

Rye Park Wind Farm

Fact Sheet

2

May
2020

Shadow Flicker



Why was the assessment undertaken?

Shadow flicker can result from the position of the sun in relation to the blades of the wind turbine as they rotate.

A Shadow Flicker Assessment (SFA) (contained at Appendix G.2 of the Modification Application Report) was prepared by DNV GL to assess the increase in tip height, removal of 12 wind turbines and increase in rotor diameter. The SFA assessed the change in potential shadow flicker impacts from the Approved Project to the Modified Project.

What was the methodology used?

The SFA was prepared considering the relevant conditions of the Development Consent and in accordance with relevant Guidelines including:

- Draft National Wind Farm Development Guidelines, and
- NSW Wind Energy Visual Assessment Bulletin

Calculation of the theoretical shadow flicker did not consider any reduction due to cloud cover, turbine rotor orientation, low wind speed, vegetation, or other shielding effects around each residence. This was to generate a conservative result that will likely exceed the actual impacts of the Project, i.e. a worst-case scenario was the basis of the assessment.

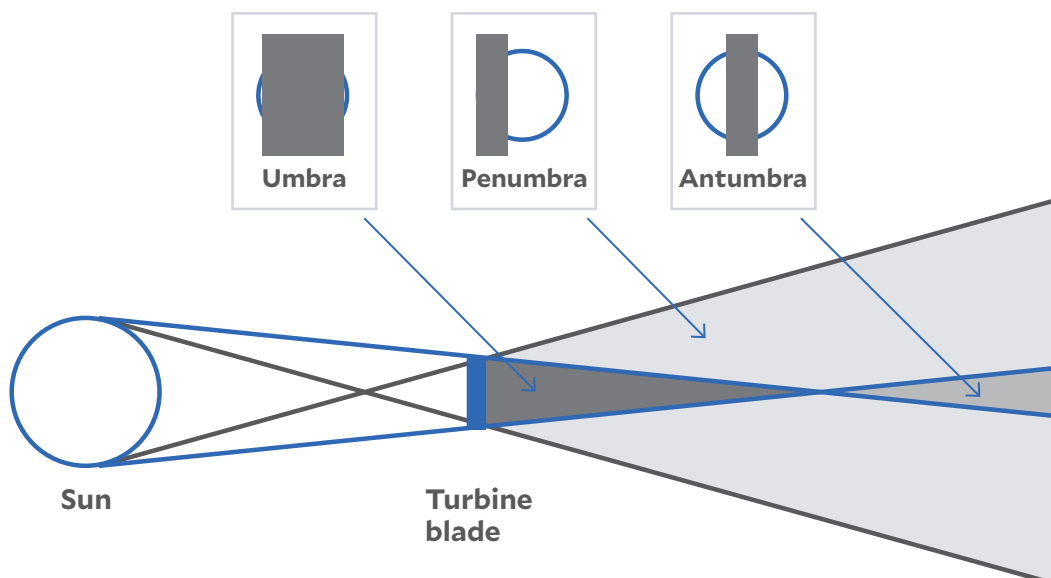


Diagram: Parts of a shadow cast by a turbine blade

What did we find and how does it compare to the approved project?

The assessment found that for the Modified Project, seven residences are predicted to experience some theoretical shadow flicker. Three residences are noted to experience durations that exceed the annual 30-hour limit, however all three of these are associated with the Project. This is illustrated in the table below.

Predicted theoretical shadow flicker within 50 m of residence	Approved project	Modified project	Extent of change
Above 0 hours/year	4 residences (R001, R002, R014, R016)	7 residences (R001, R002, R014, R016, R044, R056, R128)	Increase in 3 residences
Above Development Consent limit of 30 hours/year	2 residences (R002, R0016)	3 residences (R002, R014, R016)	Increase in 1 residence

Therefore, the Modified Project will have no increased shadow flicker impacts at any non-associated residences. However, the SFA noted that the shadow flicker durations at some associated residences would be high and recommended that through the development of the final layout, further assessment be undertaken to determine the predicted shadow flicker durations at these residences and implement mitigation measures if required.

What are the proposed mitigation strategies?

The effects of shadow flicker can be reduced through several mitigation measures including:

- Installation of screening structures or planting of trees to block shadows cast by the wind turbines
- Use of wind turbine control strategies which shut down wind turbines when shadow flicker is likely to occur
- Micro-siting wind turbines to reduce impacts

A non-reflective finish will be applied to the wind turbines to ensure the potential effects of blade glint are reduced.

Assessment against development consent

The Modified Project can comply with the existing conditions of the Development Consent relating to shadow flicker.