SHERIFFDOM OF GRAMPIAN, HIGHLAND AND ISLANDS AT ABERDEEN

[2019] SC ABE 25

ABE-B336-17

JUDGMENT OF SHERIFF ANDREW MILLER

in the cause

ANDREW MILNE and MRS ROSEMARY MILNE, Spouses, East Mains of Crichie, Stuartfield, Aberdeenshire, AB42 5DY

PursuerS

against

STUARTFIELD WINDPOWER LIMITED, a company incorporated under the Companies Acts and having a place of business at 1 East Craibstone Street, Aberdeen, AB11 6YQ

Defender

Pursuers: Mr J Campbell QC
Defender: Mr J Findlay QC

ABERDEEN: 10 May 2018.

Findings in Fact

The sheriff, having resumed consideration of the cause, Finds the following facts admitted or proved, namely:

1) The pursuers ('Mr and Mrs Milne') are spouses and ordinarily reside at East Mains of Crichie, Stuartfield, Mintlaw, Aberdeenshire AB42 5DY, which they own.

2) The defender is a limited company having its registered office at 1 East Craibstone Street, Aberdeen and a place of business at West Knock Farm, Stuartfield, Mintlaw, Aberdeenshire AB42 5DJ.

3) This court has jurisdiction.

4) West Knock Farm is owned by Mr Albert Howie, whose family also controls the defender.

5) East Mains of Crichie is a smallholding of about five acres. The dwellinghouse there has four bedrooms and is one and a half storeys high. The master bedroom is at the rear of the property facing east, generally towards West Knock Farm and the wind turbines situated there. The dwellinghouse has double glazed windows throughout. The property has a number of outbuildings including stables for horses owned by Mrs Milne and a field in which the horses are exercised.

6) Mrs Milne owns a number of horses and competes in equestrian events.

7) The pursuers purchased East Mains of Crichie in 2001 and moved there from Aberdeen city centre in 2001 in order to be nearer to their parents and so that Mrs Milne could keep her horses there.

8) Mrs Milne gave up work as a microbiologist in about 2010 order to spend more time at East Mains of Crichie with her horses.

9) Planning consent was granted to the defender on 20 April 2011 for the construction of three wind turbines ('the turbines') at West Knock Farm.

10) The planning consent was subject to a number of conditions including planning condition 17, which was in the following terms:

"17. At wind speeds not exceeding 12 metres per second, as measured or calculated at a height of 10 metres above ground level at the site, the noise level generated by the wind turbine cluster at any noise sensitive premises shall not exceed:

a) During night hours, (2300 – 0700), 38 dB LA 90 (10 minutes) or the night hours LA 90 (10 minutes) background noise level plus 5 dBA, whichever is the greater, and;

b)

c) During daytime hours, (0700 – 2300), 35 dB LA 90 (10 minutes) or the daytime hours LA 90 (10 minutes) background noise level plus 5 dBA whichever is the greater.

Reason: In order to ensure that neighbouring residential properties are protected from unacceptably high levels of additional noise arising from the operation of the turbines."

11) The pursuers received no formal notification of the defender's application for planning permission for the turbines and were unaware of the precise locations chosen for the turbines until construction commenced.

12) On becoming aware of the proposed location of the turbines the pursuers did not complain or attempt to intervene to prevent construction of the turbines.

13) The turbines were constructed during 2011 and commissioned on 7 November 2011.

14) The turbines were manufactured by Enercon. They are each approximately 80 metres in height to blade tip.

15) The turbines each have three blades attached to a central hub. The blades turn when the wind blows against them. The turbines are designed so that the orientation of the hub to which the blades are attached changes according to the wind direction, with the result that the turbine blades always face into the wind. The turning of the blades generates electricity which has a financial value to the defender.

16) The action of the blades turning under wind power also generates aerodynamic noise, as distinct from any mechanical noise arising from the operation of the turbine mechanism.

17) West Knock Farm, where the turbines are situated, is an exposed, rural location which is frequently subject to strong wind.

18) The stronger the wind blows against the turbine blades, other things being equal, the more quickly the blades turn.

19) The more quickly the blades turn, other things being equal, the greater is the electrical power output of the turbines and hence the financial value of that output to the defender.

20) The more quickly the blades turn, other things being equal, the louder is the aerodynamic noise emitted by the turbines.

21) The cost to the defender of constructing the turbines was approximately £X, all of which was borrowed in terms of a loan secured on West Knock Farm. Approximately £Y of the loan remains outstanding. The outstanding loan is expected to be repaid within Z years.

22) The defender has a 15-year contract with Enercon for the maintenance of the turbines. This represents an ongoing cost to the defender of operating the turbines.

23) The defender also has a number of other ongoing financial costs arising from the operation of the turbines.

24) The relative positions of East Mains of Crichie and the turbines are shown on production 6/30/30 Google map, on which East Mains of Crichie is marked '9.'

25) The nearest turbine to East Mains of Crichie ('turbine 1') is situated approximately 477 yards (436 metres) northeast of the dwellinghouse there, the base of the turbine being no more than 8 metres higher than the ground level of the dwellinghouse.

26) The turbines were operated for the first time on 7 November 2011, when they were tested at high speed ('the high speed test'). On that occasion Mrs Milne was in the grounds of her property at East Mains of Crichie, exercising one of her horses. Mr Milne was working offshore. No prior notice had been given to Mrs Milne of the high speed test.

27) During the high speed test the blades of turbine 1 were rotated at high speed, which generated a loud noise for approximately a minute, after which a braking system was applied, which generated a different, very loud noise similar in character to the noise of a jet aircraft. The noise emitted by the turbines during this high speed test was frightening to Mrs Milne and to her horse, which bolted.

28) A further high speed test of turbine 1 was carried out later on 7 November 2011, with the same results. The noise emitted during the second test was again frightening to Mrs Milne and to her horse.

29) On 8 November 2011 Mrs Milne approached a member of Enercon staff who was working in the vicinity of turbine 1 and complained about the noise emitted by the turbines during the high speed test the previous day. As a result Mrs Milne has received prior notice from Enercon of all subsequent high speed tests of the turbines, although on some occasions the period of notice has been as short as 30 minutes.

30) Similar high speed testing of the each of the turbines, with similar results in terms of the volume and character of the noise emitted, has been conducted on three or four occasions each year since the first such test on 7 November 2011. Each testing period lasts around half a day.

31) After the first high speed test of the turbines on 7 November 2011 the turbines commenced routine operation under wind power.

32) Under routine operation the turbines emit noise of a volume and character which is disturbing to Mr and Mrs Milne.

33) The volume of the noise emitted by the turbines is frequently loud and intrusive to Mr and Mrs Milne's domestic routines and activities. The volume of the noise emitted by the turbines can unexpectedly drop and, having dropped, can

unexpectedly resume at an intrusive level. The noise emitted by the turbines is often clearly audible within the grounds of the pursuers' property and is sometimes audible within their house even with the double glazed windows closed.

34) The character of the noise emitted by the turbines varies from high frequency rhythmic 'blade swish' corresponding to the rotation of the blades to continuous lower frequency noise. The noise often pulses in time with the rotation of the turbine blades. The frequency of the pulses increases with the strength of the wind and hence the speed of rotation. Gusts of wind can result in sudden, sharp, particularly loud pulses of noise. The noise can be maintained at an intrusive level for long periods of time, extending to days at a time, depending on the wind conditions.

35) The volume and character of the noise emitted by the turbines changes with the strength of the wind.

36) The turbines emit noise of the volume and character described in the preceding findings in fact constantly except when the wind drops to a level at which the turbine blades do not rotate, or only rotate slowly.

37) The noise emitted by the turbines has been disturbing to Mrs Milne. She became more upset and emotional as time went on due to the impact of the noise from the turbines on her peace of mind and quality of life. She experienced difficulty concentrating and became irritable and unable to relax as a result of the volume and character of the noise emitted by the turbines.

38) From approximately 1991 until January 2017 Mr Milne worked offshore in the oil industry on a four week on/ four week off rotation. This limited his exposure to the noise emitted by the turbines during the period after they were commissioned in

November 2011, although during his periods onshore Mr Milne has experienced the same general level of intrusion from the noise emitted by the turbines as Mrs Milne.

39) Until February 2017 Mrs Milne spent a significant proportion of her time at East Mains of Crichie outdoors exercising, riding or tending to her horses. The noise emitted by the turbines has been particularly intrusive in relation to her domestic routines and quality of life whilst she has been undertaking these activities.

40) As a result of the noise emitted by the turbines Mrs Milne has been unable to sleep in the master bedroom of the house at East Mains of Crichie since approximately November 2012. Since then she has had to sleep in a bedroom at the opposite side of the house.

41) Mr Milne's sleeping arrangements have also been affected by the noise emitted by the turbines. He has refused to move to a different bedroom and continues to sleep in the master bedroom when he is at East Mains of Crichie. However he is only able to sleep in that bedroom with the window closed, in contrast to his longstanding practice of sleeping with his bedroom window open.

42) One component of the noise emitted by the turbines is amplitude modulation ('AM'), a phenomenon whereby the level of noise generated by the passing of the turbine blades through the air fluctuates periodically over time.

43) Different forms of AM are associated with the operation of wind turbines. One form (normal AM ('NAM')) is associated with the high-frequency 'blade swish' arising from the rotation of the turbine blades. Other forms of AM ('other AM ('OAM')) associated with wind turbines are less well understood but include a form of OAM which results from the turbine blades coming into contact with the surrounding air at too flat an angle, resulting in the generation of low-frequency 'thumping' noises at

locations distant from the turbine. Scientific knowledge in relation to AM as it pertains to the operation of wind turbines is a developing field.

44) AM is present within the noise emitted by the turbines situated at West Knock Farm.

45) In 2012 Mrs Milne began to keep diary entries describing the noise emitted by the turbines. She maintained that practice each year until the end of 2016.

46) Mrs Milne wrote to Aberdeenshire Council Environmental Health Department on 7 January 2012 expressing her concerns about the noise emitted by the turbines. That letter made reference to "almost constant noise pollution" from the turbines and complained about the "acoustic character" of the turbine noise as well as its volume.

47) Prior to that letter Mr and Mrs Milne had not made any complaint about the location of the turbines and had never made any formal complaint of any kind to any officials.

48) Prior to the commissioning of the turbines Mr and Mrs Milne had considered installing a domestic wind turbine at East Mains of Crichie. They subsequently decided not to install any such turbine on their property.

49) Subsequent to her letter of 7 January 2012 Mrs Milne maintained correspondence by letter and email with Aberdeenshire Council and other organisations and individuals in relation to her concerns about the noise emitted by the turbines. She also carried out research into issues relating to wind turbine noise.

50) In response to the concerns expressed by Mrs Milne about the noise emitted by the turbines, Aberdeenshire Council served an Abatement Notice on the defender on 11 December 2013 under section 80 of the Environmental Protection Act 1990. Proceedings at Peterhead Sheriff Court, initiated by the defender, followed. Those proceedings are presently sisted.

51) In November 2016 Mr Milne took up a temporary assignment with his employer based onshore in Surrey. He commenced work in Surrey in January 2017. His assignment there is due to come to an end in November 2018.

52) Mrs Milne chose to relocate with her horses to Surrey in February 2017 in order to get away from the noise emitted by the turbines. She presently lives with Mr Milne in Surrey and her horses are stabled near to the rented property where they currently live.

53) Mr and Mrs Milne expect to return to live at East Mains of Crichie when Mr Milne's assignment in Surrey comes to an end.

54) Mrs Milne's state of mind and emotional wellbeing have improved since she moved to Surrey. That improvement is due to the fact that, whilst resident in Surrey, she is not subject to the noise emitted by the turbines.

55) Solicitors acting for the pursuers served a notice on the defender on or about 14 January 2017 under section 82 of the Environmental Protection Act 1990. That notice asserted that the frequency, character, duration and repetition of the noise emitted by the turbines gave rise to a statutory nuisance within the meaning of that Act.

56) As at Sunday 11 February 2018, when Mr and Mrs Milne returned to East Mains of Crichie in order to attend the proof in these proceedings, there was no abatement of the volume or character of the noise emitted by the turbines which was noticeable to them.

57) The volume of the noise emitted by the turbines has always complied with the limits imposed by planning condition 17.

58) Planning condition 17 relates only to the volume and not to the character of the noise emitted by the turbines.

Findings in Fact and Law

1) The combined effect of the volume and character of the noise emitted by the turbines situated on the defender's land at West Knock Farm would not be tolerated by a reasonable person and amounts to a nuisance at common law.

2) The combined effect of the volume and character of the noise emitted by the turbines situated on the defender's land at West Knock Farm amounts to a statutory nuisance within the meaning of section 79(1)(g) of the Environmental Protection Act 1990.

3) The pursuers are persons aggrieved by the existence of a statutory nuisance for the purposes of section 82(1) of the Environmental Protection Act 1990 as a result of the combined effect of the volume and character of the noise emitted by the turbines situated on the defender's land at West Knock Farm.

Findings in Law

1) The pursuers being persons aggrieved by the existence of a statutory nuisance for the purposes of section 82(1) of the Environmental Protection Act 1990, the court is required to make an order in terms of and for the purposes set out in section 82(2) of that Act.

Interlocutor

The sheriff, having resumed consideration of the cause: Repels the pleas in law for the defender; Sustains the pursuers' first and third pleas in law and the pursuers' second plea in law with the exception of the words "prejudicial to health and;" Grants the pursuers' first crave and in terms thereof Finds and declares that the pursuers are aggrieved by the

existence of a statutory nuisance caused and permitted by the defender, namely the emission of noise from the operation of machinery, being three Enercon E48 wind turbines of 79.6m overall height to blade tip located in a field on West Knock Farm, Mintlaw, Peterhead AB42 5DJ being the defender's premises; Continues consideration of the pursuers' remaining craves and Assigns 30 May 2018 at 11:30am within Aberdeen Sheriff Court, Civil Annexe, Queen Street, Aberdeen as a hearing thereon.

NOTE:

Relevant provisions of the Environmental Protection Act 1990

82.— Summary proceedings by persons aggrieved by statutory nuisances.

(1) A magistrates' court may act under this section on a complaint **[**or, in Scotland, the sheriff may act under this section on a summary application, made by any person on the ground that he is aggrieved by the existence of a statutory nuisance.

(2) If the sheriff is satisfied that the alleged nuisance exists, or that although abated it is likely to recur on the same premises…, the sheriff shall make an order for either or both of the following purposes—

(a) requiring the defender to abate the nuisance, within a time specified in the order, and to execute any works necessary for that purpose;
(b) prohibiting a recurrence of the nuisance, and requiring the defender, within a time specified in the order, to execute any works necessary to prevent the recurrence;
...

(3) If the sheriff is satisfied that the alleged nuisance exists and is such as, in the opinion of the sheriff, to render premises unfit for human habitation, an order under subsection (2) above may prohibit the use of the premises for human habitation until the premises are, to the satisfaction of the sheriff, rendered fit for that purpose;

(4) Proceedings for an order under subsection (2) above shall be brought—

(a) except in a case falling within paragraph (b), (c) or (d) below, against the person responsible for the nuisance;
(b) where the nuisance arises from any defect of a structural character, against the owner of the premises;
(c) where the person responsible for the nuisance cannot be found, against the owner or occupier of the premises.

