



### WIND TURBINES

## AM conditions approved

In what is expected to be the final chapter of the long running Den Brook wind farm 'war', both sides have claimed success in the High Court. The wind farm gets the go ahead – but stringent amplitude modulation conditions are confirmed and likely to be used elsewhere.

The Den Brook wind farm was first mooted in 2004 and has been in and out of the courts ever since, a saga that was covered in the recent four hour BBC *Windfarm Wars* documentary. Grounds for objection were gradually whittled away leaving amplitude modulation (thumping) as the only issue in dispute.

Developer RES said noise would not be audible or a problem. Objector Mike Hulme was not convinced and wanted a legally-watertight condition that could allow the wind farm to be sanctioned if it produced amplitude modulation.

In the final stages, Hulme's

acoustic consultant Mike Stigwood proposed specific conditions, which were adopted in part, leaving some ambiguity requiring the final appeal.

Hulme technically lost this appeal with the court stating that while the condition was badly worded (suggesting that all the operator needed to do was measure and assess noise, not treat it), the court said the condition could be inferred as meaning noise would also have to be stopped.

Hulme says this was the protection against noise nuisance that he had been seeking from the start: "RES now has to meet the unprecedented and significant reduction of the noise limits in the event of amplitude modulation from the wind farm."

"In coming to their judgement the Lords have not only set in stone the parameters of the Den Brook amplitude modulation condition but also cut off any further opportunities

for RES (they have tried) to redefine those parameters through the scheme required by the noise condition. It is exactly what I set out to achieve.

"Hopefully, others will now be able to make use of, and benefit from, this amplitude modulation condition precedent for their own cases."

Mike Stigwood told *Noise Bulletin*: "I devised an excess amplitude modulation condition based on my findings and measurements at other wind farms that was worded simply and made an exceedence a breach. It was a simple stand-alone condition.

"The Inspector decided to add a section to the condition requiring that on receipt of a complaint the wind farm operator must investigate and measure the excess amplitude modulation, omitting the wording which made it clear that excess was a breach. Thus it changed from 'it shall not

● continued on page four

### COST BENEFIT ANALYSIS

## Noise and other 'services' costed

Defra has released a study that assigns costs to noise and other environmental issues. The costings have been embraced by the Natural Environment White Paper released this week (p2).

Defra says the research "for the first time" reveals the true value of nature. The UK National Ecosystem Assessment "strengthens the arguments for protecting and enhancing the environment and will be used by the government to direct

policy in future". A key difference between this research and other economic assessments is the treatment of various environmental features such as woodland and grassland as 'services' – for instance to reduce noise exposure. By identifying these services, they can then be valued and included in cost benefit analysis.

Environment secretary Caroline Spelman said: "The natural world is vital to our

existence, providing us with essentials such as food, water and clean air, but also other cultural and health benefits not always fully appreciated because we get them for free. The UK National Ecosystem Assessment is a vital step forward in our ability to understand the true value of nature and how to sustain the benefits it gives us."

● Report available from <http://uknea.unep-wcmc.org>

### IN BRIEF

#### Research cut

Defra has updated its research plans.

In its latest *Evidence Investment Strategy*, funding for environment research is down 5%, and noise research in particular is down 8% from £3.51m to £3.24m in 2011/12.

● *Defra's Evidence Investment Strategy*: [www.defra.gov.uk/publications/2011/04/27/pb13471-evidence-investment-strategy/](http://www.defra.gov.uk/publications/2011/04/27/pb13471-evidence-investment-strategy/)

#### Research delays

Epuk has reported continuing delays in publication of research on wind turbine noise.

"A number of pieces of work are underway that promise to contribute to unravelling the complexities of wind farm noise assessment but they are subject to delay in completion and publication. This reflects both the complexity and political sensitivity of determining a reliable means of deciding where wind farms should go.

"Defra-commissioned work looking at supporting the use of the statutory nuisance regime for dealing with wind farm noise complaints is long overdue, and we hope to see it in the next month. Also delayed is research commissioned by the DECC, looking at the consistency of implementation of Etsu – which we hope will go broader than its original remit and include an examination of current practice. This was due to be reported at the end of last year, then this May, but is now not expected for a few more weeks.

"The third piece of work awaited, is research commissioned by industry body Renewable UK on amplitude modulation and this is anticipated to be in the autumn."

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**IN BRIEF**

**Wales finalises quiet area guidance**

Draft guidance on noise action planning and quiet areas has been firmed up by the Welsh Assembly.

The draft, released earlier this year (*Noise Bulletin Feb/Mar p1*), sets out in detail how noise action areas and quiet areas are agreed, and dealt with.

**Quieter fleets**

The Campaign for Better Tyres has published tyre comparison data to help fleet managers choose better tyres to improve the economical, environmental and safety performance of their vehicles.

● [www.bettertyres.org.uk/why-better-tyres/buying-better-tyres](http://www.bettertyres.org.uk/why-better-tyres/buying-better-tyres)

**Wiltshire fine**

A Wiltshire stonemason firm has been fined £20,000 for failure to comply with a noise abatement notice.

External stone cutting and forklift movements are understood to have caused the complaints against Sulis Architectural Ltd.

**Motocross win**

A planning enforcement notice issued by West Lancashire Borough Council ordering the motocross track at Leisure Lakes, near Tarleton to cease operating has been confirmed by the Planning Inspectorate and an appeal by the operator dismissed.

The council took enforcement action against the unauthorised use on green belt and noise grounds.

Following a four-day public inquiry, a planning inspector ruled that the motocross noise had a "serious adverse impact" on neighbouring properties. The decision said that the noise was "irritating and impossible to ignore" and that "the motorbike noise was seriously intrusive".

**POLICY**

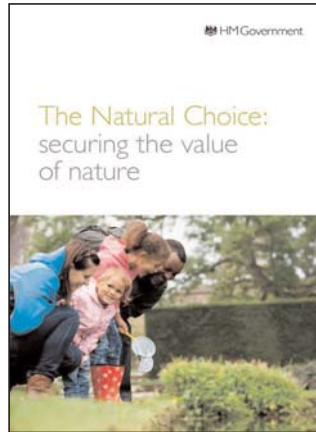
**White paper affects noise**

Noise features in a new natural environment white paper. Noise wasn't mentioned in the initial draft (*Noise Bulletin Aug/Sept 2010 p4*).

