Waterloo Wind Farm Survey April 2012

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To the Select Committee on Wind Power in SA;

Thank you for this opportunity to bring to your attention the problems of the inappropriate siting and noise pollution governance in SA.

This submission relates to a survey at Waterloo wind farm, the levels of impacts on the community and the need for change in noise monitoring, noise guidelines and compliance in the wind farm industry.

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Introduction

TRUenergy's Waterloo Wind Farm commenced operation in late 2010.
Since it's operation there have been a large number of complaints from local residents about noise and other disturbing impacts from the wind farm.
In July 2011, Zhenhua Wang(1) conducted a survey of the 75 households within 5 km of the Waterloo wind farm to assess the effect of the wind farm on community amenity. While a copy of Mr Wang's dissertation has been circulated internationally (see email attachment), results from this survey have never officially been made public or provided to the participants.
As it was clear from widespread community complaints and from the participants in Mr Wang's survey that there were indeed significant noise and amenity problems as a result of the Waterloo Wind Farm, I undertook to conduct a similar survey of the Waterloo and districts residents. The survey area was enlarged to include households within approximately 10 km of the wind farm as there had been many reports of households being impacted at locations this far away.
The aim of this survey was to establish **what percentage of people who live in the vicinity of Waterloo Wind Farm have been disturbed by noise, shadow flicker or tv/radio interference from the wind farm** since it started operating.
It was also to establish **the distance from the turbines at which any disturbance may be occurring**.
Results from this survey are to be used to inform the relevant Local, State and Federal Government authorities of any disturbance issues which fall within their duty of care.

Method and Results

An anonymous self reporting survey and letter of introduction explaining why the survey was being conducted, was posted or delivered to all households within or near a 10 kilometre zone of the Waterloo Wind farm.
Of the 230 surveys delivered 93 households returned completed surveys. 40% response rate.
For the 93 households located approximately within a **radius of 10 kilometres** of the Waterloo Wind farm, 49% were disturbed by impacts including noise, visual flicker or television reception.
Daytime Noise disturbance, which in some cases varied with weather, was reported in 39% of households surveyed.
Night time noise disturbed 40 % of households and of those surveyed, 27 households or 29% of households surveyed reported sleep disturbances.

Upon examining the responses from within **5 km of the turbines** , 56 % of households were disturbed by day time noise, 56 % disturbed by night time noise and 39 % experienced sleep disturbance.

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CONCLUSION

Sleep is an essential part of healthy life and recognised as a fundamental right by WHO under the European Convention on Human Rights (European Court of Human Rights 2003)(2).

This study of the Waterloo area supports claims that the **Waterloo Wind Farm is generating noise disturbance, sleep disturbance and electromagnetic interference which are above levels acceptable to a significant proportion of the local population**.

It is clear that noise pollution governance is failing the people of Waterloo.

It is also clear that siting wind turbines of these specifications in this topography within 10 km of homes and workplaces is inappropriate. The acoustic modeling for this wind farm is clearly flawed.

As TRUenergy and the EPA continue to maintain that this wind farm is compliant, then the noise regulations are manifestly inadequate to protect the community and need to be revised immediately.

Currently, low frequency noise is not measured, noise monitoring results are not provided to affected residents, noise monitoring is not a transparent, open and honest process.

A thorough review of audible and inaudible noise measurements and monitoring relating to wind farms is long overdue and should be undertaken immediately by experts independent of the industry to protect residents where wind farms are planned.

The following pages contain a summary of results from the survey and a map showing distance contours from the turbines.
The first set of results relates to 0 – 10 km from the turbines
The second set of results relates to 0 – 5 km from the turbines.

From these responses it must be concluded that 1 and 2 km setbacks as stipulated by the SA Ministerial DPA on wind farms are **manifestly inadequate**.