…

(6) Before instituting proceedings for an order under subsection (2) above against any person, the person aggrieved by the nuisance shall give to that person such notice in writing of his intention to bring the proceedings as is applicable to proceedings in respect of a nuisance of that description and the notice shall specify the matter complained of.

(7) The notice of the bringing of proceedings in respect of a statutory nuisance required by subsection (6) above which is applicable is—

(a) in the case of a nuisance falling within paragraph (g) or (ga) of section 79(1) above, not less than three days' notice; and
(b) in the case of a nuisance of any other description, not less than twenty-one days' notice; but the Secretary of State may, by order, provide that this subsection shall have effect as if such period as is specified in the order were the minimum period of notice applicable to any description of statutory nuisance specified in the order.

(8) A person who, without reasonable excuse, contravenes any requirement or prohibition imposed by an order under subsection (2) above shall be guilty of an offence and liable on summary conviction to a fine not exceeding level 5 on the standard scale together with a further fine of an amount equal to one-tenth of that level for each day on which the offence continues after the conviction.

…

(12) Where on the hearing of proceedings for an order under subsection (2) above it is proved that the alleged nuisance existed at the date of the making of the complaint **[**or summary application**]**, then, whether or not at the date of the hearing it still exists or is likely to recur, the sheriff shall order the defender or defenders in such proportions as appears fair and reasonable to pay to the person bringing the proceedings such amount as the sheriff considers reasonably sufficient to compensate him for any expenses properly incurred by him in the proceedings.
…

General background

[1] In this summary application the pursuers allege the existence of a statutory nuisance in terms of section 79 of the Environmental Protection Act 1990 ('the 1990 Act') by virtue of noise emanating from wind turbines operated by the defender, which stand on land in the vicinity of the pursuers' home in rural Aberdeenshire. In this judgment, unless the context

indicates otherwise, the three wind turbines owned by the defender, with which these proceedings are concerned, are simply referred to as 'the turbines.'

[2] The pursuers crave a declarator that they are 'properly aggrieved' by the commission of a statutory nuisance (crave 1) and an order in terms of section 82(2) of the 1990 Act requiring the defender to abate the nuisance, prohibiting a recurrence of the nuisance and requiring the defender to execute any necessary consequential works (craves 2, 3 and 4). The defender opposed the pursuer's craves on the basis that they had failed to establish the existence of a statutory nuisance (defender's pleas in law 8, 9 and 10) and also on a number of technical grounds which were ultimately not insisted upon.

[3] The matter called before me for proof and I heard evidence on 13, 15 and 16 February 2018. I thereafter heard legal submissions on 12 March 2018, after which I made *avizandum*.

[4] Both of the pursuers gave evidence. They also called Mr Terry Poole, the proprietor of another property in the vicinity of the turbines, and two skilled witnesses in the field of acoustics, namely Dr Matthew Cand and Mr Dick Bowdler. The defender called Mr George Howie, the son of the owner of the farm on which the turbines stand, and a skilled witness, namely Mr Cameron Sutherland.

[5] The evidence from skilled witnesses in relation to acoustics was detailed, complicated and related to highly technical matters under reference to numerous technical reports, not all of which were considered in detail beyond their conclusions. A significant proportion of the technical evidence was also concerned with examining differences of opinion within the field of acoustics as to the (apparently evolving) issue of how the impact of noise from wind turbines on individuals ought to be assessed. However it is clear to me that the technical evidence was ultimately of limited significance in the context of the fundamental issue which was before the court for determination, namely whether the

pursuers had discharged the burden on them of proving that noise from the turbines gave rise to a statutory nuisance within the meaning of Section 79 of the 1990 Act. For the reasons given below, I have come to the view that the non-technical evidence given by the witnesses of fact is of the greater significance in the context of these proceedings and that the case ultimately turns on the non-technical evidence, which I have therefore summarised in some detail. However, given that most of the proof was concerned with the technical evidence, and having regard to the complex nature of that evidence, I have also felt it necessary to summarise that evidence in some detail.

[6] I have chosen to summarise the evidence under the general headings of non-technical evidence and technical evidence, rather than dealing in turn with the evidence led by the pursuers and then with that led by the defender. The evidence was recorded by a shorthand writer and the notes can be extended should that become necessary.

Non-technical evidence

Mr and Mrs Milne

[7] Both of the pursuers gave evidence. Mr Milne is aged 49 and employed as a production team leader in the oil industry. Mrs Milne is aged 49 and was a microbiologist based at Aberdeen Royal Infirmary until she gave up that employment in around 2010 in order to spend more time at East Mains of Crichie with her horses. Mr and Mrs Milne purchased East Mains of Crichie in 2001. They moved there from their previous home in the centre of Aberdeen. They married in 2003.

General matters

[8] Mr and Mrs Milne moved from Aberdeen City to East Mains of Crichie in 2001 in order to be closer to their parents, all of whom lived in Aberdeenshire, and in order to facilitate Mrs Milne's interest in horses and equestrian eventing. The couple still own the property at East Mains of Crichie and consider it to be their home. However, they are temporarily living in Surrey at present. Mr Milne took up an assignment with his employers in Surrey in November 2016, which he anticipates will last until approximately November 2018, although the assignment is due for review in June 2018 and may come to an end earlier. Mr Milne moved to Surrey in January 2017 and Mrs Milne joined him in February 2017. Mrs Milne's horses are temporarily stabled close to their rented accommodation in Surrey.

[9] Mr Milne's current assignment allows him to live at home. However, prior to that he had worked on offshore rotation in the oil industry since the age of 21, including a period of 10 years prior to his move to Surrey working 4 weeks on/4 weeks off in Azerbaijan.

[10] The property at East Mains of Crichie was built in 1990 or 1991 and comprises a detached dwelling house with separate stables and an exercise yard for Mrs Milne's horses, all set in five acres of ground, approximately 400 metres from the nearest road. It is a detached dwelling house on two floors with two public rooms, four bedrooms, front and back doors and a patio. It is double glazed. The google map produced as 6/30/30 shows the position of the three turbines relative to the surrounding properties including East Mains of Crichie, which is marked number 9 on the plan. The red icon denotes the position of the house. The number 9 shows the position of an exercise "arena" for Mrs Milne's horses. The light coloured rectangle immediately to the right (east) of the house is a field which is included in the grounds. Other local domestic properties are marked on the map. None of

those properties have been visited by Mr or Mrs Milne in order to assess wind turbine noise at those locations. The turbines are located along the light coloured track running generally southwest to northeast in the centre of the photograph. Turbine 1 is at the extreme left of the track. It is a agreed in paragraph 6 of the joint minute of agreement that turbine 1 is approximately 477 yards (436m) from the pursuers' house. The land slopes upwards from East Mains of Crichie to turbine 1, though Mr and Mrs Milne were at odds as to the resulting height difference. In any event, it is agreed in paragraph 6 of the joint minute of agreement that turbine 1 is "between 0m and 8m higher AOD that East mains of Crichie House." I take this to be a reference to the elevation of the base of the turbine, as I heard evidence that the turbines are each some 80m in height. I understand the expression 'AOD' to mean 'above ordinance *datum*,' which I understand to be another way of saying 'above sea level.' Turbine 2 is located slightly to the left (southeast) of the crossroads in the centre of the aerial photograph. The land slopes upwards, by an unspecified height, between turbines 1 and 2. The crossroads in the centre of the photograph appears to mark the brow of the hill on which the turbines stand, and turbine 3 is located to the right (northeast) of the crossroads, slightly over the brow of the hill and therefore at a slightly lower altitude than turbine 2.

[11] Mr and Mrs Milne did not receive any formal notification of either an application for planning permission to erect the turbines or the grant of that application. The only prior notice they received was in around 2009, when a man attended at East Mains of Crichie and requested permission to install a noise monitor on their land in connection with a proposal to put up wind turbines nearby. The couple agreed. They understood from this visit that consideration was being given to the construction of wind turbines somewhere in the vicinity. However, they had no idea that the site of the turbines was to be so close to their property. Mr Milne thought that the turbines might be installed at the top of the hill on

which they currently stand. Mrs Milne said that her impression was that the proposed site was an entirely different, and more distant, hill in the vicinity. In due course work began on the construction of the turbines, which was when the Milnes discovered how close the nearest turbine would be to their property.

[12] The turbines were constructed in 2011. Mr and Mrs Milne did not seek to intervene or object. They were not opponents of wind turbines. At that time they gave consideration to installing a domestic wind turbine on their property. As a result of subsequent events they have firmly rejected any such notion. The turbines remained inactive until testing was carried out on 7 November 2011. At that time Mr Milne was offshore. Mrs Milne was at home. She was with one of her horses preparing for a riding session when the testing began. The blades of turbine 1 (the turbine closest to her property) were rotated at very high speed, which generated a loud roar. This continued for a minute or so, whereupon a braking system was applied, resulting in a "catastrophic" noise which she said was like the sound of a military jet. The "jet" noise lasted for several seconds. The overall impact was frightening. Her horse bolted. She screamed towards the turbine to tell the operators to stop what they were doing, although she recognised that they would not hear her because of the noise. Turbine 1 was tested again later that day, with precisely the same results in terms of the noise generated and the impact on her horse, which was again frightened with the result that she was nearly unseated. The following day, 8 November, Mrs Milne spoke to an engineer, Jens Schaeffer from Enercon, whom she understood to be the operators of the turbines. He was at turbine 1 when she approached him and complained about the noise from the testing the previous day. He agreed that the noise from testing can be frightening and said that he would request that she be given advance notice of testing in future. She has

received such notice of all tests since then, although sometimes that notice has been very short (in one case a telephone call 30 minutes prior to the testing).

[13] Mr Milne was offshore at the time of this initial test. He spoke to Mrs Milne by phone shortly after the test, when she told him what had happened. He described her as being quite emotional when describing the test and said that she told him that she couldn't believe the level of noise emitted by the turbine. Mr Milne was at home during a subsequent high speed test of the turbines and confirmed that what he heard was firstly a very loud "whooshing" noise from the blades when they were rotated at high speed and then a very loud "crashing "noise when the brakes were applied. The test he heard lasted for an hour or so. It appears that each of the turbines is subjected to a high speed test every year, up to a maximum of three or four times per year. Each turbine is tested individually. The testing usually takes half a day.

[14] Both Mr and Mrs Milne gave evidence that they assumed that the noise generated by the turbines during normal operation would be significantly lower than the noise generated during high speed testing. However, that has not been the case. Given the significance of this issue I have summarised Mr and Mrs Milne's evidence about the volume and character of the noise generated by the routine operation of the turbines in some detail in a separate section below.

[15] Both Mr and Mrs Milne described the impact of the turbine noise on their lives, and particularly on Mrs Milne. The couple had enjoyed living at East Mains of Crichie from 2001 until 2011 with no difficulties in relation to noise. They regarded the seasonal noise generated by local harvesting work as being unobjectionable. Mrs Milne had given up work in 2010 in order to spend more time with her horses. She was happy and comfortable until the wind turbines began to operate. From then on her quality of life was affected by the

noise from the turbines. From that point onwards, every time Mr Milne returned home from working offshore he found that Mrs Milne was more and more upset and disturbed as a result of the noise from the turbines. The couple often discussed the noise, and its effects on Mrs Milne, by phone when Mr Milne was offshore. They are not unusually sensitive or emotional. Prior to this issue the couple had never made any formal complaint to officials about anything. Mrs Milne became more and more upset as time went on as a result of the impact which the turbine noise had upon her. The impact was greater upon Mrs Milne than on Mr Milne because of his offshore work rotation, which gave him respite. However, he too was affected by the noise when he was at home.

[16] The noise from the turbines made Mrs Milne feel stressed, distracted, annoyed, irritated and "on edge". She likened the impact of the noise upon her daily life as like being forced to listen to loud music whilst trying to concentrate on work.

[17] The noise from the turbines is sometimes audible inside the house despite the double glazing and is immediately audible on leaving the house. The master bedroom of the house is at the rear, facing east, generally towards the turbines. About a year after the turbines were switched on Mrs Milne became unable to sleep in the master bedroom because of the noise and moved to another bedroom at the opposite side of the house. Mr Milne continued to sleep in the master bedroom not because he was unaffected by the noise from the turbines but because he refused to allow himself to be forced to alter his sleeping arrangements as a result of the turbine noise. His decision to continue to sleep in the master bedroom was therefore characterised by him as an act of defiance rather than an indication that he was unaffected by the turbine noise. However, he said that he is unable to sleep in the master bedroom with the window open, which has always been his preference, as a result of the turbine noise.

[18] In due course the couple decided to seek help from the local authority Environmental Health Department and ultimately instructed solicitors. After Mrs Milne contacted the Environmental Health Department, Mr Grant, environmental health officer, visited the property and spoke with her while she was in her stable block. When he heard the noise from the turbines Mr Grant shook his head and said words to the effect of "Oh no, there's a mistake here", which Mrs Milne appeared to interpret as indicating that Mr Grant found the level of noise from the turbines, even though they had passed the planning process, to be unacceptable.

[19] In June 2016 they received an offer from solicitors acting on behalf of the defender (production 5/1/10) offering to provide secondary or triple glazing for their property. However, they did not respond to that offer because they did not think it would meet their concerns. Additional glazing would not alter the intrusive character of the noise within their house when windows are open and would make no difference to the impact of the noise when they were outdoors.

[20] Mrs Milne stressed in cross-examination that, although Mr Milne had moved to Surrey because of his work, there was no particular need for her to join him. She could have remained at East Mains of Crichie had she felt able to do so. However, she took the opportunity to move to Surrey with her husband in order to get away from the impact of the turbine noise upon her.

[21] Both Mr and Mrs Milne gave evidence that Mrs Milne's state of mind and general wellbeing have improved significantly since moving to Surrey. The improvement is due to the absence of wind turbine noise.

[22] Mr and Mrs Milne were both adamant that the level of noise resulting from the operation of the turbines and its impact upon them, particularly Mrs Milne, has not been

improved in any noticeable way by any alterations made to the turbines or by any other mitigation applied to the turbines. The couple returned to East Mains of Crichie on Sunday, 11 February 2018 in order to attend the proof in this case. They have found the turbine noise to be as loud and unpleasant as ever. According to Mr Milne the noise was "particularly bad" on 11 and 12 February. On both evenings Mrs Milne slept in the spare bedroom and Mr Milne in the master bedroom.

[23] The couple seek to have the turbines removed, or at least slowed down to a speed which generates no noise or at least a level of noise which does not impact negatively upon their quality of life.

[24] No medical evidence was led by the pursuers in relation to any recognised medical condition or treatment arising from the turbine noise of which they complain. Likewise there was no evidence by them of any specific, identifiable impact of the turbine noise on their health, beyond the general descriptions which they gave of the impact of the noise on their general peace of mind and on Mrs Milne's emotional wellbeing.

