

13 Aviation and Radar

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13 Aviation and Radar

13.1 Executive Summary

- 13.1.1 The following chapter outlines the aviation and radar impact assessment undertaken to identify the potential issues associated with aviation and radar as a result of the Proposed Development during the construction, operation and decommissioning phases.
- 13.1.2 Relevant legislation, policy and guidelines are outlined subsequent to the description of consultation with key stakeholders identified as potential receptors to aviation and radar effects from the Proposed Development. National Air Traffic Services Plc (NATS), Glasgow Airport, Glasgow Prestwick Airport and the Ministry of Defence (MoD) were identified as receptors and consultation was undertaken with these stakeholders to establish whether any effects are anticipated and, if so, effective mitigation measures to be implemented.
- 13.1.3 No effects on aviation and radar have been identified from the construction, operation or decommissioning of the Proposed Development. Although no effects have been identified, should an effect arise it will be mitigated through consultation with the aforementioned consultees. Otherwise, no mitigation measures are deemed necessary.
- 13.1.4 As the Proposed Development will not impact on any aviation or radar receptors, the Proposed Development will not have any cumulative effect on aviation and radar with other developments. It should be noted that stakeholders consider cumulative impacts in their responses.

13.2 Introduction

- 13.2.1 This chapter considers the potential effects of the Proposed Development on existing and planned military and civil aviation activities, including those resulting from impacts to radar. Other potential effects result from the physical presence of the turbines as obstacles and effects on navigational and air-ground-air communication stations.
- 13.2.2 Following a summary of relevant policy and legislation, this chapter describes the consultations conducted, the assessment methodology that has been adopted, the overall baseline conditions and associated mitigation requirements. The chapter concludes with a description of residual effects and a summary.
- 13.2.3 Radio waves are used in a variety of surveillance and communication systems within aviation and any large structure has the potential to interfere with their broadcast and reception. The potential of a structure to affect the propagation of radio waves is principally dependent upon the size, shape and materials of construction. Wind turbines are very slender, and the rotor is substantially constructed from non-conducting materials (Glass Reinforced Plastic), of which both factors reduce their potential for causing interference. However, the tower is usually steel, and the rotor blades contain some conductive materials for lightning conduction, and in some cases structural carbon fibre. As the blades of a turbine rotate, this can cause them to show up on radar, which are specifically designed to detect movement.
- 13.2.4 The potential effects are highly dependent on the location of the wind farm and on the positions of the individual turbines. In some cases, there are no significant consequences and no mitigation is required, whilst in other cases the turbine specification or layout must be designed to accommodate local infrastructure. Mitigation is often available and appropriate to manage impacts. In the extreme, sites can be considered inappropriate for wind energy development where no mitigation is considered fully effective.

13.3 Legislation, Policy and Guidelines

- 13.3.1 The relevant sections of key legislation, policy and guidance documents are described below, which together place a responsibility on the planning authorities and the developer to assess potential impacts on aviation.

Legislation

- 13.3.2 There is a statutory requirement for the lighting of onshore wind turbines over 150 m tall, specified in the Civil Aviation Authority (CAA) CAP 393, The Air Navigation Order and Regulations. The turbines of the Proposed Development are under 150 m tall and hence this statutory requirement does not apply.

Policy

- 13.3.3 Policies include those relevant aspects of Scottish Planning Policy (SPP), Planning Advice Notes and other relevant guidance. Of relevance to the aviation and radar impact assessment presented within this chapter, regard has been given to the following policies.

Scottish Planning Policy (SPP), 2014

- 13.3.4 The SPP states under paragraph 169 on Development Management, that consideration should be given to the, *“impacts on aviation and defence interests and seismological recording”*.

North Ayrshire Council Local Development Plan 2 (LDP2), 2019

- 13.3.5 The LDP2 states under Policy 29 that support will be given for energy infrastructure, including wind, where they will have no unacceptable adverse environmental impacts taking into consideration aviation and defence interest.

Planning Circular 2/03 (revised March 2016): Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas

- 13.3.6 This circular summarises the Scottish Ministers’ understanding of the general effect of the relevant primary or secondary legislation.

- 13.3.7 It contains 4 Annexes. Annexes 1 and 2 describe the formal process by which planning authorities should consider safeguarding, including in relation to wind energy developments. Annex 3 lists officially safeguarded civil aerodromes and Annex 4 lists planning authority areas containing civil en-route technical sites for which separate official safeguarding maps have been issued (as at 27 January 2003).

