

St Patricks Plains Wind Farm

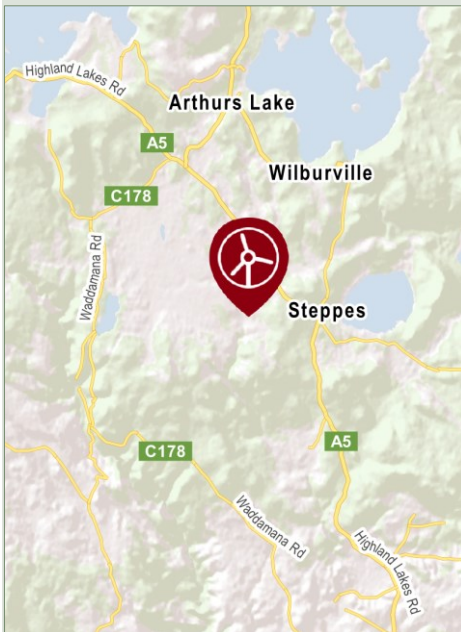
Noise Assessment Overview

February 2022



Photomontage from Highland Lakes Road looking north

Location



The site proposed for St Patricks Plains Wind Farm is about 10 km south-east of Miena and 30 km north of Bothwell in the Central Highlands.

It is located within Tasmania's Midlands Renewable Energy Zone, an area identified by the Australian Energy Market Operator as optimal for new projects to support Tasmania's renewable energy growth and meet its world-leading renewable energy target.

The site has strong, consistent winds, is made up of large private landholdings and includes a powerline with available capacity, making it ideally located for wind energy generation.

Noise assessment

A technical noise assessment by acoustic specialists is required as part of the Environmental Impact Statement (EIS). It involves applying the noise levels from the candidate wind turbine at all proposed wind turbine locations and using predictive modelling to determine the noise associated with operation of the wind farm.

The Project Specific Guidelines outline environmental noise assessment requirements and specify that consideration be given to the Environment Protection Authority (EPA) Tasmania's *Noise Measurement Procedures Manual* (EPA, 2008), which prescribe that wind farm noise is assessed in accordance with the New Zealand Standard 6808:2010 *Acoustics – Wind farm noise* (NZS 6808).

NZS 6808 determines whether background noise monitoring is required and treats involved landowners, such as those hosting wind turbines, and non-involved landowners differently.

Marshall Day Acoustics was engaged to undertake the independent environmental noise assessment in accordance with relevant legislation, policy and standards. The assessment considered both construction and operational noise impacts.

Construction noise

The assessment includes consideration of construction vibration levels, on site construction noise levels and off-site construction traffic noise. There would be several construction activities occurring simultaneously including civil works for the road network, concrete batching and pouring of the wind turbine foundations, construction and assembly of the various structures including wind turbines, workshop facilities, substation and met masts.

Noise levels from the various construction equipment, machinery and activities are predicted using methods from relevant standards. The predicted range of construction sound levels at the nearest sensitive receptors is in the order of 25-55 dB L_{Aeq} .

Management and mitigation measures will be followed to avoid noise nuisance during construction, in accordance with the Tasmanian *Environmental Protection Policy (EPP) (Noise) 2009* and *Environmental Management and Pollution Control (Noise) Regulations 2016*. This includes adherence to prescribed work time restrictions and hours for operation of machinery.

Operational noise

Background noise monitoring was deployed at seven locations and wind data was sourced from a met mast on the site measuring wind speed at various heights, to understand the surrounding sound environment into which the noise from the wind farm will disperse.

An initial predictive model for wind turbine noise was done based on the Vestas V162 5.6 MW wind turbine in a 50 wind turbine layout and repeated based on the Vestas162 6.2 MW model in a 47 wind turbine layout with similar results.

Based on the data a noise contour map was created to show the sound output of the wind farm and this was modelled at each of the background noise locations to ensure that the wind farm would comply with the required limits.

