

**Open Submission: Risk of Harm to Children
and Industrial Wind Turbines**

Health and Social-economic Impacts in Canada

Health Canada Wind Turbine Noise and Health Study

*Health Impacts and Exposure to Wind Turbine Noise:
Research Design and Noise Exposure Assessment*

Submitted by Carmen Krogh, BScPharm

December 27, 2012

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*Health Impacts and Exposure to Wind Turbine Noise:
Research Design and Noise Exposure Assessment*

Submitted by Carmen Krogh, BScPharm

December 27, 2012

To:

The Honourable Leona Aglukkaq
Minister of Health
Health Canada
minister_ministre@hc-sc.gc.ca

Copy:

The Right Honourable Stephen Harper
Prime Minister of Canada
pm@pm.gc.ca

David S. Michaud, PhD
Principal Investigator
Consumer and Clinical Radiation Protection Bureau
Healthy Environments and Consumer Safety Branch
Health Canada
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December 27, 2012

Dear Minister Aglukkaq,

Re: Health Canada Wind Turbine Noise and Health Study

1 Background

This submission is being made regarding risk of harm to children in general, with examples of increased vulnerability associated with pre-existing medical conditions such as autism, respiratory conditions and other when industrial wind turbine facilities are sited in close proximity to family homes and schools.

2 Purpose

The purpose of this submission is to inform Health Canada, the study team and others about the health and socio-economic issues in general, which have caused Canadian families to report symptoms, stress, anxiety, depression, frustration, financial burdens, social impacts and other health related issues associated with pre- and post-operations of industrial wind facilities.

Families with children, including those with pre-existing medical conditions, have reported concerns regarding the siting of industrial wind energy facilities in close proximity to residences and schools.

I have provided a copy of my comments to The Right Honourable Stephen Harper, Prime Minister of Canada, and Dr. David Michaud, Principle Investigator.

This submission is intended to contribute to the consultation process and study design for the *Health Canada Wind Turbine Noise and Health Study*, to request an inquiry-investigation prior to finalizing the study design.

3 Disclaimer

The contents of this submission should not be used to infer any bias for or against wind energy.

This submission is not to be associated with and/or used to characterize any individual and/or organization.

I have received no financial support for the research, authorship, and/or publication of this submission.

4 Introduction

I am frequently in contact with Canadians and others reporting the serious health and social-economic consequences that are occurring when industrial wind facilities are

proposed or operating in quiet rural areas and in close proximity to residents. A number of submissions have been forwarded to Health Canada at the request of Canadian families. These submissions include those made confidentially and publicly for proposed and operating projects.

This information is being provided due to my concern about the risks to children when proposed or operating wind energy facilities are sited in close proximity to schools and family residences.

Excerpts from peer reviewed and published research and other documentation of health and social-economic impacts associated with wind energy facilities has been provided to Health Canada and the Principle Investigator.

Vigilance and long term surveillance systems regarding risks to children associated with wind energy facilities are lacking.

The lack of resolution associated with industrial wind energy facilities has led to serious health, social, economic and altered quality of life issues.

The harm reported is in conflict with the World Health Organisation's definition of health:

": "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" ¹

Many jurisdictions, including the Canadian federal, provincial, and territorial governments and health officials have accepted WHO's definition of health (Health Canada, 2004, vol. 1, p. 1-1)." ²

5 Canada and rights of the child

Canada has had a role regarding "rights of the child":

"Canada played an instrumental role in drafting and promoting the United Nations Convention on the Rights of the Child. The Convention outlines the responsibilities governments have to ensure a child's right to survival, healthy development, protection and participation in all matters that affect them. The four general principles of the Convention are: non-discrimination, the best interests of the child, the right to life, survival and development, and respect for the views of the child.

The UN General Assembly unanimously adopted the Convention on November 20th, 1989. As of September 2010, the Convention has been ratified by 193 countries, making it the most widely ratified human rights treaty.

Canada ratified the Convention in 1991. The Public Health Agency of Canada is responsible for coordinating federal implementation of the Convention in Canada. The Department of Justice is responsible for its legislative implementation at the federal level.”³

The United Nations Convention on the Rights of the Child proclamation states that “childhood is entitled to special care and assistance”:

“Preamble

Recalling that, in the Universal Declaration of Human Rights, the United Nations has proclaimed that childhood is entitled to special care and assistance,

Convinced that the family, as the fundamental group of society and the natural environment for the growth and well-being of all its members and particularly children, should be afforded the necessary protection and assistance so that it can fully assume its responsibilities within the community,⁴

...

The above United Nations proclamation that “childhood is entitled to special care and assistance” signatories “Have agreed as follows” to a number of Articles that can be retrieved from the site <http://www2.ohchr.org/english/law/crc.htm> Indications are that “...the governments that have ratified it have legally agreed to fulfill its provisions.” The Canadian Children's Rights Council notes:

“The U.N. Convention on the Rights of the Child is the most ratified of all the United Nations Human Rights treaties. The treaty affirms and describes the fundamental human rights of all children (all human beings below the age of 18), and the governments that have ratified it have legally agreed to fulfill its provisions. The CRC forms the most comprehensive and well-established international standard for children's rights and provides the framework for the actions of UNICEF, the UN children's agency.

Children's rights are also protected under the other UN human rights instruments, which include the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant of Economic, Social

and Cultural Rights, International Labour Organization Conventions and numerous other documents.”⁵

6 Risks to children *[not intended to be exhaustive]*

Excerpts from a fact sheet from the World Health Organization states:

“Facts and figures

Noise is an underestimated threat that can cause a number of short- and long-term health problems, such as for example sleep disturbance, cardiovascular effects, poorer work and school performance, hearing impairment, etc.

Who is most affected?

Some groups are more vulnerable to noise. As children spend more time in bed than adults, they are more exposed to night noise.

Nuisance at night can lead to an increase in medical visits and spending on sleeping pills, which affects families' budgets and countries' health expenditure. The gap between rich and poor is likely to increase if governments fail to address noise pollution.