- 13.3.8 The circular refers planning authorities, statutory consultees, developers and others to CAA CAP 764 (CAA Policy and Guidance on Wind Turbines), which is discussed further under Guidance below, and Met Office guidelines.

- 13.3.9 The circular also refers to the interim guidelines, Wind Energy and Aviation Interests – Interim Guidelines, published by the Department of Trade and Industry in 2002. Whilst still of some relevance, the advice here has largely been superseded.

Guidance

- 13.3.10 CAA guidance, within CAP 764 (CAA Policy and Guidance on Wind Turbines), sets out recommended consultation and assessment criteria for the impacts of wind turbines on all aspects of civil aviation.

- 13.3.11 The CAA involvement in the Wind Farm Pre-Planning Consultation Process ceased on 25 December 2010. CAP 764 now states that *“developers are required to undertake their own pre- planning assessment of potential civil aviation related issues.”*

- 13.3.12 Within CAP 764 the CAA provides a chapter describing the “wind turbine development planning process”, within which the main civil aviation stakeholders and their interests are listed and described in brief. Table 1 within the guidance document provides an overview of considerations and the following paragraphs detail what developers will need to consider, conducting associated consultations as appropriate.

- 13.3.13 The CAA notes in section 5.25 of CAP 764 that *“it is incumbent upon the developer to liaise with the appropriate aviation stakeholder to discuss – and hopefully resolve or mitigate – aviation related concerns without requiring further CAA input. However, if these discussions break down or an impasse is reached, the CAA can be asked to provide objective comment”*.

13.3.14 Section 5.26 of CAP 764 states that *“the CAA will not provide comment on MoD objections or arguments unless such comments have been requested by the MoD.”*

13.4 Consultation

13.4.1 The aviation stakeholders consulted as part of the aviation and radar impact assessment were NATS, Glasgow Airport, Glasgow Prestwick Airport and the MoD. Table 13.1 provides a summary of all consultation responses received.

Table 13.1 – Consultation Responses

Consultee	Response	Actions
NATS	No objection.	No action required.
Glasgow Airport	No objection.	No action required.
Glasgow Prestwick Airport	No response received.	
MoD	May object to the development and the Applicant should consider the MOD low flying maps. It is probable that the MOD will request that the turbines are fitted with MOD accredited visible or infrared aviation safety lighting.	The Applicant has reviewed the low flying maps and included aviation safety lighting within the mitigation requirements.

13.5 Assessment Methodology

13.5.1 The role of the Applicant is to independently assess the potential effects and where significant effects may occur, to enter a dialogue with the affected stakeholders prior to submission as far as is possible. Whilst the aim of this pre-submission dialogue is to enable the approval of all stakeholders, typically solutions are identified but do not reach full maturity in terms of the assessment by the stakeholders and the contracting of mitigation (where required) until formal consent applications have been submitted. The stakeholders consider dialogue a higher priority and more meaningful once design iterations are completed and a live application exists.

13.5.2 Wind turbines can have an impact on flying simply by virtue of their presence. In this respect, they are no different to any other tall obstacles such as pylons or television masts, with recognised criteria for safeguarding the airspace around airfields. Away from airfields, such obstacles are a normal part of the aviation scenery and measures are in place to enable aircraft to safely navigate around them.

13.5.3 The assessment process involves considering all military and civil aerodromes in the wider area out from the site, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.

13.5.4 This study considered the visibility of the Proposed Development to primary surveillance radars, secondary surveillance radars, weather radars, precision approach radars, en-route radars and air defence radars. These are used by aerodromes, NATS and the MoD. A network of 12 radars within the UK are also used by the Met Office to monitor the weather.

- 13.5.5 The scoping process identified NATS, Glasgow Airport, Glasgow Prestwick Airport and the MoD as relevant stakeholders.

13.6 Baseline Conditions

- 13.6.1 The site lies 23 km to the west of Glasgow Airport and 40 km north of Glasgow Prestwick Airport. No other aerodromes or private air strips were found to be sufficiently close to require consideration. The Proposed Development is 69.5 km from the Eskdalemuir Observatory boundary and therefore effects to Eskdalemuir Observatory from the Proposed Development have been scoped out due to this large intervening distance.
- 13.6.2 No military airfields or air defence radars were identified as being close enough to the Proposed Development for effects on radar to be significant. The site is located within a low fly zone (Low Flying Area 16). However, as the site is also just inside the western boundary of the Glasgow Airport Control Zone (CTR), military activity within the low fly zone does not occur in this area. Furthermore, MoD Aviation Safeguarding mapping shows that the eastern extent of the site area lies within a green low flying zone (“area with no military low flying concerns”) whereas the western extent of the site area lies within a blue low flying zone (“low priority military low flying areas less likely to raise concerns”).
- 13.6.3 No affected Met Office radars are identified within 20 km of the Proposed Development.

