



Mr Nicholas Dowie  
Planning Policy & Environment Section  
Airports Branch  
Department of Infrastructure, Transport, Regional Development and Local  
Government  
GPO Box 594  
CANBERRA ACT 2601

Dear Mr Dowie

**RE: Department of Infrastructure, Transport, Regional Development and  
Local Government (DITRDLG) Safeguards for airports and the  
communities around them. Discussion Paper.**

Please find attached a submission regarding the above discussion paper.

If you wish to discuss this matter further, please do not hesitate to contact the  
undersigned or Mark Endersby on (08) 8217 2634 or  
[mark.endersby@originenergy.com.au](mailto:mark.endersby@originenergy.com.au)

Yours sincerely

A handwritten signature in black ink, appearing to read "Kyle Russell".

Kyle Russell

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Att. Submission / 4 pages.



**Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG) Safeguards for airports and the communities around them. Discussion Paper**

**The submission**

This submission has been compiled by Origin Energy in response to the Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG) discussion paper titled *Safeguards for airports and the communities around them* (July, 2009).

This submission describes briefly some considerations around the following questions in the DITRDLG discussion paper:

Question 13. *Should developers of wind farms be required to provide CASA with a report on the potential impacts on aviation and aviation infrastructure of the turbines?*

This submission focuses primarily on hazard lighting requirements of wind farm developments that are located outside the vicinity of an aerodrome (i.e. outside the Obstacle Limitation Surface, OLS's, and generally > 30km from registered aerodromes).

**Background to Origin Energy and wind farm developments**

Origin Energy (Origin) is a leading Australasian integrated energy company, participating in most segments of the energy supply chain including natural gas and oil exploration and production, electricity generation and energy retailing.

Origin has been developing a substantial portfolio in renewable generation, particularly in wind power generation. In May 2009, Origin announced the acquisition of Wind Power Pty Ltd, including its portfolio of high quality wind farm development sites in Victoria. Together with existing sites and options, this increases Origin's access to a wind development portfolio by 1460 MW to more than 2000 MW. Further, Origin's power purchase agreements with many existing wind farm developments has enabled those projects to proceed.

Origin's wind generation developments demonstrates the company's support of the Federal Government's policy response to climate change by assisting in meeting our obligations under the expanded National Renewable Energy Target to ensure 20% of Australia's electricity is from renewable sources by 2020.

**Windfarm Lighting & Planning - a brief overview**

Where CASA has considered that the windfarm is a hazardous object to aviation, it has recommended that the turbines be designed to provide the appropriate lighting during hours of darkness and at times of low visibility in accord to the standards provided in the Manual of Standards (MOS) Part 139 - Aerodromes and Advisory Circular 139-18(0) *Obstacle Marking and Lighting of Wind Farms* (AC139-18 (0))

The requirement to light windfarms is often a contentious issue for the community. Key concerns often relate to the potential impacts to visual amenity, as such developments generally occur in rural environs on elevated parts of the landscape.

Panel members for windfarm developments in Victoria, usually express concern over the effect hazard lighting has on the visual amenity and fauna. Panels often

mention that the 'darkness' of the night sky in rural areas is an intrinsic value even if this is not explicitly recognised in the planning system. For example, in the panel hearing associated with the Victorian Oakland Hill Windfarm, 3km south of Glenthompson, the objectors made it abundantly clear that they did not want an addition to their night panorama, and that the darkness of their night sky was highly valued (Moles *et al.*, 2008).

As windfarms are required to be assessed against several state and commonwealth environmental and planning legislative requirements, the eventual location of wind turbines often needs to consider numerous factors. These include *inter alia* specific planning requirements, the landscape, heritage ecology and community values. It is therefore considered, that while aviation safety is a key matter, wind farm lighting requirements need also to consider site specific risks together with other planning requirements (see below).

#### **Determining whether lighting is required outside the OLS: post AC139-18(0)**

Until recently, AC139-18 (0) was the guideline used by windfarm developers to assist in the determination of whether lighting was required. This advisory circular was withdrawn by CASA in September 2008 pending a safety study into the risks posed to aviation by wind farms.

Since the repeal of AC139-18(0), CASA appear not to be mandating the requirement of lighting of windfarms outside the vicinity of aerodromes, rather they indicate that the owner of the obstacle has a duty of care to minimise the hazard to aircraft. The provision of obstacle marking is considered (by CASA) as a way to fulfil that duty of care (Saunders *et al.*, 2006; Moles *et al.*, 2008a).

