

AVIATION

3rd runway for Heathrow

Expansion of Heathrow airport will be supported by the Government despite widespread opposition on noise, air quality and climate change grounds.

The Government will support a planning application from BAA to build a third runway and sixth terminal. Some good news for local councils however – mixed mode will not be allowed. Mixed mode gives extra capacity but would end the current arrangement that gives predictable periods of respite to overflowed communities.

The go-ahead means the government is not accepting arguments that its favoured L_{eq} noise annoyance measurement system is flawed. A key

argument of protesters is that the increased number of quieter planes in the air following expansion will be more annoying. These issues were supposed to have been dealt with in the Anase (Attitudes to Noise from Aviation Sources in England) research which said noise metrics had changed over the years – but the Government dismissed this work (*NB November 2007 p1*).

Noise (and air quality) found itself centre stage of politics in the run up to the decision. In the original Aviation White Paper and Heathrow expansion consultation (*NB Dec 2007 p1*), the Government said that expansion could only go ahead provided the noise climate

(measured by the 57dbA contour) did not increase, and that air quality was below European directive limits.

This commitment is apparently strengthened in this month's go ahead, with the Government promising an 'independent' watchdog to monitor the pledge. This will be the Civil Aviation Authority. Some have already questioned whether the CAA is independent, and point to the unusual arrangement whereby aviation noise action plans required to meet the European Noise Directive are produced by the airports themselves (*NB October p6*).

The Government counters

● Continued on p3

PLANNING

Bristol flat appeal allowed despite objections

Student flats have been allowed on appeal despite Bristol City Council's objections that future residents will be disturbed by nightclub noise.

The case has some parallels with the recent Crosby case in Birmingham where the council objected to flats because of a local night club that might give rise to future noise complaints (*Noise Bulletin December p2*).

In Bristol, developers wanted to build 12 student flats and shop units next door to a popular nightclub. The site is borderline NEC C/D which means noise mitigation will be needed to make it acceptable, and possibly that permission should be refused in any case. Acoustic consultants proposed an acoustic wall and triple

glazing, but the council said bass tones from the nightclub would travel through the wall and lead to complaints. This led the council to refuse the development.

At the recent appeal, the inspector disagreed and allowed the development with conditions, including that noise levels "no higher than NR25 $L_{eq, 5 mins}$ during the hours of 11pm and 7am will be experienced within any of the bedrooms with windows shut together with provision of acoustic ventilation". The inspector believes this will reduce the risk of residents seeking to have the neighbouring club closed down.

Further, he added: "The council made the point that

residents, and their visitors, entering and leaving the flats may suffer from noise arising from the night club. I accept that a certain level of noise nuisance will be suffered in that way. However, the appeal site lies in an area which is culturally diverse and lively.

"I would expect those choosing to live in the flats would be aware of the nature of the area before committing themselves to occupy such accommodation. Given that context, I consider that the minor level of noise nuisance suffered in this way would not cause significant harm to future residents."

● Appeal Ref: APP/Z0116/A/08/2082507, email us for copy of the appeal.

IN BRIEF

Wakeham quits

Peter Wakeham has quit as boss of the Noise Abatement Society. Wakeham has been director for nine years but was unable to respond to *Noise Bulletin's* enquiries as the matter was in dispute.

Former NAS chair Gloria Elliott becomes chief executive and NAS has appointed Lisa Lavia as managing director. Lavia has experience in business and communication campaigns both for the private sector (including Rexam) and mental health and child welfare charities.

As part of the shake up, trustee David Lane becomes chairman of NAS, and two new trustees are being appointed.

Manby appeal

East Lindsey DC has taken the Manby vehicle noise compensation decision to the Court of Appeal.

The council was told to pay compensation to homeowners because of traffic noise (*Noise Bulletin December p1*). It is understood the council will argue that the area was already subject to industrial noise.

Accon UK win

Accon UK, set up in July 2007, has been awarded a commission to provide noise and air quality input for the proposed BX-D Luas tram line in Dublin. Accon MD Graham Parry said: "This is a major commission for us to deliver the noise and air quality assessments and chapters for the environmental statement.

Accon's team, which includes Nick Hawkins, will work with ARM Acoustics, lead by Colin Cobbing. "The project will include extensive noise and air quality modelling. CadnaA software allows us to run the noise and air pollution modelling within the same model. This provides major efficiencies on the modelling side not usually available to many other consultants."

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IN BRIEF

Impacts assessed

Defra has commissioned research on noise and environmental impact assessment (EIA).

It has appointed a team that includes Bernard Berry to review the effects of the planning process on the noise environment with regard to human health, flora, fauna and the built environment.

Defra says: "The study will investigate the effectiveness of the EIA process in dealing with noise impacts. It will consider both the Environmental Statement itself and the outcome of the process ie. after the development has been implemented. For the environmental statement stage, the project will assess both the technical quality of the noise section and whether the impacts are described sufficiently clearly for the benefit of those who might be affected.

"Where developments have been completed, the study will review how well the noise impacts were predicted, whether any mitigation offered or imposed has achieved its objective, and whether there are any unexpected noise issues eg. leading to complaints.