Industrial Wind turbines of this magnitude should not be sited within 10 km of rural communities

References:

(1) Zhenhua Wang ***Evaluation of Wind Farm Noise Policies in South Australia***,. *A case study of Waterloo Wind Farm*

(2)Official Journal of the European Communities, 18.7.2002
WHO, *Noise Guidelines for Europe* , pp 108, 109

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Totals and percentages for 0 – 10+ km from Waterloo W F

93 respondents out of 230 surveys delivered. 40 % response rate.

Question 1. 0 – 10 + km How many people reside at your house?

46 households with a total of 138 residents said they were AFFECTED

30 households with 76 residents said they were NOT AFFECTED

17 households with 56 residents said they were NOT AFFECTED, but then went on to describe noise, shadow flicker and interference effects from the wind farm and the effect of weather on these.

Question 2 . 0 – 10+km
Are any of your household affected/impacted by the Waterloo Wind Farm?

46 yes (49%) 47 No (51%)

Question 3 . 0 – 10+km
Does the wind farm generate shadow flickering?

Yes 10 (11%) No 83 (89%)

Question 4. 0 – 10+km
(i)Does the flickering annoy anyone in your home?

Yes 9 (10%) No 84 (90%)

(ii)What happens?
Annoying working in it, distracting, headaches, blurs vision,

Question 5. 0 – 10+km

(i) Does the wind farm affect your household watching television of listening to the radio or other electronic devices?

Yes 31 (33%) No 62 (67%)

(ii) What happens?
29 households: tv interference/pixellates/no signal/picture comes and goes in time with turbine blade sweep
8 households: AM/FM radio interference
4 households: Mobile phone interference
2 households: internet interference.
Interference correlates with blade sweep

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Question 6. 0 – 10+km
(i)Does the wind farm generate noise disturbance during the day?

Yes 36 (39 %) No 57 (61%)

(ii) How does it disturb your household during the day?

Annoying noise, workshop/sheds vibrate, can't concentrate, can't work in shed, sounds like vehicle coming that never arrives, vibration, grinding, thumping, whining, feel it pulsing, drumming, bopping, constant humming, droning, constant high pitch sound, has taken away our peace, growling, rumbling noise goes right through you, very unsettling. Dogs upset on bad days – frightened by the noise as if it is a thunderstorm.

Question 7. 0 – 10+km
(i)Does the wind farm generate noise disturbance during the night?

Yes 37 (40%) No 56 (60%)

(ii) How does it disturb your household during the night?

Vibration of building, Noise – roaring, thumping, grinding, whining, drumming, constant rumbling, can hear it over tv, have to keep windows shut, whooshing, fence vibrates 8 km away, constant humming, had to relocate lounge-room so could hear tv.

Question 8. 0 – 10+km
(i) Are there any particular conditions that create more noise disturbance?

Yes 29 (31%) No 64 (69%)

(ii) What happens?

Wind direction affects it, wind speed affects it, calm at ground level combined with windy on the ridge/at turbine hub height – more noticeable, inversion layer, low cloud, frosty nights.

Question 9 . 0 – 10+km
(i) Is your sleep disturbed?

Yes 27 (29%) No 66 (71%)

(ii) How many nights per week?

Many said hard to specify as it varies so much with weather conditions.
1 to 7 nights per week. Many 3 – 7 .

(iii) How are your household disturbed?

Can't get to sleep, get woken up, Can't get back to sleep, wake up in a panic, wake up in a sweat, broken/disturbed sleep, ear pain/ear pressure/tinnitus, headache, nausea, had to move away to get sleep, high blood pressure when wake up, ears hurt which makes sleep difficult

Question 10. 0 – 10+km
At present how would you describe the impact of noise on your household?

Seriously affected	7
Moderately affected	17
Slightly Affected	16
(not affected)	4
(Total	44)

Question 11. 0 – 10+km
If the turbines were not operated at night (10 pm to 7 am) would you describe the people in your home as:

Seriously affected	3
Moderately affected	2
Slightly Affected	29
(not affected)	6
(Total	40)

Question 12. 0 – 10+km
Inside which line on the map is your residence located?