Origin are currently undertaking independent safety cases by qualified aeronautical consultants to determine what risks a specific wind farm (*outside the vicinity of an aerodrome*) may present to aviation, and therefore what types of specific mitigation measures may be appropriate (eg. movement of individual towers, hazard lighting, installation of an obstacle collision avoidance system, promulgation of a Danger Area). These assessments generally follow AC71-1(0) *Guidelines for Airspace Risk Management and Associated Aeronautical Study Methodology* as a guide to risk management processes.

Factors that are considered in the safety case assessments in relation to tower locations may include, but are not necessarily limited to:

- whether the windfarm is outside OLS and beyond 30km from the nearest registered aerodrome,
- prescribed airspace (PANS-OPS),
- air routes,
- lower safe altitude heights (LSALT) for VFR and IFR aircraft,
- navigation aids,
- the location of nearest non-registered landing strips,
- considerations of local aerodrome operators,
- comparison of the wind turbine heights to the height of nearby hills, and
- the likely frequency and type of aircraft flying in the vicinity of the windfarm, and therefore potential to interact with the windfarm.

These assessments are expected to provide an objective, risk based process to determine whether individual windfarms pose a hazard to aircraft outside the vicinity of an aerodrome. It is proposed that these assessments will be presented to CASA and included as part of planning applications. The assessments may also be provided to insurance providers if required.

### When to notify

Origin suggests the following CASA notification thresholds in relation to windfarm developments *outside the vicinity of an aerodrome*:-

#### Proponent to notify CASA - trigger 1

As per the current *AC139-08 Reporting of Tall Structures* process, where a structure which will be *45m or more* above ground level *outside the vicinity of an aerodrome*, the proponent should notify the Royal Australian Air Force (RAAF) Aeronautical Information Service (AIS) so that it can be placed on a national database of tall structures.

#### Proponent to notify CASA - trigger 2

Where a wind tower (or obstacle) is to be *less than or equal to 150m AGL outside the vicinity of an aerodrome*, the proponent would be required to undertake a safety case (as detailed above) to determine if the wind farm is considered a hazardous object. This would be similar to the existing process for structures *> 110m AGL in the vicinity of aerodromes* as per CASR 1998 Part 139.365 and 370.

Where the safety case determines the windfarm does not present a hazardous object, lighting would not be required.

*It is noted that CASA would need to provide additional guidance to the windfarm industry on what factors would cause a windfarm to be a hazardous object, so that not only is the process transparent and repeatable, but developers have an opportunity to consider these factors in the placement of towers. In some circumstances, this may enable the towers to be placed or relocated to positions which result in entire windfarm not being designated a hazardous object.*

The safety cases would then be considered by CASA and included in the planning submission for the project.

The tower height of 150m (rather than 110m) aligns to the height presented in the DITRDLG discussion paper which indicates that *"...turbines more than 152m above ground pose a hazard..... as normal aircraft operations are permitted down to that height."* and coincides with UK's Civil Aviation Authority's (CAA) position, where *"..structures less than 150m high, which are outside the immediate vicinity of an aerodrome, are not routinely lit.."* (Civil Aviation Authority, 2009).

#### Proponent to notify CASA - trigger 3

Where a wind tower is to be *greater than 150m AGL outside the vicinity of an aerodrome*, the proponent would be required to submit a safety case to CASA to determine if the wind farm is considered a hazardous object.

In this scenario however, given the wind turbine(s) would penetrate the Lowest Safe Altitudes of VFR traffic, hazard lighting would be considered mandatory. Lighting would be in accordance with AC139-18(0) and MOS Part 139 subsection 9.4.7.

## **References**

Civil Aviation Authority (2009). CAP 764. CAA Policy and Guidelines on Wind Turbines.

Moles, J., Chiodo, J. and Sheehan, P. (2008a). Southern Grampians Planning Scheme. Permit Application 2007/0370. Oaklands Hill Wind Farm Panel Report. April 2008.

Moles, J., Burns, C., and Munro, D (2008b). Moyne Planning Scheme. Permit Applications 2006-0220 and PL06/396. Woolsthorpe Wind Farm.

Saunders, R., Munro, D, and Thatcher, A. (2006). Permit Application PL-SP/05/0283. Macarthur Wind Farm. Panel Report. May 2006.