"EIA procedures in other EU member states will also be compared to the UK process and any possible transferable benefits identified. Finally, consideration will be given to any effects that noise action planning under the terms of the European Noise Directive might have on the current planning process as regards noise."

● www.defra.gov.uk/environment/noise/research/eia.htm

Farnborough grows?

Owner of Farnborough Airport TAG Aviation has tabled plans to develop it into a civil airport.

Its new voluntarily-produced master plan sets out its plans to apply to Rushmoor District Council for permission to expand to 50,000 annual business air traffic movements.

● www.farnboroughairportconsultation.com

WIND TURBINES

Official: all noise and no action

In the largest, most rigorous study to date, building mounted turbines appear to produce on average less than 1% of their rated power.

Defra has been mounting a rearguard action to prevent DCLG relaxing planning permission on building mounted turbines fearing that there will be noise problems (*NB Jan/Feb 2008*). The wind farm industry has said that noise is not a problem and that red tape associated with planning permission is holding back their uptake.

However noise does appear to be a problem, and delays to relaxing planning permission rules (while Defra agrees to noise standards) may become irrelevant as it emerges that building mounted domestic turbines – the ones most likely to cause noise and vibration disturbance – produce negligible amounts of electricity.

The stark findings were contained in the recently released final report of the Warwick Wind Trials project which covered 170,000 hours of operation of 26 building-

mounted wind turbines from five manufacturers across the UK. Turbines were mounted on sites ranging from theoretically poor (single storey urban buildings) through to theoretically excellent (45m tall exposed flats in isolated settings on hilltops).

The report concluded: "The average energy generated per turbine per day across the sample set has been 214 Wh (including times when turbines were switched off for maintenance or due to failures). This is equivalent to an average of 78 kWh of energy produced per site per year and an average capacity factor of 0.85%. (This compares to typical capacity factors of between 10% and 30% for larger turbines on free standing sites in good areas).

"Urban environments and building mounting is probably the most challenging context in which to try to make wind power work, and the findings of this study cannot be generalised to larger-scale wind, nor to freestanding wind of any size mounted on poles or masts well away from obstructions. All the

evidence (and theory) is that wind power is an excellent and highly effective choice for such conditions, which exist widely across the UK away from buildings and towns."

Of particular note is that turbines at high rise sites were able to generate as much energy in one month as other turbines in the trial did in one year. But the report admits: "It is unfortunate that these high performing turbines had to remain switched off for the majority of the trial following complaints about noise from the building residents.

"Noise levels have been an unexpected issue at three of our trial sites. All of the sites where noise has been an issue have involved multiple occupancy buildings. Generally it was not the turbine owners that complained about noise but the residents. Two of these wind turbines are now permanently turned off due to local environmental health officers stating that the turbines are a statutory noise nuisance.

● The trial results are available www.warwickwindtrials.org.uk

TRAFFIC NOISE

Epuk welcomes tyre consultation

In a new consultation, the DfT has given its support for lower rolling resistance and lower noise tyres, as set out in the EU proposal for regulation concerning type-approval requirements for the safety of motor vehicles.

The DfT Impact Assessment states the aims of the proposed regulation – to reduce CO₂ emissions; reduce tyre noise

and the associated cost of annoyance/ill health. Epuk, which has been campaigning for quieter tyres for some time, commented: "While we favoured earlier implementation for the reduction of tyre noise, we are encouraged to see DfT supporting measures that provide tools for achieving a cleaner, quieter UK."

Wide tyres – much the

fashion these days – are noisier, and are allowed higher noise thresholds which will have the effect of diluting the impact.

A thin tyre, for example, is set to have a 70dBA limit, while a fat tyre a 74dBA limit.

● More details of the consultation, see feature page six & DfT website www.dft.gov.uk/consultations/open/motorvehiclessafety

TRAFFIC NOISE

Little impact if speed limits are enforced

Intelligent speed controls on vehicles would have little impact on noise, a report claims.

The Commission for Integrated Transport (CfIT) and the Motorists' Forum (MF) decided jointly in 2007 to consider what impact the voluntary introduction of an Intelligent Speed Adaptation

(ISA) system across the entire road network would have and commissioned the Institute for Transport Studies at Leeds University to research the effects.

They found that neither overridable nor mandatory ISA make a major impact on overall carbon dioxide emissions or fuel consumption rates at any

level of penetration, and no effect on other pollutants.

Regarding noise, the implementation of intelligent speed adaptation systems "is likely to make a negligible contribution to reducing overall broadband noise levels".

● More details can be found on website www.cfit.gov.uk/docs/2008/isa/index.htm

AVIATION

Heathrow go ahead (from page 1)

that it is to give the CAA a new statutory environmental duty to ensure that it acts in the interests of the environment in addition to its existing obligations and duties. "Moreover, in the event that air quality or noise limits are breached, the independent regulators will have a legal duty and the necessary powers to take action – or require others to take the action – needed to come back into compliance."

