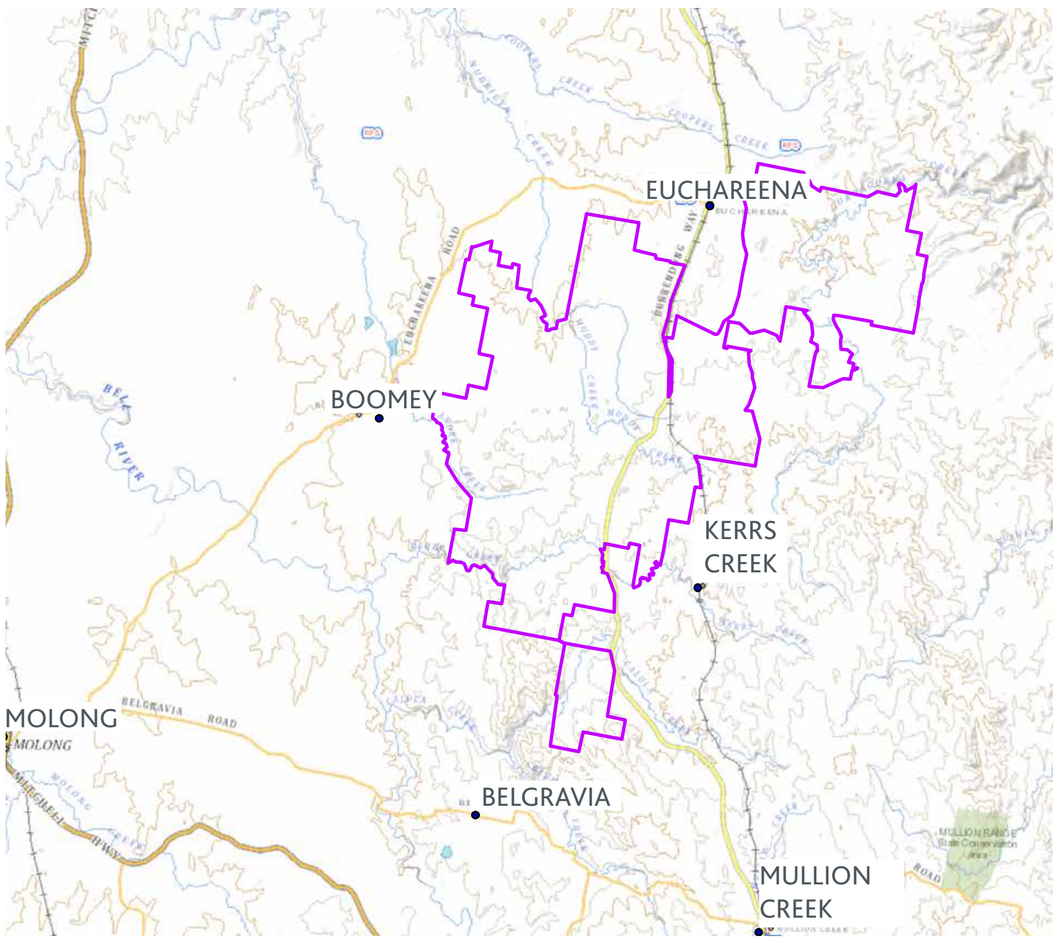
KERRS CREEK WIND FARM

Why we chose this location:

- Excellent wind resource
- Close proximity to the transmission network
- Excellent distance buffering of wind turbines to non-involved dwellings
- Low environmental impact

Project status:

- Environmental and technical studies underway
- Scoping Report and request for Secretaries Environmental Assessment Requirements (SEARs) to be submitted in Q2 2021



Benefits

Local investment
Clean energy
Cheaper energy

Up to **650MW**

of renewable energy capacity

Supply between **250,000** and **325,000** homes

50-80

Wind turbines

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PROJECT BENEFITS
KERRS CREEK WIND FARM

Employment

The project will generate:

- approximately 340 direct and 540 indirect full time equivalent jobs, during construction;
- 10 - 15 full time jobs during the operation and maintenance phase; and
- Around 20 medium term contract jobs during any major maintenance activities.