0 – 1km	1 – 2 km	2 – 4 km	4 – 5 km	5 – 7.5 km	7.5 – 10 km	10 + km
A	B	C	D	E	F	G
2	14	17	8	17	25	19

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Totals and percentages for 0 – 5 km from Waterloo W F

41 respondents out of 75 surveys delivered. 55 % response rate.

Question 1. 0 – 5 km How many people reside at your house?

26 households with a total of 68 residents said they were AFFECTED

6 households with a total of 12 residents said they were NOT AFFECTED

9 households with a total of 27 residents said they were NOT AFFECTED, - but then went on to describe noise, shadow flicker and interference effects from the wind farm and the effect of weather on these.

Question 2. 0 – 5 km
Are any of your household affected/impacted by the Waterloo Wind Farm?

Yes 26 (63 %) No 15 (37 %)

Question 3. 0 – 5 km
Does the wind farm generate shadow flickering? Yes 9 (21 %) No 32 (78%)

Question 4. 0 – 5 km
(i)Does the flickering annoy anyone in your home? Yes 7 (17%) No 34 (83%)

(ii)What happens?
Annoying working in it, distracting, headaches, blurs vision

Question 5. 0 – 5 km
(i) Does the wind farm affect your household watching television of listening to the radio or other electronic devices?

Yes 26 (63%) No 15 (37%)

(ii) What happens?

17 households: tv interference/pixellates/no signal/picture comes and goes in time with turbine blade sweep/ interference with satellite tv installed by wind company
5 households: AM/FM radio interference
2 households: Mobile phone interference
2 households: internet interference.
Interference correlates with blade sweep

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Question 6. 0 – 5 km
(i)Does the wind farm generate noise disturbance during the day?

Yes 23 (56 %) No 18 (44%)

(ii) How does it disturb your household during the day?
Annoying noise, workshop/sheds vibrate, can't concentrate, can't work in shed, sounds like vehicle coming that never arrives, vibration, grinding, thumping, whining, feel it pulsing, drumming, bopping, constant humming, droning, constant high pitch sound,

Question 7. 0 – 5 km
(i)Does the wind farm generate noise disturbance during the night?

Yes 23 (56%) No 18 (44 %)

(ii) How does it disturb your household during the night?
Vibration of building, Noise – roaring, thumping, grinding, whining, drumming, constant rumbling, can hear it over tv, have to keep windows shut, whooshing, constant humming, had to relocate lounge-room so could hear tv.

Question 8. 0 – 5 km
(i) Are there any particular conditions that create more noise disturbance?

Yes 22 (54%) No 19 (46%)

(ii) What happens?
Wind direction, wind speed, calm at ground level combined with windy on the ridge/at turbine hub height, inversion layer, low cloud, frosty nights.

Question 9 . 0 – 5 km
(i) Is your sleep disturbed?

Yes 16 (39 %) No 25 (61%)

(ii) How many nights per week? Up to 7, depending on weather conditions.

(iii) How are your household disturbed?

Can't get to sleep, get woken up, Can't get back to sleep, wake up in a panic, wake up in a sweat, broken/disturbed sleep, ear pain/ear pressure/tinnitus, headache, nausea, had to move away to get sleep, high blood pressure when wake up, ears hurt which makes sleep difficult

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Question 10. 0 – 5 km

At present how would you describe the impact of noise on your household?

Seriously affected	6
Moderately affected	10
Slightly Affected	7
(not affected)	2
(Total	25)

Question 11. 0 – 5 km If the turbines were not operated at night (10 pm to 7 am) would you describe the people in your home as

Seriously affected	2
Moderately affected	2
Slightly Affected	16
(not affected)	4
(Total	24)

Question 12. 0 – 5 km

Inside which line on the map is your residence located?