It adds: "There will be a legally binding process to ensure that, if planning permission is given for expansion above the present planning cap of 480,000 air traffic movements, additional flights will be allowed only if regular independent assessments confirm that this progressive expansion can be done without breaching noise and air quality limits."

"First, it will be a precondition for releasing new capacity that air quality and noise limits are already being met. Air quality limits are already statutory – we will also ensure the noise limit is given legal force."

"Second, the CAA is to be given a new general environmental duty setting out legal requirements and such other requirements as ministers see necessary. Third, once the precondition is met, the CAA would be responsible for making decisions on the release of new capacity, taking account of their duties and associated guidance."

"As regards the question of enforcement, the CAA has world-renowned experience, knowledge and authority on aircraft noise monitoring and



Expansion underlines that Government is sticking by L_{eq} measures

modelling and as such would report to the Secretary of State for Transport (Geoff Hoon) and the Secretary of State for Environment, Food and Rural Affairs any breach of the noise limits."

The CAA will be given "necessary powers to ensure that relevant parties take their share of the remedial action needed to comply with the respective legal limits".

Capacity would initially be capped to 605,000 movements a year, to be reviewed in 2020. This is less than the maximum 827,000 movements a year originally suggested.

While mixed mode operation has been ruled out, and westerly preference retained, the Cranford agreement will be ended. Night time rotation and early morning runway alternation are both confirmed.

Hoon also confirmed the intention to introduce incentives for new capacity to be given to cleaner, quieter aircraft.

As a sweetener to the Heathrow go-ahead, the Government has set up a

limited company (High Speed 2) to promote a high speed rail line between Heathrow and the Midlands and perhaps to Scotland.

Geoff Hoon said: "Things have improved greatly for those living near the airport over the past 30 years. Improved aircraft technology means that, while in 1974 some two million people around Heathrow were affected by average levels of noise at or above 57 decibels, by 2002 that number had dropped to 258,000 people."

Documents released include:

- Adding capacity at Heathrow Airport – Decisions following consultation;
- Adding capacity at Heathrow Airport: Report on consultation responses;
- Adding capacity at Heathrow Airport – Impact Assessment;
- Adding capacity at Heathrow Airport – equalities impact assessment.

They can be viewed at www.dft.gov.uk/pgr/aviation/heathrowconsultations/heathrowdecision/

More detail next month

CONSULTANCIES

Kings Cross monitoring for English Cogger

The English Cogger Partnership is installing long term, remote noise monitoring equipment at the long running Kings Cross Central development site in London.

Sophisticated SPL Net equipment is fitted with 3g mobile internet links enabling

remote monitoring of construction noise at the site, from almost anywhere at any time.

The system provides continuous noise level data, long term statistical levels and even real-time audio, with simultaneous logging of wind

data to assist in the analysis.

The monitoring of construction noise is being undertaken on behalf of developers Argent to meet planning conditions for the site, imposed to protect nearby residents.

● www.tecp.co.uk

IN BRIEF

MOD claims reports

There has been a sharp increase in compensation claims made to the Ministry of Defence for low flying aircraft damage.

244 claims were made in 2007/08 compared to 175 in the previous year.

● www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/FinanceandProcurementPublications/Claims/

Exeter for Hitchcock

The University of Exeter has appointed Dr Guy Hitchcock as the new head of its Centre for Energy and the Environment replacing Dr Trevor Preist.

Hitchcock will lead a team of eight working with local authorities and public sector bodies across Devon, Cornwall and Somerset providing technical advice to member authorities on issues such as noise.

Letter to the editor

Atkins growing

We would like to respond to your article last month that suggested Atkins had adopted a lower profile in acoustics (Noise Bulletin December p3).

Far from contracting, Atkins Acoustics is one of the largest acoustic consultancies in the UK with a current complement of 23 staff growing to 25 over the next month. We undertake work on a number of high profile transport, infrastructure and building design projects in the UK and overseas and we have recently been appointed by the London Organising Committee of the Olympics and Paralympic Games (LOCOG) as the official engineering design services provider for the 2012 Games.

This means we will provide engineering design consultancy (including acoustics) for the temporary venues and overlay (Olympification) that LOCOG is providing within London and across the country. With other recent wins this has enabled us to recruit four new members of staff at a time when many consultancies are shedding staff.

Graham Haines, Atkins

ETSU fails large wind turbines?

There are calls for more research into the complex issue of predicting the noise impact of today's large wind turbines, reports Lisa Russell

Opponents of wind turbines might have thought that they had a new and powerfully recently when press reports claimed that damage to a Lincolnshire wind farm was caused by a UFO.

But with no proof of extraterrestrial involvement, more prosaic approaches are being used to tackle concerns about the noise from wind turbines. In particular, there are criticisms of failings in the assessment techniques used to gauge the impact. Today's turbines stand far taller than those of a decade ago, raising concerns about the use of methods developed for earlier, smaller models. Complaints arise from householders experiencing a range of sounds from nearby wind farms – noises that can be disturbing enough to drive them out of their homes (see box).