[25] No sound recordings of noise from the turbines were played during the evidence or Mr or Mrs Milne.

Descriptions of turbine noise

[26] Both Mr and Mrs Milne endeavoured to describe the noise from the turbines during routine operation as opposed to high speed testing.

[27] According to Mr Milne the noise varies according to the wind speed and hence the speed of the turbine blades, which are designed to turn on their vertical axis so that they always face into the wind. When the turbines are not rotating there is no noise. However, in high wind there is extreme, irregular and unpredictable noise. The noise results from the

rotation of the blades in the wind rather than from the mechanism of the turbine. The resulting noise is a sharp, whooshing, penetrating noise which varies in pitch. The noise pulses like a loud, slow, helicopter blade, which varies in rate and volume. It is possible to match the pulsing of the noise to the rotation of the blades. Gusting wind results in a particularly sharp, loud pulse. The noise is constant because the turbines have been placed in an exposed, windy location. The direction of the wind makes no difference to the level or character of the noise from the turbines. The only respite, day or night, is when the wind drops to such a level that the blades of the turbines do not rotate or rotate very slowly. The noise can last for days on end. Sometimes the noise suddenly varies in character. For example, on Sunday, 11 February 2018 Mr Milne described the noise as a very loud "whooshing and double thumping" sound.

[28] Mrs Milne described the noise as consisting of "insidious pulsing jets". By 'jets' I understood her to be referring to the sound produced by jet aircraft. It is impossible to know when the sound will suddenly significantly change in volume. It is sometimes audible inside the house with the double glazed windows closed. The noise is not always rhythmic. Sometimes it is a "deep bass whooshing". At other times it sounds like a person clearing his throat, which Mrs Milne described by using the word "graunching." The noise changes according to the wind direction and possibly also the temperature. Sometimes it suddenly drops entirely before unexpectedly resuming. Mrs Milne said that when the wind speed is low at ground level but high at the level of the turbine blades, the pulsing sound produced by the blades is particularly penetrating.

Other matters covered in Mrs Milne's evidence

[29] Given the lead role played by Mrs Milne in pursing the couple's concerns, a significant portion of her evidence addressed issues in which Mr Milne was not directly involved, specifically relating to Mrs Milne's interactions with the local authority Environmental Health Department and other agencies. At an early stage after the turbines were commissioned she set about researching the planning process which had led to the grant of planning consent for the turbines, and other more general issues concerning wind turbines. She was taken to numerous emails between her, the local authority and others which illustrated this correspondence. She kept diaries recording her observations of the turbine noise each year from 2012 to the end of 2016. She identified her diaries in evidence, but was not taken to them in any detail. In the diaries she endeavoured to keep brief records, using her own shorthand, of the level and character of the noise from the turbines on days when she was at home. There is no diary for 2017 because she moved to Surrey in February of that year. In due course an Abatement Notice under section 80(1) of the Environmental Protection Act 1990 was issued to the defender by Aberdeenshire Council, apparently at the instigation of Mr Grant, on 11 December 2013 (production 5/1/9). Mrs Milne was not involved in the preparation of that notice, the terms of which were decided by the local authority. She believed that proceedings arising from that notice had been sisted and that no action had ultimately been taken against the defender arising from that process. Ultimately the local authority had not taken any action to alleviate the problem of noise from the turbines.

[30] In September 2012 Mr Howie, the owner of the land on which the turbines stand, came to her house. He said he had heard that she was complaining about the turbines. She confirmed that she was complaining because they were very noisy. Mr Howie said that the

turbines were needed in order to generate power. Existing sources of power generation would become ineffective and "the lights would go out". He appeared to believe that she was English because of her accent. He suggested that, "It's all of you from down south who complain". When she told Mr Howie that she and her husband had been considering installing their own domestic wind turbine he said he would help them to get one. He also said he would pay for their electricity for a year. She told him that his offer did not interest her. She simply wanted the noise from his turbines to stop. Mr Howie closed by pointing out, in a manner which she interpreted as an implicit threat, that the water supply for her house ran through his land.

[31] Ultimately Mr and Mrs Milne instructed solicitors, in absence of any satisfaction via the local authority Environmental Health Department. This resulted in the service on 14 January 2017 of a notice at their instigation under section 82(6) of the Environmental Protection Act 1990 (production 5/1/12), after which these proceedings were raised.

[32] Mrs Milne rejected the suggestion put to her in cross that she was, or had become, unusually sensitised to the noise produced by the turbines, as compared to the average person. She accepted that, since raising her concerns about this issue, she has become involved in objecting to a number of applications for planning consent for wind farm developments in other parts of Scotland, including Banchory and Ayrshire. She said that she had only become involved in those applications when asked to do so by organisations or individuals from whom she had previously sought information to assist her in progressing her own concerns. Her motivation in becoming involved in those other applications was simply that she did not want other people to be subjected to what she and her husband have had to live with in terms of noise from wind turbines.

Terry Poole

[33] The pursuers called Mr Terry Mark Poole, aged 50, of Aulton of Coynach Cottage, Clola, Aberdeenshire. Mr Poole pointed out his property as No. 16 on the Google map (production 6/30/30). Mr Poole and his wife have lived at this property since 1998. Their two children live with them. The house is a 150 year old granite bungalow, with double glazing throughout. Approximately two years ago Mr Poole converted the loft area to add bedrooms there. The livingroom and the main bedroom face north and the gable wall of the property faces towards the wind turbines. However, Mr Poole said that the livingroom has a panoramic window, which means that the turbines are visible from the livingroom. The main bedroom faces towards the turbines. The house stands in two acres of land. Mr Poole's wife keeps horses there and the couple own a number of dogs and cats. Along with Mr Poole's interest in gardening, the family spend a lot of time outdoors.

[34] Mr Poole has served as a firefighter, initially in Aberdeen and latterly in Peterhead, for 26 years. Prior to that he served as a firefighter for six years in the RAF.

[35] Mr Poole initially said that his property is approximately 500 metres from the nearest wind turbine, but I accepted under reference to production 6/30/30 that it may be as far as 680 metres from that turbine.

[36] Mr Poole described the idyllic life which he and his family led in their home until November 2011 when the wind turbines were activated. He said that the family's peace and quiet has been taken away by the turbines. They have had to endure constant noise intrusion as a result of the turbines. He described a constant "whooshing, graunching" noise which is audible in all parts of the property, indoors and outdoors, even with the windows closed. The noise "beats through the house at all times of the day and night." The noise from the turbines comes in waves which "thrash" through the fabric of the house. The

noise is loud enough to prevent conversation outdoors and within the house the beating of the turbine blades is audible over the sound of the television and over the sound of the electric fans which the family use to keep the house cool as a result of the fact that they no longer feel able to open the windows due to the noise from the turbines.

[37] He described a "wave of noise" which greets him as soon as he arrives home from work or steps outside the house. The noise is so loud that it sometimes "stops him in his tracks". He sometimes finds himself looking at the turbines wondering what has happened to cause a sudden change in the level or character of the noise. The intrusive and incessant nature of the noise has impacted upon Mr Poole's sleep. He finds it difficult to sleep. Sometimes all he can concentrate on are the "thumping waves of noise through the house".

[38] Mr Poole said that the noise which he described is present continuously, all year round. The only respite is when the turbines are not in operation, such as on the occasions when they are switched off for an hour at a time to facilitate noise monitoring. Those occasions are the only times when Mr Poole is able to hear birdsong and to experience peace and quiet. Sometimes the noise dissipates, only to return without warning. It can be as loud as thunder and sometimes it is possible to feel the vibration of the turbines through the ground.

[39] When asked to describe the impact of the noise of the blades on his family, Mr Poole described his home as a "dream house" until the turbines were activated in 2011. Since then he and his family have sometimes found themselves retreating indoors, away from Mr Poole's interest in his garden and his wife's interest in her dogs and horses, in order to seek respite from the noise. Sometimes the family leave the house altogether in order to escape the noise. The whole family has suffered from stress and anxiety because they are

unable to escape the noise from the turbines. Mr Poole described changes in his own mood as a result of the effect of the noise upon him.

[40] Mr Poole denied that he was sensitised to the noise of the turbines and that he regarded the noise as objectionable simply because he could hear it. He confirmed that the noise of the turbines resulted in constant intrusion to his family's life, irrespective of the wind direction. The noise appears to get louder during the colder months of the year, from September or late October onwards.

[41] Mr Poole said that when the turbines were first switched on he went to speak to the farmer who owns the land, and with whom he thought that he got on well. Mr Poole asked whether anything could be done about the noise of the turbines. The farmer said that he was surprised and disappointed at the level of the noise, but he quickly added that he had generated £5,000 worth of electricity the previous day and it became clear that he was not taking Mr Poole's complaint seriously.

[42] Mr Poole confirmed that he is not a pursuer in the action because, having sought funding from his Trade Union in order to take action, his application had been refused. He is not in a position to take on the financial commitment of pursuing legal proceedings.

[43] In cross-examination Mr Poole rejected the suggestion that his wife regularly exercises her horses on the road which runs past the turbines. The horses are "spooked" by the sound of the turbines and by the shadow flicker from the blades. He insisted that he never walks his dogs on this road. In response to the suggestion that none of the residents of the properties marked 15 (which consists of five separate houses) or 14 have complained about the noise of the wind turbines, Mr Poole stated that he believed that the residents had spoken to the Environmental Health Department about the issue but that the proprietor of property 14 has his own domestic wind turbine and therefore felt that it was not appropriate

for him to complain about the turbines to which this action relates. Mr Poole's decision to convert the loft of his home five years ago was taken to avoid having the family's life "put on hold" by this issue and due to the family's lingering hope that something would be done to address the noise from the turbines and its impact on their lives.

[44] Mr Poole agreed that what he wanted was for the turbines to be switched off and taken down.

[45] In re-examination Mr Poole reiterated that he is not complaining about the noise simply because it is audible. It was the intrusive nature of the turbine noise and its resulting impact upon his family's life which caused him to complain.

George Howie

[46] The defender called Mr George Howie, who is the son of Albert Howie, owner of West Knock Farm, on which the wind turbines stand. Under reference to the Google map (production 6/30/30), Mr Howie pointed out his father's home, marked 3 and his sister's home, marked 2. Mr Howie himself lives at a nearby location which is not shown on the photo and which is to the northeast of the area shown in the photo.

[47] West Knock Farm combines arable farming and the farming of livestock. Mr Howie works in the fields around the wind turbines. Farm animals are kept within 150 metres of the turbines. According to Mr Howie, the sound generated by the turbines has no impact upon him. When it is moderately windy the sound generated by the blades rotating is audible but moderate. When it is very windy the sound of the wind dominates any sound from the turbines. When there is no wind, the turbines do not turn and generate no sound.

[48] Mr Howie said that he regularly sees local residents exercising horses and dogs along the public road which runs from Stuartfield in the northwest (top left) of the Google

photo 6/30/30, between houses 2 and 3 and then southeast towards the "crossroads" in the centre of the photograph before turning to the northeast past turbine 3.

[49] Mr Howie pointed out the belt of trees which lies to the west of turbine 1 in photo 6/30/30 and which is the closest belt of trees to that turbine. That belt of trees is referred to in a report produced by the defender's witness Mr Sutherland. It lies within the title of West Knock Farm. The farm has applied for a licence to fell these trees, on Mr Sutherland's advice. Mr Howie expected the licence to be granted in March 2018, whereupon the trees would be felled.

[50] In around 2006, developers approached Mr Howie's family and suggested that wind turbines be constructed on the farm land. The family considered the issue and ultimately decided to put up turbines on their own initiative rather than allowing developers to use their land. They approached Green Cat Renewables ('Green Cat') and instructed them to prepare an environmental report. Green Cat has no financial interest in the operation of the turbines. The farm has a 15 year contract with Enercon for the maintenance of the turbines. Enercon arrange the routine annual testing of the turbines and sometimes the farm does not receive advance warning of the testing.

[51] Mr Howie pointed out Mr and Mrs Milne's house at No. 9 on photo 6/30/30. He explained that the farm has in the past received complaints about noise from the turbines from the residents at Toft Monks (number 1 on the Google map) and Crichie House (number 5). An environmental health officer from the local authority spoke to the family in relation to complaints from those residents. However, neither of those residents has pursued any formal complaint. The only live complaint which is outstanding is the complaint on behalf of Mr and Mrs Milne to which these proceedings relate.

[52] The family's total investment in the turbines was £X, all of which was borrowed in terms of a loan secured against the farm. Mr Howie expects the loan to be repaid within Z years. At present £Y remains outstanding.

[53] The turbines are switched off during particular conditions (not explored in evidence) in order to mitigate shadow flicker from the blades. That mitigation costs approximately £5,000 a year in terms of lost power generation from the turbines. Blade mitigation measures (which I understood to involve altering the angle of the blades) have also been implemented in relation to turbine 1 (the closest turbine to East Mains of Crichie – see Google map 6/30/30). Those measures have made that turbine 7% less productive. However, the family has been happy to bear that cost as a consequence of necessary mitigation in the interests of neighbouring proprietors. If the court orders further mitigating measures to be implemented, the family will abide by the court's order.

[54] Mr Howie said that the farm bears a number of annual costs arising from the operation of the turbines, namely maintenance, rates to the local authority, insurance and bank interest. However, these were not explored in any detail nor were they quantified in any way.

Technical evidence

The skilled witnesses

[55] The pursuers called Dr Matthew Cand, aged 39, a consulting engineer specialising in acoustics with Hoare Lea Associates ('HLA'), Bristol. Dr Cand's particular speciality is in the field of environmental acoustics and wind farm noise. He became involved in this case after HLA were instructed by Mr Grant, environmental health officer from Aberdeenshire

Council. Dr Cand visited the East Mains of Crichie in 2015 and spoke to Mrs Milne at her home. That is the only occasion on which he has visited the site.

[56] The pursuers also called Dick Bowdler, who described himself as an Acoustics Consultant and Acoustic Engineer with 45 years' experience in that field, who has specialised in wind turbine noise since around 2000. He visited the site once prior to writing his report and once subsequently.

[57] The defender called Cameron Sutherland, aged 41, a specialist in the environmental assessment of wind turbine projects with Green Cat Renewables Limited ('Green Cat'). Mr Sutherland has significant experience of issues relating to the prediction of wind turbine noise pre-construction and the assessment of wind turbine noise post-construction. Green Cat produced a number of reports in relation to this case on the instructions of the defender, beginning prior to the application for planning permission when Mr Sutherland conducted a pre-planning noise assessment on behalf of the defender at the site in 2009.

[58] No objection was taken to the qualifications or professional standing of any of the skilled witnesses or to the competence of any of these witnesses to give the evidence or express the opinions which they did.

[59] Although each of the skilled witnesses had visited the site, none was asked to give any detailed evidence of their observations of the volume and character of the turbine noise which they experienced on those visits. None gave evidence of having heard turbine noise during their visits of a volume or character which caused them any concern.

