

# MACARTHUR WIND ENERGY FACILITY PRELIMINARY SURVEY

**August 2013**

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## **Introduction**

The Macarthur Wind Energy Facility (WEF) is operated by AGL. It is the largest WEF in the Southern Hemisphere. It comprises 140 Vestas V112 3MW turbines. Operation commenced in late January 2013. Although the WEF has only been operating for a short time (7 months) local residents have been complaining of negative impacts.

## **Key Findings**

**66% of the responding households were affected by the WEF.**

**Of those households affected, 96% reported disturbance by the turbines during the day and 100% reported disturbance during the night (10pm-7am).**

**Of those households affected, 91% reported negative changes to their health.**

## **Aim**

The aim of this preliminary survey is to establish how many people are impacted by noise, shadow flicker and television or radio interference in the early period of operation. An objective of this survey was to identify the experiences of those who reside near to WEFs. The results of this initial survey will be included in a future survey and aims to promote further consideration and investigation into the health impacts of WEFs.

## **Limitations**

It was evident that a valid population survey was not possible because of the close proximity of two proposed WEFs. Of concern is the probable existence of confidentiality clauses in the contracts of stakeholders/turbine hosts which prevents them from speaking publically about some aspects of the WEF.

The proposed Penshurst WEF comprises 225 turbines and is situated to the north and east of the Macarthur facility with less than one kilometre corridor between them.

The proposed Willatook WEF comprises 145 turbines and is situated to the south of the Macarthur facility with a corridor of less than two kilometres between them.

## 2.

The three WEFs take up more than one third of the total area covered in this survey. It would be expected that this area contains many potential or signed stakeholders and thus you would expect a lack of response.

There are acknowledged limitations of the survey methodology. The accuracy of this survey is compromised by issues of communication in providing a suitable format that allows for complete clarity, detail and depth in accurately reporting the respondents' experiences. Providing a format that allows for the full quality and clarity of experiences is most desirable. Extensive verbal interviews and face-to-face recordings would be most suitable.

### **Method:**

An anonymous self-reporting survey, map with distance bands so households could establish how far they reside from turbines and a letter of introduction, explaining the reasons for conducting the survey, was delivered within and near to the Macarthur WEF out to approximately 10 kilometres. Each survey was numbered to avoid tampering.

### **Results:**

**Of real concern is that children are included as part of respondents' households and are being impacted. Children are also probably part of hosts' or potential hosts' households, but confidentiality clauses would prevent any knowledge of impacts being revealed.**

37 households responded to the survey

23 (66%) households were affected by the WEF

8 households were not affected but included:

1 household was not affected, but stated that the noise was "intrusive"

1 household was not "inconvenienced" but stated that the noise was "like the sea roaring continuously" and "like something coming down the road"

1 household was not affected but stated "the worst thing is there is no more silence" and "always a hum"

2 surveys were discarded because of the removal of anti-tampering numbers

A total of 62(74%) individual people were affected and 22 individual people were not

14(38%) households reported diminished television reception, some having to increase television volume to override turbine noise

5(13%) households were disturbed by flicker

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**Of the households affected:**

8 (36%) were within 0-2 kilometres of turbines

10 (46%) were within 2-5 kilometres of turbines

4 (18%) were within 5-10 kilometres of turbines, the greatest distance being 8-9 kilometres

22 (96%) reported disturbance by the turbines during the day

23 (100%) reported disturbance by the turbines during the night (10pm – 7am)

5 (24%) reported sleep disturbance for the majority of nights

16 (70%) reported sleep disturbance for 1-4 nights per week

**Of the 23 households affected, 21(91%) households reported changes to their health.**

**Of the 21 households reporting health changes, 19(90%) reported sleep disturbance and sleep deprivation and 5(23%) reported a sudden and alarming awakening during the night.**

**Sleep disturbance and deprivation was the most significant impact reported by the majority of households.**

Reported symptoms included:

Sleep deprivation, lethargy, lacking energy – reported by 19 households

Ear pain/ discomfort, ringing/buzzing in ears – reported by 9 households

Headaches and head pressure – reported by 8 households

Tremors and vibration through body (often felt in bed or chair) – reported by 7 households

Anxiety – reported by 7 households

Heart palpitations and rapid heart rate - reported by 5 households

Dizziness and light-headedness – reported by 4 households

Nausea and dry retching – reported by 4 households

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Respondents were asked to rate the noise impact on their households – seriously, moderately, slightly and not. Of the households affected:

48% rated a serious impact

30% rated a moderate impact

22% rated a slight impact

If the turbines were turned off at night, their responses were:

4% predicted a serious impact

17% predicted a moderate impact

22% predicted a slight impact

57% predicted no impact

#### **Households who have made complaints to AGL, the developer – 52%**

Many have made numerous complaints to AGL, some 30, 45 and 90 times. A complaint receipt was provided and some were told they (AGL) would “look into it”. Most were told that their health and sleep problems were not caused by wind turbines and were told to “visit your doctor”. They were advised that the WEF was operating compliantly and that “noise emissions were within planning parameters”.