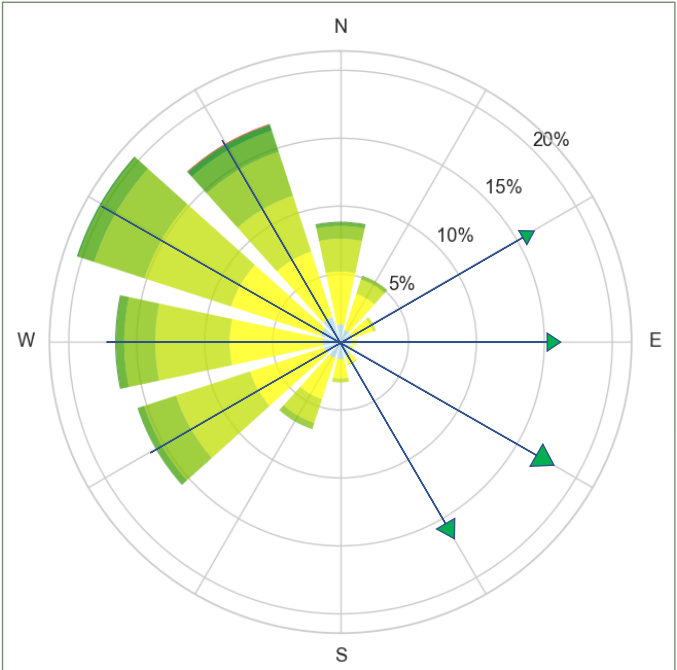
For non-involved receivers applicable noise limits were calculated based on the background monitoring data. NZS 6808 defines acceptable noise limits at non-involved residences as 5 dB above the background noise or a level of 40 dB, whichever is greater. This limit is considered appropriate for the protection of sleep, health and amenity of residents.

Using the modelled contours for the candidate wind turbine - the Vestas V162 6.2 MW model - the highest predicted noise levels for all non-involved receptors was found to be below the base noise limit of 40 dB. The potential for impact to sensitive receptors as a result of wind turbine noise is therefore considered acceptable and meets the applicable legislation.

The assessment also considered cumulative noise impacts from this project and the Cattle Hill Wind Farm.

The predicted noise levels at all residences around the St Patricks Plans Wind Farm demonstrate that the project would comply with the applicable noise limit.

The diagram below provides the noise levels (in decibels dB) of various familiar sounds for comparative reference.



Above: Diagram shows the wind distribution recorded by the onsite wind monitoring mast. Wind direction on the site blows mainly from the west and north-west towards the east and south-east.

Right: a noise contour map shows the predicted sound output of the wind farm. Contours show the maximum predicted noise levels based on the candidate wind turbine and layout of 47 wind turbines.