*The natural choice: securing the value of nature* sets out a detailed programme of action to repair damage done to the environment in the past, and urges more community involvement. At the heart of the policy is the recent costings for various 'services' provided by the environment (*see news p1*). Green spaces and trees, for instance, provide a 'service' by reducing noise – this will now be valued.

Key measures in the white paper include:

● Green Areas Designation allowing local communities to give protection to areas that are important to them for



**Much reliance on costings**

recreation, the view or their importance for wildlife;

● Better urban green spaces for the benefit of cities and towns. Support for parks, gardens, and tree planting which benefit

people and nature alike;

● Natural Capital Committee – an independent body to put the value of nature at the heart of the Government's economic thinking.

More specifically on noise it says: "We are committed to delivering the Noise Policy Statement for England that promotes good health and quality of life. As part of this, we will work with local authorities to establish mechanisms for formally identifying and protecting urban Quiet Areas, so that people living in cities can benefit from access to areas of relative quiet for relaxation and contemplation."

● *Natural environment white paper, the natural choice* [www.defra.gov.uk/environment/natural/whitepaper](http://www.defra.gov.uk/environment/natural/whitepaper)

**AVIATION**

**Heathrow plans to revamp noise schemes**

Heathrow Airport is consulting on changes to noise amelioration policies including the Cranford Agreement.

The review forms part of a commitment within Heathrow's noise action plan submitted to the government.

Changes over the existing set of policies include:

● Widening the area in which people are eligible to apply for assistance;



**Cranford Agreement: Winners and losers from changes**

● Introducing a zoning system so that those living nearest the airport receive more funding;

● Increasing the range of mitigation options available;

● Providing support for an additional 7,500 properties should they wish to move away.

The consultation also explains how changes brought about by the ending of the Cranford Agreement, signalled by Government last year. At the moment planes avoid overflying Cranford where possible, but this pushes planes over other, more populated areas. Heathrow claims ending the agreement will "provide benefits to thousands of people living near Heathrow since noise will be spread more evenly around the airport" although it admits that some will suffer more noise.

Currently, when the wind blows from the east, planes must take off from the southern runway and land on the northern runway. This means many locals across areas such as Windsor, Datchet, Colnbrook and North Feltham hear aircraft

noise all day. The ending of the agreement means that full runway alternation can be introduced in the same way as the current arrangement when the wind blows from the west, spreading noise more evenly around the airport.

More taxiways will be needed to enable the change – and these taxiways will need planning permission from Hillingdon council.

● [www.heathrow.com/consultations](http://www.heathrow.com/consultations)

**Night flight delay**

A consultation on changes to night flights at London airports has been delayed until Spring 2012.

Aviation minister Theresa Villiers says this is to allow the Government to take account of the views expressed in its Aviation Scoping Document, currently out for consultation until September 2011. The current night flight regime comes to an end in October 2012.

## PLANNING

## Planning reform: hints given

A glimpse of the shape of future streamlined planning system have been included in the new environment White Paper (*see news, facing page*).

It is known that the Government is keen to streamline planning policy and remove detailed guidance in favour of a single overarching document. Some fear the removal of PPG24 on noise will make it even harder for noise to figure in planning decisions.

In the latest announcement, the Government once again describes the current system as

“costly and bureaucratic with excessive central control, preventing local communities from shaping development in their neighbourhoods”.

“Central to the Government’s planning reforms is the National Planning Policy Framework (NPPF), which will set out our environmental, social and economic objectives for the planning system and explain how they relate to each other in one succinct document.

“We have already made clear that our top priority for the NPPF will be to support long-

term sustainable economic growth, with a new presumption in favour of sustainable development.

“The policy framework will provide communities with the tools they need to achieve an improved and healthy natural environment as part of sustainable growth, taking account of the objectives set out in this White Paper.

“The Government will consult extensively on a draft of the National Planning Policy Framework later in the summer.”

## PLANNING

## Experts suggest wording of planning policy

A group of Government-selected planning experts have proposed a wording for the overarching planning policy framework. The framework is intended to be a short overarching policy statement to replace current policy and accompanying detailed guidance such as PPG24 on noise (see above).

The wording was developed by the Practitioners Advisory Group, which includes both industry and environmental advisors, and thus is likely to be taken up by Government. It says local planning authorities should:

- Ensure new development which may give rise to pollution, either directly or indirectly, is appropriately located having regard to the effects on health, the natural

environment or general amenity, taking account of the potential sensitivity of the area to adverse effects from pollution;

- Focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to other pollution control regimes. Planning authorities should assume that these regimes will operate effectively;

- Acknowledge that much of the development needed to sustain economic development will create some noise, and where it is not possible to achieve a separation of land uses, consider whether it is practicable to control or reduce noise levels, or to mitigate the impact of noise, through the use

of conditions; and

- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise nuisance and are prized for their recreational and amenity value for this reason.

While ministers have trumpeted that the new planning regime will be streamlined and cut out much guidance, a footnote admits: “Applicable standards and the approach to be taken into account in determining planning applications both for noise sensitive developments and for those activities which generate noise, including mineral working and wind energy developments will be provided in technical guidance.”

- The statement can be seen on [www.nppfpractitionersadvisorygroup.org](http://www.nppfpractitionersadvisorygroup.org)

## ASSESSMENT

## DfT revamps cost benefit analysis

The DfT has added a new tool to its suite of guidance for assessing transport infrastructure.

Noise is included in the new Early Assessment and Sifting Tool (EAST) published on the DfT transport business case website.

It says: “EAST is a tool that

has been developed to quickly summarise and present evidence on options in a clear and consistent format. It presents relevant, high level, information so that an early view can be taken on how options perform and compare.

“This tool is new and we welcome feedback on both the

tool and the guidance.” Noise is specifically mentioned with assessments required to state whether any scheme will impact on noise ‘problem areas’ – effectively those areas highlighted on Defra’s noise action planning website.

