Information Notice

Civil Aviation Authority

Information Notice

Number: IN–2015/038

Issued: 8 May 2015

Wind Turbine Wake Encounter Study

This Information Notice contains information that is for guidance and/or awareness.

Recipients are asked to ensure that this Information Notice is copied to all members of their staff who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	All Aerodrome Licence Holders/All Aerodrome Operators
Air Traffic:	All ATC/All FIS/All A/G/All ANSPs/All ATS
Airspace:	All NATMAC Representatives
Airworthiness:	Not primarily affected
Flight Operations:	All Aeroplane and Helicopter AOC Holders/All General Aviation Pilots/ All Unmanned Aircraft Operators
Licensed/Unlicensed Personnel:	Helicopter Pilot Licence Holders/Private Pilot Licence Holders

1 Introduction

1.1 Wind turbines are being widely deployed within the United Kingdom and are therefore becoming more common in places closer to aerodromes, other aviation related activity sites, and aircraft undertaking their operational duties.

1.2 In 2014 these factors, coupled with the likelihood of widespread deployment of larger wind turbines, prompted the CAA, in association with University of Liverpool, to commission a research project (the Wind Turbine Wake Encounter Study) that would clearly outline the nature of the wake created by wind turbines and identify its effect on aircraft operations (in particular General Aviation and all helicopters) when encountered.

2 Scope

2.1 It is intended that the output of the Wind Turbine Wake Encounter Study will provide Local Planning Authorities, wind industry and aviation industry experts with high quality research data to assist them with the safe deployment of wind turbines in the vicinity of aviation related sites.

2.2 The output of the study is also intended primarily to assist General Aviation and helicopter pilots to remain clear of wind turbine wake turbulence when operating in the wider aviation environment.

3 Wind Turbine Wake Encounter Study

3.1 The completed University of Liverpool Wind Turbine Wake Encounter Study (Wang, Y., White, M., and Barakos, G., "Wind Turbine Wake Encounter Study," University of Liverpool, March 2015) can be found under "Publications" at **http://www.liv.ac.uk/flight-science/cfd/wake-encounter-aircraft/.**

4 Wind Turbine Wake Avoidance Guidance

4.1 As a result of the output of the research project the wind turbine wake avoidance guidance outlined in CAP 764 was reviewed. The result of this review is outlined in paragraphs 4.1.1, 4.1.2 and 4.1.3 below.

4.1.1 The recommended horizontal distance for an aircraft wishing to remain clear of the turbulence associated with the wake of a wind turbine or turbines with a Rotor Diameter (RD) of 30 meters (m) or less is 5 x RD downwind of the wind turbine.

4.1.2 As there is no Mandatory Occurrence Report or other safety data and safety concerns associated with the current recommended wind turbine wake avoidance guidance of 16 RD outlined in CAP 764, this will remain extant pending completion of further research, for all wind turbines with a RD of greater than 30 m.

4.1.3 The recommended vertical distance for an aircraft being flown above a wind turbine or turbines so that it remains clear of the downwind wake is 1 x the Radius of the RD or ½ RD above the highest point of the wind turbine or turbines. This is the case for all sizes of wind turbine.

4.2 Pilots should note, however, that they are still obliged to comply with the minimum height requirements contained within Regulation (EU) No. 923/2012 (Standardised European Rules of the Air), Rules of the Air Regulations 2015 and any Permissions and Exemptions issued under either.

4.3 All of the updated wind turbine wake avoidance guidance material will be included in the next edition of CAP 764 which is due for publication in August 2015.

5 Future Steps

5.1 The CAA and University of Liverpool are now considering undertaking a further research project to produce data that will allow for the provision of enhanced guidance associated with the turbulence created by wind turbines with RD sizes greater than 30 m.

6 Queries

6.1 Any queries or requests for further guidance as a result of this communication should be addressed to **Stephen.Wheeler@caa.co.uk**.

7 Cancellation

7.1 This Information Notice will remain in force until 30 September 2015.