[60] The skilled witnesses distinguished between the measurement of noise levels emitted by the defender's turbines, which generates technical data, and the recording of the sound made by the turbines, which results in an audio recording. It appears that both noise

measurement data and sound recordings featured to some extent in the analyses undertaken by these witnesses.

The planning conditions

[61] Evidence was led in relation to production 5/5/6, the planning permission granted by Aberdeenshire Council on 20 April 2011 for the construction of the wind turbines to which this action relates. It is worth reproducing the terms of condition 17, which featured significantly in the evidence.

> "17. At wind speeds not exceeding 12 metres per second, as measured or calculated at a height of 10 metres above ground level at the site, the noise level generated by the wind turbine cluster at any noise sensitive premises shall not exceed:
>
> a) During night hours, (2300 – 0700), 38 dB LA 90 (10 minutes) or the night hours LA 90 (10 minutes) background noise level plus 5 dBA, whichever is the greater, and;
> b) During daytime hours, (0700 – 2300), 35 dB LA 90 (10 minutes) or the daytime hours LA 90 (10 minutes) background noise level plus 5 dBA whichever is the greater.
>
> Reason: In order to ensure that neighbouring residential properties are protected from unacceptably high levels of additional noise arising from the operation of the turbines."

[62] I understand that the term 'dBA' to be a reference to decibels of noise. According to evidence given by Dr Cand, the term 'LA 90' is a reference to the quietest 10% of the noise measured over a standard 10 minute period. This is an industry standard which aims to represent constant background noise by eliminating the loudest 90% of the measured noise over the standard 10 minute period. Specialist noise measuring equipment measures the level of noise ten times per second, and then takes an average over a 10 minute period. This is believed to give a more accurate indication of the general level of noise, by filtering out loud, brief but non-typical noises such as an emergency vehicle or a helicopter passing.

[63] Measurement of the noise emitted by wind turbines takes account of the wind speed at the time the noise is measured. Wind turbines are fitted with anemometers at hub height, i.e. on the structure which holds the mechanism to which the blades are attached. However standard height for the measurement of wind speed in relation to the assessment of noise emitted by wind turbines is 10 metres above ground level. There are two ways of measuring wind speed at that height. The first is by mounting a separate anemometer on a post 10 metres above the ground. The second is by measuring the wind speed at hub height using the anemometer mounted on the wind turbine and then using a formula which is accepted and used in the industry to carry out a 'back calculation' to convert the wind speed at hub height to a correspondingly lower notional wind speed at a height of 10 metres. This latter technique takes account of the known fact that wind speed increases with height, a phenomenon known as 'wind shear.' However this back calculation may in fact give rise to an inaccurate result. Atmospheric conditions may mean that the actual wind speed at 10 metres is different from the result of the back calculation from a measured wind speed at hub height. This feature introduces an element of uncertainty into the question of whether the noise generated by a wind turbine or cluster of turbines at any given wind speed, measured or calculated at a height of 10 metres above the ground, is compliant with limits imposed by a planning condition.

[64] 'Noise sensitive premises,' in terms of condition 17, are premises which are alleged to be affected by noise from wind turbines (in this case East Mains of Crichie).

[65] In general, the noise generated by wind turbines arises from the contact between the blades of the turbine and the surrounding air. That noise generally increases with wind speed which, in turn, generally increases with height above ground.

[66] The noise which is available to be measured and analysed at noise-sensitive premises will be composed of two elements, namely: background noise, which has nothing to do with the wind turbines; and the noise generated by the rotation of the wind turbines. It is possible to identify the component of the overall noise which is attributable to the operation of wind turbines by measuring the noise at the noise-sensitive premises with the turbines switched off and then with the turbines activated.

[67] The noise generated by a turbine will be greater at hub height (the source of the noise) than at the noise sensitive premises at which measurements are made. The level of turbine noise which reaches noise-sensitive premises will be affected by a number of variables, including the height of the turbine, the distance and topography between the turbine and the premises and the atmospheric conditions. The end result is that the process of fixing a noise limit, as part of a planning condition, is complicated.

[68] The references in paragraphs (a) and (b) of condition 17 to noise limits during night hours and during daytime hours respectively take account of the acceptance within the planning system that permitted noise levels are generally higher at night because it is assumed that at night people are more likely to be indoors, and that the fabric of buildings will absorb or mask the effect of noise from, for example, wind turbines. Daytime limits are generally lower to reflect the accepted likelihood that members of the public who may be affected by turbine noise are more likely to be outdoors during the daytime.

[69] The standard methodology used for measuring wind farm noise is a tool known as ETSU–R–97 ('ETSU') (production 6/1/1), entitled 'The Assessment & Rating of Noise from Wind Farms.' This guidance was issued by a body known as the 'Working Group on Noise from Wind Turbines' in 1997. The Department for Trade and Industry (DTI) facilitated the establishment of the working group, but the group was independent of the DTI and report is

explicitly not a government report. I heard however that this document is embedded in the planning policy guidance issued by the UK and Scottish Governments and that since about 2007 it has generally been accepted as the pre-eminent source of guidance in relation to the assessment and measurement of noise emitted by wind turbines. The balance of the technical evidence indicated that the underlying ethos of the approach represented by ETSU seeks to assist planning authorities to strike an acceptable balance between the public interest in allowing wind farm developments to proceed in order to contribute to society's need for electrical power and the public interest in minimising any harmful impact of wind farm developments on local communities.

[70] I heard that ETSU recommends a daytime limit in the range of 35-40dB and a night time limit of 43 dB. In comparison the limits imposed by the local authority in terms of condition 17 of the planning consent are more conservative, namely 35dB during daytime hours and 38dB during night hours.

[71] Very little more need be said about the issue of the volume of the noise emitted by the defender's turbines, given that Mr Campbell accepted in his submissions on behalf of the pursuers that the available evidence indicates that the noise emitted by the turbines has always complied with the limits set by planning condition 17 (pursuers' written submissions, page 6, section 7).

[72] However, as is apparent from articles 3 and 5 of condescendence in the initial writ, the pursuers' complaint does not relate solely to the volume of the noise emitted by the turbines but rather to a combination of the volume and character of the noise from the turbines. As appeared to be accepted by all of the skilled witnesses, planning condition 17 relates solely to the volume of the noise emitted by the turbines and does not address the character of the noise.

Amplitude modulation

[73] Much of the most complicated technical evidence led at proof focussed on a particular characteristic of wind turbine noise, namely amplitude modulation ('AM'). AM is a reference to the extent to which the volume of noise emitted by turbines varies over very short periods of time. This variation in noise levels is a quite distinct issue from the mere loudness of noise. AM is a factor in the measurement of wind farm noise because it is often present to some degree in the noise emitted by wind turbines. According to Dr Cand the rhythmic "whooshing" noise described by Mr and Mrs Milne as emanating from the wind turbines is a descriptor for AM.

[74] Where AM is present, the magnitude of the variation in noise levels is believed to be significant in considering the potentially harmful effects of AM on individuals. The greater the magnitude of the change in loudness, the greater is the potentially harmful effect. This general proposition was supported by the balance of the technical evidence led at proof and was not the subject of any dispute, although no evidence was led of any specific research into the issue. No objective, accepted criteria are recognised within the acoustics profession as to what level of AM might be harmful to individuals, or as to any particular factors which might cause a given level of AM to be harmful to individuals.

[75] The two broad categories of AM which arise from wind turbine noise are, firstly, 'normal AM (NAM),' which accounts for the high frequency 'blade swish' generated to some degree by all wind turbines and, secondly, 'other AM (OAM),' which may take a number of forms of which one is the low frequency 'thumping' sound sometimes noted in the vicinity of wind turbines. Although the balance of the technical evidence indicated that it is accepted (for example, in the ETSU policy guidance) that all wind turbines produce some

level of NAM arising from unavoidable 'blade swish,' it appears that scientific knowledge in relation to the causes, effects and factors influencing OAM is an evolving field. Although the explanation for OAM is not clear, it appears from evidence given by Dr Cand and Mr Bowdler that one factor which may be associated with the presence of OAM is where turbine blades are too flat relative to the surrounding air as they rotate. Altering the pitch of blades to a sharper angle may mitigate this effect in some cases.

[76] I have summarised the evidence led in relation to the issue of AM in some detail because of the focus on that issue at proof. However it seems to me that AM is in fact of limited significance in the context of the issues for decision by the court, because Mr Campbell for the pursuers made it clear in his submissions that the pursuers did not assert that AM as a component of the noise emitted by the defender's turbines is the cause of the nuisance of which they complain. The pursuers' position came to be that, having regard to the complexities of the developing science of wind farm acoustics, the pursuers were not obliged to identify by reference to any scientific principles the characteristics of the turbine noise which gave rise to nuisance. Their position was that the volume and character of the turbine noise, as described by the witnesses of fact, give rise to a nuisance and that AM as a component of the turbine noise is simply one potential contributing factor.

[77] AM as a component of wind turbine noise appears to have assumed prominence during the events which preceded the raising of this action because an Abatement Notice (production 5/1/9) served on the defender by Aberdeenshire Council dated 11 December 2013 under section 80 of the Environmental Protection Act 1990 ('the 1990 Act') specifically required the defender to:

> "Operate the wind turbines at West Knock Farm, Stuartfield, Peterhead, in such a manner that eliminates or reduces amplitude modulation to a level which does not give rise to a nuisance at any noise sensitive property."

[78] I understood from the evidence given by Mr Sutherland that, following the service of this notice, discussions took place between the local authority and Green Cat, Mr Sutherland's employers, as a result of which some mitigating measures were applied to turbine 1 (the turbine closest to East Mains of Crichie), in the form of alterations to the pitch of the blades (i.e. the angle at which the blades strike the air as they turn), the effectiveness of which is a matter of dispute.

[79] It is worth noting that this Abatement Notice was issued by the local authority, not by or on the instructions of the pursuers (albeit it appears to have been a response to the pursuers' complaints to the local authority about the noise from the defender's turbines) and it is a matter of agreement that proceedings initiated by the defender at Peterhead Sheriff Court resulting from the service of this notice remain sisted.

[80] The pre-action notice (production 5/1/12) served on the defender at the instance of the pursuers on or about 14 January 2017 under section 82 of the 1990 Act makes no specific mention of AM. Instead it specifies "[T]he frequency, character, duration and repetition" of the noise emitted from the defender's turbines as giving rise to a statutory nuisance and requires the defender to abate that nuisance by:

> "[Reducing] the aerodynamic and/ or mechanical noise emitted by said wind turbine generators by so altering the parameters of any control systems fitted to and/ or governing the operation of said wind turbine generator and/ or its blades such that any aerodynamic and/ or mechanical noise so emitted shall not cause a nuisance, and shall be maintained by you only at a sound power level or frequency, or of a character or duration, insufficient to establish any further justified allegation of the occurrence of a statutory nuisance, all under and in terms of S. 79(1)(g) of [the 1990 Act]."

[81] The initial writ does specifically refer to AM, but not as the sole objectionable characteristic of the turbine noise to which the action relates (articles 3 and 10 of condescendence).

[82] Much of the most technical evidence led from the skilled witnesses was concerned with a dispute within the acoustics profession as to the most appropriate means of identifying, measuring and assessing the impact of wind turbine noise on individuals.

[83] On one side of the divide, Dr Cand and Mr Sutherland considered that the most appropriate and robust method was to take the approach embodied in ETSU, applied according to guidance issued in 2013 by the Institute of Acoustics (IOA) (production 6/1/8) and thereafter to apply penalties (expressed in decibels) to the noise emitted which are intended to reflect the potentially harmful impact of the AM component of turbine noise, as opposed to the simple volume of the noise. The application of penalties arises from recommendations made in yet another body of guidance, this time in a report commissioned by a department of the UK Government now known as the Department for Business, Energy and Industrial Strategy (DBEIS) and published in 2016 ('the DBEIS report') (production 5/3/4).

[84] The application of penalties arising from the approach proposed in the DBEIS report may result in a notional noise level which, by virtue of the AM component of the noise, exceeds the limits set by the relevant planning consent.

[85] Evidence was led at some length which demonstrated, by reference to a number of sources of current planning policy guidance, the pre-eminence of ETSU in the planning policies of the UK and Scottish Governments in relation to the assessment and rating of noise from wind farms.

[86] On the other side of the professional divide was Mr Bowdler, who rejected the legitimacy of ETSU and its associated guidance as a tool for assessing the impact of wind turbine noise on individuals. Instead Mr Bowdler favoured an alternative source of guidance, namely BS 4142: 2014 (hereafter 'BS 4142') (production 5/3/5), entitled "Methods

for Rating and Assessing Industrial and Commercial Sound". He rejected the suggestion that BS 4142 is not a suitable tool for assessing wind farm noise. It is a generic tool which is used for assessing all types of industrial and commercial noise, which takes account of the nature and character of the noise and of the extent to which the noise is inconsistent with the surrounding environmental context. There is no reason why wind farm noise should be excluded from its ambit. ETSU is concerned with balancing the impact of wind farm noise on the local community with the interests of wind farm developers. It is not a suitable tool for assessing the impact of wind farm noise on individuals. BS 4142 is designed to assess the impact of noise (though not specifically noise from wind turbines) on individuals. BS 4142 is the more appropriate tool because the planning system requires an assessment of the likely or actual impact of noise on individuals, not simply the striking of a balance, which may be unsatisfactory, between the interests of wind farm developers and local communities. He recognised however that his preference for BS 4142 over ETSU in the assessment of noise from wind farms does not reflect the general approach of acoustics professionals or the practice of planning authorities in relation to planning issues concerning wind farms. Since ETSU became firmly established as the pre-eminent source of planning policy guidance in relation to wind farms in around 2007, he has never succeeded in persuading a planning authority to approach the issue of turbine noise on the basis of the approach proposed by BS 4142 in preference to that proposed by ETSU.

[87] A number of arguments for and against each of these two competing policy approaches to the assessment of the impact of wind turbine noise on individuals were canvassed in considerable detail. There is no need to rehearse them here. I accept the pre-eminence of ETSU over BS 4142 in relation to the assessment of wind turbine noise.

[88] There was general agreement amongst the skilled witnesses that experience within the acoustics profession tends to indicate that some people who are exposed to audible noise over a long period can become 'sensitised' to the noise, meaning that they become more sensitive to the noise than the average person and they can develop a particular focus on the noise and its source which is resistant to attempts to reduce, or actual reduction of, the noise. Such people may be less likely to regard any mitigating measures as being acceptable unless they completely remove the noise. On the other hand there was some recognition that it is also possible for a person who is exposed to a constant noise to become habituated to it, as in the case of a person who lives near a busy road. These issues were not explored under reference to any medical data concerning either of the pursuers or to any research into the issue but were rather presented as matters of professional experience and, ultimately, common sense.

Other points arising from the technical evidence

[89] As indicated, in my view the technical evidence came to be of limited significance. However a number of features of that evidence are worth noting.