Children, noise and health

Impairment of early childhood development and education caused by noise may have lifelong effects on academic achievement and health. Studies and statistics on the effects of chronic exposure to aircraft noise on children have found:

- consistent evidence that noise exposure harms cognitive performance;
- consistent association with impaired well-being and motivation to a slightly more limited extent;
- moderate evidence of effects on blood pressure and catecholamine hormone secretion.”⁶

Excerpts from The World Health Organization's “Training Package for the Health Sector” on “Children and Noise” identify vulnerabilities:

“VULNERABLE GROUPS OF CHILDREN

§ The fetus and babies

§ Preterm, low birth weight and small for gestational age babies

- § Children with dyslexia and hyperactivity
- § Children on ototoxic medication”⁷

“It is logical to consider certain subgroups of children (since conception) to be particularly at risk for harm from excess noise exposure. These include the fetus, babies and very young infants born preterm, with low birth weight or small for gestational age. Also, children who have learning disabilities or attention difficulties may be more likely to develop early problems with mild hearing loss compared to children without these challenges, and children on ototoxic medications may have higher likelihood of developing problems from exposure to excess noise.”⁸

A brief overview of the WHO Training Package notes that adverse effects from noise exposure can include direct ear damage, indirect adverse effects (physiological and psychological effects) and impaired cognition. The “indirect damage” of indirect adverse effects can include stress-related somatic effects (stress hormone, blood pressure and muscle spasm) and psychological effects can include annoyance/isolation, sleep disturbance and mental health issues. Cognitive effects can include reading, concentration, memory and attention issues. Chronic noise exposure impairs cognitive function (reading comprehension and long term memory) and that dose-response relationships are supported by both laboratory and field studies and that “Over 20 studies have reported that noise adversely affects children’s academic performance”.⁹

Children with pre-existing medical conditions can have increased risks of adverse effects. For example autism,^{10, 11, 12} asthma,^{13, 14} migraine,^{15, 16} bronchitis,¹⁷ and epilepsy^{18, 19} can be vulnerable to the effects of noise and/or stress and/or sleep disturbance. These effects can be detrimental to the health of children. Childhood asthma²⁰ and migraine²¹ can be triggered by stress.

Niemann et al state:

“With children the effects of noise induced annoyance from traffic, as well as neighbourhood noise, are evident in the respiratory system. The increased risk of illness in the respiratory system in children does not seem to be caused primarily by air pollutants, but rather, as the results for neighbourhood noise demonstrate, by emotional stress..”²²

6.1 Autism [The Appendix provides excerpts of judicial decisions associated with wind turbine appeals including among other issues, the risk to autistic children. Indications are that UK planning inspectors and planning authorities have been sufficiently convinced of the adverse effects of wind turbines on children with AS (Autistic Spectrum Disorders) of similar

severity to the children reported here, to refuse planning permission for several wind energy facilities.

Steigler and Davis (2010) report that a “survey of over 17,000 children with ASD, over 40% were hypersensitive to sounds” and that “noise sensitivity is a particular problem for those with Autistic Spectrum Disorders (ASD)”.²³

Steigler and Davis (2010) note:

“Depending on the observer’s perspective, the behaviors may be viewed as challenging behaviors, self-treatment strategies, autonomic fear responses, or emotional regulatory strategies. Such behaviours include covering ears, crying, and/or tantruming in response to certain sounds, fleeing the area where the sound is occurring, humming/vocalizing in the presence of sound, trembling, increased muscle tone, hyperventilation, pupil dilation and even self-injury in the form of blows to the ears.”²⁴

The Becchio et al (2010) abstract states:²⁵

Abstract

Background: Cast shadows in visual scenes can have profound effects on visual perception. Much as they are informative, they also constitute noise as they are salient features of the visual scene potentially interfering with the processing of other features. Here we asked i) whether individuals with autism can exploit the information conveyed by cast shadows; ii) whether they are especially sensitive to noise aspects of shadows.

Methodology/Principal Findings: Twenty high-functioning children with autism and twenty typically developing children were asked to recognize familiar objects while the presence, position, and shape of the cast shadow were systematically manipulated. Analysis of vocal reaction time revealed that whereas typically developing children used information from cast shadows to improve object recognition, in autistic children the presence of cast shadows—either congruent or incongruent—interfered with object recognition. Critically, vocal reaction times were faster when the object was presented without a cast shadow.

Conclusions/Significance: We conclude that shadow-processing mechanisms are abnormal in autism. As a result, processing shadows becomes costly and cast shadows interfere rather than help object recognition.

A review article by Cortesi et al (2010) abstract states:

“Children and adolescents with autistic spectrum disorders (ASD) suffer from sleep problems, particularly insomnia, at a higher rate than typically developing children, ranging from 40% to 80%. Sleep problems in ASD might occur as a result of complex interactions between biological, psychological, social/environmental, and family factors, including child rearing practices that are not conducive to good sleep. Interestingly, children with a history of developmental regression have a more disturbed sleep pattern than children without regression. Even though regulation of sleep in children with ASD is still poorly understood, circadian abnormalities in autism might be the result of genetic abnormalities related to melatonin synthesis

and melatonin's role in modulating synaptic transmission. Recently a bifurcation of the sleep/wake cycle with increased sensitivity to external noise and short sleep duration causing irregular sleep onset and wake up times has been suggested. Identifying and treating sleep disorders may result not only in improved sleep, but also impact favorably on daytime behavior and family functioning. Several studies have also demonstrated effectiveness of behavioral interventions for sleep onset and maintenance problems in these populations. When behavioral interventions are not effective or lead only to a partial response, pharmacological treatment options should be considered. Studies of melatonin use in children with ASD provide evidence for its effectiveness and safety in the long run. The clinician assessing a child with an ASD should screen carefully for sleep disorders and make referrals as indicated." ²⁶

Malow et al (2006) conclude: ²⁷

Conclusions: Parentally reported sleep concerns of insomnia in children with ASD are substantiated by validated sleep questionnaires and by PSG. Furthermore, good sleepers with ASD showed fewer affective problems and better social interactions than ASD poor sleepers.