- [www.dft.gov.uk/about/howthe-dftworks/transportbusinesscase](http://www.dft.gov.uk/about/howthe-dftworks/transportbusinesscase)

## IN BRIEF

### Night deliveries

Transport for London is considering relaxing overnight delivery restrictions during the Olympic games.

In a bid to keep traffic running freely during the games, night time deliveries could remove a significant amount of traffic off the network. However current restrictions would need to be relaxed, for instance the London night time lorry ban, and planning restrictions for particular businesses.

Westminster Council is already expected to relax many of these restrictions.

### Carbon confirmed

Last month energy and climate secretary Chris Huhne confirmed tougher-than-expected carbon targets as set by the independent Committee on Climate Change.

It requires the UK to cut emissions by at least 80% by 2050 and promises increased encouragement for low carbon technologies such as wind power.

Cost estimates suggest that onshore wind is likely to be one of the cheapest low-carbon options but the policy accepts there are “questions over the scale at which it can be deployed”.

### Europe seeks help

The European Environment Agency (EEA) has advertised a vacancy for project manager for managing its noise reporting and assessments.

- [www.eea.europa.eu/about-us/jobs](http://www.eea.europa.eu/about-us/jobs)

### Turbine SPG

Scottish Borders has released special planning guidance for wind turbines.

Among other statements, it notes: “Smaller scale turbines can prove to emit more noise than larger structures and it is important that even for smaller structures noise outputs are confirmed for the benefit of environmental health.”

**IN BRIEF**

**Quieter vehicles**

The EU has announced plans to make cars and lorries quieter

European lobby group Transport and Environment reports that the European Commission is to tighten noise limits for cars, lorries and buses.

A proposal is expected within weeks which is intended to cut noise emissions from cars by 4dBA and from lorries by 3dBA. The new limits would come into force within four years of a new Vehicle Noise Directive.

It is suggested that new noise limits would be introduced in two stages: car limits, which are currently set at 74 decibels, would be reduced to 72 decibels within two years and to 70 decibels within four years. Lorry limits would have to be lowered by one decibel within two years and by a further 2dB within four years, he said.

The Commission's announcement follows publication of an EU-funded study by consultant TNO which compared a new vehicle noise testing procedure against the existing one. Adoption of the new test method and limits could provide benefits of over €100bn – with benefits over 20 times the costs.

Nina Renshaw of Transport & Environment said: "The Commission has finally admitted that current vehicle noise legislation has blatantly failed to tackle the problem; tightening these limits was long overdue. If car manufacturers can already meet the standards with existing technology, there is no excuse for further delay. Furthermore, the Commission must improve the testing process to ensure noise tests for heavy vehicles on the test bench reflect what happens in the real world. Cutting noise emissions on paper only is not an option."

**FROM PAGE ONE**

**Den Brook conditions (from page one)**

occur' to 'if it does occur then you must measure it'. He did keep the definition of excess amplitude modulation which was important.

"The important outcome is that if excess amplitude modulation occurs, it is a straightforward breach of the consent and can be addressed by enforcement action. It also rather endorses the definition itself and at last residents have a recognised form of words that protects them against excess amplitude modulation from modern wind farms."

The appeal decision went into much detail about noise, and restated developer RES's objections from previous inquiries against noise conditions on the grounds that excessive amplitude modulation is rare and conditions for amplitude modulation are not recommended in Etsu guidance.

Inspectors rejected these arguments as misleading: "If amplitude modulation is unlikely, then it is equally unlikely that it would be necessary to enforce the condition. On the basis of the evidence I have heard I am satisfied that the phenomenon is not fully taken into account in Etsu and the condition imposed is of a precautionary nature ... in my opinion the imposition of conditions is both necessary and reasonable."

Another Lord commented: "There is no doubt that the relevant conditions could and should have been drafted with greater precision but, read in the context of the planning permission as a whole and against the background of the

objectives set out in the inspector's report, it is clear that the intention was that the condition 20 limits should be complied with."

The wind turbine industry, through Renewable UK, does not like the move by inspectors to impose conditions: "The problem for the industry is that there is currently insufficient knowledge to be able to draft such a condition or, at least, to draft one which does not cause difficulties for the industry in the future. This lack of knowledge has not stopped opposition groups from drafting their own condition. This condition is completely untested and may pose a serious barrier to the continued development of onshore wind power." It has launched research to frame an industry-agreed condition (see page 8).

The conditions at the heart of the dispute – and endorsed by the High Court are:

● **Condition 20:** At the request of the local planning authority following the receipt of a complaint the wind farm operator shall, at its expense, employ a consultant approved by the local planning authority, to assess whether noise immissions at the complainant's dwelling are characterised by greater than expected amplitude modulation. Amplitude modulation is the modulation of the level of broadband noise emitted by a turbine at blade passing frequency. These will be deemed greater than expected if the following characteristics apply: a) A change in the measured LA<sub>eq 125 milliseconds</sub> turbine noise

level of more than 3dB (represented as a rise and fall in sound energy levels each of more than 3dB) occurring within a 2 second period and b) the change identified in (a) above shall not occur less than five times in any one minute period provided the LA<sub>eq 1 min</sub> turbine sound energy level for that minute is not below 28dB and c) the changes identified in (a) and (b) above shall not occur for fewer than six minutes in any hour.

Noise immissions at the complainant's dwelling shall be measured not further than 35m from the relevant building, and not closer than 3.5m of any reflective building or surface, or within 1.2m of the ground.

● **Condition 21:** No wind turbine shall generate electricity to the grid until the local planning authority, as advised by a consultant approved by the local planning authority at the expense of the operator, has approved in writing a scheme submitted by the wind farm operator providing for the measurement of greater than expected amplitude modulation immissions generated by the wind turbines.

The objective of the scheme (which shall be implemented as approved) shall be to evaluate compliance with condition 20 in a range of wind speeds and directions and it shall terminate when compliance with condition 20 has been demonstrated to the satisfaction of and agreed in writing by the local planning authority.

● Full judgement: [www.bailii.org/ew/cases/EWCA/Civ/2011/638.html](http://www.bailii.org/ew/cases/EWCA/Civ/2011/638.html)

**Councillor wants 2km turbine separation**

South Cambridgeshire Council has passed a motion requesting that wind turbines have a 2km separation zone and developers prove they cause no harm.