Dr Cand

[90] Dr Cand was taken to production 6/3/24, an Amplitude Modulation Analysis produced by HLA in relation to West Knock Wind Farm and dated 18 June 2014. The analysis (para 7.05) found that the AM ratings detected in measurements taken at East Mains of Crichie of noise emanating from the turbines were lower than those found by HLA on some other sites in which 'other AM' (OAM) was found to be a significant contributor to

complaints. The 'thumping' phenomenon associated with OAM was unusual and difficult to explain but, according to para 7.5 of analysis 6/3/24, it did not appear to be a significant component of the turbine noise detected at East Mains of Crichie.

[91] Dr Cand found that "clear AM" was present in some sound recordings made at East Mains of Crichie in certain wind conditions at times corresponding to some of the descriptions in Mrs Milne's diary entries (production 6/3/26, 'Compliance and Mitigation Review Report' by HLA dated 14 March 2016, para 6.1.2). He reviewed Mrs Milne's diary entries in relation to turbine noise. He was able to correlate periods of high AM with the dates of some of the complaints noted by her. In his view there was a good correlation between the two.

[92] Under reference to his report "West Knock Wind Farm, Stuartfield, Noise Feature Analysis Report" dated 25 January 2016 (production 6/3/27), particularly pages 32 and 33, Dr Cand said that he found a correlation between high levels of AM in noise from the turbines and diary entries made by Mrs Milne noting particularly loud turbine noise on 4, 9, 11, 13, 14 and 16 November 2016. On those dates at least, applying the approach recommended in the DBEIS report and attaching the appropriate penalties to recognise the level of AM present, he found that the noise levels would in fact have breached the planning conditions. The conclusions of the report noted that HLA had applied the guidance published by the Institute of Acoustics ('IOA'), to which reference has already been made, to data acquired in October and November 2016 relating to noise emitted by the defender's turbines and found that:

> "The analysis determined periods of clear AM (with a magnitude of more than 3 dB) were detected in a wide-range of wind conditions… If penalties were applied to reflect this modulating character in line with recent guidance, this would result in increased noise levels which would likely exceed relevant noise limits. Although

> such a procedure does not form part of the consent conditions for the Wind Farm, it may reflect the disturbance reported by residents neighbouring the site".

[93] Under reference to para 6.1.3 of the report, Dr Cand explained his conclusion that this particular review indicated that the volume of noise produced by the wind turbines probably did not exceed the level set in planning condition 17. However it did not follow that there was no nuisance arising from other features of the noise, as it affected East Mains of Crichie, but which fall outwith the ambit of planning condition 17, such as the AM component of the noise produced by the turbines. Accordingly it was best not to focus further assessment too closely on simple compliance with the noise levels set out in planning condition 17. It was more worthwhile to focus on the potential for nuisance to arise from other features of the noise, including the potential impact of the AM component.

[94] Paragraph 6.1.6 of the report records that Dr Cand had reviewed evidence provided by Mr Sutherland's employers, Green Cat, and undertaken his own assessment of the noise produced by the turbines, which indicated that mitigating measures put in place in relation to turbine 1 had resulted in a reduction of AM in some but not all weather conditions which was measurable by scientific instruments. That extent to which the reduction would have been apparent to the human ear was a matter of dispute.

Mr Bowdler

[95] Against the background of the comparative discussion of ETSU and BS 4142, Mr Bowdler was taken to his report 5/3/1, which I understand that he compiled using the approach set out in BS 4142. Part B of the report, beginning at page 14, addresses issues arising from analysis of noise measurements made at East Mains of Crichie. Mr Bowdler carried out an analysis of technical data provided by others, and set forth in reports lodged

as productions by the defender. The data was gathered during 2009, 2012, 2013 and 2015. Mr Bowdler did not take his own noise measurements for the purposes of his report. His remit was to consider whether the pursuers' descriptions of turbine noise were supported by the available technical data. Mr Bowdler's conclusion, set out at para 12.9 on page 20 of his report, was that: "The BS 4142 assessment suggests that, in the particular conditions, there is almost always a significant adverse impact at night and an adverse impact during the day". The 'particular conditions' referred to are described by him at para 10.3 on page 16 of his report, namely "Between 180 and 300 degrees (south clockwise to west) and between 4 m/s and 8 m/s wind speed standardised to 10 metres". These parameters were not explained or commented upon to any significant extent by Mr Bowdler in his evidence, but I understand them to refer to the wind direction and speed.

[96] In cross-examination under reference to para 10.6 on page 16 of his report 5/3/1, Mr Bowdler said that his analysis of the data gathered on behalf of the defender suggested that the type of AM which was prominent in the sound generated by the West Knock wind turbines appeared to be a form of 'other AM' (OAM). He could not be specific as to which particular category of OAM was involved. However he was confident that the type of AM which appeared to be problematic in this case was not 'normal AM' (NAM) generated by routine blade swish. Under reference to para 13.4 of his report, Mr Bowdler expressed the view that, although there appeared to be AM present in the sound generated by the West Knock turbines, there did not appear to be much in Mrs Milne's diaries to suggest that AM is the dominant problem in terms of the impact of the turbine noise on her. Therefore, his view was that AM appeared to contribute to the harmful effects complained of by Mrs Milne, but it did not appear to be the dominant contributing factor.

Mr Sutherland

[97] Mr Sutherland was referred to a number of Green Cat reports, which supported his general position that the turbines have always complied with the noise limits imposed by planning condition 17. Under reference to a report (production 6/4/29) entitled "West Knock Wind Farm Noise Assessment – Compliance with Planning Conditions" dated 25 January 2018, he referred to mitigation applied to turbine 1, whereby the manufacturers were asked to vary the pitch of the blades on the turbine by increments of 2 degrees. When the pitch of the blades had been altered by 6 degrees a measurable reduction in AM resulted.

[98] Mr Sutherland was taken to section 3 of report 6/4/30 dated 5 February 2018, beginning on page 14, which addresses the issue of "Amplitude Modulation and Mitigation". This section of the report indicates (para 3.1.1) that, in parallel with the assessment of compliance with the noise limits in planning condition 17, a period of AM monitoring was also conducted at the site using data gathered since 16 November 2017. Mr Sutherland said that the method used to rate AM during this exercise was the "IOA reference method", which both he and Dr Cand supported. Mr Sutherland was taken to tables 3.2 and 3.3 on pages 18 and 19 of the report. The tables were not analysed in detail, but in summary his evidence was that, even incorporating the appropriate penalties in recognition of the AM element of the turbine noise during this monitoring period, compliance with the noise limits in planning condition 17 would have been achieved at all of the measured wind speeds (covering the range 4 to 12 m/s).

[99] In cross-examination, however, Mr Sutherland accepted that para 3.1.13 of this report, which immediately follows table 3.3, states that "These results [which appear to be a reference to the results represented in tables 3.2 and 3.3] suggest that the West Knock project

would slightly exceed its planning condition 17 limits during daytime periods and meet night time limits if penalties were to be retrospectively applied…"

[100] Mr Sutherland was taken to table 3.4 of report 6/4/30, which bears the description "Listening test subjective responses for AM ratings greater than or equal to 3 dB". As I understood Mr Sutherland's evidence this table sets out results of an exercise during which Mr Sutherland and a colleague listened to a total of 153 two-minute audio samples of sound from recordings taken at East Mains of Crichie between 16 November and 14 December 2017. According to para 3.2.4 of the report, the aim of this exercise was "to identify the main feature of [each] two-minute sample but also [to] note in order of subjective importance, the other features of the sample". The subjective descriptions which were used by Mr Sutherland and his colleague to indicate the character of the turbine noise on the various recordings to which they listened were, apparently in ascending order of intrusiveness: "unnoticeable or inaudible", "background," "intrusive" or "dominant". The most significant description applied by him and his colleague (to 21 of the 153 recordings listened to), was that the turbine noise recorded was "intrusive." None of the recordings merited what appeared to be the most significant subjective description of turbine noise, namely 'dominant.' There was no contextual evidence in relation to the circumstances under which the recordings were made or the extent to which listening to such recordings gives an authentic impression of the sound as it might have been heard by a listener 'on the ground.'

[101] In order to illustrate this chapter of Mr Sutherland's evidence, a brief sound recording was played in court. I understood that this was part of one of the recordings listened to by Mr Sutherland and his colleague during the listening exercise which led to the preparation of table 3.4 in report 6/4/30. There was, as I understood it, general agreement that the recording was only intended to be illustrative of the type of material which was

available to Mr Sutherland and his colleague during this exercise. What I heard, over a period of a few minutes, might be described as a comparatively quiet, but rhythmic, persistent and clearly audible "whooshing" sound, occurring approximately every second, which was then drowned out by what I was told was the sound of a helicopter passing overhead. Mr Sutherland said that the turbine noise audible on the recording played in court was what he would describe as 'intrusive,' using the terminology of table 3.4.

[102] Under reference to section 3.3 of report 6/4/30, Mr Sutherland expressed the opinion that turbine 2 makes little difference to the impact of the measured AM from the wind farm at East Mains of Crichie. As I understand it this is accepted on behalf of the pursuers.

[103] Under reference to section 3.5 of report 6/4/30, Mr Sutherland discussed options which might allow AM emitted by the turbines to be further reduced. The three options discussed were: firstly, asking the manufacturer to set the turbines to operate at lower speed in certain wind conditions so as to reduce the potential magnitude of AM fluctuations (also referred to as 'depowering'); secondly, making further adjustments to the pitch angle of the blades of turbine 1; and thirdly the removal of the clump of trees situated generally between turbine 1 and East Mains of Crichie.

[104] Each of the first and second options would have implications for the productivity of the turbines (production 6/4/30, paras 3.5.7 and 3.5.8). These measures have been discussed with the turbine manufacturer and appear to be practically viable, if the need arises to employ them.

[105] As to the third potential mitigatory measure, Mr Sutherland said that the trees are 15 to 20 metres high and that they are potentially close enough to turbine 1 to affect the turbulence of air around the turbine. During the listening exercise previously referred to (table 3.4 of report 6/4/30), Mr Sutherland and his colleague found periods of "potentially

unacceptable OAM" (para 4.1.5) in noise measured at points in line with these trees. It is possible that air travelling towards turbine 1 from the direction of the trees may become turbulent as it passes over them. Where there is high wind shear there is the potential for a very significant difference between the wind speed at ground level and the wind speed at hub height of turbine 1. Turbulent air striking the blades of turbine 1 as they turn may contribute to heightened levels of AM in the noise emitted by the turbine. However, this possibility has not been investigated, measured or quantified.

Submissions

Submissions on behalf of the pursuers

[106] Mr Campbell adopted his written submissions. The pursuers sought declarator in terms of their first crave that they are properly aggrieved by the commission of a statutory nuisance caused and permitted by the defender, in the form of noise from the defender's turbines, and an order in terms of their second, third and fourth craves requiring the defender to abate the nuisance and prevent its recurrence, all in terms of the powers available to the court under section 82(2) of the Environmental Protection Act 1990 ('the 1990 Act').

[107] Despite the significant focus during the proof on highly technical evidence, the case was in fact comparatively simple. The pursuers' case was that a statutory nuisance within the meaning of section 79 of the 1990 Act had been established on balance of probabilities, primarily on the basis of the evidence given by the pursuers and Mr Poole, and that as a result the court should pronounce an order under section 82(2) of the Act requiring the defender to abate that nuisance and prevent its recurrence. Bearing in mind the highly technical issues surrounding the measurement and characterisation of wind farm noise and

the developing state of scientific knowledge with regard to AM, the pursuers could not be expected to specify, with reference to the applicable science, the precise cause of the nuisance, whether by reference to AM or any other component or characteristic of the noise emanating from the turbines. Their case was simply that the volume and character of the noise emitted by the turbines, as described by Mr and Mrs Milne and by Mr Poole, amounted to a nuisance and that they were entitled to redress in the form of an order from the court under section 82(2) of the Act.

[108] Mr Campbell pointed out that, in terms of section 82(2) of the 1990 Act, if satisfied that the pursuers have proved the existence of a nuisance, the court would be under an obligation to make an order which would (a) require the defender to abate the nuisance, within a time specified in the order, and to execute any works necessary for that purpose, and/or (b) prohibit a recurrence of the nuisance, and require the defender, within a time specified in the order, to execute any works necessary to prevent the recurrence. The court had no discretion as to whether or not it was appropriate to make such an order. The court's discretion only extended to the terms of the order.

[109] The pursuers accepted that the principal source of the nuisance of which they complain is turbine 1, the turbine closest to their property. The court's order under section 82(2) of the Act should focus on that turbine.

[110] Mr Campbell submitted that any order pronounced under section 82(2) of the Act should be framed in such a way as to leave it to parties to decide precisely how to abate the nuisance and prevent its recurrence. This was the appropriate approach, notwithstanding the criminal penalties for breach of such an order in terms of section 82(8) of the Act because, having regard to the complexities around wind turbine noise, it was simply not possible for

the court to identify a means of abatement (presumably short of decommissioning turbine 1) which could be succinctly embodied in an interlocutor at this point in the proceedings.

[111] There was no reliable evidence that any of the theoretical means of abatement discussed by Mr Sutherland would actually produce an acceptable level of abatement. Alterations to the blade pitch of turbine 1 had produced "infinitesimal" improvements, if any, which were imperceptible to the pursuers. The suggestion that the removal of a clump of trees which presently stands between the pursuers' home and turbine 1 would have any practical impact on the noise from turbine 1 was entirely speculative. The abatement potential of 'depowering' turbine 1, i.e. programming it so that the blades would rotate more slowly, was unknown. These observations all demonstrated that the issue of mitigation and abatement is inherently experimental, which supports the pursuers' contention that any order made by the court under section 82(2) of the 1990 Act should not attempt to specify the steps (short of decommissioning turbine 1) which the defender was required to take in order to abate the nuisance and prevent its recurrence but should rather place the onus upon the defender, in discussion with the pursuers, to identify the necessary measures.

[112] It emerged that parties were in fact in agreement that, in the event that I was satisfied that a nuisance had been proved, the appropriate course would be to make a finding to that effect and thereafter continue the proceedings to a further hearing in order to hear submissions with regard to the appropriate means of achieving the necessary abatement and avoiding recurrence, and hence the appropriate terms of the order under section 82(2) which the court would be obliged to grant.

[113] Mr Campbell founded upon the case of *Robb* v *Dundee City Council* 2002 SC 301 as setting out the proper approach to the question of whether a statutory nuisance under the 1990 Act has been proved. That case related to a quite different factual matrix from these

proceedings. However, Mr Campbell submitted that, applying the approach set forth in *Robb* to the terms of section 79(1)(g) of the 1990 Act, a statutory nuisance could be established where a pursuer proves either that noise emitted from premises is "prejudicial to health", which is in turn defined in section 79(7) of the Act as meaning "injurious, or likely to cause injury, to health", or that noise emitted from premises constitutes a nuisance at common law. Mr Campbell made it clear that the pursuers founded solely upon the existence of nuisance at common law and accepted that there was no evidence of any identifiable medical condition or other medically confirmed consequence having been caused to the pursuers by noise from the turbines. Their averments to the contrary were not supported by the evidence.

[114] Mr Campbell submitted that a nuisance at common law would be established by evidence which proved on balance of probabilities that the noise from the turbines would not be tolerated by a reasonable person and that its effects upon the pursuers were *plus quam tolerabile* (*Robb* v *Dundee City Council* per Lord Cameron of Lochbroom at paras [17] and [20]).