6.2 Learning and cognitive [excerpts are not intended to be exhaustive]

As noted in the WHO Training Package briefly summarized above, research has demonstrated that children's learning is affected by noise. ²⁸

Ljung et al (2009) note that road traffic noise was found to impair reading speed and basic mathematics and that:

"The American National Standards Institute emphasizes that school buildings' sound isolation should prevent two types of noise: noise that intrudes into the classroom from sources outside of the school building envelope, which include vehicular traffic, aircrafts, industrial plants, and activity in schoolyards and noise that originates within the school building such as unwanted speech." ²⁹

Stansfeld and Matheson (2003) note:

"It is likely that children represent a group which is particularly vulnerable to the non-auditory health effects of noise. They have less cognitive capacity to understand and anticipate stressors and lack well-developed coping strategies. Moreover, in view of the fact that children are still developing both physically and cognitively,

there is a possible risk that exposure to an environmental stressor such as noise may have irreversible negative consequences for this group...

Studies of children exposed to environmental noise have consistently found effects on cognitive performance. The studies which are most informative in terms of the effects of noise on cognition have been field studies focusing on primary school children. This article will focus on these studies. For details of noise effects on pre-school children and of laboratory studies of acute noise exposure,"³⁰

Dr. Arline L. Bronzaft, author of landmark research on the effects of elevated train noise on children's classroom learning states;

"Abstract

Research linking loud sounds to hearing loss in youngsters is now widespread, resulting in the issuance of warnings to protect children's hearing. However, studies attesting to the adverse effects of intrusive sounds and noise on children's overall mental and physical health and well-being have not received similar attention. This, despite the fact that many studies have demonstrated that intrusive noises such as those from passing road traffic, nearby rail systems, and overhead aircraft can adversely affect children's cardiovascular system, memory, language development, and learning acquisition. While some schools in the United States have received funds to abate intrusive aircraft noise, for example, many schools still expose children to noises from passing traffic and overhead aircraft. Discussion focuses on the harmful effects of noise on children, what has to be done to remedy the situation, and the need for action to lessen the impacts of noise from all sources. Furthermore, based on our knowledge of the harmful effects of noise on children's health and the growing body of evidence to suggest the potential harmful effects of industrial wind turbine noise, it is strongly urged that further studies be conducted on the impacts of industrial wind turbines on their health, as well as the health of their parents, before forging ahead in siting industrial wind turbines."³¹

Pediatrician Dr. Nina Pierpont (2009) documented health effects in a case series which included Canadian participants. Dr. Pierpont defined the cluster of symptoms associated with wind turbines to include: sleep disturbance, headache, tinnitus, ear pressure, dizziness, vertigo, nausea, visual blurring, tachycardia, irritability, problems with concentration and memory, and panic episodes associated with sensations of internal pulsation or quivering when awake or asleep.³²

Pierpont (2010) states:

“During exposure, young Justin, a healthy 2½-year-old, pulled on his ears and got cranky at the same times that adults in the family noticed more headache and tinnitus. His language development was good before, during, and after exposure, but his mother noticed during exposure that the child began to confuse T with K sounds and W with L sounds, which he had not done before. This sound confusion was ongoing six weeks after exposure ended, when I interviewed the parents.”

In my wind turbine study, 7 out of the 10 school-age children and teens did worse in school during exposure to turbines, compared to before or after, including unexpected problems in reading, math, concentration, and test performance, noticed by both teachers and parents. Teachers sent notes home asking what was wrong with the children.

Subtle as these effects are, they have serious implications. Noise exposure, even at relatively low sound levels, fouls up the parts of the brain responsible for figuring out language sounds (what we call language processing) and the parts responsible for understanding and learning and remembering things we hear or read (what we call language based learning).

Let me emphasize: Noise exposure, even at low levels that don't damage hearing, can do this.

Over 90% of my sample of affected people, both adults and children, had cognitive difficulties during wind turbine exposure—problems that lingered and resolved slowly after exposure ended. These included difficulties with reading, math, spelling, writing, multitasking in kitchen and home, remembering a series of errands, maintaining a train of thought in a telephone conversation, following the plot of a TV show, following recipes, and following directions to put together furniture.”³³

6.3 Sleep disruption [excerpts are not intended to be exhaustive]

Sleep deprivation associated with the operation of industrial wind facilities has been documented in peer reviewed and / or other sources.^{34, 35, 36, 37, 38, 39} Chronic sleep deprivation can lead to extreme fatigue, cognitive dysfunction and inability to concentrate and learn, depression, anxiety, increased risk of cardiovascular problems, and emotional responses such as fear, anguish and humiliation.^{40, 41}

In a peer reviewed editorial published in the British Medical Journal, Hanning and Evans (2012) state:

“The evidence for adequate sleep as a prerequisite for human health, particularly child health, is overwhelming. Governments have recently paid much attention to the effects of environmental noise on sleep duration and quality, and to how to reduce such noise. However, governments have also imposed noise from industrial wind turbines on large swathes of peaceful countryside.

The impact of road, rail, and aircraft noise on sleep and daytime functioning (sleepiness and cognitive function) is well established. Shortly after wind turbines began to be erected close to housing, complaints emerged of adverse effects on health. Sleep disturbance was the main complaint. Such reports have been dismissed as being subjective and anecdotal, but experts contend that the quantity, consistency, and ubiquity of the complaints constitute epidemiological evidence of a strong link between wind turbine noise, ill health, and disruption of sleep.”⁴²

Bonnet and Arand state:

“...There is strong evidence that sufficient shortening or disturbance of the sleep process compromises mood, performance and alertness and can result in injury or death. In this light, the most common-sense 'do no injury' medical advice would be to avoid sleep deprivation.”⁴³

Additional information is available in the full version WindVOiCe health survey where parents have commented on some of their observations regarding children.⁴⁴

9 Conclusion

Published peer reviewed references document individuals living in the environs of wind turbines report reduced sleep quality and- / -or sleep disturbance and- / -or lower quality of life.^{45, 46, 47, 48, 49}

There are no precautionary measures in place for children in public or private child care centres, schools or other institutions that care for children part or full-time. Parents and caregivers are unable to protect the health of their children and their capacity to learn.