The policy would have to be considered in the next update of the council's development plan which should conform to central Government policy.

The motion passed was: "This council supports seeking energy from renewable resources. However, applications for wind farms (two turbines or more) cause deep concerns to our residents by nature of their size, scale and noise. This council believes that a minimum distance of two

kilometres between a dwelling and a turbine should be set to protect residents from disturbance and visual impact. If the applicant can prove that this is not the case a shorter distance would be considered. This will be addressed during the review of the local development framework."

# Councils spring to action

Lis Stedman finds out whether budget cuts have dampened the ardour of local authorities and other organisations taking part in Noise Action Week

Noise Action Week this year was a decided success, the Epuk-organised event had support from MPs, with Twitter and other online social networking tools being used to spread the message to a wider audience than ever.

This year's topics included noise and schools – the importance of a healthy noise environment for children and teachers, in acknowledgement of the Institute of Acoustics campaign, and there was certainly plenty of school-based activity, of which more anon – and noise in gardens and open spaces. Housing associations came forward in numbers to help, in addition to the traditional support from councils.

The impression gained is that this year the level of activity stepped up a gear. Mary Stevens confirms: "There was a lot going on round the country – a lot emerged through Twitter and Google searches." Epuk contacted MPs to ask for support and a healthy number of all political hues issued press releases with a greater number pledging their support.

For instance, the Tory MP for Meriden, Caroline Spelman, issued a press release noting: "Having served as an MP for fourteen years, I know that excessive noise creates misery for many people. Complaints to me and to local councillors have frequently focused on loudness, which often accompanies anti-social behaviour."

Other MPs issuing statements of support included Lib-Dem MP for Leeds North West Greg Mulholland, who said on his website: "I welcome Noise Action Week and am confident that it will raise awareness of noise related problems, and the solutions to this. Excessive noise is a real issue that can be incredibly stressful for people, whether it be at home, work or travelling."

Labour MP for Blaydon David Anderson said provocatively on his web page: "Such initiatives are handy but we need less noise pollution every day. [Epuk's] advice all boils down to being considerate to each other and treating others as we would like to be treated ourselves." Other high-profile backers included Labour's Keith Vaz, Tory Dr Liam Fox, and Labour's David Lammy – Epuk has so far recorded 13 MPs issuing press releases and over 30 MPs and MSPs voicing support.

Actions from the other high-profile supporters of NAW included HACAN, with an entertaining quiz that posed five questions about aircraft noise (aficionados can test their expertise) on its website.

These were:

- Hounslow and Richmond are the most overflowed boroughs in London, but which borough is in third place?
- How many people in London are disturbed by aircraft noise?
- How many local people from Newham does London City Airport employ?
- To which sporting event to be held in August in London would it be advisable to bring ear-plugs?
- Name at least one "oasis" in London; an area that is typically plane-free?

The answer to the first, surprisingly, is Waltham Forest. Hacan chair John Stewart said: "We did a survey over nine months – we were getting a lot of complaints from East London and wondered what that was about so we calculated the number of planes over each borough. Waltham Forest was high because it has got a lot of Heathrow and London City planes – the London City aircraft are at less than 3000ft and part of the borough is getting a lot of Heathrow planes as they are turning."

## “Decibella, the put a sock in it hand puppet”

He notes that it shows aircraft noise is no longer confined to parts of west London. "You can virtually find aircraft noise in any part of London, which wasn't the case 15 years ago." Another surprise is that London City Airport employs just 300 residents of Newham, less than a large Tesco.

Stewart says: "What benefit is London City bringing to the local borough? Over 60% of those using the airport are business people, the highest proportion in the UK. They are landing and speeding out in a cab as quickly as possible." The locals experience the disbenefits such as air pollution, he observes, but very little in the way of benefits. People were surprised by the answers to the quiz, he adds (the remainder are at the bottom of this feature).

New faces on the NAW scene included housing association Guinness South which hit the road with a staff member dressed as a dog (a favourite Noise Action Week disguise)

and agencies such as environmental health and mediation specialists to talk to residents on their estates about the impact noise can have and how it can be prevented.

As well as providing literature and discussing the different aspects of noise, there were various activities on board, including a drawing competition for children, an opportunity for people to test their hearing against a sound monitor and the chance to meet Justin the life-sized dog.

Mike Parkin, of the Guinness South team says: "We have a converted motorhome that we take out to various events, where people can come on board and talk about their issues." The event covered estates in Brighton, Milton Keynes, Hemel Hempstead and London.

Parkin says: "The roadshow raised awareness about noise and how important it is, as well as how to avoid getting into trouble." On the rainier days, the team went out knocking on doors to spread the message, and the dog proved a big draw with schoolchildren. "They dragged their parents in with them," Parkin chuckles. "It worked on a lot of levels."

The noise meter also proved a revelation to people he adds. Visitors were asked to turn a stereo to what they thought was an acceptable level, which was then recorded on the noise meter. "People were genuinely interested," he says, adding: "The general feeling is that if people realised they were causing distress and upset they were genuinely embarrassed."

He was also pleased that a young man who had had a noise complaint lodged

● continued overleaf



Melin Homes had its Community Safety Team (Helen Larkin and Steven Mitchell) at an information stall in Cwmbran Town Centre.

## CONTINUED FROM PREVIOUS PAGE

against him previously came to the bus to explain what he had done to reduce noise levels in his home. "He had gone from being an inadvertent nuisance to really picking up the mantle and taking responsibility," Parkin observes. "In my experience in the work we have done noise nuisance often is inadvertent – that is why it felt so worthwhile to be proactive."

Among a number of authorities focusing on one of the main themes, schools, was South Kesteven DC. Spokesperson Rowena Long says the team visited three local junior schools and held training sessions. "It was good fun," she says. "They got quite involved." The team has a giant plastic ear that is used to explain the workings of that complex organ, and at each school there was a discussion and competition based around noise and annoyance. "We asked the children what they thought of different noises – some children found some annoying and others did not."

Fife Council held noise and health workshops in schools, among a range of other activities. Consumer Education Team EHO Tom Weanie says: "We did some work with primary schools – they are the noise makers of the future. We explained how noise and the ear work, and had a noise meter to demonstrate both a lot of noise and quiet. We went outside to explain background noise and had an Epuk poster blown up to A1 size, on which the children had to find the noise." The visits proved very popular, he reports, and the team now has many more booked up.