Households who have made complaints to Councils, Planning Dept, Health Dept, politicians, media etc – 57%

**Households who reported a satisfactory resolution for themselves – none.**

#### **Recommendations and Conclusions:**

**This preliminary survey of the impacts of the Macarthur wind energy facility has clearly identified that the WEF is having serious health and wellbeing impacts on many people living within its’ vicinity. It is clearly shown that noise, both audible and infrasound, is**

**being generated by the Macarthur WEF and that this noise is causing sleep disturbance and harm.**

**Sleep is an essential part of healthy life and is recognised as a fundamental right by the World Health Organization (European Court of Human Rights) (1).**

**The planning schemes and noise standards used by the Victorian Government to regulate WEFs are obviously inadequate and are failing profoundly to protect citizens from harm. The acoustic modelling and siting of turbines is inappropriate and flawed.**

**The survey identifies the urgent need for support for impacted residents.**

**When the results of this preliminary survey are viewed in conjunction with the results of previous surveys and studies undertaken at Waubra, Waterloo and Cullerin Range, it is undeniably apparent that WEFs are having serious and detrimental impacts on the health and wellbeing of many people living in their vicinity.**

**These surveys clearly show the urgent need for a thorough review of audible and inaudible noise measurement and monitoring relating to wind energy facilities and the paramount need for independent multi-disciplinary studies.**

#### References

- (1) Official Journal of the European Communities, 18.7.2002 WHO, Noise Guidelines for Europe, pp108,109

*\*The author's interest in wind energy began soon after she and her husband purchased their property and found that a wind facility was proposed next to it. She conducted this preliminary survey because of the lack of data and the refusal of Government agencies to collect data and to investigate. She has a background in scientific research and has spent many years working in secondary schools as a technical assistant delivering practical science in the classroom.*

## Comments

### Some of the comments regarding the noise:

“roaring, thumping, rumbling”, “like a jet engine overhead”, “constant droning, our peace and quiet gone”, “loud incessant, unsettling roar”, “no relief, even indoors”, “like a furnace on slow roar”, “an unrelenting drone”, “doof-doof sound”, “like a truck that never arrives”, “very disturbing”, “often worse at dusk and dawn”, “sound of an unbalanced washing machine in the house”, “variable roaring noise”, “very loud rumbling”, “thump, thump, thump”, “continuous, annoying noise in a previously quiet environment.”

“Noise can be horrible, gets in your head, always there”,

“Extremely loud roar constantly in southern paddocks....cannot work in this paddock AT ALL due to noise.”

“Sounds like the ocean roaring, but not in a calming way, does not let up sometimes.”

“When the winds are in the north and north west we really cop it.

“Sounds like an electric motor going all night.”

“At the moment we are experiencing very strong north/north westerlies. Turbines are extremely noisy; we are being hammered day and night”.

“We have had weeks and weeks of unrelenting northerly and north westerly winds and consequently are recently really feeling the affects – no sleep, pain in head and ears.”

“Depends on wind direction and strength but can be clearly heard in the house. Can be horrible – seems to get into your head.”

“Constant, unending noise drowns out wind in trees.”

“The family avoids staying here at night, if possible.”

“The noise is in the room with you.”

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**Some of the comments regarding vibrations:**

“At times I feel a pulsating through my body”.

“Pulse sensation and noise when in bed”.

“Noise seems to come through the pillow”,

“It is not just a noise outside, but it is in the room. It is in the pillow as you try to sleep. It vibrates in your head.”

“It is a very loud rumbling noise that vibrates through the whole house.”

“We can feel the vibration through the floor and the couch.”

“We can feel the vibration in bed as if there is an electric charge going through your body. We wake in the morning feeling wretched and exhausted.”

**Some of the comments regarding health impacts:**

Tightening, like a band around the head”.

“Unable to sleep without noise interruption”.

“Experienced a vibration tingling sensation ripple through my whole body”.

“Feeling very stressed, compounded by lack of good quality sleep”.