0 – 1km	1 – 2 km	2 – 4 km	4 – 5 km
A	B	C	D
2	14	17	8

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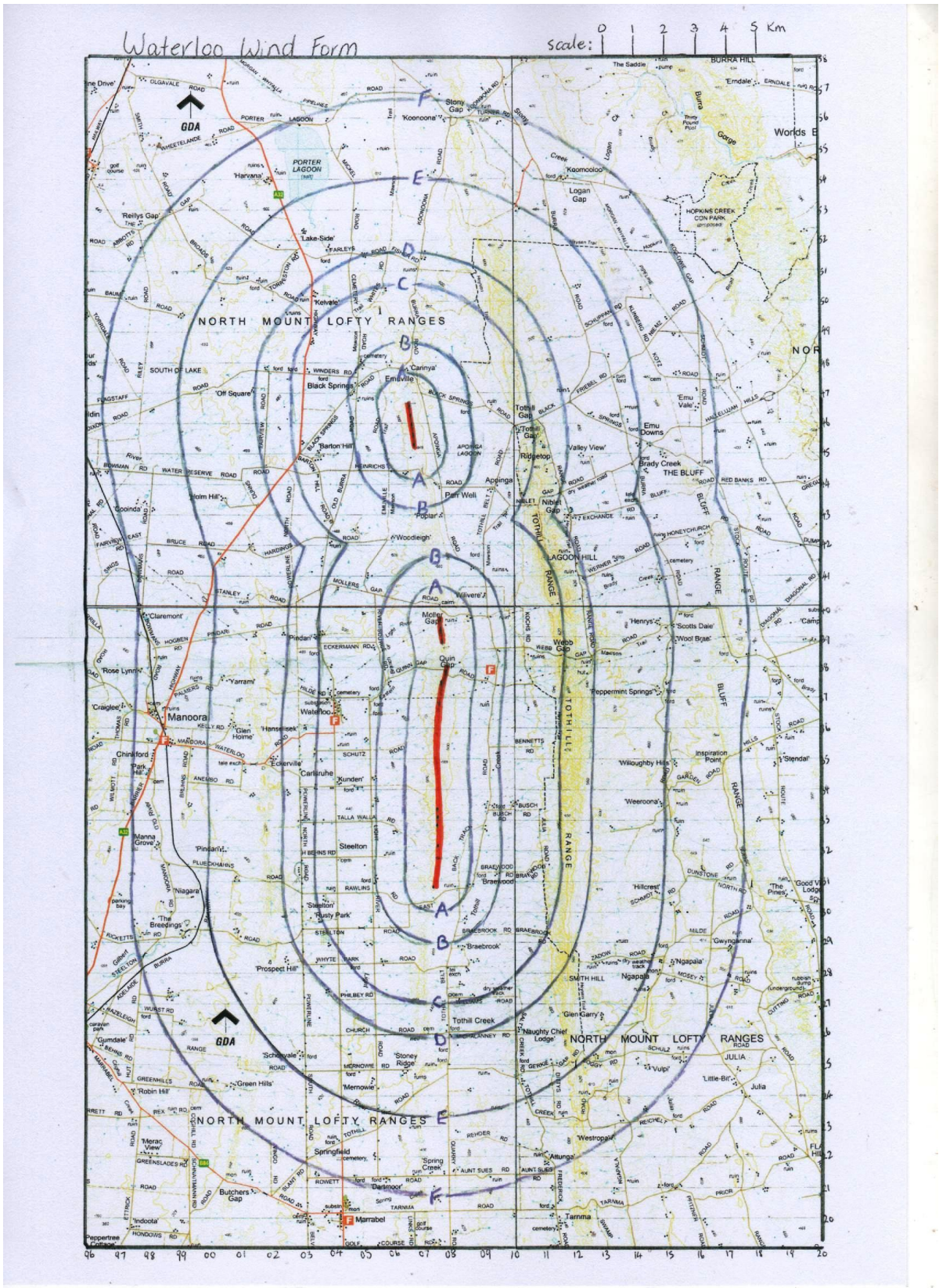

A 0 -1 km, B 1-2 km, C 2-4 km, D 4-5 km, E 5-7.5 km, F 7.5 -10 km, G >10 km