that aircraft can</p>

Potential Impact	Justification
	<p>maintain appropriate vertical clearances from obstacles when flying under IFR.</p> <p>The Proposed Varied Development will not become the dominant obstacle in the area and the AMA will be unaffected.</p>
Air Traffic Control radar	Based on radar Line-of-Sight (LoS) using OS Terrain 50 data, the Proposed Varied Development is predicted to be hidden from all civil and military ATC radar.
Air defence radar	Air defence radar installations are typically safeguarded against any wind developments that are within radar LoS. No air defence radar have been identified that would require assessment.
Meteorological radar	Meteorological radar installations are typically safeguarded against wind developments within 20km. There are no meteorological radar in the vicinity of the Proposed Varied Development that would require assessment.
Navigational Aids	Navigational aid installations are typically safeguarded against wind developments within 30km. There are no navigational aids in the vicinity of the Proposed Varied Development that would require assessment.
Obstacle Limitation Surfaces (OLS)	The closest aerodrome to the Proposed Varied Development is Dornoch Airstrip, which is located 36km away. Consultation with HIAL indicated that the Consented Development would not infringe on the Wick and Inverness Airport OLS, which will remain true for the Proposed Varied Development.

14.4. Consultations

14.4.1. A summary of the stakeholder consultation undertaken for the Proposed Varied Development is presented in **Table 14.3**.

Table 14.3: Summary of Stakeholder Consultation

Consultee and date	Summary of Response	Comment / Action Taken
NATS Safeguarding - 16 June 2025	NATS confirmed that the Proposed Varied Development does not conflict with their safeguarding criteria and has no objections.	No further action.

Consultee and date	Summary of Response	Comment / Action Taken
Ministry of Defence (MoD) – 01 July 2025	The MoD requested that, as a minimum, cardinal turbines are fitted with MoD accredited Infra-Red (IR) lighting.	An Aviation Lighting Assessment (Technical Appendix 14.2) has been undertaken which proposes an appropriate aviation lighting scheme. The aviation lighting scheme includes 2000 candela and IR lighting at 7 cardinal turbines. The implementation of this scheme will be agreed again with the MoD prior to construction.
Ministry of Defence (MoD) – 02 September 2025 (Post-scoping)	MoD confirms their requirement for IR lighting at cardinal points of the Proposed Varied Development.	No Further Action.
Highlands and Islands Airport (HIAL) – 30 June 2025	HIAL confirmed that the Proposed Varied Development is outside their safeguarding criteria and has no objections.	No further action.

14.4.2. No consultation with the CAA in association with the Proposed Varied Development has been undertaken in relation to aviation and radar at this stage. The CAA does formally approve appropriate aviation lighting and therefore further consultation with the CAA will take place following application submission and post-consent to satisfy planning conditions.

14.5. Assessment Methodology

14.5.1. The potentially affected installations have been identified based on a database of infrastructure, published sources and inspection of relevant aviation maps. These highlight the aerodromes, radar installations, navigation aids and/or military low flying zones that require consideration.

14.5.2. Technical assessments were carried out using sophisticated computer modelling and a digital terrain database - based on OS Terrain 50 datum.

14.5.3. The significance of potential effects has been evaluated using a systematic approach together with the expert judgement of the specialist consultant. The systematic approach is based upon the identification of the importance / value of receptors and their sensitivity

to the Proposed Varied Development together with the predicted magnitude of the potential impact.

- 14.5.4. The terms used to define receptor sensitivity and magnitude of impact are the same as those used for the Consented Development aviation assessment (**2021 EIAR Volume 4, Technical Appendix 16.1: Aviation Impact Assessment**).

14.6. Consented Development EIAR Baseline

Physical Obstruction for Aircraft Flying Under VFR

Civil aircraft and Helicopter Operations

- 14.6.1. The 2021 EIAR identified a **negligible** impact in relation to the turbines as physical obstructions to civil aircraft and helicopter operations flying under VFR.
- 14.6.2. This impact magnitude was based on the turbines being less than 150 metres above ground level, which means they were not automatically classified as en-route obstructions.

Military Low Flying

- 14.6.3. The 2021 EIAR identified a **negligible** impact in relation to the turbines as physical obstructions to military low flying operations.
- 14.6.4. This impact magnitude was subject to the agreement of an appropriate aviation lighting scheme with the MoD.

