

Wind farms – noise solutions



Noise is one of the top challenges identified in obtaining permits for wind farm developments.

Issues can vary depending on complex factors including aerodynamic noise, mechanical noise and weather conditions. So it's important to access expertise early in a project lifecycle.

Supported by an international team with 20+ years of wind farm experience, Trinity is uniquely qualified to deliver comprehensive noise solutions for onshore and offshore developments.

We have an in-house expert who has authored a guideline for the wind farm industry and site engineers with extensive experience in large-scale noise surveys in remote locations.

Our consultants also have deep expertise in assessing meteorological conditions and wind farm noise impact, with broad experience in 3D environmental noise modelling. We also have a large fleet of equipment with remote access and real-time capabilities.

Our capabilities

Regulatory review

- Review of relevant legislation, guidelines and planning conditions to advise on noise impact requirements throughout a project

Data review

- Acquire, compile and review diverse data including meteorological, geospatial, GIS on sensitive receptors, sound power levels for noise sources within wind farm and adjacent to wind farm

Noise modelling

- Create 3D noise models based on required scenarios (including worst-case), likely impacts of wind conditions, and cumulative impact of proposed windfarm and surrounding noise sources

Marine ecology and water quality

- Monitoring services for offshore windfarms

Peer reviews

- Review internally or externally produced reports and information to strengthen and support research conclusions

Noise impact assessment

- Provide detailed noise impact assessments for developers (incorporating many of the below capabilities)

Noise monitoring

- Ambient monitoring, underwater noise monitoring, baseline noise survey (short-, medium- or long-term monitoring), annual survey, complaints instigated survey and infrasound survey

Meteorological modelling

- Modelling of 3D meteorology using prognostic model software TAPM and WRF for implications on noise propagation. In collaboration with partners, we also deliver higher resolution modelling of wind power at turbine height for siting analysis

Stakeholder consultation

- Develop a stakeholder map and plan; execute proactive and reactive engagement strategies, including with relevant government authorities

Expert witness

- Provide expert testimony regarding noise sources and outputs, based on our own analysis





Software and modelling

We undertake computational modelling in-house, using a range of specialist software packages, including CadnaA and SoundPLAN 8.2. Results can be presented as 2D contour plots and 3D renders of noise propagation predictions based on ISO 9613-2 or Concaawe. We can also assess noise control options, providing a lower cost means of considering different controls.

Where exceedances of the noise criteria curves are identified, Trinity can provide curtailment options based on various wind conditions to manage noise levels to be within the environmental noise criteria for the site.

We can also simulate short-term construction noise impact. Our model is able to incorporate dynamic onsite activities (including grading operations) and offsite activities (including construction of underground transmission line).

Collaborative approach

Our Trinity noise engineers collaborate with developers and diverse project stakeholders to deliver optimal solutions for each unique environment. Engaging our team early in the project enables us to investigate an acoustically optimal location for your wind turbines. It also allows us to recommend mitigation strategies to optimise operations and reduce the likelihood of complaints.

Certifications and standards

- JAS/ANZ 3rd Party Certified by SCI Qual International (certification number 4277) for our Quality Management System, which is in conformance with ISO 9001:2015
- Staff who are a Registered Professional Engineer Queensland (RPEQ)

Our solutions

Trinity has delivered solutions for multiple large-scale wind farm developments, including noise impact assessments, constraints studies, and site and route selection assessments. We have also offered expert testimony at planning and arbitration hearings.

Our noise mitigation strategies include a variety of the below:

- Optimising wind turbine and power equipment operating parameters
- Optimising buffer zone between sensitive receptors and wind turbines,
- Customising a Noise Management Plan
- Providing advice on sustainable construction materials.

Please contact us for a list of prior projects.

Contact us

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Get to know our work
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