[115] Mr Campbell submitted that that test was met having regard to the evidence as a whole. The pursuers' case is that the noise emanating from the turbines, as described by the pursuers and by Mr Poole, is intolerable both in terms of its volume and character. The court was therefore obliged to pronounce and order in appropriate terms in terms of section 82(2) of the 1990 Act.

[116] Mr Campbell invited me to accept the pursuers and Mr Poole as credible and reliable witnesses in relation to the volume and character of the turbine noise and its intolerable impact upon them. There was no evidence to suggest that Mrs Milne is any more sensitive to turbine noise than the average person.

[117] In addition to the evidence of the pursuers and Mr Poole, the pursuers relied upon the evidence of Mr Bowdler and his report (production 5/3/1). Mr Bowdler had identified AM in the noise from the turbines. The turbine noise was found by him to vary in volume over short periods of time, spanning tens of seconds. This was consistent with the pursuers' descriptions of the turbine noise. Turbine noise is not inaudible simply because it is below background noise (para 3 of 5/3/1). Mr Campbell invited me to accept Mr Bowdler's view that BS 4142 is a more appropriate tool for assessing the impact of turbine noise than ETSU.

[118] Mr Campbell submitted that the brief audio sequence played during the evidence of Mr Sutherland did not adequately demonstrate the volume or character of the turbine noise to which the pursuers have been subjected. It simply demonstrated what was recorded at the particular time when the clip was captured, and was then played in the highly artificial setting of the court on equipment of unknown technical capabilities.

Submissions on behalf of the defender

[119] Mr Findlay adopted his written submissions, invited me to sustain the defender's pleas-in-law numbers 1, 6, 8 and 10 and invited me to refuse the pursuers' craves. It seemed to me that the defender clearly also relied upon its plea in law number 9.

[120] Mr Findlay confirmed that the issue focussed in the defender's pleas-in-law numbers 3, 4 and 5, namely the adequacy of the pre-action notice served on behalf of the pursuers under section 82(6) of the 1990 Act, was no longer insisted upon by the defender. It appears to me that the defender's plea in law number 2 focusses the same issue. These pleas in law therefore fall to be refused on the basis that they were not insisted upon at proof.

[121] The defender's plea in law number 7 attacks the pursuers' second plea in law on the basis that it "[seeks] an order which is insufficiently precise." However that argument was not insisted upon by Mr Findlay and so this plea in law also falls to be refused as a result.

[122] Mr Findlay accepted that the correct approach to the determination of whether a statutory nuisance had been proved is that set out in *Robb* v *Dundee City Council*.

[123] Mr Findlay accepted that compliance with a planning condition does not exclude the possibility that a nuisance has nonetheless arisen. He relied upon the case of *Lawrence and another* v *Fen Tigers Limited and others* [2014] UK SC13 as authority for a number of propositions. In determining whether a particular activity caused a nuisance by noise, the court has to objectively assess the level of noise which a normal person would find it reasonable to put up with given the established pattern of uses, or character, of the locality in which the activity was carried out. The terms and conditions of the relevant planning permission can be relevant to an evaluation of the acceptability of the noise complained of. The grant of the planning permission may be relevant to the issue of remedy. The view of a local planning authority as to an acceptable noise level may be of value as a starting point in considering whether a nuisance has been caused (paras [96] and [97] per Lord Neuberger of Abbotsbury PSC). Where a relevant planning permission includes a detailed and carefully considered framework of conditions governing the acceptable limits of noise use, they may provide a useful starting point or benchmark for the court's consideration of the same issues (per Lord Carnwath JSC at para [218]). The pursuers had no criticism of the terms of the planning conditions applicable to the defender's turbines.

[124] In contrast to the circumstances in *Lawrence*, the planning conditions applicable to the defender's turbines were detailed, carefully considered and also reflected consideration of the relevant nationally applicable policy framework (ETSU).

[125] There was no evidence of any established breach of the noise levels set out in planning condition 17. This was expressly accepted in the pursuers' written submissions (see section 7 of pursuers' submissions, page 6, para 5). That condition was the result of consideration by the planning authority and took account of the guidance set forth in ETSU, which is not solely concerned with balancing the interests of wind farm developers with the interests of local communities but is rather concerned with finding a balance which properly protects the local environment and community. Aberdeenshire Council, in formulating planning condition 17, had specified noise levels which were more stringent than those recommended in ETSU.

[126] Mr Findlay stressed the pre-eminence of ETSU in relation to the assessment of the impact of turbine noise. The pursuers' submissions with regard to the merits of BS 4142 over ETSU simply reflected the personal preferences of Mr Bowdler. The pursuers' witness, Dr Cand, and the defender's expert, Mr Sutherland, both accepted the primacy of ETSU and their evidence in that regard should be preferred.

[127] Mr Findlay criticised the pursuers' failure to call Mr Grant, the local authority environmental health officer, as a witness despite having cited him. Mr Findlay submitted that, if called, Mr Grant could have given evidence about his own observations of the level of turbine noise which he experienced during his visits to the site and that he could also have given expert evidence as to whether a nuisance had been caused (*Westminster CC* v *McDonald* [2005] Env. LR 1). The fact that he had not been called left the pursuers' case lacking independent support.

[128] The evidence given by the pursuers and Mr Poole of the level and character of noise from the defender's turbines and its impact upon them was exaggerated and suggested that they had become sensitised to the noise, and that they would only be content if the turbines

were removed or otherwise rendered inaudible, which was entirely unrealistic given the clear evidence that all turbines produce some level of 'blade swish' noise.

[129] Neither Dr Cand nor Mr Bowdler, the pursuers' expert witnesses, had given evidence that any sound output which they heard from the turbines was of a level which caused any concern. They merely confirmed that the turbines were audible to them and they confirmed the presence of AM as a component of the turbine noise.

[130] The pursuers and Dr Cand accepted that the turbines have at all times complied with the noise levels set out in planning condition 17. Compliance with the condition has been demonstrated by the defender's witness, Mr Sutherland, over a significant period of time spanned by numerous reports produced by Green Cat under his supervision. The Noise Assessment produced by Green Cat in January 2018 (production 6/4/29) demonstrated that, up until that late stage, the turbines were meeting the planning condition noise limits comfortably at night and were also meeting the relevant limits, albeit by a smaller margin, during the day. Taken along with the careful and conservative nature of planning condition 17, this strongly contradicted the pursuers' case.

[131] With regard to the potential significance of AM as a component of the noise from the defender's turbines, Mr Findlay accepted that there was AM present at the site, inevitably so given that all wind turbines generate AM to some degree. However, there was no evidence to suggest that AM was present at this site to a degree which was exceptional or unusual.

[132] Applying the relevant penalties to reflect the AM component of the turbine noise retrospectively, Mr Sutherland's conclusion was that the turbines would still have complied with the noise limits in planning condition 17 with the exception of very limited breaches in the very recent past during daytime hours when East Mains of Crichie was unoccupied and therefore background noise levels were unnaturally low.

[133] The defender's expert, Mr Sutherland had also visited the site on a number of occasions and listened to a large number of audio recordings of the turbines. He had never heard anything consistent with the pursuers' descriptions of the level of turbine noise which they claim to have experienced and the impact which they claim that the turbine noise has had on their lives. Mr Sutherland's experience was supported by the brief audio recording played during his evidence, which Mr Findlay relied upon as providing an indication not only of the character but of the volume of the noise emitted by the turbines.

[134] Google photo 6/4/30 showed that numerous other domestic dwellings sit in fairly close proximity to the defender's turbines. However only the pursuers have a formal complaint of nuisance outstanding. Some of those dwellings are closer to the turbines than Mr Poole's property.

[135] It was not sufficient for the pursuers to give evidence describing their impressions of the noise from the turbines. Some people are simply more sensitive to noise than others. The pursuers may fall into that category, having regard to Mrs Milne's evidence in chief to the effect that initially she had assumed that the turbines would be inaudible. This was an unrealistic attitude on her part. Her evidence was exaggerated. The noise from the turbines did not appear to have the same impact on Mr Milne as on Mrs Milne. He did not find it necessary to move to another bedroom. Both of the pursuers and Mr Poole appeared to share the wish for the turbines to be virtually, if not literally, inaudible. Mr Poole, who is not a party to the action, wants the turbines removed. Neither the pursuers nor Mr Poole would accept that any mitigation applied to turbine 1 had had any impact on the noise from the turbines. However, both Dr Cand and Mr Sutherland accepted that there had been a measurable, if slight, reduction in turbine noise levels as a result of mitigating measures applied to turbine 1.

[136] In the event that the court was satisfied that the pursuers have proved the existence of a statutory nuisance, a further hearing should be fixed in order to discuss and consider the terms of an appropriate order under section 82(2) of the 1990 Act with regard to abatement. It was not appropriate for the court to specify "the route to abatement" but, given the potential for criminal penalties to apply to breach of any order under section 82(2), by virtue of section 82(9) of the Act, it may become necessary for the court, at the appropriate point in further procedure, to specify the standard against which compliance with any such order was to be assessed.

[137] Returning to the approach of the UK Supreme Court in *Lawrence* v *Fen Tigers*, Mr Findlay submitted that the noise limits specified in planning condition 17 are a good starting point for determination of whether a statutory nuisance has been proved in this case. Taking that as a starting point, the evidence indicated that the pursuers had failed to prove their case.

Assessment of Evidence

The pursuers, Mr Poole and Mr Howie

[138] I accept the evidence of the pursuers and Mr Poole in relation to the level of noise experienced by them from the defender's turbines, the characteristics of that noise and its impact upon their lives. I prefer their evidence in relation to these matters to the evidence of Mr Howie, whose evidence was very brief and included his account of the level and character of the noise from the turbines, but which I must interpret in light of the financial interest which his family has in maximising the efficiency and productive capacity of the turbines, even at the cost of consequent noise.

[139] In submitting that I should not accept the evidence of the pursuers and Mr Poole as credible and reliable in relation to the level and character of the turbine noise described by them, the defender founded in part upon the fact that no other local residents had made formal complaints about noise from the turbines. It is perhaps a slightly unusual feature of these proceedings that further witnesses of fact were not called by either the pursuers or the defender to give evidence about the level and character of the noise from the defender's turbines, although there were passing references in the evidence of Mr Poole and Mr Howie to concerns expressed by other local residents. That said, there are a number of factors which support my assessment of the pursuers and Mr Poole as credible and reliable witnesses whose evidence in relation to these matters should be accepted.

[140] There was no evidence, or suggestion, of any connection between the pursuers and Mr Poole which might suggest that they had colluded to fabricate or exaggerate their descriptions of turbine noise and its impact upon them.

[141] According to their unchallenged evidence, the pursuers have never visited any other local properties in order to assess the extent to which those properties may be affected by noise from the turbines.

[142] The pursuers' property is 436 metres southwest of turbine 1. Mr Poole's property is apparently around 680 metres southeast of turbine 3 (the most distant turbine from the pursuers' property but the closest to Mr Poole's property). However, the descriptions of the level, character and impact of turbine noise given by the pursuers on one hand and Mr Poole on the other were entirely consistent with each other.

[143] There is also some support for the pursuers' description of the variable, undulating character of the turbine noise in the expert evidence led by both the pursuers and the defender to the effect that amplitude modulation (AM), which is a reference to variation in

the volume of noise over short periods of time, as opposed to its simple volume, is not only a predictable feature of all wind turbine noise but is also present in the noise emitted by the turbines at West Knock Farm.

[144] In his closing submissions Mr Campbell indicated that the pursuers cannot say with certainty that AM is the cause of, or a material factor contributing to, noise nuisance from the defender's turbines. The evidence of Dr Cand did, however, indicate (without referring to specific research on the issue) that there is an acceptance in the acoustics profession that AM can potentially contribute to harmful impact upon individuals exposed to noise which has an AM component. Presumably it is in recognition of this potentially harmful impact that the analytical tools for the assessment and rating of AM in wind turbine noise which were advocated by both Dr Cand and by the defender's expert Mr Sutherland involved the imposition of notional penalties, expressed in decibels, in recognition of the AM component of noise which may, in terms of its basic volume, comply with a planning condition or other relevant limit but which may exceed that limit when those penalties are applied.

[145] Mrs Milne has clearly taken the leading role in articulating the pursuers' complaints about noise from the turbines and in communicating with the local authority and other bodies in pursuit of redress. It is clear that Mrs Milne's correspondence with, in particular, the local authority began at a very early stage after the turbines were commissioned. It is worth noting that evidence was led that Mr and Mrs Milne did not receive any formal notice of the planning application for the turbines. Although Mr Campbell made it clear in his submissions that no issue was taken arising from this, it was clear that Mr and Mrs Milne were not directly included in the planning process which preceded the construction of the turbines. It appears that, after construction of the turbines commenced and they became aware that the turbines were to be constructed and of where they were to be positioned, they

took no steps to complain or object. This is consistent with their position in evidence that they were not opposed as a matter of principle to wind turbines being situated in the vicinity of their property and that they had indeed given consideration to the installation of a small turbine on their own land prior to their experience of the noise emitted by the defender's turbines. Mr and Mrs Milne's complaints about the defender's turbines only began after the turbines were commissioned in November 2011 and the couple, particularly Mrs Milne, experienced the combined effects of the volume and character of the noise which they emitted.

[146] Mrs Milne's earliest letter to Mr Grant, the local authority environmental health officer, is dated 7 January 2012 (production 5/1/5) and the language which that letter uses to articulate her concerns is entirely consistent with the evidence which she gave in court. The letter speaks of "almost constant noise pollution" since the commissioning of the turbines in November 2011 and complains that "it is not just the sound level but the variable acoustic nature of wind turbine noise that is so insidious". These descriptions are entirely consistent with Mrs Milne's evidence and it seems clear that her position has remained consistent from that very early stage. The evidence of Mr Milne and Mr Poole is, in my view, in turn, entirely consistent with the evidence of Mrs Milne as to the volume, character and impact of the noise from the turbines.

[147] There was unchallenged evidence that Mrs Milne maintained diaries throughout 2012, 2013, 2014, 2015 and 2016 recording her descriptions of objectionable levels of noise from the turbines (pursuers' fifth inventory). This also tends in my view to support her position that the level and character of the noise from the turbines have exerted a consistently negative impact on her domestic environment from the outset.

[148] I also accept that the primary reason for Mrs Milne's decision to relocate to Surrey, with her horses, during her husband's temporary assignment there was to escape the noise from the defender's turbines and its effects upon her life. This was a significant upheaval in Mrs Milne's domestic circumstances which, in my view, supports her evidence of the level and impact of the turbine noise.