Wind power is widely seen as the most effective way of meeting targets for greater use of renewable energy and turbines are now increasingly appearing relatively close to people's homes. Certain areas are proving particularly attractive to developers, with some councils facing as many as 10 current planning applications.

The relevant planning guidance ETSU-R-97 comes in for much criticism for failing to predict the adverse impacts of the latest generation of turbines, yet it continues to be relied on by many in nuisance assessment says Mike Stigwood of MAS Environmental.

The Renewable Energy Foundation has also called for new guidelines for the UK, citing evidence including an EU-financed study by Dutch expert Frits van den Berg that found wind turbines to be more annoying than other industrial noise of the same magnitude and that the noise is poorly masked by background noise (*Noise Bulletin July 2008 p1*).

Stigwood is experienced in wind turbine cases and has also been undertaking independent research on wind farm noise impact. He presented his findings and recommendations at a recent seminar in Cambridge.

The issues need to be recognised, he says. Despite his concerns, he remains at heart an enthusiast. "I would love wind turbines to be very efficient and for them not to cause problems. But the fact is that they do – and that needs to be dealt with," he says.

The assessment and rating of noise from wind farms ETSU-R-97, was published by a working group on noise from wind turbines in 1996. Stigwood says that the fundamental problem with ETSU is that it fails to

address the differences between medium and large wind turbines. He has considered approximately 15 different wind farms and has in several cases provided evidence in relation to Judicial Review. He is currently advising three separate local authorities on wind farm developments.

His interest was sparked when measurements he took at a large turbine disagreed with the guidance. He then undertook a detailed study of ETSU in 2003 and identified a number of inadequacies. This led to independent research into the effects of wind farms and in particular the impact within dwellings. "I have observed and measured low frequency noise and excessive aerodynamic modulation of noise internally due to wind turbines. Neither is addressed by ETSU – both appear to be denied as relevant by the industry and government," he says.

Stigwood says that there are assumptions in ETSU that do not hold true, and inherent defects in the methodology. "I think it does a reasonable job for medium turbines. My own experience is that they are far less intrusive," he adds.

Medium-sized turbines typically have a hub height of 15m to 45m, while today's larger models are 50m to 100m. The blade of a medium turbine reaches no more than 75m, while the range for large models is typically 80m to 160m. The swept area for a medium turbine is 300 sq m to 1,250 sq m; values for a large one are 2,800 sq m to 11,000 sq m. There is also a considerable difference in the blade tip speed: 72kph to 144kph for a medium turbine against 216kph to 450kph for a large one.

The large turbine's blades are more likely to cause irregular or noticeable noise, depending on atmospheric conditions, he says. Blades of large turbines pass through a greater range of air density, speeds and wind angle. "The blade will be going through some air that is at the wrong angle for it," he adds. "I'm not saying that is the reason why you get some unusual noise effects – but it is one of the things at the back of my mind."

One of Stigwood's research sites is at the Deeping St Nicholas wind farm in South Lincolnshire. It stands on open flat fenland and has a row of five turbines and another of three. The nearest turbine to the affected property is 930m. The turbines have a swept area of 5,281 sq m, a hub height of 59m and the top tip reach is 100m.

He made audio recordings and undertook detailed spectral analysis, using a meter

monitoring the third octave band every eight of a second. Measurements were taken outside and in, with audio, video, weather and noise data downloaded simultaneously to a computer over a period of months.

He found the turbines can generate low frequency noise impact, which may dominate within dwellings even at substantial distances. He also found that excess amplitude modulation (AM) can arise, particularly around 4am or 5am.

External sound energy measurements using the standard procedures can be corrupted by wind interacting with the recording apparatus he says, and also fail to represent the impact experienced internally. The free-field background noise level measurements as proposed in ETSU also fail to represent background noise levels experienced immediately outside dwellings.

Other measurement methods and standards such as planning policy guidance use downwind conditions, he says, while ETSU "jumbles up" the wind directions. "I've certainly seen very eminent acousticians put together their analysis of compliance and then they do a regression curve to see if the average level complies," he says. "It's a bit like going on a journey and breaking the speed limit but having average speed of 70mph. Am I alright in the eyes of the law? No. And yet in terms of noise impact we seem to have this idea that you can look at the average."

He says that ETSU does not inform on issues such as the noise's character, the duration of the impact, how the noise intrudes internally and whether it is incongruous with the soundscape. "This is not a loud noise," he adds. "It intrudes because the modulating characteristics are clearly audible."

In ETSU, the difference between the LA_{eq} and LA_{90} of wind turbine noise is assumed to be 2dB over a 10 minute period. This suggested relationship arises because of the limited variation between peak and trough sound energy levels for medium turbines, says Stigwood.

LA_{90} is a statistical measure of the quietest 10% of the time, he says. The sound troughs for LA_{90} may be similar for large and medium turbines, giving similar LA_{90} figures, says Stigwood – but the peaks are markedly different. In comparing his measurements for Blood Hill (medium) and Swaffham (large), he found that if the same LA_{90} condition were to be applied to both then the larger turbine would be permitted to create noise peaks almost 6-7db higher

than the medium. "The message to get across to anyone looking at planning conditions is that limiting the troughs is never going to control the overall noise from large turbines."