The council had a wide range of other NAW activities, Weanie notes: "We decided one of our focuses was going to be alarm noise – we have not had a lot of people registering as keyholders." The event was widely publicised and proved a great success, he says: "We had an amazing response – on the first day we had 15 to 20 people register." The team also went to local colleges to draw attention to the issue of hearing loss from too-loud personal music players.

He adds that the council's NAW activities (and the team that undertakes the week's work) are evolving to include such people as the dog warden, the night noise team, and representatives from the licensed trade office. "It is just a much better team and better organised – much better than three years ago when we started."

Another affordable housing provider, Derwent and Solway, held a colouring competition with local junior schools to depict nuisance noises, providing materials and prizes, and Swale BC coordinated a sponsored silence at 56 local primary schools. Robert Porter, director of Derwent and Solway, said: "The top rated case types



**Elmbridge hit the High Street mob handed**

of anti-social behaviour for Derwent and Solway are related to noise. By working with the children we hope to raise awareness about nuisance noise, demonstrating examples of what causes it and why it is a problem."

South East Wales affordable homes provider Melin Homes went out and about on estate visits, as spokesperson Gwen Powell explains: "It went very well, we were quite pleased with the response – we did a couple of estate visits and chatted to residents to see if they had noise problems."

The team also had a stall with Torfaen council in Cwmbran town centre where they expanded on an online noise survey to find what noise locals found most annoying. "It turned out dogs were the biggest culprit at 53%," Powell explains. "Torfaen Council focused its stall on dog barking because it is their big issue."

Torfaen CBC took the opportunity provided by the stall to hold a "pin the shhh on Mr Noisy" game based on "pin the tail on the donkey" for children, and a "can you guess which noise is loudest" game for older visitors. Torfaen also couldn't resist dressing a member of its team up as a Dalmatian dog to hand out balloons to children.

Powell also found that social networking sites were extremely useful in planning the week's events. "Something I found particularly useful when planning the week – our survey was picked up on Twitter, and I think that helped to raise the profile of the event. Melin was very keen to get involved."

Local authority website winner Elmbridge took the opportunity to publicise the revamping of its website and the creation of an online complaint toolkit (rivals please note, this has a prominent spot on the council's home page).

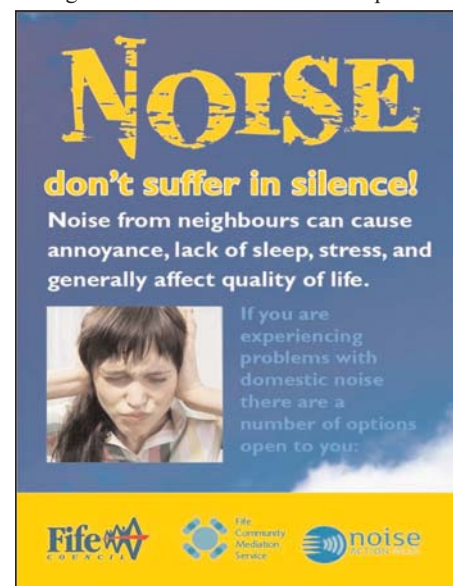
Senior EHO Paul Leadbeater explains: "The online toolkit gives the ability to upload evidence. It also offers template letters including ones for businesses, and you can upload audio clips, nuisance record sheets and witness statements."

The section on the website (which looks increasingly good) about taking private legal action has been rewritten in consultation with the courts, which are now aware of the council's procedures, he adds. The toolkit was developed because the council lost its out of hours service at the beginning of April, he explains, and Noise Action Week was "a real opportunity to get out there and explain the new service to the public".

The council's roadshows were a great success, Leadbeater says, with over 300 visitors and 100 registering their details to go on the mailing list for further information. "Overall it was very positive," he notes. "A lot of people were not aware of the new facilities." The team even loaned iPads to demonstrate the new website to the public, and managed to get information onto the local police intranet so that the constabulary is aware of the team's capabilities.

He believes the ability to upload sound and video clips and other evidence "empowers people suffering from noise, that they can do that and they don't feel as bad or as alone".

Edinburgh CC (like Welsh capital Cardiff) focused on alarm keyholder registration, manager Steve Williamson explains: "We focused on alarms because we get a reasonable amount of complaints



**Fife had a series of eye-catching posters**



**South Kesteven's visit to Caythorpe School**

about them.” The number of alarms is on the increase, he adds, and people often forget to provide details of keyholders.

“As with any noise we have to establish a nuisance, which is time consuming, and to demonstrate that we have gone through the necessary process, which is also time consuming,” he says. The team sent out information to all the local media and produced a business-size card with the slogan “don’t alarm your neighbours” to publicise the keyholder registration drive.

Beside the disturbance to neighbours, the team emphasised the costs of a faulty alarm – which can include the council’s not inconsiderable costs for resolving the issue. Williamson says. “If the council has to seek a warrant of entry, the vast number of times it is late at night because that is when we can prove disturbance, and we need a justice of the peace for that, which is not easy in the middle of the night.”

The team also visited streets with predominantly commercial premises, going to those that had alarms and providing information about keyholder registration. “it was received quite positively,” Williamson notes.

He too believes that NAW is growing, though he observes with regret that it has become more difficult to undertake work with schools in the area: “The curriculum is so full, teachers do not have the time for ad-hoc things. Once upon a time schools were delighted to take part.”

A brief rundown of other activities has to mention Medway Council, which held a

five day roadshow based on dog ownership and being a responsible dog owner, with free microchipping, vet checks and agility lessons.

Strabane DC in Northern Ireland also homed in on dogs, with tips on dog care and reducing barking and a competition with a hamper of dog goodies as a prize. Strabane’s Geraldine Kirk said the council often focuses its NAW activities on dogs because it is their top

complaint (dog barking is the regular number one dislike in polls in the province). Kirk added: “The events were about raising awareness – anything that can be done, it all helps.”

The event took place over two days in three towns in the Strabane area and various organisations such as the PDSA NI, dog warden and kennel owners were on hand to give advice on how to keep dogs healthy and content (and therefore quiet).