14.7. Summary of Effects Predicted & Mitigation Measures suggested for the Consented Development

Physical Obstruction for Aircraft Flying Under VFR

Civil aircraft and Helicopter Operations

- 14.7.1. The 2021 EIAR identified a minor and not significant effect in relation to the turbines as physical obstructions to civil aircraft and helicopter operations flying under VFR.

Military Low Flying

- 14.7.2. The 2021 EIAR identified a minor and not significant effect in relation to the turbines as physical obstructions to military low flying operations, subject to the agreement of an appropriate aviation lighting scheme with the MoD.

- 14.7.3. Aviation lighting consisting of MoD accredited infra-red aviation lighting was recommended for the Consented Development, and a planning condition (27) was imposed on that basis.

14.8. Revised Assessment of Effects for the Proposed Varied Development

Physical Obstruction for Aircraft Flying Under VFR

Civil aircraft and Helicopter Operations

- 14.8.1. Based on the height of the turbines being increased to 150m above ground level or greater, they are considered en-route obstacles that require visible aviation lighting. The cranes used in construction will reach approximately the same height of the turbine nacelles and will therefore also be a physical obstruction. The impact magnitude is therefore considered to be **major**.
- 14.8.2. The sensitivity of the receptor remains **medium** due to the Proposed Varied Development being in uncontrolled airspace where civil aircraft and helicopters can fly under VFR.
- 14.8.3. The resulting significance of effect is **major**, which is **significant** in EIA terms.

Military Low Flying

- 14.8.4. Military low flying can take place down to 100 feet (30m) above ground, meaning that the turbines would be a physical obstruction to aircraft flying in the area. The cranes used in construction will reach approximately the same height of the turbine nacelles and will therefore also be a physical obstruction. The impact magnitude is therefore considered to be **major**.
- 14.8.5. The sensitivity of the receptor remains **high** due to the Proposed Varied Development being located in the Tactical Training Area (TTA).
- 14.8.6. The resulting significance of effect is **substantial**, which is **significant** in EIA terms.

14.9. Revised Mitigation Measures for the Proposed Varied Development

- 14.9.1. The Aviation Lighting Assessment (**Technical Appendix 15.2**) sets out the proposed visible and Infra-Red (IR) aviation lighting scheme which aims to minimise potential landscaping and visual impacts (covered further in Chapter 5: Landscape and Visual) in accordance with Draft CAP 764 (CAA, 2024).

- 14.9.2. The Applicant expects that a planning condition will be imposed similar to the one imposed for the Consented Development and will seek formal approval from the CAA and MoD to discharge the condition prior to construction of the Proposed Varied Development. Aviation lighting to be implemented during the construction phase, including any temporary lighting requirements, will also be agreed with the CAA and MoD. The turbine locations, heights and altitudes will be provided to stakeholders so that they can be marked on the relevant aeronautical charts.
- 14.9.3. The CAA will be notified of the Proposed Varied Development and any proposed cranes. All cranes and obstacle notifications to the CAA will be made to the Airspace Coordination and Obstacle Management Service (ACOMS) service. Cranes used in construction will be fitted with visible medium intensity and IR aviation lighting in accordance with CAP 1096 (CAA, 2021).

14.10. Comparison of Effects of the Proposed Varied Development with the Effects of the Consented Development

- 14.10.1. Following the implementation of the revised mitigation measures, a **minor** and **not significant** effect is predicted upon civil aircraft and military aircraft flying under VFR, which remains the same as the effects of the Consented Development.

14.11. Conclusion

- 14.11.1. A **minor** and **not significant** effect is predicted on surrounding civil aircraft, helicopter operations, and military low flying aircraft flying under VFR due to the implementation of aviation lighting and the turbines being marked on the relevant aeronautical charts.

14.12. References

Civil Aviation Authority (CAA), 2021. CAP 1096: Guidance to crane users on the crane notification process and obstacle lighting and marking [Online]. Available at: <https://www.caa.co.uk/publication/download/14615>. [Accessed: 2nd October 2025].

CAA, 2024. Draft CAP 764: CAA Policy and Guidelines on Wind Turbines [Online]. Available at: https://consultations.caa.co.uk/policy-development/proposed-revision-to-cap-764-caa-policy-and-guidel/supporting_documents/Draft%20CAP764%20Ed7%20Red%20Underline.pdf [Accessed: 2nd October 2025].