

## **FEATURE: And the beat goes on . . .and on and on**

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They call it the train that never arrives. It's a low, rumbling sound that goes on and on ... and on.

Sometimes, in a stiff easterly, the rumbling develops into a roar, like a stormy ocean.

But worst of all is the beat. An insidious, low-frequency vibration that's more a sensation than a noise. It defeats double-glazing and ear plugs, coming up through the ground, or through the floors of houses, and manifesting itself as a ripple up the spine, a thump on the chest or a throbbing in the ears. Those who feel it say it's particularly bad at night. It wakes them up or stops them getting to sleep.

Wendy Brock says staff from Meridian Energy promised her the wind turbines at Te Apiti, 2.5km from her Ashhurst home in southern Hawke's Bay, would be no noisier than waves swishing on a seashore.

"They stood in my lounge and told me that."

But during a strong easterly, the noise emitted by the triffid-like structures waving their arms along the skyline and down the slopes behind the Brock family's lifestyle block is more like a thundering, stormy ocean. Sometimes it goes on for days. And when the air is still, there's the beat - rhythmic and relentless, "like the boom box in a teenager's car".

"It comes up through the floor of our house. You can't stop it."

Mrs Brock says she can feel it rippling along her spine when she's lying in bed at night. Blocking her ears makes no difference.

"It irritates you, night after night. Imagine you've done your day's work, then you go to bed, and there's this bass beat coming up through the floor and you can't go to sleep. You can't even put headphones on and get away from it.

"My older son sometimes gets woken up by the noise. He gets up and prowls around the house."

She tells of other Ashhurst residents who "feel" the sound hitting their chests in the Ashhurst Domain 3km from the turbines. She says one woman is so distressed by the sensation she has put her home on the market.

Not everyone in the village hears the infrasound - Mrs Brock reels off the names of residents wondering what the fuss is all about - but says those who do feel the sound are distressed by it and have nowhere to turn for redress.

There's little point complaining to the Tararua District Council because all it does is record each complaint and forward it to Meridian, and nothing ever happens.

"What are they (the council) going to do to Meridian - fine them, or shut down the turbines?" asks Mrs Brock.

Meridian is dismissive of complaints about noise from Te Apiti.

"Infrasound is just not an issue with modern turbines," insists spokesman Alan Seay.

"We take it very seriously. We have looked into it seriously, but the advice we are getting from eminently qualified people is that it is just not an issue."

Many people claiming to be putting forward scientific argument about noise from turbines "are not qualified in this area of expertise. I have a problem with some of their statements", Mr Seay said.

He asked Hawke's Bay Today for the names of those complaining about noise from Te Apiti.

Asked why he wanted the names, he replied: "There is a group of people there. They are opposed to wind farms per se".

Asked why he thought they were opposed, Mr Seay said "I don't want to speculate. They just are. Possibly for the visual impact."

Meridian had complied with all legal requirements for sound emissions from Te Apiti, and "the people of Ashhurst are very happy to have those turbines there. They have become an icon," Mr Seay said.

Meridian is currently appealing noise restrictions placed on its proposed 70-turbine wind farm at Makara, near Wellington, where some houses will be about 1km away, and downwind of, the turbines.

J ohn Napier lives on the Woodville side of the Te Apiti turbines, about 2km from the nearest one.

When they first began operating, he couldn't believe the roaring noise they made.

"We can hear it in our bedroom at night."

One night, about 2am, he got out of bed to check whether the bedroom windows were vibrating, and about five times since, he has been woken up and thought "they're making a racket tonight".

He doesn't hear the infrasound beat so much. It's mainly "a roar like a train going through a tunnel or over a bridge, but it never stops".

He complained to Meridian about the noise, and the company put a noise meter on his property for a couple of weeks, but wouldn't tell him the results.

"Wind farm companies say noise from turbines is not an issue, but it is an issue all right. I would be very concerned if I lived in Karori (near Makara, in Wellington)," Mr Napier said.

Harvey Jones, who lives in a valley 3km from Te Apiti, says there is an easterly wind blowing across the wind farm about 10 percent of the time. The wind goes across the top of the hill, but the noise from the turbines rolls down the valley. It sounds like a train constantly passing by, and the stronger the wind, the louder the noise. When there's a westerly blowing, he can even hear the turbines in Woodville, 6-7km away.

"Once you get tuned in to it you can easily pick it up," he says.

Mr Jones says the amount of noise generated by the Te Apiti turbines was unexpected, and landowners prepared to put turbines on their land at Te Pohue should think very carefully about the possibility of a repeat scenario.

He predicts disaster for the residents of Makara and Karori.

"They're going to get hammered, but they don't realise."

Steve Griffin, of Te Pohue, is secretary of the Outstanding Natural Landscape Protection Society, formed to oppose two windfarms proposed for his area on the Napier-Taupo road.

Lines company Unison has resource consent to put up about 50 turbines, and Hawke's Bay Windfarms plans to erect 75 turbines nearby.

The landscape protection society is appealing all the consents in the Environment Court.

Mr Griffin, who is "sick to death of wind farms", says the prospect of 128 giant industrial turbines visually disrupting pristine skyline and covering more than 16km of prominent mountain range near Te Pohue is bad enough. But he and other residents are worried sick about the noise potential - both normal-range and infrasound - from the turbines. Each turbine will have an 80m tower and three 45m blades. They will be 125m high and 90m wide, each taking up the equivalent of 1.5 rugby fields.

They will encircle Te Pohue village and its school, in a valley downwind of the turbines in prevailing winds - and nobody in authority seems to care, he says.

The Government has thrown the doors wide open to wind farm developers, in a bid to meet its Kyoto commitments; there are no national guidelines specific to wind turbines. That stance is unbalanced and unfair, Mr Griffin says.