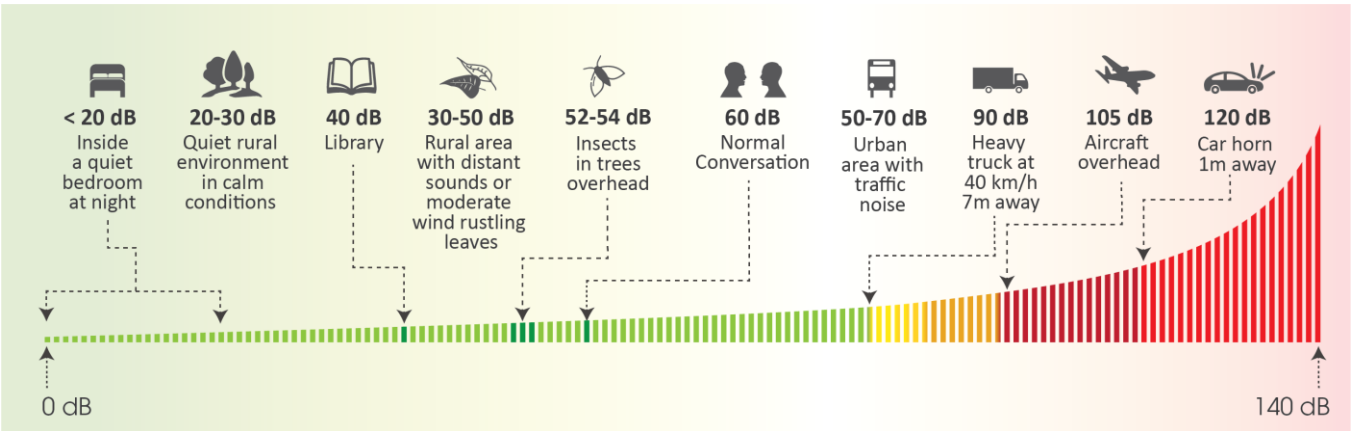
Post approval and operation

When the final wind turbine to be installed is selected the noise assessment will be repeated and must demonstrate again that it is predicted to comply with the prescribed noise limits.

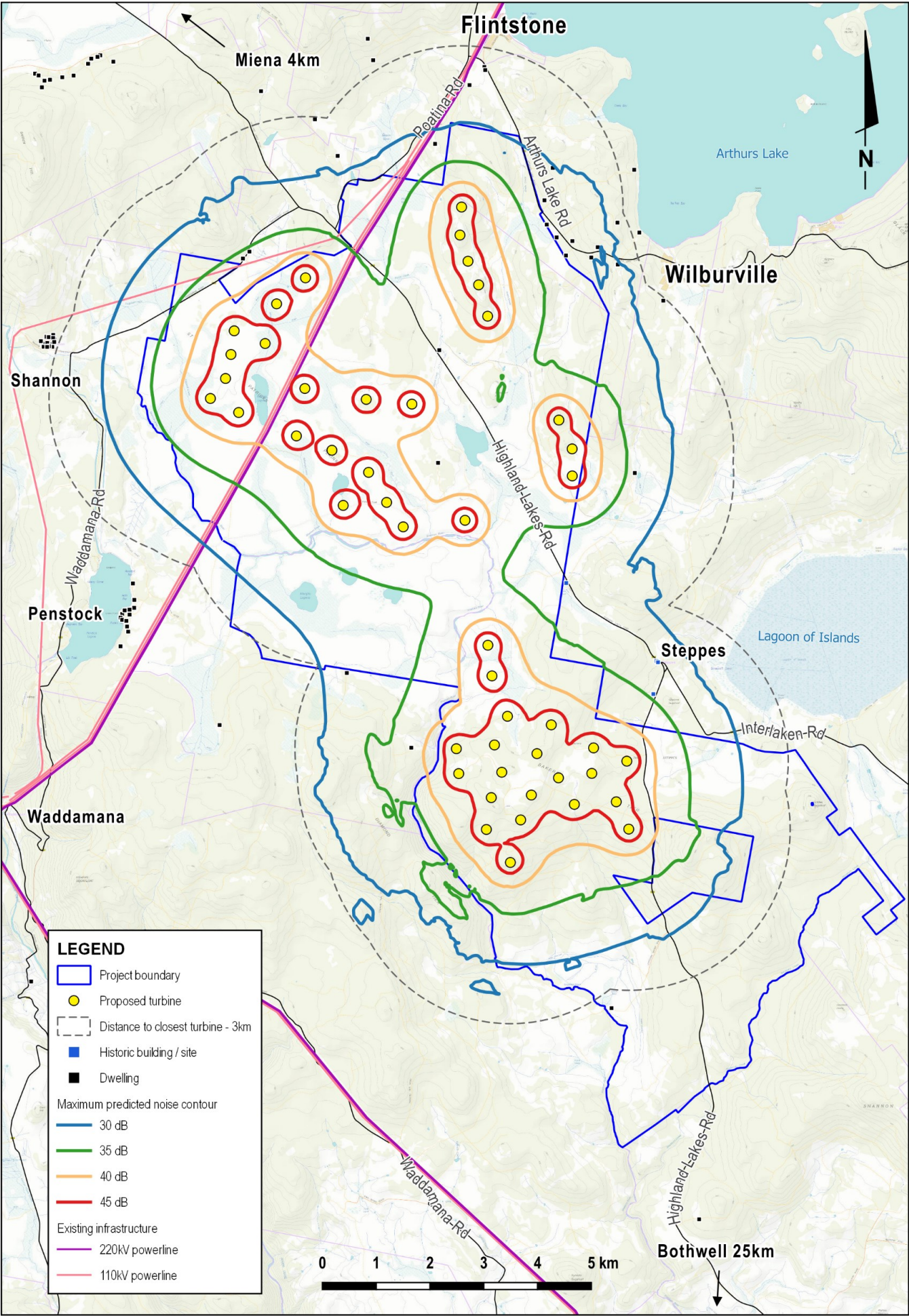
After installation the wind farm is subject to noise monitoring and audits to ensure it is noise compliant during operation.