Hull CC was one of a number of councils (others included Runnymede BC) focusing on student noise, hearing protection and tinnitus awareness, working with Hull University to target students leaving nightclubs and hosting a “design a sign” competition for further education art students – the winning design was made into a real sign that was delivered to chosen licensed premises on the last day of the event to help reduce nuisance noise from pubs and clubs.

Noise measurement instrument manufacturer Cirrus Research urged companies and workers to be extra vigilant when managing noise at work and issued a press release highlighting the risks of work-related hearing loss, and City of York council added new advice to its website on “the growing problem of noise from chickens and cockerels” and also published advice on noise from pubs and clubs.

The Hearing Care Centre in Ipswich sent out a mobile unit to give free hearing checks and educate people on listening to music safely, and Sandwell Homes and

Sandwell police had a stand in a local shopping centre to give advice and urge residents to “keep a lid” on intrusive noise.

Tonbridge and Malling BC worked with Russell Homes on neighbourhood noise and barking dogs, and held a health and wellbeing day featuring “Decibella, the put a sock in it hand puppet”.

Gravesham BC had a stall with a hearing loss simulator and invited people to test their mp3 players and headphones in a “giant ear” to see how loud they were, and Swindon BC trundled out an antique steam roller to crush confiscated noise-making equipment in style.

London councils as always had a wide range of activities, focusing on potential hearing damage from mp3 players and promoting the RNID’s “Don’t lose the music” campaign. LB Harrow hosted a talk by Siobhan Wall on her recently published book *Quiet London*, which some wags would doubtless observe should be a slim volume.

In Scotland, Transport Scotland used the variable messaging signs on the M8 around Glasgow to display messages about environmental noise – they have also surveyed the public about their understanding of traffic noise, results of which should be published soon.

There was also a lively exchange on Epuk’s Twitter page about the relative acoustic merits of plants and stuffed toys, and many other interesting snippets including Specsavers’ request for input on irritating noises people would like to block out, tips on activities around the country including a link to Chelmsford BC’s BBQuiet campaign, and a link to noise puzzles posted by East Staffs BC.

It’s heartening to report that thanks to a combination of growing awareness, goodwill, increasing enthusiasm and the advent of social networking sites to raise the profile of events, despite the absence of central funding Noise Action Week seems to have reached the enviable stage where it has an impetus of its own – as it undoubtedly deserves.

● More details on the NAW website [www.noiseactionweek.org.uk](http://www.noiseactionweek.org.uk)



**This year much use was made of Twitter to broadcast activities**

**QUIZ ANSWERS**

1. Waltham Forest
2. BAA's Noise Action Plan says over 700,000 but other studies put it closer to 1 million.
3. Just over 300, fewer than a large Tesco's.
4. The Fourth Test between England and India at the Oval, where there can be over 40 planes an hour.
5. There aren't many but you would be right if you came up with places like Uxbridge, Raynes Park, Norbiton, South Woodford, Mayfair, the northern part of Chiswick, most of West Drayton, parts of Kingston, and parts of Barking.

# Turbine noise in Rome

**Wind turbine experts gathered in Rome recently to discuss noise. Low frequency noise and amplitude modulation provided plenty to talk about**

**N**oise from wind turbines is still not solved, as evidenced by seemingly endless conferences called to talk about the problem. Not that there is a noise problem, many wind farm operators would have us believe!

That there are so many speakers and delegates at wind farm conferences would sort of suggest there are problems, with 87 papers covering both sides of the argument.

At such technical conferences, it tends to be taken as read that there isn't a low frequency noise problem with wind turbines that can directly affect health. Most wind turbine experts are quick to dismiss any theories that there are peculiar 'syndromes' associated with wind turbines. The more honest consultants will quickly admit that there are enough known problems with conventional noise from wind farms that there is no need to invent any mysterious ones!

But there is debate about low frequency noise having amenity or nuisance impacts.

Malcolm Swinbanks has experience with low frequency gas turbine pumping station complaints that featured low frequency noise. He investigated complaints and where low frequency noise should have been inaudible according to conventional theories.

Human audibility of low frequency noise is usually considered to be between 10-100hz depending on volume. But Swinbanks feels that conventional low frequency dose response relationships can be based on pure tones and low frequency sounds that are supposed to be inaudible may trigger complaints: "Typical wind

turbine infrasonic and low frequency noise can be readily audible at very much lower levels than has hitherto been acknowledged."

Swinbanks used data from a van den Berg wind farm study, applying adjustments to better align human response to low frequency noise. He found that this would mean that some 2.5% of adults may be able to perceive low frequency noise from turbines.

He concluded: "Modern upwind rotor configuration wind turbines can give rise to very low frequency impulsive sound patterns. It is considered that a clean impulsive low frequency signal can be audible at levels 8-11dB below the threshold defined according to mean square energy."

Canadian researcher Werner Richarz presented a paper to the Rome conference which looked at how low frequency pulses could become audible.

He said: "Sound emissions from operating wind farms frequently give rise to noise complaints. Most compliance-based noise audits measure hourly A-weighted  $L_{eq}$ , thereby removing low frequency contents of the wind turbine sound. The metric is also insensitive to amplitude modulation and is unsatisfactory when sensitive receptors are annoyed by the low frequency sound and amplitude modulation."

He then used auto correlations to show that when wind turbine low frequency pulses travel through a "real, dynamic" atmosphere, a potential source for turbine 'swoosh' is discovered.



He studied over 3,000 recordings taken at several wind farms in the USA and Canada, and a third showed low frequency pulses. He explained that in an idealised atmosphere, these would be transmitted evenly – but in a real atmosphere with turbulence, the pulse shape can be distorted by the time it reaches the listener several hundred metres away.

"The random effects introduced by atmospheric turbulence destroy the perfect phase relation implicit in an ideal pulse. The result is an audible burst of noise which is perceived as a 'swoosh'. In effect the infrasound pulse becomes audible."

The theme that the authorities and wind industry lobby are missing possible noise disturbance continued with Denis Siponen of Finland. He feels that as turbines get larger, more concern should be centred on amplitude modulation and low frequency noise: "So far these noise components of wind turbines and their adverse effects on nearby residents are underestimated or even ignored by local authorities."