"Our view is that while wind farms are part of our energy solution, sites must be selected in a socially responsible manner.

"They should not be placed within 5km of schools, hospitals, rest homes, or the private homes of those not involved with a wind farm development."

They should also be kept out of coastal, and recreation areas, and those with high scenic value, he says.

The landscape protection society wants the Government to establish national guidelines for wind farms, and review noise-testing standards to include measurement of low-frequency sound.

Low-frequency sound - sometimes called infrasound - is controversial.

Dr Geoff Leventhall, a noise vibration and acoustics expert from the UK who looked into infrasound at the request of Genesis Power, says "I can state quite categorically that there is no significant infrasound from current designs of wind turbines".

He says "the ear is the most sensitive receptor in the body, so if you cannot hear it you cannot feel it". Engineer Ken Mosley, of Silverstream, has an entirely different view.

The foundations of modern turbines create vibrations in the ground when they are moving, and also sometimes when they are not moving, Dr Mosley says.

"This vibration is transmitted seismically through the ground in a similar manner to earthquake shocks and roughly at similar frequencies.

"Generally, the vibrations cannot be heard until they cause the structure of a house to vibrate in sympathy, and then only inside the house. The effects inside appear as noise and vibrations in certain parts of a room. Outside these areas, little is heard or felt.

"However, the low frequency components of the noise and vibration can cause very unpleasant effects which eventually cause the health of people to deteriorate to an extent where living in the property can become impossible."

Dr Mosley says that wherever wind farms are built close to houses, people complain about noise and vibration.

He quotes a scientist in South West Wales, David Manley, who has been researching noise and vibration phenomena associated with turbines since 1994.

An acoustician and engineer, Dr Manley writes "it is found that people living within 8.2km of a wind farm cluster can be affected and if they are sensitive to low frequencies they may be disturbed".

Two GPs in the UK have researched the health effects of noise and vibrations from turbines. Amanda Harry documented complaints of headaches, migraines, nausea, dizziness, palpitations, sleep disturbance, stress, anxiety and depression. People suffered flow-on effects of being irritable, unable to concentrate during the day, losing the ability to cope.

Bridget Osborne, of Moel Maelogan, a village in North Wales, where three turbines were erected in 2002, is reported as saying "there is a public perception that wind power is 'green' and has no detrimental effect on the environment, but these turbines make low-frequency noises that can be as damaging as high-frequency noises.

"When wind farm developers do surveys to assess the suitability of a site they measure the audible range of noise but never the infrasound measurement - the low-frequency noise that causes vibrations that you can feel through your feet and chest.

"This frequency resonates with the human body, their effect being dependent on body shape. There are those on whom there is virtually no effect, but others for whom it is incredibly disturbing."

Dr Mosley says wind-power generators in New Zealand are aware of such literature on turbine noise and infrasound from all around the world.

"Are they therefore just ignoring what is happening in the rest of the world in the hope that once turbines are up and running, people will quietly endure, or when the noise/vibration situation really starts to damage their health, the community will cut their losses, leave their homes and quietly fade away? Of course, wherever they end up, they must still pay their electricity bills, which is rather like paying the landlord who has evicted you."

The New Zealand Wind Energy Association, which did not return calls from Hawke's Bay Today, acknowledges that turbines produce infrasound, but insists it is so minimal from modern turbines that human beings cannot perceive it. Its website says "there is no evidence to indicate that low frequency sound or infrasound from current models of wind turbine should cause concern."

Infrasound was more of a problem with older turbines, which had their blades downwind of the turbine tower, the association says.

"That caused a low frequency thump each time a blade passed behind the tower."

In contrast, modern turbines "have their blades upwind of the tower, thus reducing the level of this type of noise to below the threshold of human perception, thereby minimising any possible effect on human health or wellbeing".

The association has published excerpts of a report by Dr Leventhall, who suggests that infrasound is a concept that could be classified as pop-science, seized upon by emotionally-overwrought wind farm opponents.

"When a group of residents decides to object to a development, they often support each other with strong emotions, which can sometimes lead them astray. The emphasis on low-frequency noise is an example of this. Over the past 30 years there has been a great deal of confusion and misinformation about low frequency noise, mainly in the popular media. Much of it can best be described as "hot air"

but complainants' uncritical acceptance of what they read in unreliable sources has two unfortunate effects:

- \* It detracts from those people who have genuine low-frequency noise problems, often from industrial exhaust fans, compressors and similar.

- \* It undermines the credibility of the complainants, who may be harming their own cause in their apparent 'grasping at straws' approach."

Dr Leventhall goes on to say "the rational study of low frequency noise, its effects and criteria for control, has been bedevilled by exaggerations, half-truths and misrepresentations, much of it fomented by media stories over the last 35 years. The result in the UK, and it is probably similar in other countries, is that an incorrect concept - 'low frequency noise is a hazard' - has taken root in the national psyche, where it lies dormant waiting for a trigger to arouse it. The current trigger is wind turbines."

Dr Leventhall says:

- \* High levels of low-frequency noise are needed before people can perceive it, and the levels must increase as frequency reduces.

- \* The ear is the most sensitive receptor in the body, so if you cannot hear it you cannot feel it.

- \* When there are problems with predominantly low-frequency noise, that is because assessment methods do not cater for it. That leads to the noises being dismissed as not being a nuisance, which in turn leaves unhappy complainants in a distressed state.

Up on the Napier-Taupo road, the printer in Steve Griffin's office is working overtime in preparation for an Environment Court battle. It might be a David and Goliath confrontation, but there's too much at stake to sit back and take it quietly, he says.