The employment benefits extend through the local supply chains to fuel supply, vehicle servicing, uniform suppliers, hotels/motels, B&B's, cafés, pubs, catering and cleaning companies, tradespersons, tool and equipment suppliers and many other businesses.

Environmental

The Kerrs Creek Wind Farm Project will provide:

- Minimal impact on the productivity of traditional farming activities;
- Ability for land to be rehabilitated at the end of the project;
- Smaller environmental footprint than comparative forms of generation;
- Additional fire breaks and improved roads for firefighting;
- Enough clean renewable energy to power approximately 200,000 New South Wales homes; and
- Additional energy supply to meet growing energy demand.

Community

RES is committed to supporting the host communities where our projects are located. The Kerrs Creek Wind Farm Project will commit to establishing a community fund once the project is operational. The community fund will provide ongoing funding to support local projects, community groups and organisations over the project lifetime. Input will be sought from the community to inform and shape how the fund could be implemented to maximise the benefits for the surrounding community.

RES also sponsors local community groups, clubs and projects where possible and we are on the lookout for local sponsorship opportunities. If you are seeking sponsorship and your organisation is located in the Belgravia, Euchareena, Boomey or Molong area, please talk to one of our representatives today or get in touch through our website (kerrscreek-renewableenergy.com).

Contributing to Climate Change Policy Targets

The Kerrs Creek Wind Farm Project will contribute to the following targets if constructed:

- The New South Wales Government targets of a 35% emissions reduction in New South Wales compared to 2005 levels and net zero emissions by 2050; and
- Australia's 2030 climate change target to reduce emissions by 26 to 28% on 2005 levels.

FIRE MANAGEMENT
KERRS CREEK WIND FARM

Risk of Fire

No bushfire has ever started as a result of a wind turbine. (Source: CEC)

The risk of fire at wind farms is very low due to:

- Flammable elements being located high above the ground;
- Each turbine is situated next to a cleared construction pad reducing the available fuel load;
- Lightning protection devices installed on every turbine also reducing ground strike; and
- Monitoring systems installed in the wind turbines detecting temperature increases and automatically slowing or shutting down wind turbines if the temperature or wind speed exceeds an assigned threshold.

