

Summary sheet – Shadow Flicker

This is a Summary Sheet on the Preliminary Shadow Flicker Assessment which is available in full at <https://osmi.com.au/planning/>. The Shadow flicker results for Delburn Wind Farm, layout version 2.1, for a rotor diameter of 180 m are shown on the visual figure on the following page.

Method

The Policy and Planning Guidelines for Wind Farm Development in Victoria state that ‘shadow flicker experienced immediately surrounding the area of a dwelling (garden fenced area) must not exceed 30 hours per year’.

The impact was modelled for the currently proposed 35 turbines (subject to final design changes) design layout version 2.1. The turbine measurements are described in the following table.

	Number of turbines	Rotor diameter [m]	Hub height [m]	Maximum blade chord [m]
Modelled turbine	35	180.0	160.0	4.5

The assessment procedure uses appropriate modelling parameters, taking into account variables such as topography and cumulative effect, to calculate the theoretical annual shadow flicker duration at each residence. Other assumptions include:

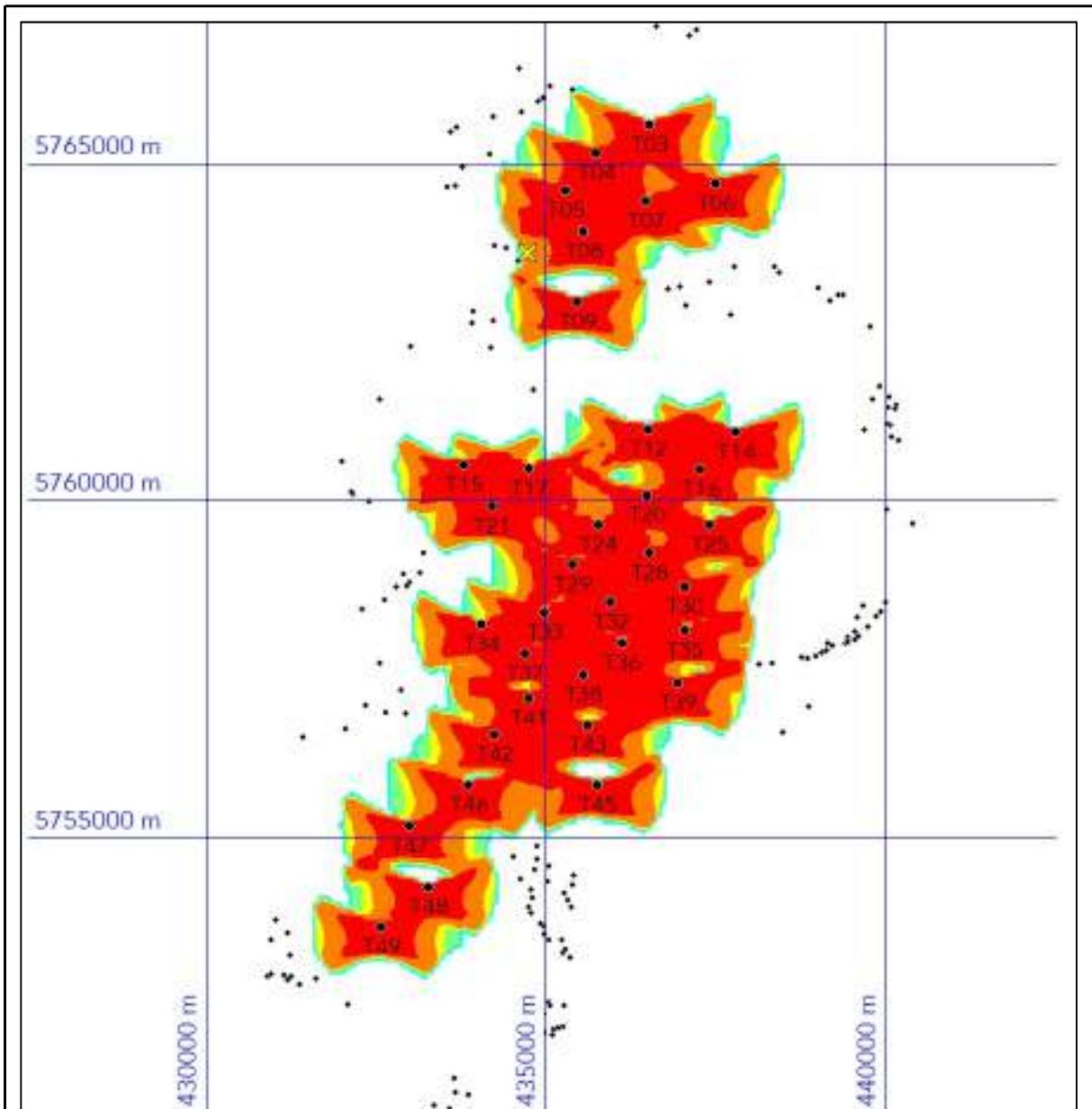
- the sun is assumed to be shining all day, from sunrise to sunset, that is, there are never any clouds in the sky
- the wind turbine rotor is modelled as a disc and assumed to be in the ‘worst case’ orientation, that is, perpendicular to the sun-rotor vector at all times
- the wind turbines are always operating

Calculation of shadow flicker in an ideal model (with the assumptions specified in the full report) provides a conservative estimate of the actual shadow flicker. In most circumstances where a dwelling experiences a modelled level of shadow flicker less than 30 hours per year, no further investigation is required. However, if this level is exceeded in the modelled scenario, mitigation measures may be introduced and the ‘actual’ or ‘measured’ level of shadow flicker will need to be determined. If necessary, to achieve compliance, turbine layout is then modified and calculations repeated or mitigation measures introduced, to ensure compliance.

Results

The preliminary shadow flicker results show that no dwellings experience shadow flicker in excess of 30 hours per year.

Shadow flicker modelling undertaken in accordance with the national and state planning guidelines, confirms compliance with the specified limit of 30 hours per year for all dwellings within the assumed shadow flicker zone of 1192.5m. Furthermore, only 1 dwelling will experience any discernible shadow flicker from the proposed Delburn Wind Farm in the current layout design. If the design changes in way that may change these results (ie, movement of turbines rather than simply deleting turbines) the shadow flicker modelling will be updated to reflect changes.



Legend

-  Proposed turbine
-  Dwelling
-  10 flicker hours per year
-  20 flicker hour per year
-  30 flicker hours per year
-  40 flicker hours per year
-  100 flicker hours per year

Notes: Coordinate system is UTMGrid Zone-55 WGS84 Datum