Typical readings at Deeping St Nicholas show amplitude modulation. "The sound is building up and then it dies down again," he says. The value from lowest to the highest point varies by a considerable amount, exceeding 10dB in a single minute, while the maximum variation for an individual 'thump' or 'whoosh' was 8dBA.

The sound energy from medium sized turbines is typically around the 800Hz third octave band level, he finds, while the principal noise frequencies of interest for larger turbines were in the 63Hz to 400Hz third octave bands.

Filtering of some frequencies means that the noise from medium sized turbines is reduced indoors. But for the larger turbines, "we have repeatedly measured low frequency noise internally at different times of the day and night," he says. "Externally the wind turbine noise can be almost completely masked and unrecognisable. Internally the masking noise is almost completely removed, revealing serious intrusion from the modulating noise."

He believes that another important influence for large turbines is wind shear – the gradient of wind speed going up through the atmosphere. Various curves have attempted to quantify the increasing wind speed at height. ETSU's approach assumes that the profile is dictated purely by the ground roughness, while the power approach takes two points to calculate a curve. The reality is that "weird things" can happen at particular points, says Stigwood. Wind shear varies with the time of day, the season, the terrain and the atmosphere, he says. "In practice, the wind speed at different heights will vary most of the time and sometimes reverse," says Stigwood. "All methods are approximate but the power method is the most accurate."

The different methods appear to agree during the daytime, but diverge in the evenings and at night. The differences mean that the turbine could be turning faster than predicted, generating more noise.

Standard formulae are no longer relevant in the stable atmospheric conditions that can occur for perhaps two thirds of the night. There can also be a nocturnal jet – a layer of fast moving air – as low as 50m-70m above ground level. "In the UK it is reasonable to expect the effects at about 100m above the ground." This is within the range of the blades and he wonders whether this could be one of the aspects leading to noise problems.

He believes that what is required is the downwind data, to give a more accurate picture of the background noise levels are likely to be when the wind is from the wind farm to the properties.

He recommends that internal background noise level measurements should be taken at the same time as the developer's external ones, and to make sure that the residents get photographs of every measurement location and layout.

"In the absence of peer-reviewed research on the prediction and propagation of wind farm noise for large turbines, the ISO9613 Part II model, adjusted for atmospheric conditions and wind speed is the best procedure for determining the worst-case noise impact," he says. Modelling neutral air conditions with the noise contours equally radiating in all directions – as if the wind were in all directions – gives very different results to the adjusted values for stable air and wind from a particular

direction, he says. In a typical example, the readings at specific places differed by about 4-5dB.

"Once a set of turbines are operating it is difficult to say stop," he says. He recommends a condition that requires a noise management scheme, approved for a limited period, so that it can be revisited if required.

The seminar concluded with an open discussion, where delegates echoed Stigwood's view of the guidance as outdated. They called for further research into issues including health impacts, amplitude modulation and effective modelling. Future guidance should also address compensation, suggested a delegate.

● www.masenv.co.uk

What it feels like to live in the shadow of a turbine

Jane Davis told delegates at the Cambridge seminar about the noise impact of the Deeping St Nicholas wind farm.

They live on a farm on the Fens in Lincolnshire. Eight 2MW turbines were completed in 2006, the closest 930m from their home. The house is well-shielded by mature trees and agricultural buildings – for most of the year, the turbines are out of sight.

"As soon as the wind farm became operational, we noticed new noises in the house," she says. They have been since awarded a cut in their council tax in recognition of noise nuisance from wind turbines (*Noise Bulletin August/September 2008*), but otherwise have found no recourse to compensation under existing law.

She identifies a wide range of sounds that disturb them:

- Swish, a modulating sound as the blade cuts through the air;
- Ripping/lashing sound – most audible when the wind direction is from 80° to 160°;
- Hum – "almost as if you can feel the noise as a sensation in the ear". The amplitude of the hum is detectable at more than 2km from the turbines. Indoors, "it is almost as if the building itself exhibits a slight resonance";
- WD40 noise – "so named because it sounds as if the turbines need a squirt of lubrication;
- Background roar – "sounds as if there is a motorway half a mile away at 100m high".
- Whoomph (helicopter noise) is one of the most disturbing sounds to be produced by the wind farm, she says.

"The nearer you get the less the effect." There appear to be "focal points" and "interference patterns", arising under distinct atmospheric conditions. The normal background noise levels can



be pin-drop quiet with the turbines modulation peaking at more than 45dBA. ● Amplitude modulation of aerodynamic modulation. It appears that an "interference" pattern occurs either between sound pressure waves from different turbines, or blades from the same turbine, she finds. "Reinforcement" can last about two or three seconds, and may occur a couple of times a minute.

Some of the worst noises generated are due to wind shear, she believes.