Due to the siting of wind energy facilities in close proximity to residences, some children may be limited in their ability to play outdoors in order to avoid the potential risk of ill health.

Krogh and Horner (September 2012) note: ⁵⁰

“Inequity exists as participants who host industrial wind turbines typically “agree” and/or are compensated to accept noise, nuisance and / or other effects through a contractual arrangement. ⁵¹ , ⁵² Non participants typically have not agreed, or may not be given a similar opportunity to be compensated for noise, nuisance and / or other effects.

An example of a lease agreement states:

“The Rent, in respect of the Specified Locations...represent compensation in full for...nuisance, noise, signal interference,..., casting of shadows and other inconveniences or damage...incurred by Lessor from the acts or omissions of Lessee.” ⁵³

This inequity appears to violate the principle that all children are to be treated equally i.e. that of “non-discrimination”. ⁵⁴

Children living in homes exposed to the noise and other emissions of industrial wind turbines are reported to suffer adverse health effects ⁵⁵ and may be at risk of mental and / or physical adverse health effects similar to that of their parents.

Vigilance and long term surveillance systems regarding risks and adverse effects related to children are lacking. Such programs are necessary to evaluate the risks to children who have been exposed to industrial wind turbines. This evaluation should take place before proceeding with a final study design.

Research indicates New Experts i.e. humans, “are objective measuring instruments...”. ⁵⁶ The role of New Experts has been described in other submissions to Health Canada (*see Krogh and Harrington October 31, 2012 submission to Health Canada*) ⁵⁷

On behalf of children, New Experts have reported on risks associated with autism.

Dan Danaher (2012) reports:

“A West Clare mother who looks after an adult son with Autism Spectrum Disorder (ASD) has claimed her life has been “turned upside down” following the erection of a 19.6m agricultural wind turbine in a neighbouring property. ” ⁵⁸

BBC News, Lincolnshire (2012) reports:

“A Lincolnshire family with an autistic son said plans for wind turbines near their home had prompted them to move to another county.”⁵⁹

The article noted that:

“In 2010 an application for a wind farm at Burton upon Stather in North Lincolnshire was turned down because of its potential effect on autistic twin boys.”⁶⁰

9 Closing statements

Canada has committed to four general principles:

“... non-discrimination, the best interests of the child, the right to life, survival and development, and respect for the views of the child”.⁶¹

Purple Cherry et al support the importance of respecting the individual:⁶²

CONCLUSION

It is important to look beyond behavioral modification strategies when considering ways to alter difficult behaviors or reinforce the good behaviors of an autistic child. A comprehensive approach to support ASD children will integrate behavioral, academic, and physical and environmental strategies to improve the quality of life for children on the spectrum. The most important message of all is to respect the individual with the autism diagnosis. When we respect the individual's underlying physiology – investigating, remediating, and dignifying their sensory and other physiological issues – we are indeed respecting the individual.

Research indicates New Experts i.e. humans, “are objective measuring instruments...”.

There is an urgent requirement to consult with the New Experts, the children themselves, parents and care givers prior to finalizing the Health Canada study design.

To date, the voices of those adversely affected by operating and proposed wind turbine facilities in rural Canada have not been heard. An inquiry to investigate wind turbines and the health and social-economic issues would provide the opportunity to obtain first hand

knowledge from the “New Experts” who are currently exposed; who have been exposed in the past; or will be exposed in the future; to wind energy facilities.

As the result of the anticipated proliferation in the future⁶³ of industrial wind turbine facilities in Canada, it is expected more Canadians, including children in general, and those with special needs such as autism, epilepsy, migraine and those with respiratory disorders will be at risk of harm. Risk of learning/cognitive difficulties is also a risk factor.

The Report of the Commissioner of the Environment and Sustainable Development to the House of Commons 2012 states that regarding federally funded initiatives:

“Some of the thousands of contaminated sites are a testament to poor planning, the failure of initial assessments to anticipate and avoid future environmental and human health problems, and a lack of ongoing mitigation to lower the environmental risks during operations.”⁶⁴

This submission which identifies childhood risks including those with special needs are examples of an urgent requirement to convene an inquiry-investigation.

Other jurisdictions have conducted a public inquiry-investigation to better understand the health and socio-economic impact of wind energy development.^{65 66 67 68 69}

In addition to the advantages of a public inquiry-investigation described in the Krogh and Harrington submissions of September 5, 2012 and October 31, 2012, “New Expert” testimony would provide expert advice regarding health, social well-being and social-economic impacts and would assist with the study design.

Action by Health Canada would support its “Mission and Vision”:

“Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health.

Health Canada is committed to improving the lives of all of Canada 's people and to making this country's population among the healthiest in the world as measured by longevity, lifestyle and effective use of the public health care system.”⁷⁰

And it would support Health Canada’s “Objectives”:

“By working with others in a manner that fosters the trust of Canadians, Health Canada strives to:

- Prevent and reduce risks to individual health and the overall environment;
- Promote healthier lifestyles;
- Ensure high quality health services that are efficient and accessible;
- Integrate renewal of the health care system with longer term plans in the areas of prevention, health promotion and protection;
- Reduce health inequalities in Canadian society; and
- Provide health information to help Canadians make informed decisions.”⁷¹

The Policy Interpretation Network on Children’s Health and Environment comments on the use of the precautionary principle i.e. prevention:

Policies that may protect children’s health or may minimise irreversible health effects should be implemented, and policies or measures should be applied based on the precautionary principle, in accordance with the Declaration of the WHO Fourth Ministerial Conference on Environment and Health in Budapest in 2004.⁷²

Regarding precaution, the World Health Organization states:

“...where there is a reasonable possibility that public health will be damaged, action should be taken to protect public health without awaiting full scientific proof.”⁷³

There is an opportunity to invoke the precautionary principle. Until guidelines are established that protect human health and social-economic viability, no further development of wind energy facilities should occur and existing sites reporting health issues should be resolved to the satisfaction of the New Experts.