13.7 Receptors Brought Forward for Assessment

- 13.7.1 The MOD, Glasgow Airport, Glasgow Prestwick Airport and NATS have been brought forward for assessment.

13.8 Standard Mitigation

- 13.8.1 It is anticipated that the MoD may require infra-red lighting, which is invisible to the naked eye, and possibly a small element of very low intensity red lighting, also of minimal visual impact, to be fitted to all the turbines. If requested this will be fitted.
- 13.8.2 It is unlikely that any further mitigation will be required.

13.9 Potential Effects

Glasgow Airport

- 13.9.1 Glasgow Airport is 23 km to the east of the Proposed Development and the site is underneath the CTR. Due to the distance between the airport and the site, it is not necessary to consider physical safeguarding. However, the site is within the 40 km consultation zone that the airport maintains in relation to wind farm developments.
- 13.9.2 Glasgow Airport has confirmed through consultation that they have no objection to the Proposed Development.

Glasgow Prestwick Airport

- 13.9.3 Glasgow Prestwick Airport lies 40 km to the south of the Proposed Development. The distance between the site and the airport significantly reduces the risk of any possible effects from the Proposed Development on aviation and radar at Glasgow Prestwick Airport substantially. Although no response to consultation with Glasgow Prestwick Airport has been provided, it is considered highly unlikely that the Proposed Development will impact the airport.

En Route Airspace and NATS En Route Radars

- 13.9.4 NATS operates a network of long-range Air Traffic Control (ATC) radars throughout the country. Whether or not the Proposed Development would affect these ATC radars depends upon whether the turbines are expected to show on the radar and what type of airspace is above the site.

- 13.9.5 NATS has confirmed through consultation that they have no objection to the Proposed Development.

Ministry of Defence

- 13.9.6 The MOD has been consulted by the Applicant and stated that they may object to the Proposed Development due to low-flying. However, as described in paragraph 13.6 the site is within the western boundary of the Glasgow Airport Control Zone (CTR), and therefore military activity within the low fly zone does not occur in this area. Furthermore, MoD Aviation Safeguarding mapping shows that the eastern extent of the site area lies within a green low flying zone (“area with no military low flying concerns”) whereas the western extent of the site area lies within a blue low flying zone (“low priority military low flying areas less likely to raise concerns”).
- 13.9.7 Therefore an objection from the MOD and impacts from the Proposed Development on low flying are considered very unlikely.

13.10 Additional Mitigation

- 13.10.1 No additional mitigation or enhancement is required.

13.11 Residual Effects

- 13.11.1 There will be no residual effects during the construction, operation or decommissioning phases of the Proposed Development with respect to aviation and radar.

13.12 Cumulative Assessment

- 13.12.1 It is considered that as the Proposed Development will have no significant residual effects on aviation and radar interests, there will likewise be no cumulative effects. It should be noted that stakeholders consider cumulative impacts in their responses.

13.13 Summary

- 13.13.1 This chapter has considered the potential effects of the Proposed Development on existing and planned aviation and radar.
- 13.13.2 No objections were received through consultation with NATS and Glasgow Airport. MOD stated that they may object, but given the location of the Proposed Development within the Glasgow Airport Control Zone, impacts on low flying are considered unlikely. At the time of writing, a response is still awaited from Glasgow Prestwick Airport, however as the Proposed Development is located 40 km from Glasgow Prestwick Airport the intervening topography is anticipated to prevent impacts on the operations of the airport.
- 13.13.3 It is anticipated that the MoD may require infra-red lighting, which is invisible to the naked eye, and possibly a small element of very low intensity red lighting, also of minimal visual impact, to be fitted to all the turbines. If requested this will be fitted.

Table 13.1 – Summary of Effects

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction/Operation/Decommissioning					
Effects on aviation and radar	No effect	N/A	None required	No effect	N/A

Table 13.2 – Summary of Cumulative Effects

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
Effects on aviation and radar	No effect	None identified	No effect	N/A

13.14 References

Civil Aviation Authority (2016). *CAP 764: Policy and Guidelines on Wind Turbines*. Available at: <https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=5609>

Civil Aviation Authority (2019). *CAP 393: The Air Navigation Order 2016 and Regulations*. Available at: <https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=7523>

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