No Special Hazards

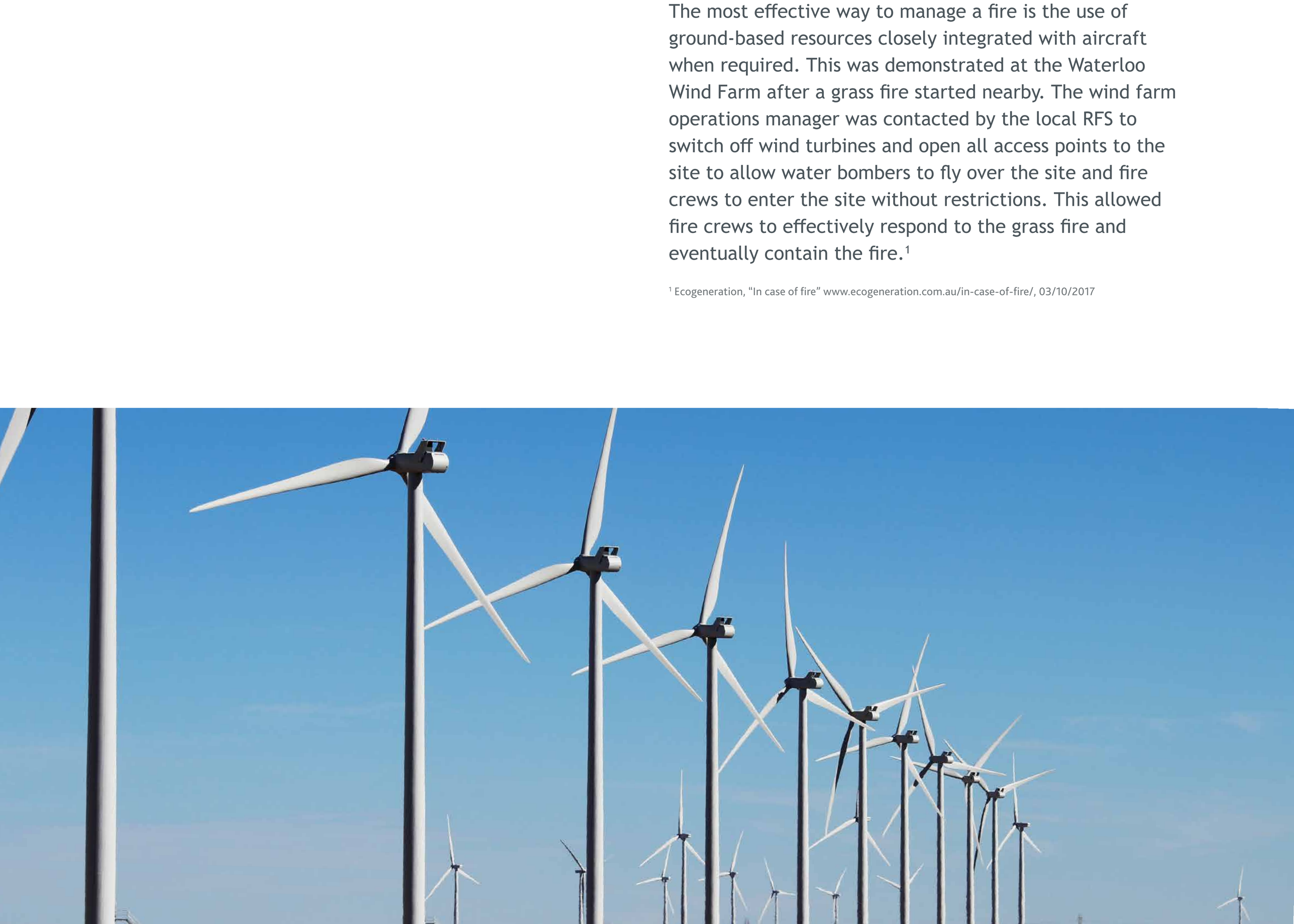
Wind farms are not considered to pose any special hazards when it comes to fighting fires.

The Australasian Fire and Emergency Services Council (AFAC) position paper on Wind Farms and Bushfire Operations concluded that “Wind farms are not expected to adversely affect fire behaviour, nor create major ignitions risks. Fire and land management agencies and wind farm developers and operators have a shared interest in mitigating the following bushfire related risks.”

Wind turbines also do not provide any adverse risk to pilots responding to emergencies. Pilots view wind turbines, in a stationary position, as no different to other tall structures and hazards such as power lines, transmission towers, radio masts, mountains and valleys. Wind farms are just another piece of infrastructure in the environment that needs to be managed on a risk basis when fighting fires.

The most effective way to manage a fire is the use of ground-based resources closely integrated with aircraft when required. This was demonstrated at the Waterloo Wind Farm after a grass fire started nearby. The wind farm operations manager was contacted by the local RFS to switch off wind turbines and open all access points to the site to allow water bombers to fly over the site and fire crews to enter the site without restrictions. This allowed fire crews to effectively respond to the grass fire and eventually contain the fire.[1]

[1] Ecogeneration, “In case of fire” www.ecogeneration.com.au/in-case-of-fire/, 03/10/2017



NOISE
KERRS CREEK WIND FARM

Noise Assessment

The NSW Government has adopted the 2009 South Australian document Wind farms – environmental noise guidelines (SA 2009).

Figure 1 below shows the average distances at which compliance with different noise standards is expected to occur, using noise standards from other Australian states and international jurisdictions as examples.

For the Scoping and Pre-lodgement stage of the project RES has engaged Sonus to undertake an indicative noise impact assessment, which will assess the noise levels expected at all receivers under a worst case scenario. These results will be compared against the base criteria adopted in NSW of 35 dB(A) to provide RES with an early indication of noise levels at all receivers.

Then while preparing an Environmental Impact Statement RES will undertake further noise assessment comprising of:

1. Measurement of background noise at a number of measurement locations.
2. Establishment of the project noise criteria based on the background noise levels and the EPA guidelines.
3. Prediction of the noise levels using the CONCAWE noise propagation model under worst-case (highest noise level) meteorological conditions.
4. Comparison of the predicted noise levels at each residence against relevant noise criteria to ensure compliance with the EPA Guidelines.