I propose that resolution include emergency funding to relocate families at risk and / or support legal action to protect their children and restore physical, mental and social well being and financial status.

Resolution would include pausing before constructing and operating wind energy facilities until siting guidelines are protective of human health to ensure physical, mental and social well being.

Respectfully submitted,

Carmen Krogh, BScPharm
 Ontario, Canada
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Appendix: Examples of Appeal Decisions - Autism

1. Flixborough Grange Farmhouse



Appeal Decision

by **John Braithwaite** BSc(Arch)
BArch(Hons) RIBA MRTPI

an Inspector appointed by the Secretary of State
for Communities and Local Government

**Inquiry held on 23-26 February
and 2 March 2010 - Site visits
made on 1 March 2010**

The Planning Inspectorate
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Bristol BS1 6PN

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Decision date:
19 April 2010

Appeal Ref: APP/Y2003/A/09/2105130

Flixborough Grange Farmhouse, Flixborough, Scunthorpe DN15 8RY

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Grange Wind Farm Ltd against the decision of North Lincolnshire Council.
- The application Ref WF/2008/0900, dated 16 June 2008, was refused by notice dated 29 April 2009.
- The development proposed is seven wind turbines and associated hardstandings, tracks, anemometry mast, switch gear house and underground cables.

Decision

1. The appeal is dismissed.

Reasons

2. The first three main issues are the effect of the seven wind turbines on the character and views of the landscape, on the amenities and health of local residents, and on the health and well being of the Glathorne family. The fourth main issue is whether any harm caused by the renewable energy project is outweighed by its environmental and economic benefits.

21. Lewis and Ross have Autistic Spectrum Disorder (ASD), which was diagnosed by Dr Stebbings, a Consultant Clinical Psychologist, over six years ago. In her written evidence to the Inquiry she explains that the boys also have significant speech, language and communication difficulties and severe learning difficulties; their current learning development age is no more than eighteen months. She also explains that the boys have "...significant sensory sensitivities which is a very characteristic component of ASD". Lewis and Ross have "...a fixation with spinning objects" and the "...time they spend engaged in spinning and observing spinning objects has to be limited in order to allow them to engage in other more meaningful activities". The boys are doubly incontinent and have other medical problems such as Lactic Acidosis, a dangerous condition where the blood becomes too acidic.

22. Lewis and Ross have no sense of danger and their parents, having found a house that would suit their particular needs, have spent many years adapting their home and garden to provide a safe environment for their sons. The boys attend St

2. Penpell Farm:



Appeal Decision

Inquiry held on 18 & 20-21 July, 08, 15-16 August and 16-17 November 2006

Site visits made on 19 July, 09 August and 15 November 2006

by **R D Hiscox MA (Oxon) DipTP MRTPI MRICS**

an Inspector appointed by the Secretary of State for Communities and Local Government

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2 The Square
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Bristol BS1 6PN
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e-mail: enquiries@planning-inspectorate.gsi.gov.uk

Date **17 JAN 2007**

Appeal Ref: APP/Q0830/A/05/1189328
Penpell Farm, Par, St Austell, Cornwall, PL24 2SA

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Mr S Tonkin & Mrs J Thomas against the decision of Restormel Borough Council.
- The application Ref 03/01146, dated 18 June 2003, was refused by notice dated 06 April 2005.
- The development proposed is the installation of two wind turbines with a maximum hub height of 45m. and a maximum rotor diameter of 62m. including access tracks, ancillary equipment and the installation of a guyed anemometry mast of a maximum height 50m. on one of the wind turbine positions for a temporary period of up to 18 months.

Summary of Decision: The appeal is dismissed

Health

67. In respect of health considerations, the main concern is the effect upon an autistic child, Billy Turner, who lives with his family at Willowood Farm, at a distance of some 550 metres one of the nearest properties to the sites for the proposed turbines. Both turbines would be clearly open to view from both the house and the garden. From within the house, they would be seen from the living room, from Billy's parents' bedroom and from Billy's own bedroom, where they would be open to view by a person sitting on his bed, as was demonstrated to me at my visit to the property.
68. In respect of the possible effect of the turbines upon Billy and his family, I have evidence for the Appellants from a witness with considerable academic qualifications, for the Council from a witness with no formal qualifications in respect of autism but with considerable "hands on" experience of teaching young people with autism, and also evidence from Billy's immediate family, who have to deal with his daily requirements. I have records of Billy's condition from Social Services and from his former medical practitioner. I also heard in favour of the proposal from one person and of his experience of dealing with his autistic son's obsession with large mechanical objects. The conflicting nature of this evidence is such that I will not seek to reconcile all differences, but seek to draw from areas of agreement to reach a conclusion as to the possible effects of the turbines upon Billy.
72. It is not disputed for the Appellants that these personal circumstances in this case are a material consideration. The personal circumstances are not only concerned with Billy himself, but his immediate family who have to deal with him. In this particular instance, where the family works together running a game rearing enterprise, should the situation be that they needed to move away because of the effect of the turbines upon Billy's health, this would evidently result in hardship from the loss of a business, linked to the home, built up over years. As a local business, this overlaps with a consideration of impact on the local economy, as well as the social impact on this particular family. Overall, I consider that these are exceptional circumstances, and some weight should be accorded to them as material considerations in the overall balancing exercise.

