

Comment on the Revised Operating Conditions of
New Zealand Windfarm Limited's
Te Rere Hau Windfarm,
355-573 North Range Road, Palmerston North,
Under Section 128 of the Resource Management Act

Submission from
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Date: 12/10/2017

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Introduction

As the Hearings Panel is aware this S128 review of the operating conditions of the existing resource consent for NZWL to operate their TRRH windfarm was timetabled while we were overseas, and so our evidence was presented "in absentia". PNCC was well aware, far in advance, of our intended travel however, after waiting several years for this S128 review there was legislative urgency to have the hearing before time expired. During that hearing a timeline of the 13th October, 2017 was established for submitters to provide comment on the final revised conditions. This final version was supplied to PNCC at 4.12 pm on Tuesday, 11th October. This left 3 days to undertake an analysis of the final document and in our opinion that is a rather truncated timeframe which does stymie community involvement, particularly as the community are operating on a part-time basis. From our personal point of view it is particularly problematic because we travel to Timaru on the 12th for my mother's 93rd birthday.

Of necessity then, this submission can only cover the significant issues that we see and we would refer the Panel back to our original submission of the 29th August, 2017.

We apologise in advance for the directness of what follows, and if any of the points that we raise have already been discussed in detail. Notwithstanding this we consider the issues raised below are of paramount importance for the amenity value of the community surrounding the TRRH windfarm.

The following relate to NZ Windfarm's final Version of Conditions, submitted to PNCC on the 10th October.

Suggested changes are underlined.

Abbreviations:

August submission – Our submission of the 29th August that was presented to the Hearings Panel by Dr Huffman.

MDA – Marshall-Day Acoustics

NZWL – New Zealand Windfarm Ltd

PNCC – Palmerston North City Council

TRRH – Te Rere Hau windfarm

the "Standard" is NZS 6808:2010

WTG – Wind turbine generator

Clause 4 – Dwellings in existence prior to 30 May, 2005.

This is redundant, surely. Clause 1.3 of the Standard surely specifies locations that exist before the final date of the completion of a windfarm, particularly when read in conjunction with Clause 4.2. NZWL has only constructed 65 of 99 consented WTGs and refuses to surrender the unfinished 34 WTGs so technically the windfarm is still under construction. Also they make it clear in Section 12 that they will probably build more WTGs. So, if an "in existence date" is to be set it must be when the windfarm is completed because only then might a new buyer realise its full impact.

Notwithstanding this, Clause 4.2 requires the local authority to provide advice, information and noise contours. Has this been done? Have the final noise contours for TRRH been determined?

See August submission Clause 19.

Remove reference to "Dwellings in existence prior to 30 May, 2005."

Clause 4 – cut-in speeds 6 m/s, 8 m/s and Options 1 and 2

For some reason cut-in speeds of 6 m/s and 8 m/s, at the windfarm, for specific wind sectors were apparently discussed at the hearing. The Environment Court has already adjudicated on this issue and specified 10 m/s cut-in for Windflow Technology's WTGs so this should apply at TRRH.

In reality it is the wind speed at a residence that influences the noise and any possible complaint. While there is copious data on noise levels at 8 properties neighbouring the windfarm, NZWL has vehemently refused repeated requests/suggestions that wind parameter also be measured, notwithstanding that it is obvious to all that it is during low-speed-wind conditions at a residence that we complain. A consequence now is that there is no reliable information on the relationship between noise, wind flow at a residence, and windflow at the windfarm. This is further complicated by the highly variable data, over short distances, of the windflow across the Tararua ridge crest.

There is some data relating wind flow at the ridge crest to both windfarm noise at a residence and to back ground noise at a residence. In June, 2011 monitoring was carried out at 8 residences near TRRH and during this monitoring the windfarm was shutdown for periods (see Fig 2a of our August submission for data on 48 Ridgeview Rd.). These shutdowns allowed for comparisons of natural back ground noise with windfarm-operating noise. During the period 22 – 24 March, there were easterly winds of 13-16 m/s and there was no noticeable change in noise level when TRRH was turned off – the local wind noise had masked the windfarm. In contrast, on the 31st March, when there were 5-7 m/s easterly winds there was a 10-13 dB drop in the noise level when the windfarm was turned off – the windfarm was not masked by local noise.