"The peculiar noises that the wind turbines emit cannot only be heard, they can also be felt by the body, and then resting becomes impossible. We tried: fans, white noise machines, sleeping tablets, red wine and ear plugs. The latter masks background noises but allows the low frequency that we get to penetrate so that it feels part of your body. The beat – the pulsation – that is slightly faster than our human hearts beat, means that you feel as if you are constantly trying to get your heart to catch up with this external rhythm that is felt by the body rather than heard ... so rest is impossible.

"The biggest problem with the heard noises from the wind turbines is that they are so unpredictable."

Driving down tyre noise

Lis Stedman looks at the tortuous behind-the-scenes lobbying that should lead to new tyres becoming quieter

Noisy tyres may at last be tackled in the UK. A new DfT consultation on the forthcoming EU regulation on the general safety of road vehicles brings good news for proponents of tyre noise reduction with its support for the originally-proposed, stringent limit values.

The regulation will be passing its final approvals in February, and is being hailed as a well-deserved win for persistent lobbying, notably that undertaken by Epuk and the European Federation for Transport and Environment (T&E).

DfT's uber-fast four week consultation underlines this success with its endorsement of the tyre noise elements within the new legislation. The regulation is due to cover a range of vehicle-related issues, setting type-approval requirements for general vehicle safety that encompass various tyre issues. The aim is to sweep away a mess of red tape by repealing 50 directives on general vehicle safety and tyre noise and consolidating them into this one mega-regulation.

The regulation will be a daughter element of Directive 2007/46/EC and will apply to cars, light and medium commercial vehicles, heavy vehicles and new tyres. Critical from the noise perspective is the proposal to tighten noise limits for tyres from the current limit values set in Directive 92/23/EEC (as amended by Directive 2001/43/EC and known as the Tyres Directive).

There are also proposed limits on tyre rolling resistance, aimed at reducing CO₂ emissions by reducing fuel consumption, and requiring the fitting of a tyre pressure monitoring system – the aim being to minimise increases in tyre rolling resistance due to under-inflation, a CO₂ reduction move that will also help to reduce tyre noise.

The tyre noise limit values proposed by the Commission are based on the conclusions of a wide-reaching and extensive review formulated in Article 3 of the revised Tyres Directive. They represent a 2 to 5dB(A) reduction compared with current limits, with actual values depending on tyre class and width – the noise limit values for car tyres in Class C1 depend on tyre width, but there are single value limits for commercial tyres in Classes C2 and C3. The proposed dates from which new tyres must comply are 29 October 2012 for new types of tyre and tyres fitted to new types of vehicle, and 29 October 2016 for tyres fitted to new vehicles and those sold separately as replacements.

The new noise limits are met by around a third of tyres already on the market. DfT's estimate is that at least 35% of all tyres

including those for commercial vehicles already meet the limit values, though T&E argues that the figure is closer to 50%. The benefits in hard cash of this reduction in road traffic noise are estimated at around twice the costs.

The coup de grace for persistent attempts by the motor industry and its supporters to water down the proposals came with a decision in early December from the European Parliament's powerful Internal Market Committee (IMCO) to support the proposed legislation. This effectively overturned a vote by the parliamentary Industry, Research and Energy Committee (ITRE) that looked likely to weaken the proposed standards to suit the motor brigade.

Minutes of a December meeting of the Kangaroo Group (an EU discussion forum) highlight the tensions between the two committees. Jorgo Chatzimarkakis MEP, rapporteur for ITRE, noted that the ITRE vote had "tried to strike the balance between environment and safety but has taken the position that safety comes first". By way of background, the 'safety versus noise' argument is one that is often cited, but research has shown that it is not necessarily the case that you can have grippy tread without necessarily having loud noise.

In addition ITRE has decided to leave sufficient lead time to the industry. The IMCO vote has been more ambitious especially on noise limits which have been tightened in comparison to the Commission's proposal. IMCO has also limited the selling off from stocks to one year whereas even a study from ADAC [a German motoring organisation] says that three years are necessary."

The IMCO vote – if its decision is upheld through the final tortuous stages of approval in the European parliament – is good news for the wider objectives within the END action plans. The noise standards, as proposed, would cut overall road traffic noise

substantially as tyres have been identified as the dominant source of road noise at speeds above 40km/hr. In the end it is more cost effective to reduce tyre noise at source than try to mitigate it once it is there.

The DfT's unequivocal

support for the noise reductions comes as a pleasant surprise to those close to the process.

The consultation document says: "The government supports the Commission's proposed noise limits and implementation dates. The government can see some merit in amending the proposal to apply to tyres manufactured after the qualifying dates. However, to avoid indefinite marketing of non-compliant tyres there would need to be a time limit, possibly 12 months, after which non-compliant tyres may no longer be sold. It would also be appropriate to limit the concession to tyres already in the EEA."

DfT's positive outlook backs the results of a 2006 TRL study that suggested quieter tyres would yield benefits ten times greater than their cost, rather more than DfT is currently prepared to suggest – at that time the research group found monetary benefits worth £1.2 billion a year. This work also confirmed that low-noise tyres could retain good wet weather grip.

Of the blanket exemption for 4x4 tyres that has already caused anxiety, the consultation notes: "In respect of off-road professional tyres the exemption should be based on an objective definition of these tyres in terms of their performance or physical characteristics to prevent abuse of this derogation."