His central point is that use of A-weighting for wind turbines underestimates noise annoyance of modern large turbines. He presented a graph showing db(A) and

## DETAILS EMERGE OF INDUSTRY AMPLITUDE MODULATION STUDY

While taking the official line that amplitude modulation is not a problem, Renewable UK (formerly the British Wind Energy Association) has bowed to the inevitable and is funding a comprehensive study into the phenomena (*Noise Bulletin November 2010 p1*).

Details of the methodology of this study were explained at the Rome wind turbine conference held last month.

A key aim of the study will be to produce a model planning condition which can be used at planning inquiries, such as that recently applied at Den Brook (see news, page one). There will also be more fundamental research into the causes of amplitude modulation so that it can be predicted and hopefully prevented.

The research will also focus on:

- Amplitude modulation from stumpy towers, high turbulence and closely spaced turbines;
- A model capable of predicting amplitude modulation both close to and away from a turbine in differing wind conditions;

- Measures available to reduce or avoid amplitude modulation, for instance turbine layout, hub height and wind patterns;
- Devise a listening test that can be used to establish a dose response relationship for amplitude modulation, and hence a noise penalty scheme for amplitude modulation;
- Collect data from about seven wind farm sites – both with and without amplitude modulation issues. This would enable a broad estimate of the frequency and severity of the amplitude modulation problem to be determined.

Renewable UK is keen to finish this work quickly – with the 'dissemination' phase just seven months after starting, ie shortly.

It concludes: "Given the background to the current situation, there is clearly little benefit in pursuing research which may deliver inconclusive results or simply highlight the need for further research. The aim of this project is to be highly targeted and to provide clear, definitive recommendations for use by the industry, planners and public, in a rapid timescale."



dB(C) readings at different frequencies for a modern 2MW turbine, the A-weighted measure clearly drops off for lower frequencies when the C-weighted curve doesn't – in other words the low frequency sound is there, but the A-weighting does not pick it up.

Add to this that high frequencies are attenuated at longer distances such as 1km, while lower 100hz frequencies have negligible attenuation – and penetrate building fabrics far easier than higher frequencies.

Because of all this “present noise limits for wind turbines are misused when low frequency content is increasing in large wind turbines”.

“This fact has a direct impact on residents living in the vicinity of large wind turbines because these wind turbines are located within the noise immission level regulations. Since larger wind turbines emit higher noise levels at low frequencies with their A-weighted overall level remains the same relative to their size, residents are exposed to higher levels of low frequency noise. Unless attention is paid to this, there will be increasing complaints about low frequency noise of wind turbines in the future.”

He proposed the industry uses a noise indicator which includes an additional correction based on the difference between C-weighting and A-weighting – ie  $LC_{Cq}$  minus  $LA_{Cq}$ , measured at the receiver.

Another Canadian researcher Bill Palmer also presented a picture that large industrial turbines were attracting complaints.

“Discussion with people living near where turbines have been installed shows that a significant number of individuals are suffering, yet are unable to identify an exact reason for the discomfort they feel. Sound level readings near their homes show a pattern of C-weighted sound levels being from 17.5 to 33.5dB higher than A-weighted levels.”

He pointed out that noise could be as much as 20dB higher than expected at houses at approved distances from turbines, with turbines at very low loads with ground level wind speeds very low. “This work confirms the presence of low frequency sound at homes near wind turbines.”

Work has been going on in New Zealand to try and identify noise disturbance.

Daniel Shepherd reported on a questionnaire-based study with detailed answers given by 56 householders near a wind farm, and 200 ‘control’ householders set further back. Those living near the turbines reported less sleep, and more annoyance.

The researchers concluded: “We conclude that night time wind turbine noise limits should be set conservatively to minimise harm, and, on the basis of our data, suggest there needs to be setback distances of

greater than 2km.”

UK wind turbine expert Dick Bowdler also presented at the conference. In the world of polarised opinions in the wind turbine circus, he is relatively unusual in that he remains accepted by the inner circle of wind turbine policy formers despite having levelled some heavy criticism (*Noise Bulletin Aug/Sep 2007 p1*).

He is ardent that there is nothing unusual about wind turbine noise – rather that non-acoustic factors have adversely affected people's perception of that noise.

He said: “There is no credible evidence to suggest that there is any syndrome or any exceptional infrasound associated with turbine noise and the symptoms described to justify such claims are no different from those exhibited by people annoyed by other types of noise. There is no doubt that a significant number of wind farms cause justifiable complaints, but those who claim there is something fundamentally different about wind turbine noise are doing a disservice to those who suffer from it because it is a distraction from the real problems.”

Bowdler used an example to illustrate why he felt non-acoustical effects were influencing perception of noise. He painted a picture of a resident with a windfarm 650m away who found himself disturbed at night, but complaints were dealt with badly, and he ended up with increasingly poor health.

“This man does not have wind turbine syndrome, he is not affected by infrasound or vibrations or anything else mysterious. He is suffering from a noise that he finds unacceptable, heavily moderated by extreme annoyance and stress brought about by the intransigence of the local council and the arrogance of the wind farm operator.”

Bowdler believes that wind farm noise has now become a “mass annoyance” – previously consultants met with people affected by industrial noise but complainants rarely communicated with each other – they never knew other people had the same symptoms.

“But when the people who had been genuinely affected by wind farm noise and been consistently ignored or ridiculed started communicating via the internet, they discovered they had the same symptoms. The idea that the common factor was that they were exposed to levels of noise which were too high got lost somewhere because they had been brainwashed into thinking that there was something wrong with them – not the wind farms. They concluded that here must be something special and different about the noise from wind farms because the problem did not arise with other noise sources.”

He said that this led to the ideas of wind farm syndrome and vibro acoustic disease, and as a result is that all wind farms, whatever their merits, face a long battle to

get approval because of the misinformation that has built up.

“The arrogance of many developers who felt they had a government-given right to build wind farms where they liked drove this further forward as did consistent misinformation and prevarication of the Government itself.”