A differential of this magnitude has a significant impact on our amenity values.

Somewhere between 7 m/s and 13 m/s at TRRH there is a wind speed that results in sufficient wind at a residence to mask the effect of the windfarm. We believe that this speed is near 10 m/s

Clause 4.1 and 4.2

What background noise is this?

Where are these data to be measures/gathered?

There is a plethora of data for many sites around the wind farm and these data should be what is used in Clauses 4.1 and 4.2, so, for clarity the first sentence of Clause 4 should be modified to read:

..... Plan Change 15, wind farm noise measured at a residence does not exceed the greater of:

Clause 4 "from 7pm to 7am"

Clause 5.3 of the Standard, when referring to High Amenity areas, refers to "protection of amenity during evening and night-time"

7pm – 7am obviously accommodates the "night-time" aspect but when does the "evening" begin? Wikipedia suggests that "evening" starts at 5 pm. However if the conditions of the new consent order are to mitigate some of the complaints of the community then it is appropriate to accommodate the timeframes of those complaints. This would suggest that for us (see figure 1) this period of special conditions should extend from about 4pm to 7.30am.

..... from 7pm to 7am Should be modified to

..... From 4pm to 7.30 am

Clauses 5A – 5D Why 104.2 dB?

The new, muffled gearbox for T103 has a sound power level of 103.6 dB so this should apply.

More generally - there appears to be a focusing on WTGs T103 and T104 to mitigate the noise. This is a "red herring". While T103 and T104 appear to be the cause of the pulsating beat that we detect, they are frequently "off" when we complain and at these times it is the "rumbling", "freight train sound", "jet engine sound", and grinding mechanical noise that is annoying. These noises seem to come from over the ridge line – from the rest of the WTGs.

Clause 7.2 Time frames of measuring.

Does not "1 hour after sunset to 1 hour before sunrise" clash with "7pm to 7am" (Clause 4.2)?

In any event the data indicates that these periods of measurement should be 4pm – 7.30am.

Clause 7.3 The Wind Sectors

Our August submission (Figure 5 and Section G) clearly shows that the Standard's 45°-arcs do not capture the most comprehensive data, so they should be changed:

7.3.1 270° – 315°

7.3.2 315° – 010°

7.3.3 135°- 200°

7.3.4 70°- 135°

This change in the SE is particularly important because that is the wind direction that causes the most amenity-loss. When we report a complaint

we just refer in general terms to a south-easterly direction. We have no measurement of the exact direction and figure 1b (August submission) clearly shows that there is significant data ENE and WSW of the SE quadrant.

Clause 7.4.1 “availability”

It should not be 95% available, it must be 95% operating. See our August submission, Section H.

Paragraph 8 deals with Tonality

Up to now NZWL has gone to great lengths to demonstrate that the existing windfarm does not have tonality however the MDA letter of the 28th September, 2017, p5, demonstrates that all 5 WTGs for which tonality has been measured produce penalisable tones (>4 dB tonal audibility). It is suggested that T104 be supplied with a new gearbox, like T103, and that this might mitigate the tonality.

This is all well and good but it leaves the other 5 WTGs with a tonal penalty and so the 5 dB penalty must be applied to the windfarm. Also, we have no idea of any tonality associated with the remaining 60 WTGs.

Clauses need to be added to the Operating Conditions that:

- (1) Require all the WTGs to be assessed for tonality, and
- (2) Have the operation of the WTGs that would receive a tonality penalty suspended until,
- (3) All the WTGs have been modified so that their tonalities fall within acceptable limits (<4 dB tonal audibility).