Epuk's Mary Stevens says: "DfT has been quite supportive. It is basically supporting the measures that the EU wants to put through on reducing noise and rolling resistance."

Of the 4x4 exemption T&E policy officer Nina Renshaw echoes the DfT's observation of a need for clear definition: "Off road professional tyres are exempted, but they are not clearly defined in any EC legislation. The exemption is designed for such things as forestry vehicles and mountain rescue vehicles, but if the exemption is not clearly defined, some chunky 4x4s could claim they are offroad

Leeway for fat fashion

Current (Directive 2001/43/EC)		Proposal			
Tyre class	Nominal width (mm)	Limit value dBA for normal tyres	Tyre class	Nominal width (mm)	Limit value dBA for all tyres
C1a	<145	72			(70)
C1b	145–165	73			(70)
C1c	165–185	74	C1A	<185	70
C1d	185–215	75	C1B	185–215	71
C1e	>215	76	C1C	215–245	71
		(76)	C1D	245–275	72
		(76)	C1E	>275	74

vehicles.”

The proposals, despite the odd remaining caveat, have not reached the stage of near-acceptance without a great deal of behind-the-scenes work by Epuk and T&E. Epuk feared that although the regulation could reduce tyre noise by up to half and fuel consumption by up to 5%, the vocal and persistent European car industry lobby would have sufficient influence to water down the proposals to a point where most tyres currently in use would comply. Stevens says: “The motor industry put up a big battle. It looks like we’ve almost won, though.”

Stevens herself went to Brussels to lobby MEPs on the key Internal Market committee, which with similar lobbying from T&E appears to have been critical in retaining the more stringent limits.

She notes: “We have been lobbying for a long time on revising the tyre directive noise levels because all cities have to do noise action planning and some areas could halve their noise levels with this one measure.” Renshaw adds: “The odds were stacked against us – we are fairly happy with the outcome. The Industry Committee vote was spectacularly bad – it put in some very watered-down amendments that would have made the whole law ineffective.”

Renshaw adds that the two associations concentrated their lobbying efforts on the critical Internal Market committee as the most effective way to deploy their resources, which – teamed with good mobilisation of the organisations’ individual members’ lobbying powers – appears to have had a significant influence.

Stevens says Epuk, like T&E, contacted members to mobilise their persuasive powers at a local level in its campaign to highlight the benefits of maintaining the proposals. The organisations argued that the regulation would contribute to meeting the aims of the Environmental Noise Directive, and would help to address the increasing concerns about the impact of road traffic noise on health.

Reducing tyre noise will not just benefit urban agglomerations, Stevens points out, but also quiet rural areas where tyre noise can be heard for miles. Dragomira Raeva of the European Environmental Bureau (EEB) confirmed in a statement that: “Under EU noise legislation, cities must reduce noise levels in urban areas. Since vehicle tyres are the biggest source of noise in our cities, this represents a very logical decision that will ultimately help municipalities meet their obligations while improving their residents’ quality of life.”

The car industry, on the other hand, was lobbying hard to minimise the impact of the regulations. The original intention, if retained, is to phase out and eventually remove from sale the most noisy and inefficient tyres on the market in stages,

between 2014 and 2018.

However a report commissioned by MEP Andreas Schwab and carried out by Cidaut, a Spanish research organisation partnered by tyre manufacturer Michelin and other car industry interests, threatened to water down the regulation to the point of toothlessness. Schwab was responsible for coordinating the European Parliament’s response to the law, and the proposed amendments would have significantly weakened the proposed limit values. The ITRE vote was a further blow.

In response to the car industry pressure, Epuk sent a joint letter in early November, signed by seven UK organisations including Lacors and the Environmental Transport Association, to MEPs on the Internal Market and Consumer Protection Committee, which is overseeing the regulation.

The organisation, in tandem with T&E, also canvassed MEPs on the committee to present their views, and managed to gain welcome support. “We spoke to a number of the MEPs, and all of the ones we spoke to came down on the side of tighter regulations,” Stevens says. T&E was pushing for yet-stricter legislation, she notes, but in the end the result appears to be an endorsement of the originally-proposed limits.

The NGOs are now campaigning on the detail of the legislation and the proposed deadlines for introduction, explaining that the industry has been lobbying for the regulation to apply to newly-produced tyres only, allowing the existing stockpile to be sold indefinitely. “Tyres have a four year lifecycle, which means if the regulation was introduced tomorrow it would be four years before it would have any real impact.”

The suggested compromise, endorsed by the DfT consultation, is to allow non-compliant tyres to be sold for a year after the regulation comes into force. “We didn’t know how many tyres were kept in stock,” Stevens says. “There were issues like that that had to be clarified, but we are going in the right direction now.”

She adds that the tyre industry has come up with a lot of arguments as to why the proposals are not achievable, some of which she dubs “totally ridiculous and spurious”. One industry fear was over control of imported tyres, but the NGOs argue that these are already successfully controlled by trading standards.