[149] I fully accept Mr and Mrs Milne and Mr Poole as credible and reliable witnesses in relation to the volume and character of the noise emitted by the turbines and the impact of that noise on their lives. Their evidence was not simply that the turbines are audible to them. Individuals may well, depending on the circumstances, reasonably be expected to endure noise which is simply audible to them. However the evidence given by Mr and Mrs Milne and by Mr Poole went far beyond a simple complaint about audible noise. Their accounts appeared to me to be entirely authentic. I did not form the view that these witnesses exaggerated their evidence in relation to these matters or that they are simply unusually sensitive to noise from the turbines with the result that they perceive noise which is in fact within reasonable limits to be intolerable. I also accept their evidence that the volume, character and impact of the turbine noise which they described in their evidence have continued at generally the same level from November 2011 when the turbines were commissioned until the commencement of the proof in February 2018.

Skilled Witnesses

[150] I also heard evidence from three skilled witnesses, namely Dr Cand and Mr Bowdler for the pursuers and Mr Sutherland for the defender. No objection was raised to the qualifications, experience or professional standing of any of these witnesses. I was given no reason to doubt the credibility and reliability of their evidence.

[151] Although each of the skilled witnesses gave evidence of having visited the site at least once (Mr Sutherland more often than either Dr Cand or Mr Bowdler), none of these witnesses gave evidence of having heard or experienced turbine noise on those occasions of the level described by the pursuers and Mr Poole.

[152] The subject matter of the evidence given by the skilled witnesses was inherently detailed, technical and complicated. Their evidence was largely focused on the issue of amplitude modulation (AM) as a component of turbine noise and the appropriate means of identifying, measuring and assessing the impact of turbine noise. This observation applies as much to the evidence of Dr Cand and Mr Bowdler, who were called by the pursuers, as to the evidence of Mr Sutherland who gave evidence for the defender. However Mr Campbell made it clear during his submissions that the pursuers do not assert that the noise nuisance of which they complain is the result of AM. It appears therefore that the pursuers' position is that AM is simply a potential component in the noise nuisance which they claim has resulted from the operation of the defender's turbines.

[153] Assessing the evidence of the skilled witnesses against that background, it appeared to me that they agreed that the available data appears to suggest that the defender's turbines have generally always complied with the noise levels set out in planning condition 17. As to the appropriate means of identifying, measuring and assessing the significance of the AM component within the noise emitted by the turbines, the pursuers' witness Dr Cand and the defender's witness Mr Sutherland appeared to be in broad agreement that the appropriate approach was that set out in the ETSU document, with appropriate modifications represented by the Institute of Acoustics (IOA) guidance on the appropriate means of identifying and measuring the AM component of the turbine noise and the application of the penalties recommended in the DBEIS guidance in order to arrive at an assessment of the

impact of the AM component of the noise. The pursuers' witness Mr Bowdler, on the other hand, rejected ETSU as the most appropriate tool for the assessment of wind turbine noise and expressed his personal preference for the alternative approach set out in BS 4142.

[154] Insofar as this particular issue may be significant to the determination of the issues which are before the court, I prefer the approach of Dr Cand and Mr Sutherland to that of Mr Bowdler. The former approach is founded on the ETSU guidance which is well established as the pre-eminent source of guidance in relation to planning issues concerning noise from wind turbines throughout the UK. Although it is concerned with attempting to strike a balance between the interest of wind farm developers and the interests of local communities, I accept that the ETSU guidance does have regard to issues concerning the potential impact of wind farm noise on individuals. It appeared to me that Mr Bowdler's sincerely held and clearly expressed preference for BS 4142 can only be regarded as his personal preference, which is clearly not reflected in the practice of professionals in the field of acoustics or of planning authorities, even on Mr Bowdler's own evidence.

[155] I therefore prefer the evidence of Dr Cand and Mr Sutherland to the evidence of Mr Bowdler, in so far as there was any conflict between the two with regard to the most appropriate means of identifying and assessing the potential impact of turbine noise. It does not appear to me however that this renders Mr Bowdler's evidence to be entirely lacking in significance, since it does not appear to me that the two competing approaches to the issue of identifying and assessing the potential impact of turbine noise (the ETSU approach on one hand and the BS 4142 approach on the other) are necessarily mutually exclusive. There is simply evidence arising from the application of each of these two alternative approaches to the investigation and assessment of issues concerning noise emitted by the turbines.

[156] It seems to me that, to the extent that the matters considered by the skilled witnesses are of significance to the issues which are before the court, their evidence lends some support to the pursuers' case. It is clear that all of the skilled witnesses found AM to be present in noise data from this site.

[157] The pursuers' witness Mr Bowdler concluded (albeit by applying BS 4142 to analyse the turbine noise) that in particular wind conditions identified by him, there was "almost always a significant adverse impact at night and an adverse impact during the day." However Mr Bowdler also commented that, although AM appeared to be a contributory factor to the harmful impact reported by the pursuers, it did not appear to be the dominant factor.

[158] Dr Cand was able to find some correlation between periods of apparently high AM, according to noise data from the site, and at least some of the complaints noted by Mrs Milne in her diaries. Retrospective application of the penalties recommended by the DBEIS report to noise data from a number of dates in November 2016 resulted in notional noise levels which, according to Dr Cand, would have been in breach of the noise limits set by planning condition 17. On the other hand Dr Cand concluded in his Amplitude Modulation Analysis (production 6/3/24) dated 18 June 2014 that, at that time, although AM was present in the noise emitted from the turbines, OAM did not appear to be a significant factor at that time and the AM levels detected appeared to be lower than at some other sites with which he had been involved.

[159] Retrospective application of the same penalties to noise data from November and December 2017 would appear to have given results which would have resulted in slight breach of the daytime noise limits, according to Mr Sutherland. The listening test carried out by Mr Sutherland and a colleague for the purposes of Green Cat report 6/4/30 found that

turbine noise was 'intrusive' in 21 of 153 brief recordings listened to. Some of the noise data gathered in November and December 2017, when analysed by Mr Sutherland for Green Cat's report (production 6/4/30), was found to contain 'potentially unacceptable OAM' when the wind was blowing in a particular direction (para 4.1.5).

[160] It seems clear that, even for specialists in the field of acoustics, the application of the developing science in this field is not a straightforward matter. In my view the extent to which the technical evidence led by both sides at proof made the issues for decision by the court any clearer is open to question. Neither side's skilled witnesses claimed to have a definitive analysis of the issues from a scientific perspective. Even though the balance of technical evidence indicated that AM is a feature of the noise emitted by the turbines, it is equally clear that it is accepted that all wind turbines produce some level of AM as a consequence of the rotation of their blades and that there are no recognised criteria as to any particular threshold or level of AM, of any type, which is recognised as being harmful to individuals who are exposed to it. The introduction of a dispute between members of the acoustics profession in relation to the most appropriate means of identifying and assessing the impact of turbine noise did not serve to make the court's task any more straightforward, particularly having regard to the limited reliance which was ultimately placed on the significance of AM by the pursuers.

[161] In my view this case turns primarily on the non-technical evidence given by witnesses who have spent years living in the vicinity of the turbines.

Discussion

General issues

[162] After some discussion parties were in agreement that the decision as to whether a nuisance exists must be taken on the basis of the evidence as at the date of the court's decision, rather than as at the date when the proceedings were raised.

[163] There was also agreement that compliance with noise levels set by planning conditions does not exclude the existence of a statutory nuisance.

[164] During closing submissions, there was some discussion of the extent to which it might be appropriate for me to consider, in reaching my judgment, the terms of technical reports not spoken to during evidence led at proof, the contents of diary entries made by Mrs Milne which were not spoken to in evidence and the content of audio recordings of turbine noise which were not played at proof.

[165] A number of technical reports which were lodged as productions were not spoken to at proof. I understood that it was suggested during submissions that it might be appropriate for me to consider some of those technical reports in the course of reaching my decision. In my view, it would not be appropriate for me to follow that course. The subject matter of the technical reports lodged in this case is such that I would not consider it to be appropriate for me to attempt to interpret their contents in absence of evidence from suitably qualified witnesses to explain the significance and context of the reports. Accordingly, I have refrained from considering the content of any reports not spoken to in evidence, except to the extent that such reports contain straightforward factual material to which reference was made elsewhere in the evidence, even if the report in question was not specifically spoken to

by a witness. As I understood it, parties were agreed that this approach was unobjectionable.

[166] Mrs Milne identified her diaries from 2012, 2013, 2014, 2015 and 2016 and gave evidence that she had made entries in those diaries recording her observations of the level and character of turbine noise where she considered it appropriate to do so. Her evidence to this effect was not disputed. However, very few specific diary entries were spoken to in evidence. During closing submissions I understood Mr Campbell to invite me to consider the whole contents of the diaries as providing a contemporaneous record of Mrs Milne's observations. Mr Findlay had no objection to the use of the diaries for this purpose, on the basis that the defender did not dispute that Mrs Milne had made the entries in the diaries but did dispute the credibility and reliability of those entries as accurate representations of the level and characteristics of the turbine noise referred to in the entries. It seems to me that the correct approach is for me simply to proceed on the undisputed basis that these diaries contain entries of the kind described by Mrs Milne, but to refrain from any detailed consideration of the content of entries which did not feature in evidence (some of which, according to Mrs Milne, are expressed in her own shorthand).

[167] So far as sound recordings are concerned, on the third day of the proof (16 February), I allowed the defender's fifth inventory of productions to be received. That inventory introduced an electronic storage device on which I understood that a large number of brief audio recordings made at East Mains of Crichie were contained. I understand that these may be copies of at least some of the recordings analysed by Mr Sutherland and his colleague in the course of the listening test which they carried out for the purposes of the Green Cat report (production 6/4/30). I understood Mr Campbell to suggest during his closing submissions that it would be open to me to listen to these recordings, although he

only raised the issue in order to invite me, in the event that I did choose to listen to the recordings, to attach very limited significance to them. Once again, however, my view is that it is only appropriate for me to have regard to the single audio clip which was played, for illustrative purposes, during the evidence of Mr Sutherland. I understood Mr Findlay to agree that that was the appropriate approach.

[168] So far as the brief recording played during Mr Sutherland's evidence is concerned, I make it clear that I do not regard this as being in any way decisive or fully representative of the turbine noise which might be audible from East Mains of Crichie under 'real' conditions, having regard to the fact that I heard the recording in the highly artificial conditions of a courtroom, via the standard audio equipment available there and with no contextual information as to the conditions under which it was recorded or whether the recording was said to representive of the level and character of the noise described by the pursuers and Mr Poole in their evidence. The recording was in fact not played for their comment during their evidence.

The nature of the pursuers' complaint

[169] It is worth emphasising that the pursuers did not base their case solely on the volume of the noise emitted by the defender's turbines, or on the assertion that AM as a component of the noise emitted by the defender's turbines is the sole cause of the nuisance of which they complain. The volume of the turbine noise is only one aspect of their complaint, and they go no further than to assert that AM is a potential contributing factor. To that extent their evidence is given some support by the technical evidence.

[170] It appears to me that the pursuers' complaint is really based on the combined effect of a number of factors, namely: the volume of the turbine noise, even if it does comply with

the noise limits set out in planning condition 17; the fact that it can continue at a significant, intrusive level for lengthy periods; the character of the noise, whether it takes the form of rhythmic, repetitive 'blade swish' or any of the other, apparently less well understood, forms of turbine noise; the unpredictable manner in which the volume and character of the noise emitted by the turbines can change, or the noise can cease altogether, only to resume again in an equally unpredictable manner; and the negative impact of the turbine noise on the pursuers' ability to enjoy living in their home at East Mains of Crichie. Against this background it is in my view worth stressing that planning condition 17 appears to be concerned solely with the simple volume of the turbine noise.

The relevant legislative structure

[171] It seems clear from the case of *Robb* v *Dundee City Council* that section 79 (1)(g) of the 1990 Act provides two distinct grounds upon which individuals such as the pursuer may seek to establish that noise emitted from premises constitutes a statutory nuisance. The first of those grounds is that the noise is "prejudicial to health", an expression which is defined in section 79(7) of the Act to mean "injurious, or likely to cause injury, to health." The pursuers made averments on Record which appeared to support this ground of action but Mr Campbell accepted in his submissions that those averments are not supported by evidence and stated that this ground of action was not relied upon by the pursuers. The second ground of action available under section 79(1)(g) of the 1990 Act is that noise emitted from premises amounts to a nuisance at common law, in the sense of being intolerable or something which would not be tolerated by a reasonable person ("*plus quam tolerabile*") (*Robb* v *Dundee City Council* per Lord Cameron of Lochbroom at paras [2], [3], [4] and [16] to [22], Lord Johnston at paras [15] and [22] and Lady Paton at paras [5] to [9]). Thus, it

appears that common law nuisance, where it is shown to arise from "noise emitted from premises", may constitute a statutory nuisance for the purposes of section 79(1)(g) of the 1990 Act. Mr Campbell made it clear in his closing submissions that the pursuers' case is based on the second of the two grounds of action provided by section 79(1)(g) of the Act, namely common law nuisance, given that the pursuers cannot point to any specific, identified medical condition or treatment which can be attributed to the effects of noise from the turbines.

The relevance of the planning condition

[172] Mr Findlay relied upon the case of *Lawrence* v *Fen Tigers* as authority for the general proposition that compliance with a planning condition applicable to the source of an alleged nuisance, particularly where that condition is carefully worded, may be relevant to the court's decision as to whether the alleged nuisance has been proved to exist.

[173] It appears to me that a number of dicta from *Lawrence* require to be noted in detail. The case arose from proceedings raised by the owners of a house ('the claimants') which was situated close to a stadium at which various motorsports took place in accordance with planning permission. The claimants succeeded at first instance in establishing that noise from the activities carried on at the stadium constituted a nuisance in terms of the 1990 Act. The Court of Appeal allowed an appeal by the defendants. The claimants then appealed to the UK Supreme Court, which allowed their appeal. In delivering their judgments the members of the Supreme Court considered the relevance of planning consent to a complaint of nuisance. Some of their Lordships' observations relate to the complications which may arise where the grant of planning permission can be said to have altered the character of the locality. However, those passages are, in my view, inapplicable to the present proceedings

because Mr Findlay made it clear in his submissions that the defender does not contend that the grant of planning permission altered the character of the area which is relevant to these proceedings.

[174] Returning to the relevance of planning consent to a complaint of nuisance, Lord Neuberger of Abbotsbury PSC observed at paragraphs 89 and 90 of his judgment that:

> "The grant of planning permission for a particular development does not mean that that development is lawful. All it means is that a bar to the use imposed by planning law, in the public interest, has been removed ... Quite apart from this, it seems wrong in principle that, through the grant of a planning permission, a planning authority should be able to deprive a property owner of a right to object to what would otherwise be a nuisance, without providing her with compensation, when there is no provision in the planning legislation which suggests such a possibility".