He cited a number of examples of such misinformation:

- Ten years ago we had developers saying that noise would be inaudible when it turned out to be 10dB above background;
- Developers profess to involve the community but when asked what size the turbines will be, they won't tell them;
- Government said that larger turbines avoid increased noise – but in fact modern large turbines are noisier;
- Government says that there is no evidence amplitude modulation is a result of turbine size despite being told by experts that it is.

He added: “Government in the UK consistently commissions not real research into how problems and potential problems can be identified and solved, but research into how the existing established but out of date standards and beliefs can be applied in a more consistent and effective manner.”

He concluded: “All this is a matter of great frustration to me as a noise consultant. Everyone involved, even some noise consultants and other scientists, has handled this whole affair with an ineptitude that I have never seen before on this scale.

“The large opposition to noise from wind turbines has developed because of the complete lack of proper noise management by developers and by government and the failure to address real issues when they arise. This means that the real issues become inseparable from myths and hyperbole. In the UK central Government has done nothing to deal with the small number of undoubted problems. It has done nothing to curb the excesses of the worst developments and indeed, has generally supported them. It has allowed mass annoyance and objection to any wind farm developments to build up to an extent that it threatens the development of renewable energy generally.

“The result of this ineptitude is not trivial. Facing the problem of climate change – the challenge of the century that ought to have drawn communities together – it has instead divided them.

## GETTING THE PAPERS

*Wind Turbine Noise 2011* conference papers are available on the *Proceedings CD*.

[www.windturbinenoise2011.org](http://www.windturbinenoise2011.org)

or contact Cathy Mackenzie on [cathy@cmmsoffice.demon.co.uk](mailto:cathy@cmmsoffice.demon.co.uk)

for purchase information.

## SOUND BITES

The recent BBC *Windfarm Wars* documentary was required viewing for anyone involved in noise.

This programme went to the heart of so much that the environmental health and noise community is all about. Unusually for a TV programme it went into heavy detail on acoustics, nuisance, planning, law and politics. Also, unusually, programme makers appeared to avoid using heavy editing to create drama where none existed.

If we believe that what we saw was a fair reflection of what happened, then wind farm developer RES should be licking its wounds. Project manager Rachel Ruffles – the ‘face’ of RES – appeared oblivious to the consequences of patronising protesters by withholding noise data or fielding her own ‘life partner’ and children at an inquiry. Like much of the wind turbine industry, blinded by saving the world from climate change, much rational thought appeared to go by the wayside.

We think the series raised many interesting issues, and presents an excellent case study in showing how mistakes can unnecessarily prolong granting of planning permission. But maybe you think the blame lies with

nimbyism. Email us your thoughts as we hope to find space to review the series in a future issue.

Just as you thought that wind turbines could get no bigger.....

Well of course the wind industry is keen to reassure us that big turbines are better as you need less of them. And of course completely silent! We feel this neglects certain facts that the latest turbines are so very, very big that they can be seen from even further away – and are so big that they may find high level winds when there is no masking wind down below.

For those that imagined turbines could get no bigger, then listen to Government plans to encourage low carbon energy. It is talking about building even larger turbines with 90m long blades. At about 200m tall – that’d be higher than London’s Post Office (BT) Tower.

Expect even more objections!

We were delighted to see Welsh consultation drafts for noise action areas and quiet areas earlier this year.

We felt that Wales was way ahead of the game in the UK, and that their plans would be of interest to the wider noise world – and asked if we could do a

feature on them. As expected, we got a lazy, pointless response from the Welsh Government press office to ‘email our questions in’, always the kiss of death for writing a feature, where we try understand the background to what is happening. If we wanted bare facts, we are capable of reading the document!

In this day and age of cuts, and enthusiasm to remove pointless layers of bureaucracy, it is surprising that press offices survive. With this example, they have achieved two sorry outcomes: actively putting off someone that is interested – and failing to rustle up interest from the public.

The consultation had just one technically useful and noise-relevant response. Great result, not.

Bellringing noise is something that is bound to bring out extreme views.

Some locals are annoyed by it – others point out that bellringing is a centuries-old tradition and that residents should know there will be bell noise if they live near a church.

But it appears that one disturbed local short-circuited legal niceties by simply locking the bellringers in the tower in Sharow, North Yorkshire.

## NOISE EVENTS 2011

### 14th June

**SOLVING PRACTICAL DIFFICULTIES IN THE ASSESSMENT OF CONSTRUCTION** noise, IoA north west branch meeting to be held in Manchester. Contact Gavin Stevenson, BDP Acoustics, 0161 828 2200

### 22nd June

#### THE QUIET DELIVERIES DEMONSTRATION SCHEME

IoA Midlands branch meeting to be held at URS, Chilwell, Notts. email caroline.lowthian@scottwilson.com

### 24th June

#### PLANNING AND NOISE WORKSHOP PAN1/2011

Epuk meeting to be held in Edinburgh website [www.environmental-protection.org.uk/events](http://www.environmental-protection.org.uk/events)

### 27th June – 1st July

#### FORUM ACUSTICUM 2011

to be held in Aalborg, Denmark. Website [www.fa2011.org](http://www.fa2011.org)

### 29th June

**OUTDOOR MUSIC EVENTS IN EUROPEAN CITIES – NOISE CONTROL AND** monitoring, IoA Irish Branch meeting to be held in Dublin, contact gary@enfonic.com

### 21st July

#### RECENT DEVELOPMENTS IN SOUNDSCAPE

IoA Midlands branch meeting to be held in Sheffield, email y.smyrnova@sheffield.ac.uk

### 24th-28th July

**10TH INTERNATIONAL CONGRESS ON NOISE AS A PUBLIC HEALTH** problem, conference to be held at Imperial College London, organised by the Institute of Acoustics website [www.icben2011.org](http://www.icben2011.org)

### 4th – 7th September

#### INTERNOISE 2011

to be held in Osaka, Japan. [www.internoise2011.com](http://www.internoise2011.com)

### 14th-15th September

#### ACOUSTICS 2011: A NEW DECADE – A NEW REALITY

IoA meeting to be held in Glasgow, contact Linda Canty 01727 848195

### 2012

### 23rd – 27th April

#### ACOUSTICS 2012

Joint Institute of Acoustics and the Société Française d'Acoustique meeting to be held in Nantes. Linda Canty 01727 848195

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