“All the family is hearing it and being disturbed”.

“SLEEP DISTURBANCE!! Before turbines started I never had problems with my sleep.”

“My heart races and palpitates hard in my chest”.

“I feel nauseous and lethargic”.

“I wake up suddenly for no reason and am wide awake”.

“My body has become very sensitive”.

“Have had occasions where noise seemed to physically hit – nauseous, anxious and faint – most unpleasant.”

“Severe head pressure- head feels like it is in a vice.”

“This constant impact leaves us in pain all day as it is so severe.”

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“We are constantly tired as the impact is debilitating.”

“Pressure in head – headaches and ringing in ears – infrasound effects.”

“The noise generated by the wind farm is by far the most debilitating impact. It doesn’t occur every day but it is very regular. It is loud (roar), incessant and unsettling. There is no relief from it.”

“We are forced to leave our house/property for 2 days and nights a week. When away our symptoms disappear.”

“The infrasound/low frequency noise we cannot hear, but we can feel it.”

“Everyone is constantly overtired.”

“Wake in alarm – anxious, hot sweat”.

“Constantly tired during the day.”

“Feeling stronger impacts with these constant northerlies.”

**General comments:**

“I have lived in my home for 20 years and never had any of these health problems before”

“anxiety and concern about reduced value of property”

“This is my life’s work and it has been devalued considerably.”

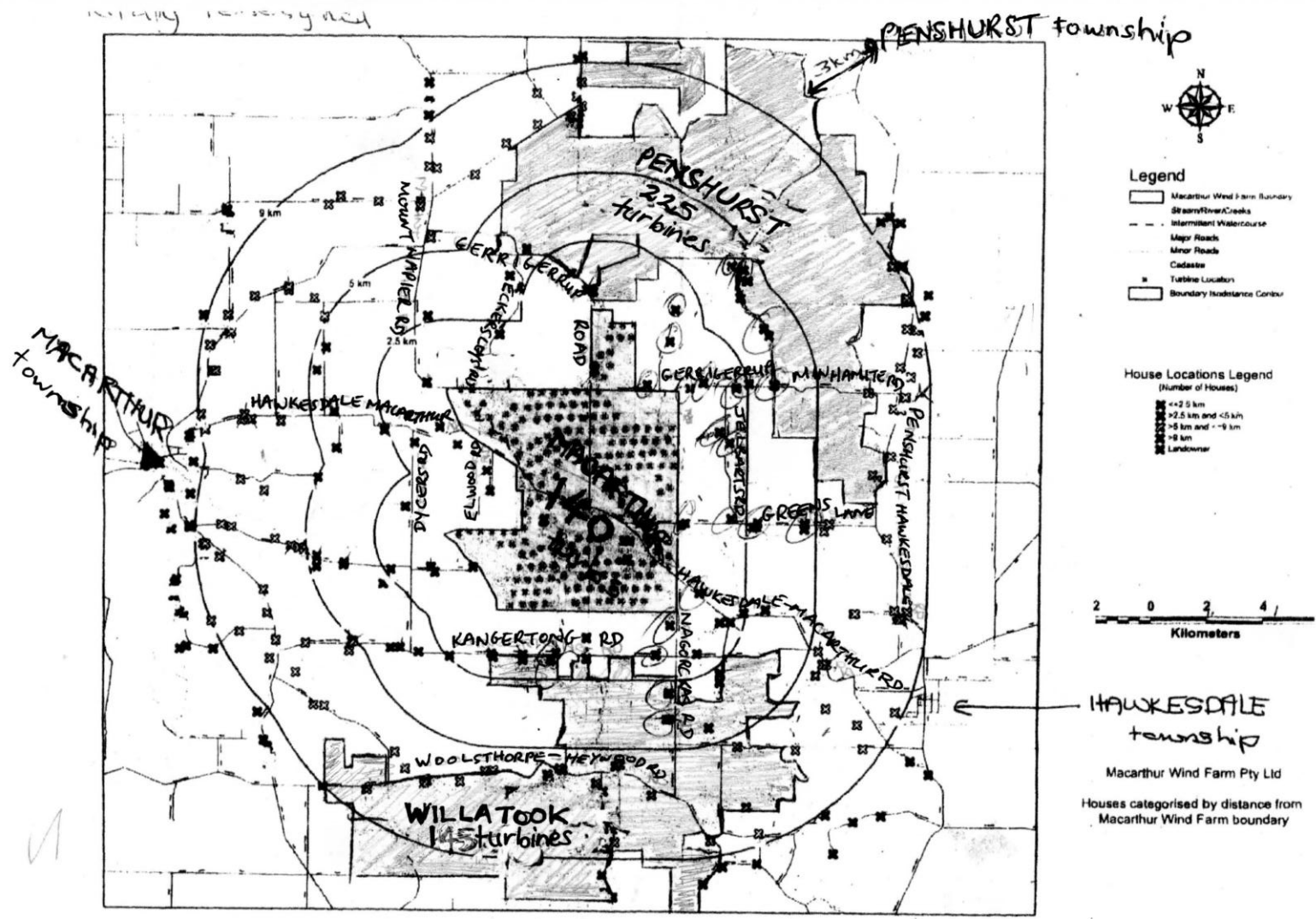
“Our life after living happily and healthily for 33 years has been turned upside down and NOBODY IS DOING ANYTHING ABOUT IT.”