Operational noise monitoring will also be undertaken post approval to ensure the operating wind farm is compliant with the EPA Guidelines.

[1] NSW Department of Planning and Environment, Wind Energy: Noise Assessment Bulletin, www.planning.nsw.gov.au/-/media/Files/DPE/Bulletins-and-Community-Updates/wind-energy-noise-assessment-bulletin-2016-12.pdf, December 2016

Frequently Asked Questions

The most frequently asked questions regarding wind farm noise relate to amplitude modulation, low frequency noise and infrasound:

1. Amplitude modulation (AM) is associated with the changing noise level as each of the three blades rotates and is often referred to as “swish”. The NSW Enviromental Protection Authority (EPA) Guidelines and the noise level criteria have been developed accounting for the operating characteristics of a wind farm, which includes amplitude modulation associated with the rotation of the blades. That is, an assessment against the EPA Guidelines, which will be made for the Kerrs Creek Wind Farm, inherently accounts for amplitude modulation.
2. Early wind turbines were constructed with blades located downwind of the tower. These turbines produced significant levels of infrasound (sound below 20Hz) as a result of the wake caused by the tower. Modern wind turbines are constructed with blades upwind of the tower, resulting in infrasound levels well below the level of perception at residential setback distances.
3. Sonus has conducted studies into the level of infrasound produced by wind turbines. These studies confirm that the level of infrasound from wind turbines is no greater than the noise encountered from other natural and non-natural noise sources on a daily basis.
4. A study by the South Australian Environment Protection Authority into infrasound (Infrasound levels near wind farms and in other environments, January 2013) provided findings which were consistent with the Sonus studies, including:
   - The measured levels of infrasound from wind farms are well below the threshold of perception.
   - The measured infrasound from wind farms are no higher than levels measured at other locations where people live, work and sleep.
   - The characteristics of noise produced by wind farms are not unique and are common in everyday life.
5. Noise sources that produce low frequency content (such as a freight train locomotive) have dominant noise content in the frequency range between 20Hz and 200Hz. Low frequency noise is often described as a “rumble”. Aerodynamic noise from a wind turbine is not dominant in the low frequency range. The main content of aerodynamic noise generated by a wind turbine is often in the area known generically as the mid-frequencies, being between 200Hz and 1000Hz.
6. Low frequency sound produced by wind farms is not unique in overall level or content. Low frequency sound can be easily measured and heard at a range of locations at levels well in excess of the level in the vicinity of a wind farm.

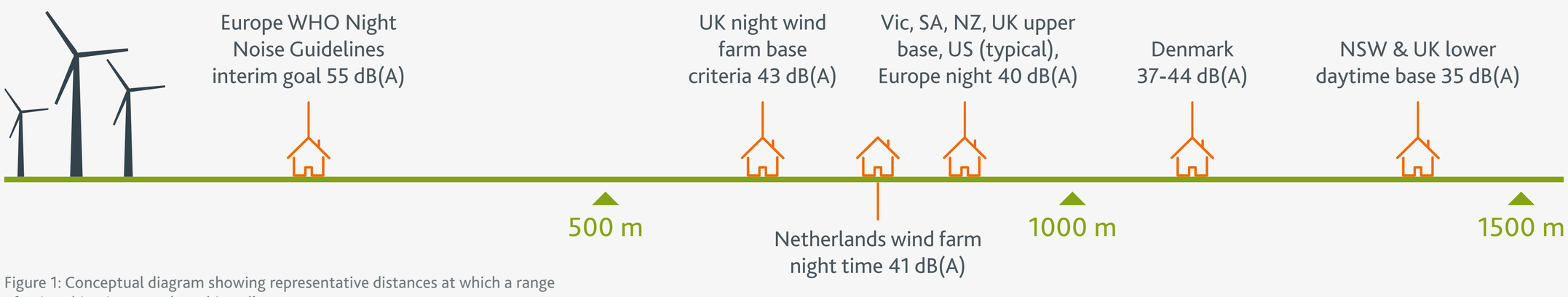


Figure 1: Conceptual diagram showing representative distances at which a range of noise objectives may be achieved[1]

PROPERTY VALUES
KERRS CREEK WIND FARM

Wind farms do not negatively impact property prices

There have been multiple major studies by respected and independent organisations over the last few decades that have failed to demonstrate any correlation between wind turbines and declining property values. In fact, some of these studies found positive impacts.