References

- ¹ World Health Organization. (1948). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. Cited Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? *Bulletin of Science Technology & Society* 2011 31: 321, DOI: 10.1177/0270467611412550, <http://bst.sagepub.com/content/31/4/321>
- ² World Health Organization. (1948). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. Cited Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? *Bulletin of Science Technology & Society* 2011 31: 321, DOI: 10.1177/0270467611412550, <http://bst.sagepub.com/content/31/4/321>
- ³ Public Agency of Canada, UN Convention on the Rights of the Child and Canada's Role, <http://www.phac-aspc.gc.ca/ncd-jne/bck-info-un-eng.php>
- ⁴ Office of the United Nations High Commissioner for Human Rights, Convention on the Rights of the Child, Adopted and opened for signature, ratification and accession by General Assembly resolution 44/25 of 20 November 1989, Entry into force 2 September 1990, in accordance with article 49
- ⁵ The Canadian Children's Rights Council, The U.N. Convention on the Rights of the Child - Overview About the U.N. Convention on the Rights of the Child (UNCRC) www.CanadianCRC.com
- ⁶ World Health Organization, Noise Facts and Figures, Sited December 23, 2012, <http://www.euro.who.int/en/what-we-do/health-topics/environment-and-health/noise/facts-and-figures> cited dec 23 2012
- ⁷ World Health Organization, Children and Noise, Children's Health and the Environment, WHO Training Package for the Health Sector, www.who.int/ceh
- ⁸ World Health Organization, Children and Noise, Children's Health and the Environment, WHO Training Package for the Health Sector, www.who.int/ceh
- ⁹ World Health Organization, Children and Noise, Children's Health and the Environment, WHO Training Package for the Health Sector, www.who.int/ceh
- ¹⁰ Cristina Becchio, Morena Mari, Umberto Castiello, (2010). Perception of Shadows in Children with Autism Spectrum Disorders *PLoS ONE* | May 2010 | Volume 5 | Issue 5 | e10582. Retrieved from www.plosone.org
- ¹¹ Catherine Purple Cherry and Lauren Underwood. The ideal home for the autistic child: physiological rationale for design strategies. *Autism Science Digest: The Journal Of Autism*, Issue 03 Retrieved from www.purplecherry.com.
- ¹² Flavia Cortesi, Flavia Giannotti, Anna Ivanenko, Kyle Johnson (2010). Sleep in children with autistic spectrum disorder, *Sleep Medicine* 11 (2010) 659–664 Retrieved from www.elsevier.com/locate/sleep
- ¹³ Hartmut Ising, Martin Ising (2002), Chronic cortisol increases in the first half of the night caused by road traffic noise. *Noise and Health* 2002,4:16:p13-21 Retrieved from <http://www.noiseandhealth.org/article.asp?issn=1463-1741;year=2002;volume=4;issue=16;spage=13;epage=21;aulast=Ising>
- ¹⁴ Bockelbrink A, Willich SN, Dirzus I, Reich A, Lau S, Wahn U, Keil T. (2008) Environmental noise and asthma in children: sex specific differences *J Asthma*. 2008 Nov;45(9):770-3. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/18972293>
- ¹⁵ Neut D, Fily A, Cuvellier JC, Vallée L (2011),. The prevalence of triggers in paediatric migraine: a questionnaire study in 102 children and adolescents. *J Headache Pain*. 2011 Nov 1. [Epub ahead of print] Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/22042255>
- ¹⁶ Doreen Wagner, Velitchko Manahilov, Gunter Loffler, Gael E. Gordon, and Gordon N. Dutton, Visual Noise Selectively Degrades Vision in Migraine *Investigative Ophthalmology & Visual Science*, April 2010, Vol. 51, No. 4 Retrieved from <http://www.iovs.org/content/51/4/2294.full.pdf>

- ¹⁷ Ising H, Lange-Asschenfeldt H, Moriske HJ, Born J, Eilts M., Low frequency noise and stress: bronchitis and cortisol in children, *Noise Health*. 2004 Apr-Jun;6(23):21-8
exposed chronically to traffic noise and exhaust fumes.
- ¹⁸ Gilboa T. *Epilepsia*. 2011 Dec 9. Emotional stress-induced seizures: Another reflex epilepsy?
doi: 10.1111/j.1528-1167.2011.03342.x. [Epub ahead of print] Retrieved from
<http://www.ncbi.nlm.nih.gov/pubmed/22150553>
- ¹⁹ Epilepsy Facts - Epilepsy Canada Cited March 2012, Retrieved from www.epilepsy@epilepsy.ca
- ²⁰ Hartmut Ising, Martin Ising (2002), Chronic cortisol increases in the first half of the night caused by road traffic noise. *Noise and Health* 2002,4:16:p13-21 Retrieved from
<http://www.noiseandhealth.org/article.asp?issn=1463-1741;year=2002;volume=4;issue=16;spage=13;epage=21;aulast=Ising>
- ²¹ Neut D, Fily A, Cuvellier JC, Vallée L. The prevalence of triggers in paediatric migraine: a questionnaire study in 102 children and adolescents. *J Headache Pain*. 2011 Nov 1. [Epub ahead of print]
<http://www.ncbi.nlm.nih.gov/pubmed/22042255>
- ²² Niemann H, Bonnefoy X, Braubach M, Hecht K, Maschke C, Rodrigues C, Röbbel N.
Noise-induced annoyance and morbidity results from the pan-European LARES study. *Noise Health*. 2006 Apr-Jun;8(31):63-79.
- ²³ Lillian N. Stiegler and Rebecca Davis (2010) Understanding Sound Sensitivity in Individuals with Autism Spectrum Disorders, Online First, published on April 6, 2010 DOI: 10.1177/1088357610364530
© 2010 Hammill Institute on Disabilities Reprints and permission: sagepub.com/journalsPermissions.nav
<http://focus.sagepub.com>
- ²⁴ Lillian N. Stiegler and Rebecca Davis (2010) Understanding Sound Sensitivity in Individuals with Autism Spectrum Disorders, Online First, published on April 6, 2010 DOI: 10.1177/1088357610364530
© 2010 Hammill Institute on Disabilities Reprints and permission: sagepub.com/journalsPermissions.nav
<http://focus.sagepub.com>
- ²⁵ Becchio C, Mari M, and Castiello U (2010), Perception of Shadows in Children with Autism Spectrum Disorders, *PLoS ONE* 5(5): e10582, doi:10.1371/journal.pone.0010582
- ²⁶ Flavia Cortesi, Flavia Giannotti, Anna Ivanenko, Kyle Johnson (2010) Sleep in children with autistic spectrum disorder, *Sleep Medicine*, www.elsevier.com/locate/sleep
- ²⁷ Malow Beth A, Marzec Mary L, McGrew Susan G, Wang Lily, Henderson Lynnette M, and Stone Wendy L, Autism Spectrum Disorders, Characterizing Sleep in Children with Autism Spectrum Disorders: A Multidimensional Approach (2006), *Sleep*, Vol 29, No. 12, 2006
- ²⁸ Bronzaft, AL, (2011) The Noise From Wind Turbines: Potential Adverse Impacts on Children's Well-Being, *Bulletin of Science Technology & Society* 2011 31: 256, DOI: 10.1177/0270467611412548. Retrieved from
<http://bst.sagepub.com/content/31/4/291>
- ²⁹ Robert Ljung, Patrik Sorqvist and Staffan Hygge (2009) Effects of road traffic noise and irrelevant speech on children's reading and mathematical performance. *Noise and Health*, Oct-Dec 2009 Retrieved from
<http://www.noiseandhealth.org/article.asp?issn=1463-1741;year=2009;volume=11;issue=45;spage=194;epage=198;aulast=Ljung>
- ³⁰ Stephen A Stansfeld and Mark P Matheson (2003), Noise pollution: non-auditory effects on health, *British Medical Bulletin* 2003; 68: 243–257 DOI: 10.1093/bmb/ldg033 Retrieved from
<http://bmb.oxfordjournals.org/content/68/1/243.full.pdf>
- ³¹ Arline L. Bronzaft (2011), The Noise from Wind Turbines: Potential Adverse Impacts on Children's Well-Being, *Bulletin of Science Technology & Society* 2011 31: 256, DOI: 10.1177/0270467611412548.
<http://bst.sagepub.com/content/31/4/291>
- ³² Pierpont, N., *Wind Turbine Syndrome: A Report on a Natural Experiment*, Santa Fe, NM: K-Selected Books, (2009)
- ³³ Pierpont, N. (October, 2010) Defining a syndrome. Paper presented at the First International Symposium on Adverse Health Effects, "The Global Wind Industry and Adverse Health Effects: Loss of Social Justice?" Picton, Ontario, Canada. Retrieved from <http://www.windturbinesyndrome.com/2010/wind-turbine-syndrome-and-the-brain-pierpont/?var=wts>