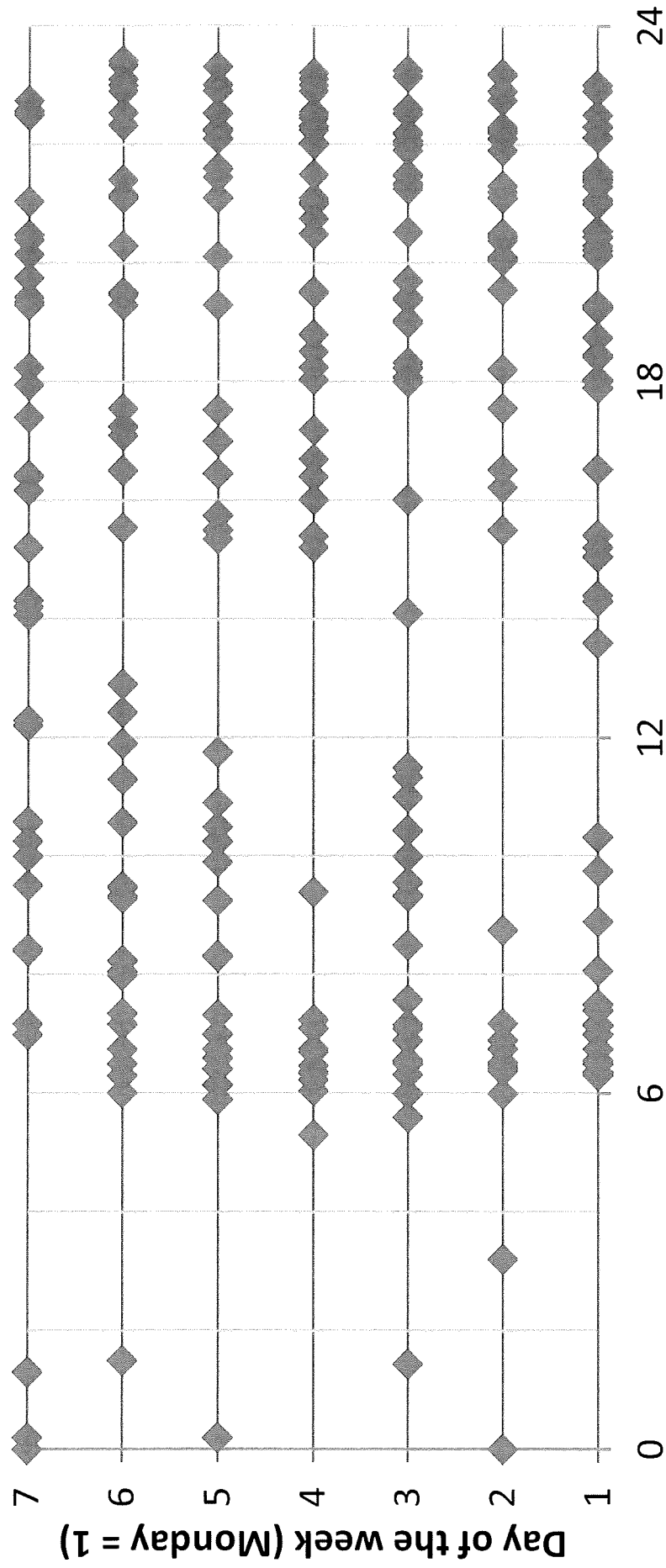
Within the Noise Management section, Infrasound must be addressed

Within the WTG Noise Management section of the Operating Conditions no mention is made of infrasound. We believe that this is a significant oversight.

Given specific local substrate characteristics and variable energy emissions from WTGs, infrasound has the potential to be an issue with buildings close-by windfarms. For the Te Apiti windfarm the understanding within the local community has it that the original Bolton house, which was within the windfarm, was being shaken apart by vibrations induced by the windfarm, and a new house was built for the Boltons. Unfortunately this cannot be confirmed by the Boltons because they are bound by contractual arrangements that they signed when their new house was built.

This would suggest that infrasound might be an issue and, taking a precautionary approach, we believe that infrasound should be measured at 1-2 localities within the windfarm and also within the neighbourhood. This is particularly so when it is considered that NZWL is modifying the existing WTGs and is apparently considering constructing new WTGs. The energy regimes of these WTGs are unknown so a conservative approach should be applied, and infrasound measured, so as to establish reference data for the future.

Figure 1 : Plot of the Wallace complaints according to days of the week and time of day.



Timing of a complaint within a 24 hour day.