No link with reduced property values

A report on community acceptance of rural wind farms by the CSIRO's Science in Society found that rural landowners with wind farms on their properties stood to gain from such benefits[1].

One landowner said having a wind farm on their property could provide "a drought-proofing income stream for my property ... Few farmers in this region could survive without off-farm income".

Another said wind farms helped fund land protection: "[With] a bit of money to put turbines on my property – that won't devalue my property – we'll be able to run less animals and put less pressure on the land and look after it a whole lot better, get the biodiversity happening as it should – that's a good outcome for me."[1]

For properties without wind turbines, but in the line of sight of turbines, statistical evidence supports that property values do not perform worse than properties in comparable regions without wind turbines.

A study conducted by the NSW Department of Lands looked at properties located near eight wind farms and found no evidence that wind turbines caused property values to drop. The report concluded that "For rural properties used for primary production, there is no direct loss of productivity resulting from wind farms; therefore, they are unlikely to negatively impact the value of such properties." The report also found that "No reductions in sale price were evident for rural properties or residential properties located in nearby townships with views of the wind farm."[2]

International studies

Internationally, a decade-long study across nine different states in the US by the Lawrence Berkeley National Research Laboratory found no negative relationship between wind turbines and property values.

The study found "Neither the view of the wind facilities nor the distance of the home to those facilities is found to have any consistent, measurable, and statistically significant effect on home sales prices."[3]

The University of New Hampshire's research on the Impact of the Lempster Wind Power Project on Local Residential Property Values from January 2012 found no evidence that the project had an impact on property values in the region. The study also said "This is consistent with the near unanimous findings of other studies - based their analysis on arms-length property sales transactions - that have found no conclusive evidence of widespread, statistically significant changes in property values resulting from wind power projects."[4]

A recent comprehensive study commissioned by the US Department of Energy looked at over 50,000 home sales across 27 counties (including around 1,200 homes within 1 mile of a turbine) and included accounted for other contributing factors like confounding home-value and spatial dependence in the data. The study found no statistical evidence that home values near turbines were affected in the post-construction or post announcement / pre-construction periods[5].

[1] CSIRO report https://publications.csiro.au/rpr/download?pid=csiro:EP117743&dsid=DS3, reported in Wind Energy the Facts, Clean Energy Council, March 2013.
[2] NSW Department of Lands report www.valuergeneral.nsw.gov.au/__data/assets/pdf_file/0006/195315/Preliminary_assessment_impact_of_wind_farms_on_surrounding_land_values_in_Australia.pdf reported in Wind Energy the Facts, Clean Energy Council, March 2013.
[3] Lawrence Berkeley study, United States https://emp.lbl.gov/publications/impact-wind-power-projects, reported in Wind Energy the Facts, Clean Energy Council, March 2013.
[4] Impact of the Lempster Wind Power Project on Local Residential Property Values, January 2012 www.nhsec.nh.gov/projects/2013-02/documents/131212appendix_55.pdf reported in Wind Energy the Facts, Clean Energy Council, March 2013.
[5] www.energy.gov/eere/wind/downloads/spatial-hedonic-analysis-effects-wind-energy-facilities-surrounding-property A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States, August 2013).

PLANNING PROCESS
KERRS CREEK WIND FARM

We are currently at stage 1

RES is holding open days to receive feedback from local community members and groups. If you wish to talk further following the open days please get in touch and we can organise a meeting.

1. Preliminary consultation with stakeholders
2. Scoping report and request for Secretaries Environmental Assessment Requirements (SEARs)
3. SEARs issued
4. Prepare and submit Environmental Impact Statement (EIS) and development application (DA)
5. Public exhibition of the EIS
6. Response to submissions
7. Department of Planning, Industry and Environment (DPIE) project assessment
8. Consent authority determines the DA