-
- ³⁴ Krogh, CME, Gillis, L, Kouwen, N, and Aramini, J, (2011), WindVOiCe, a Self-Reporting Survey: Adverse Health Effects, Industrial Wind Turbines, and the Need for Vigilance Monitoring, *Bulletin of Science Technology & Society* 2011 31: 334, DOI: 10.1177/0270467611412551, <http://bst.sagepub.com/content/31/4/334>
- ³⁵ Daniel Shepherd, David McBride, David Welch, Kim N. Dirks, Erin M. Hill (2011) Evaluating the impact of wind turbine noise on health related quality of life by Noise & Health, September-October 2011, 13:54,333-9, DOI: 10.4103/1463-1741.85502 www.noiseandhealth.org
- ³⁶ Pierpont, N. (2009). Wind turbine syndrome: A report on a natural experiment. Santa Fe, NM: K-Selected Books. Retrieved from www.windturbinesyndrome.com
- ³⁷ van den Berg G P., et al. (2008). WINDFARM perception. Visual and acoustic impact of wind turbine farms on residents. FP6-2005-Science-and-Society-20. Specific Support Action Project no. 04462 Retrieved from <http://www.epaw.org/documents.php?lang=en&article=n2>
- ³⁸ Hanning, C., (November, 2010), Wind Turbine Noise, Sleep and Health. Retrieved from <http://www.windvigilance.com/about-adverse-health-effects/wind-turbine-noise-sleep-and-health-by-dr-hanning>
- ³⁹ Lemoine, B., (February 16, 2012), Fond Du Lac County Residents Want Relief From Wind Farms Too, Wisconsin. WFRV. Retrieved from <http://betterplan.squarespace.com/todays-special/tag/fond-du-lac-county>
- ⁴⁰ Frey, BJ and Hadden, PJ, (January 2012), Wind Turbines and Proximity to Homes: The Impact of Wind Turbines Noise on Health, a review of the literature & discussions of the issues <http://www.windvigilance.com/about-adverse-health-effects/resource-centre>
- ⁴¹ World Health Organization. (2009). Night noise guidelines for Europe. Retrieved from http://www.euro.who.int/_data/assets/pdf_file/0017/43316/E92845.pdf
- ⁴² Hanning C. D and Evans, A. (8 March 2012). Wind turbine noise, *British Medical Journal*. BMJ2 012;344 doi: 10.1136/bmj.e1527 Cite this as:BMJ 2012;344:e 1527. Retrieved from <http://www.windvigilance.com/about-adverse-health-effects/wind-turbine-noise-sleep-and-health-by-dr-hanning>
- ⁴³ Michael H. Bonnet and Donna L. Arand, We Are Chronically Sleep Deprived, Dayton Veterans Affairs Medical Center, Wright State University, and Kettering Medical Center Retrieved from <http://www.sounderssleep.com/uploads/Bonnet-Arand.pdf>
- ⁴⁴ WindVOiCe, Wind Vigilance for Ontario Communities, A Self-reporting Survey of Adverse Health Effects Associated with Industrial Wind Turbines: The Need for Vigilance, March, 2011 by Carmen Krogh, BScPharm Lorrie Gillis, Process Administrator, Nicholas Kouwen, PhD., PEng, FASCE (Scrutineer), www.windvigilance.com
- ⁴⁵ Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? *Bulletin of Science Technology & Society* 2011 31: 321, DOI: 10.1177/0270467611412550, Retrieved from <http://bst.sagepub.com/content/31/4/321>
- ⁴⁶ Krogh, CME, Gillis, L, Kouwen, N, and Aramini, J, (2011), WindVOiCe, a Self-Reporting Survey: Adverse Health Effects, Industrial Wind Turbines, and the Need for Vigilance Monitoring, *Bulletin of Science Technology & Society* 2011 31: 334, DOI: 10.1177/0270467611412551, Retrieved from <http://bst.sagepub.com/content/31/4/334>
- ⁴⁷ Shepherd D, McBride D, Welch D, Dirks KN, Hill EM. Evaluating the impact of wind turbine noise on health-related quality of life. *Noise Health* 2011;13:333-9.
- ⁴⁸ Nissenbaum, M., Aramini, J., Hanning, C., (July 24 – 28, 2011), Adverse health effects of industrial wind turbines: a preliminary report 10th International Congress on Noise as a Public Health Problem (ICBEN) 2011, London, UK. Retrieved from http://www.windcows.com/files/Nissenbaum_et_al_ICBEN2011_0158_final_1.pdf
- ⁴⁹ Nissenbaum, Michael A., Aramini, Jeffery J., Hanning, Christopher D., Effects of industrial wind turbine noise on sleep and health *Noise & Health*, September-October 2012, Volume 14, p243, www.noiseandhealth.org
- ⁵⁰ Open Letter Peer Review, Health Canada Wind Turbine Noise and Health Study, Submitted by Carmen Krogh, BScPharm and Brett Horner BA CMA, September 7, 2012
- ⁵¹ “Schedule “B”, Lease Agreement for Wind Power, Canada
- ⁵² Surface Lease for Wind Power Project, Canada