“I feel my family’s health has been put at risk and I am concerned about the long term impacts. We just want to sleep in our home and to be able to work on our farm in a safe environment.”

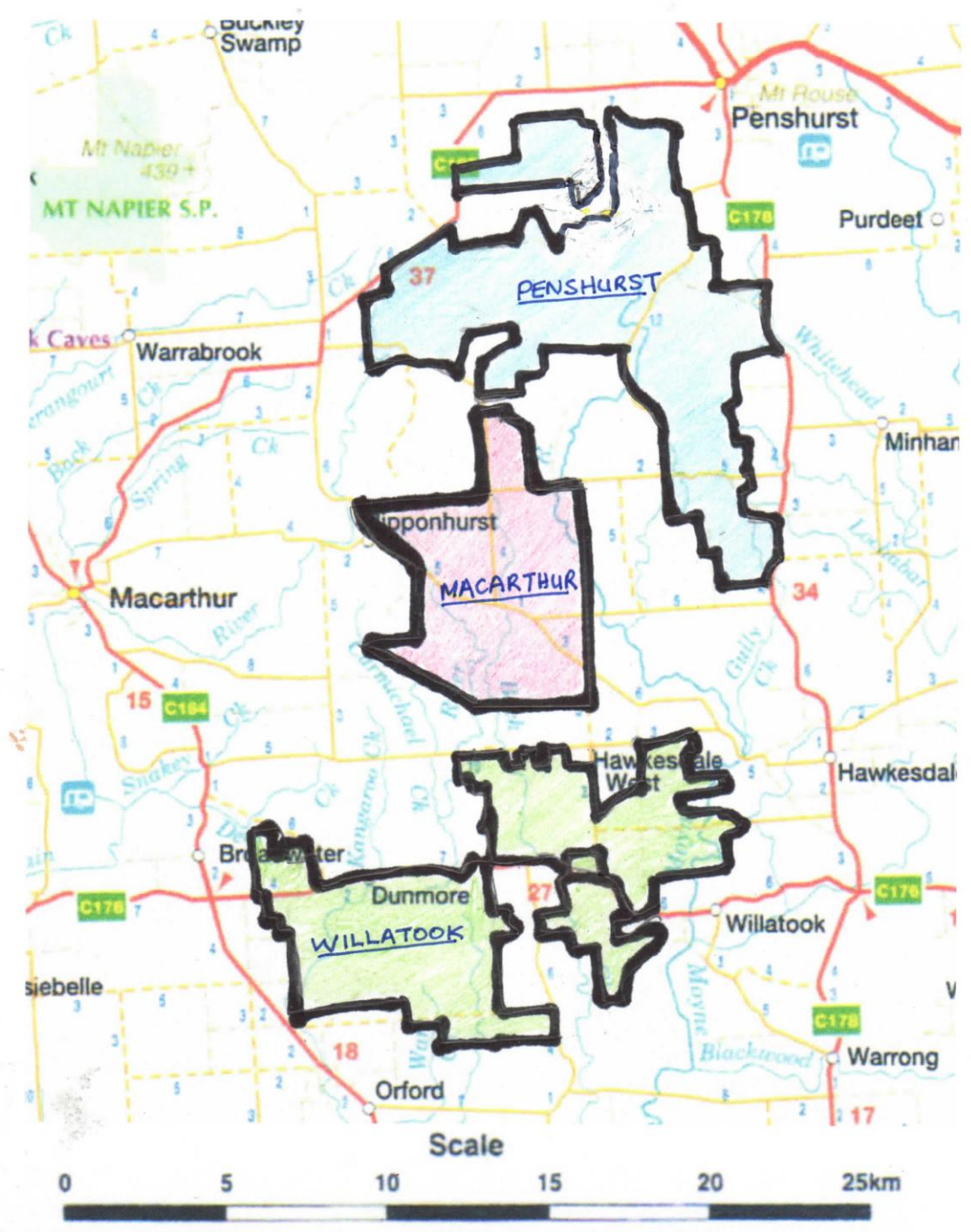
“The single aspect that is most important to us (i.e. peace and quiet) has been taken away.”