[175] At paragraphs 94 to 96 of his judgment, Lord Neuberger said this:

> "94. Accordingly, I consider that the mere fact that the activity which is said to give rise to the nuisance has the benefit of a planning permission is normally of no assistance to the defendant in a claim brought by a neighbour who contends that the activity [caused] a nuisance to her land in the form of noise or other loss of amenity.
>
> 95. A planning authority has to consider the effect of a proposed development on occupiers of neighbouring land, but that is merely one of the factors which has to be taken into account. The planning authority can be expected to balance various competing interests, which will often be multifarious in nature, as best it can in the overall public interest, bearing in mind relevant planning guidelines. Some of those factors, such as many political and economic considerations which properly may play a part in the thinking of the members of a planning authority, would play no part in the assessment of whether a particular activity constitutes a nuisance ...
>
> 96. However, there will be occasions when the terms of a planning permission could be of some relevance in a nuisance case. Thus, the fact that the planning authority takes the view that noisy activity is acceptable after 8.30 am, or if it is limited to a certain decibel level, in a particular locality, may be of real value, at least as a starting point as Lord Carnwath JSC says in para 218 below, in a case where the claimant is contending that the activity gives rise to a nuisance if it starts before 9.30 am, or is at or below the permitted decibel level. While the decision whether the activity causes a nuisance to the claimant is not for the planning authority but for the court, the existence and

> terms of the permission are not irrelevant as a matter of law, but in many cases they will be of little, or even no, evidential value and in other cases rather more".

[176] At paras 124 and 125 of his judgment, Lord Neuberger indicated that the fact that the activity which has given rise to the nuisance was permitted by planning permission may be relevant as a matter of public interest to the court's decision as to the appropriate remedy for the nuisance. Lord Neuberger considered the impact of the public interest in the context of a choice between the grant of an injunction and an award of compensation. By contrast the sheriff's powers where a statutory nuisance within the meaning of section 79(1)(g) of the 1990 Act is established are prescribed by section 82(2) of the Act and do not include the power to award damages. However, it appears to me that the principle that the grant of planning permission for an activity which is later found to have given rise to a nuisance may be relevant to the court's ultimate response to that nuisance is of some potential significance in the present case.

[177] Lord Sumption concurred with Lord Neuberger's view that:

> "...[T]he existence of planning permission for a given use is of very limited relevance to the question whether that use constitutes a private nuisance. It may at best provide some evidence of the reasonableness of the particular use of land in question. But planning authorities are concerned with the public interest in development and land use, as that interest is defined in the planning legislation and any relevant development plans and policies. Planning powers do not exist to enforce or override private rights in respect of land use, whether arising from restrictive covenants, contracts, or the law of tort. Likewise, the question whether a neighbouring landowner has a right of action in nuisance in respect of some use of land has to be decided by the courts regardless of any public interest engaged" (para 156).

[178] At paras 157 and 161 of his judgment, Lord Sumption considered the relevance of the fact that the activity complained of was permitted by planning permission to the court's

choice of remedy where that activity is found to have given rise to a nuisance and observed (para 161) that:

> "... In particular, it may well be that an injunction should as a matter of principle not be granted in a case where a use of land to which objection is taken requires and has received planning permission".

Lord Sumption did not express a concluded view on the matter but merely identified this as an issue which may merit closer consideration in an appropriate case.

[179] Lord Mance concurred with Lord Neuberger's observations in relation to the potential limits on the relevance of planning permission to the question of whether a nuisance has been established. In relation to choice of remedy, Lord Mance observed (para 168) that:

> "I would only add in relation to remedy that the right to enjoy one's home without disturbance is one which I would believe that many, indeed most, people value for reasons largely if not entirely independent of money".

[180] In relation to the relevance of planning control to the decision whether a nuisance has been established, Lord Carnwath said this:

> "192... Decisions made by local planning authorities and planning inspectors reflect, or should reflect, an attempt by the authorities consciously to balance the likely benefits of a proposed development against any potential adverse consequences. That process often involves consideration of the interests of neighbouring property owners, including the impact of noise. Thus, national planning advice encourages planning authorities to restrict new development which could give rise to significant adverse impacts from noise; but emphasises that planning is concerned with the acceptability of the use in principle, rather than control of processes or emissions which are subject to other regulatory controls ...
>
> 193. The law of private nuisance, of far greater antiquity than modern planning legislation, also fulfils the function of protecting the interests of property owners. There is, however, a fundamental difference between planning law and the law of nuisance. The former exists to protect and promote the public interest, whereas the latter protects the rights of particular individuals. Planning decisions may require individuals to bear burdens for the benefit of others, the local community or the

> public as a whole. But, as the law stands, it is generally no defence to a claim of nuisance that the activity in question is of benefit to the public.
>
> 194. Thus planning controls and the law of nuisance may pull in opposite directions. A development executed in accordance with planning permission may, nevertheless, cause a substantial interference with the enjoyment of neighbouring properties ...".

[181] At paragraph 218 of his judgment, Lord Carnwath observed that:

> "... A planning permission may be relevant in two distinct ways:
>
> > (i) It may provide evidence of the relative importance, insofar as it is relevant, of the permitted activity as part of the pattern of uses in the area;
> > (ii) Where a relevant planning permission ... includes a detailed, and carefully considered, framework of conditions governing the acceptable limits of a noise use, they may provide a useful starting point or benchmark for the court's consideration of the same issues".

[182] At para 246 of his judgment, Lord Carnwath accepted that the nature of, and background to, a relevant planning permission may be an important factor in the court's decision with regard to remedy for nuisance.

[183] In the present case, unlike the situation faced by the court in *Lawrence* v *Fen Tigers* (see para 227 per Lord Carnwath) the activity which is alleged to have given rise to a nuisance, namely the operation of the defender's wind turbines, is the subject of a comparatively detailed planning condition which sets specific noise limits governing both daytime and night time periods.

[184] *Lawrence* v *Fen Tigers* would appear to indicate that, although it is open to the court to consider the relevance of the planning condition and the unchallenged evidence that the defender's turbines have complied with the noise limits imposed by planning condition 17 since they were commissioned, when deciding whether the pursuers have proved that noise emitted by the turbines constitutes a nuisance at common law (and hence a statutory nuisance within the meaning of section 79(1)(g) of the 1990 Act), the factors which influenced the decisions of the planning authority to grant planning permission and to set

planning conditions may have been quite different from those which are relevant to the court's decision as to whether the activity permitted by the planning authority nevertheless amounts to a nuisance. Compliance with planning conditions is not a defence to a claim that the activity permitted by the planning authority nevertheless amounts to a nuisance. In this context I note once again that the planning condition is concerned with noise levels, whereas the pursuers' complaint of nuisance is more broadly based and founds on factors beyond straightforward volume. Where a claim of nuisance succeeds, the fact that the activity complained of was the subject of planning consent may, as a matter of public interest, influence the manner in which the court exercises its powers and obligations in terms of section 82(2) of the 1990 Act.

The potential admissibility of evidence of opinion by the environmental health officer

[185] This issue is academic because the environmental health officer from Aberdeenshire Council who appears to have been Mrs Milne's point of contact within the local authority in relation to her complaints about turbine noise, Mr Grant, was not called as a witness although he was listed by the pursuers and, as I understand it, did attend court during the proof.

[186] Mr Findlay submitted that it would have been open to the pursuers to call Mr Grant both as a witness of fact in relation to his own observations of any turbine noise which may have been apparent to him during his visits to East Mains of Crichie and as an expert who would have been entitled to give evidence of opinion as to whether any turbine noise experienced by him during those visits amounted to a statutory nuisance. The latter submission was based upon the case of *Westminster City Council* v *McDonald*, in which it appears that the Queen's Bench Division accepted that the environmental health officers

involved in that case (in which the noise complained of resulted from the activities of a particularly loud street busker) were qualified to give evidence of whether the noise emitted from premises amounted to a nuisance (per *Royce J* at para 23). I remain unconvinced, however, that such an approach would be followed by courts in Scotland, given that the issue of whether or not noise emitted from premises amounts to a statutory nuisance is the fundamental question which the court has to decide in a case of this nature (Walker and Walker, *The Law of Evidence in Scotland*, 4th Ed, para 16.1.3). It may be that the approach of the court in *Westminster City Council* v *McDonald* arises from a somewhat different approach to this issue which appears to be taken by the English courts (Phipson on Evidence, 19th Ed, para 33-12).

[187] However, Mr Grant did not give evidence and so it is not necessary for me to express any concluded view on the matter. So far as this particular issue is concerned Mr Grant therefore remained in the margins of the evidence, emerging only briefly during Mrs Milne's hearsay evidence of a comment which she said that Mr Grant had made during a visit to East Mains of Crichie which she interpreted as an expression of his concern at the level of noise emitted by the turbines on that occasion.

Decision as to whether nuisance established

[188] I accept that the pursuers are credible and reliable witnesses, as is their witness Mr Poole. Mr Poole is not a party to the action and I am not being asked to make a finding as to whether he has proved the existence of a nuisance arising from the turbine noise which reaches his property. It does appear that his position is broadly similar to that of the pursuers, having regard to the similarities between his evidence and that given by the pursuers in relation to the volume and character of the noise emitted by the turbines and its

impact on his domestic and family life. The principal point of distinction as between the pursuers and Mr Poole is that their respective properties have different turbines closest to them. In these proceedings the primary significance of Mr Poole's evidence is that it fully supports the pursuers' case in relation to the volume and character of the noise emitted by the turbines and its significant impact upon their enjoyment of their home environment over a period of years from the commissioning of the turbines in late 2011 until the commencement of the proof.

[189] I do not accept that the pursuers are simply prejudiced against wind turbines or that they exaggerated their descriptions of the volume and character of the turbine noise which they have experienced or the impact of that noise on their lives. I do not accept that they are unusually sensitive to noise from the turbines. The combined effect of the volume and character of the turbine noise which the pursuers have experienced, according to their evidence, is something no reasonable person ought to be expected to tolerate. It is a nuisance at common law and, for the reasons already explained, it is therefore a statutory nuisance in terms of section 79(1)(g) of the 1990 Act.

[190] It does not seem to me that the pursuers are required to explain, by reference to the relevant science, precisely how and why the noise emitted by the turbines amounts to a nuisance. It may not be possible for them to do that. There was evidence that the scientific knowledge of the properties and potential effects of AM as a component of turbine noise is very much a developing field. I can see no requirement in the 1990 Act upon the pursuers to identify the science behind their claim of nuisance. Their case was very much based upon the non-technical, factual descriptions of the volume and character of the turbine noise which were given by the pursuers and Mr Poole. It is essentially on the basis of that evidence that I am satisfied that the pursuers' case has been established.

The court's response – Section 82(2) of the 1990 Act

[191] In terms of section 82(2) of the 1990 Act, having found that a nuisance exists, I am obliged to make an order for either or both of the following purposes, namely:

a) Requiring the defender to abate the nuisance, within a time specified in the order, and to execute any works necessary for that purpose; and

b) Prohibiting a recurrence of the nuisance, and requiring the defender, within a time specified in the order, to execute any works necessary to prevent the recurrence.

I have no discretion as to whether to make an order under section 82(2), although the terms of such an order are a matter for me to decide.

[192] I considered whether it was necessary for the court to specify at this stage precisely what steps the defender is required to take in order to abate the nuisance and prevent its recurrence. However it seems to me that, had the Act required this, section 82(2) would have made that clear. It seems to me that there is force in Mr Campbell's submission that, just as it is not for the pursuers to explain the science behind their complaint of nuisance, neither can the court be expected to specify at this stage precisely what steps the defender is required to take, short of decommissioning turbine 1, in order to abate the nuisance and prevent its recurrence. On the other hand I accept the force of Mr Findlay's submission that, having regard to the criminal penalties for breach of a section 82(2) order, which are provided by section 82(8) of the 1990 Act, at some point the court may require to be in a position to make an order under section 82(2) in terms which are sufficiently specific not only to enable the parties to these proceedings to understand their respective rights and

obligations arising from the order but to enable a court to determine, in the event of a complaint of breach of the order, whether a criminal offence under section 82(8) has been committed.

[193] The difficulty which would attach to any attempt by the court to specify, at this stage, the steps which the defender would require to take in order to abate the nuisance and prevent its recurrence is indicative of the complexity of the issues involved. One option open to the court would be to order the defender to decommission turbine 1. However, it may be that an order to that effect would go beyond what is necessary to ensure that the nuisance is abated and does not recur, which is all that section 82(2) of the 1990 Act requires. Further, I am mindful of the observations of members of the Supreme Court in the case of *Lawrence* v *Fen Tigers* as to the potential relevance to the court's choice of remedy of the fact that the activity which gives rise to a nuisance is the subject of planning consent. Having regard to those observations it appears to me that it is appropriate for the court to consider whether, as a matter of public interest, it is possible to identify some means of allowing the activity permitted by the planning authority, namely the operation of the defender's turbines, to continue in a manner which does not perpetuate the nuisance which I have found to exist before concluding that an order requiring the decommissioning of turbine 1 is necessary in order to meet the objectives of section 82(2) of the Act.

[194] With these considerations in mind I shall accede to the suggestion of parties that, instead of making an order under section 82(2) of the 1990 Act at this stage, it is appropriate for me to continue consideration of the appropriate terms of the inevitable order under section 82(2) for further submissions in relation to that issue. It appears to me that the onus must lie upon the defender to identify means short of the decommissioning of turbine 1

which are acceptable to the court as a means of meeting the objectives of section 82(2) of the Act.

Decision

[195] For all of the reasons given I shall refuse the defender's pleas-in-law. I shall sustain the pursuers' pleas-in-law, although I make it clear that the pursuers' second plea in law is sustained only insofar as it proceeds on the basis that the noise emitted by the defender's turbines is a nuisance and not insofar as it asserts that the turbine noise is "prejudicial to health," since the latter assertion was departed from at proof. I shall grant decree in terms of the pursuers' first crave, which seeks declarator that the pursuers are properly aggrieved by the commission of a statutory nuisance caused and permitted by the defender, namely the emission of noise from the operation of the defender's wind turbines located on the defender's premises at West Knock Farm. I shall continue consideration of the pursuers' second, third and fourth craves, which seek an order or orders in terms of section 82(2) of the 1990 Act, for discussion of the appropriate terms of such an order or orders to a hearing on Wednesday 30 May 2018 at 11.30 am.

[196] I shall also continue consideration of the question of liability for the expenses of the action to the same hearing.

[197] In the event that parties are in agreement that they require further time to consider and discuss the appropriate terms of the order which the court is required to make under section 82(2) of the 1990 Act before the next calling of this case, I would be happy to discharge the hearing scheduled for 30 May and fix a later hearing administratively, without the need for any appearance on 30 May, on the basis of emails from parties' solicitors requesting that I take that course.

Note

After further procedure an Abatement Order under section 82(2) of the 1990 Act was made on joint motion on 20 February 2019 in the following terms:

> "In terms of the pursuers' second and third craves, Grants an Abatement Order under and for the purposes set out in section 82(2) of the Environmental Protection Act 1990 permitting the defender or those instructed by, or contracted to, the defender to continue generally to operate Turbine 1, currently installed at West Knock Farm, Stuartfield ("T1"); but requiring the defender or those instructed by, or contracted to, the defender, on all occasions during normal operation when the wind direction at T1, as measured at T1, is within the range 165 to 330 degrees of North, and the wind is blowing in the wind speed range of 5.3 to 10.6 metres per second as measured at hub height, to operate T1 only at an eight degree blade pitch angle or more and in a 600kW or lower power mode."