-
- ⁵³ Surface Lease for Wind Power Project, Canada
- ⁵⁴ Public Agency of Canada, UN Convention on the Rights of the Child and Canada's Role, <http://www.phac-aspc.gc.ca/ncd-jne/bck-info-un-eng.php>
- ⁵⁵ Hansard. (2009, April 15). Legislative assembly, first session, 39th parliament première session, official report. Standing Committee on Green Energy and Green Economy Act. Retrieved from http://www.ontla.on.ca/web/committee-proceedings/committee_transcripts_details.do?locale=en&Date=2009-04-15&ParlCommID=8856&BillID=2145&Business=&DocumentID=23801#P68_2644
- ⁵⁶ Some portions of this conclusion are drawn from the Open Submission, Update: Proposal for an Inquiry-Investigation into the Health including Socio-Economic Impacts of Industrial Wind Turbines in Rural Canada, Health Canada Wind Turbine Noise and Health Study, Health Impacts and Exposure to Wind Turbine Noise: Research Design and Noise Exposure Assessment, October 31, 2012, Submitted by Carmen Krogh, BScPharm and Beth Harrington, BMus
- ⁵⁷ Open Submission, Update: Proposal for an Inquiry-Investigation into the Health including Socio-Economic Impacts of Industrial Wind Turbines in Rural Canada, Health Canada Wind Turbine Noise and Health Study Health Impacts and Exposure to Wind Turbine Noise: Research Design and Noise Exposure Assessment, October 31, 2012, Submitted by Carmen Krogh, BScPharm and Beth Harrington, BMus
- ⁵⁸ Dan Danaher (2012), The Clare Champion 14th February 2012 (UK), Family 'demented' by wind turbine noise, The Clare Champion 14th February 2012,
- ⁵⁹ BBC News, Lincolnshire (2012) August 25, 2012 Wind farm fear prompts family with autistic son to move <http://www.bbc.co.uk/news/uk-england-lincolnshire-19374360>
- ⁶⁰ BBC News, Lincolnshire (2012) August 25, 2012 Wind farm fear prompts family with autistic son to move <http://www.bbc.co.uk/news/uk-england-lincolnshire-19374360>
- ⁶¹ Public Agency of Canada, UN Convention on the Rights of the Child and Canada's Role, <http://www.phac-aspc.gc.ca/ncd-jne/bck-info-un-eng.php>
- ⁶² Purple Cherry, Catherine and Leed AIA, and Underwood, Lauren, The Ideal Home for the Autistic Child: Physiological Rationale for Design Strategies, www.purplecherry.com
- ⁶³ Science Advisory Board Meeting, Proceedings - Science Advisory Board (SAB), February 1-2, 2012
- ⁶⁴ 2012 Spring Report of the Commissioner of the Environment and Sustainable Development http://www.oagbvg.gc.ca/internet/English/parl_cesd_201205_03_e_36775.html#ex5
- ⁶⁵ New South Wales. Parliament. Legislative Council. General Purpose Standing Committee No. 5, Rural Wind Farms, 2009
- ⁶⁶ The social and economic impact of rural wind farms: Public hearing before the Senate Community Affairs References Committee, Commonwealth of Australia (2011, May 17). Retrieved from http://www.aph.gov.au/senate/committee/clac_ctte/impact_rural_wind_farms/index.htm
- ⁶⁷ Falmouth Board of Health, Correspondence June 11, 2012, Falmouth, Massachusetts USA, Massachusetts Department of Public Health (MASS DPH)
- ⁶⁸ Renewable Energy (Electricity) Amendment (Excessive Noise from Wind Farms) Bill (2012), Australia, <https://senate.aph.gov.au/submissions/pages/index.aspx>
- ⁶⁹ Falmouth Board of Health, Correspondence June 11, 2012, Falmouth, Massachusetts USA, Massachusetts Department of Public Health (MASS DPH)
- ⁷⁰ Health Canada, About Health Canada, About Mission, Values, Activities, Retrieved from <http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php>, Cited August 24, 2012
- ⁷¹ Health Canada, About Health Canada, About Mission, Values, Activities, Retrieved from <http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php>, Cited August 24, 2012
- ⁷² Report WP7 Summary PINCHE policy recommendations Policy Interpretation Network on Children's Health and Environment (PINCHE) Policy Interpretation Network on Children's Health and Environment QLK4-2002-02395
- ⁷³ World Health Organization, Guidelines for Community Noise, WHO (1999). <http://www.who.int/docstore/peh/noise/guidelines2.html>