Some respondents commented that -regarding the 3 stakeholders/hosts of the Macarthur WEF– that one host family is moving away and now building a new home over 30kms away from the WEF. Another host has other properties elsewhere and visits these regularly. The other host does not live in the vicinity of the WEF.





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# MACARTHUR WIND FARM SURVEY

## JULY 2013

(Please circle appropriate answers)

1. Using the attached maps of the Macarthur wind farm area which shows distances in km from the turbines, please circle one letter below to indicate inside which line your residence is located. If outside line I please circle J

**A      B      C      D      E      F      G      H      I      J**

0-1km   1-2km   2-3km   3-4km   4-5km   5-6km   7-8km   8-9km   9-10km   outside 10km

2. How many people reside at your house? .....

3. (i) Are any of your household affected/impacted by Macarthur Wind Farm?

Yes   No   **(IF NOT AFFECTED** please ignore questions 4-13. If you would like to make any comments there is space provided at QUESTION 14)

(ii) How many people are affected?.....

4. Does the wind farm generate shadow flicker, blade glint or other visual effects? Yes No **(if No go to question 6)**

**Shadow flicker** describes the flicking on and off of the wind turbine's shadow as the blades rotate.

**Blade glint** happens when the surface of wind turbine blades reflects the sun's light

5. Does the flickering, glint or visual effects annoy or disturb anyone in your home or whilst working outside?

Yes No **(if No go to question 6)**

**(If yes please describe what you experience)**

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6. (i) Does the wind farm affect your household watching television or listening to the radio or other electronic devices? Yes No **(if No go to question 7)**

(ii) What happens?

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7. (i) Does the wind farm generate noise disturbance during the **DAY**? Yes No  
**(If Yes please describe the noise)**

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(ii) Does the wind farm disturb your household in any other way or does anyone feel anything different when the turbines are operating during the **DAY**? Yes No **(If Yes please describe)**

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(iii) Have you noticed any changes to you or your families' health, any new symptoms or sensations since the turbines started operating, which correlate with any disturbance from the turbines during the **DAY**?

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8. (i) Does the wind farm generate noise disturbance during the **NIGHT**? Yes No

**(If yes please describe the noise)**

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(ii) Does the wind farm disturb your household in any other way or does anyone feel anything different when the turbines are operating during the **NIGHT**? Yes No

**(If Yes please describe)**

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(iii) Have you noticed any changes to you or your families' health, any new symptoms or sensations since the turbines started operating, which correlate with any disturbance from the turbines during the **NIGHT**?

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9. (i) Are there any particular weather conditions that create more noise disturbance?

Yes No **(if No please go to question 10)**

(ii) What have you noticed?

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10. (i) Is your household's sleep disturbed? Yes No **(if No go to question 11)**

(ii) If so how many nights a week? .....

(iii) What creates the sleep disturbance?

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

Seriously affected    Moderately affected    Slightly affected    Not affected

12. If the turbines were not operated at night (10pm to 7am) would you describe people in your home as:

Seriously affected    Moderately affected    Slightly affected    Not affected

13. (i) If your household is negatively impacted by the turbines, has your household ever complained?

Yes    No

(ii) Who have you complained to and how often (estimate)?

The wind developer? Yes    No .....

The local council? Yes    No .....

The Health Department? Yes    No .....

The EPA? Yes    No .....

The Planning department? Yes    No .....

Your local MP? Yes    No .....

Other Politicians? Yes    No .....

The media? Yes    No .....

Your health care provider(s)? Yes    No .....

Other? Please provide details Yes    No .....

(ii) What was the outcome of the complaint notification(s)?

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(iii) Was the problem resolved, and if so, how and who by?

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14. If you have any further comments that you believe are relevant to this survey please feel free to write below.

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**Thank you for taking the time to complete this survey, it is appreciated.**

If you are affected by the wind farm and would like to take part in a further confidential comprehensive phone survey please register by phoning 55 964200 or by emailing [schaferaa@gmail.com](mailto:schaferaa@gmail.com) to arrange a time that is suitable.