Next steps

Epuron is finalising the EIS which includes the Noise Assessment. After it has been lodged and accepted by the EPA and Central Highlands Council it will go on public exhibition. Epuron will host local information sessions to give community members an opportunity to discuss the full EIS with the project team.



St Patricks Plains Wind Farm – 47 wind turbine layout and noise contours



- 1 Site selection and preliminary investigations
- 2 Referral to the Australian Department of Agriculture, Water and the Environment (DAWE) under the Commonwealth *Environment Protection and Biodiversity Conservation Act* (EPBC Act 1999)
- 3 EPBC Act decision: controlled action, assessment under bilateral agreement (Referral no. 2019/8497)
- 4 Notice of Intent (NOI) lodged with the Environment Protection Authority (EPA) Tasmania
- 5 Project Specific Guidelines for the Environmental Impact Statement (EIS) issued by the EPA
- 6 Studies, assessments, finalising site design

WE
ARE
HERE

Site design completed,
finalising EIS

- 8 Development application (DA) and EIS submitted to Central Highlands Council
- 9 DA and EIS referred by Council to the EPA
- 10 Preliminary assessment by Council and the EPA
- 11 DA and EIS on exhibition for public submissions
- 12 Responses to public submissions and requests for additional information from stakeholders (if required)
- 13 Assessment by the EPA Board
- 14 Determination by the EPA Board, approval conditions provided to Council and DAWE
- 15 Determination by DAWE
- 16 Assessment by Council
- 17 Determination by Council

Wind farm noise and human health

Australian Medical Association

AMA Position Statement – Wind Farms and Health (2014)

“The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects.”

Further information can be found on the AMA website at www.ama.com.au/position-statement/wind-farms-and-health-2014.

National Health and Medical Research Council

Statement: Evidence on Wind Farms and Human Health (2015)

“After careful consideration and deliberation of the body of evidence, NHMRC concludes there is currently no consistent evidence that wind farms cause adverse health effects in humans.”

Further information can be found on the NHMRC website at www.nhmrc.gov.au/health-advice/environmental-health/wind-farms.

Australian Energy Infrastructure Commissioner

The Australian Energy Infrastructure Commissioner's (AEIC) observations and recommendations in relation to wind farms and health are available on the AEIC website at www.aeic.gov.au/observations-and-recommendations/health-matters.

Marshall Day Acoustics

Established in 1981 Marshall Day Acoustics is one of the world's leading and most respected acoustic consultancies.

MDA provides specialist technical acoustic services to many industries including environmental acoustic assessments of energy infrastructure. The company has extensive expertise in the measurement, prediction and assessment of wind farm noise, and has been involved with a wide variety of wind farm projects throughout Australasia.

MDA's Wind Farm Working Group also performs ongoing review of local and international guidance and research to ensure the highest standard of accuracy and reliability in wind farm noise assessment.

More information

Website stpatricksplainswindfarm.com.au or scan QR code below.

Email: info@stpatricksplainswindfarm.com.au. Tel: 0459 937 471.

Project news: for mailed updates please send your postal address to info@stpatricksplainswindfarm.com.au or for email updates register online at epuron.com.au/mailling-list-details/.

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