There are also arguments that changing tyres will be too expensive, both in R&D costs and the expense of altering tyre moulds. It is still possible that the legislation will be weakened in its passage through the Council of Ministers and the European Parliament – Renshaw notes that Italy, with its strong motor industry links, opposes the current limits while The Netherlands and the UK are strongly in



Fat tyres are a fashion option on many vehicles – and as wider tyres tend to be noisy, this has the effect of increasing average vehicle noise. Proposed regulations mean that specific tyre types may get quieter, but with the less onerous targets for wide tyres, wide boy fashion may dilute benefits

favour.

With this caveat, Stevens feels the result so far is the classic good news all round story. “It just seems to be the common sense answer, and a big step forward in reducing road noise in one regulation – a fantastic example of joined up thinking that you don’t see very often.”

The environmental groups have now turned their lobbying skills on the new labelling proposals, which are a follow-up measure that should mean the best models of tyre get top ratings for efficiency and safety and carry some kind of noise information. Renshaw explains: “This will probably be contested, because the industry doesn’t like the idea of putting this on – they argue that people won’t understand. But it should be possible to have a mark for tyres that are substantially below the limit value – people might not know whether 67dB was much lower than 74dB, but there could be an ‘extra quiet tyre’ mark.”

Whether the noise limit values survive the next, crucial rounds of horse trading in the EU will undoubtedly affect this worthwhile aim. There are still tensions between countries that have realised the enormous potential for environmental benefit and those that want to protect their motor industries at a time of severe economic downturn.

Regulation deadlines

The DfT consultation period began on 7 January and ends on 4 February due to the speed at which Brussels is moving. Implementation of the early preparatory stages of the regulation would begin in late 2012. Tyre pressure monitoring systems would become mandatory on new vehicles in 2014, with October 2016 set as the date for noise-level compliant tyres to be fitted to new vehicles and as replacement tyres. The final roll out of tyre rolling resistance to the last vehicle types will take place in 2020.

SOUND BITES

So building-mounted wind turbines generate on average less than 1% of their rated power. What a farce.

All the fuss over the past few years about trying find a way of preventing a noise nuisance for a device with much in common with the Squarial (ugly and of little lasting benefit). Whether or not business interests get their way and dilute planning safeguards to keep turbine noise down, it looks like their inherent uselessness may do the trick instead.

The comprehensive Warwick Wind trials have confirmed what many people suspected – that the wind turbines are little more than a statement of worthy green intention when attached to buildings in urban areas. All in all, it looks like the industry has done itself few favours.

The report – and bear in mind this was made with the cooperation of many wind interests who must surely now be regretting their involvement – says this: “Overall the trial has painted a picture of an industry and technology that is still at development stage and is likely to make a tangible contribution to energy and carbon saving only on the most exposed sites and tallest buildings. The

combination of this reality, aggressive and over-optimistic marketing by some suppliers, and the enthusiasm and credulity of the market (and regulators) has potentially led to an unfortunate outcome where the wind industry as a whole is in danger of suffering from a setback in credibility.

“The evidence from this trial is that such potential setbacks can be avoided in future by greater openness by the industry as a whole, and more effort to educate the market and opinion formers about the fundamental science and challenges of new technologies earlier. Sustainable technologies and a sustainable future require customers who are properly informed and able to take individual decisions that are both economically optimal and environmentally sustainable. Without open data this is impossible.”

Perhaps the people who emerge with some credit over this affair are Defra and its advisors. We aren't just being nice to Defra because it's the New Year and they have new staff – praise where praise is due, Defra did well to stand up to the bullying wind lobby and stall rushed adoption of a technology that really does appear to be all noise and no action.

Our politeness to Defra has limits however when it comes to its persistent broken promises.

As is traditional for the past few years, Defra has promised to get out the long awaited noise strategy soon. In the ‘highlights’ of its latest annual report, it says that it will ‘develop a noise strategy’ in 2008/09 (ie by March). Ministers and Defra are quite rehearsed in making this particular promise and then breaking it, so there is little confidence that 2009 will be the year of the strategy, let alone have it wrapped up by March.

We'd settle for the action plans, these are well overdue and in mid November were promised by Defra ‘very soon’. Where are they then?

So mobile phones are to be allowed in hospitals.

We suspect this will quickly become a serious noise concern – it's bad enough being fit and well and putting up with a loud mobile phone addict (complete with silly ring tones). Imagine having to put up with that when recovering on a ward.

We hope hospitals ban them from the wards. If they don't, they might find hospital systems mucked up by mobile phone jammers (Ebay, £69.95).

NOISE EVENTS 2009

29th-31st January

SOUNDSCAPES – CONCEPTS, APPROACHES, ANALYSIS & APPLICATIONS

EEA symposium, Berlin, more details on www.dega-akustik.de/aktuelles/ea-soundscapes

10th-11th March

MANAGING NOISE IN LOW CARBON COMMUNITIES

Environmental Protection UK seminar to be held at Woodside, Warwickshire, contact Epuk, 01273 878 776

23rd-26th March

NAG-DAGA INTERNATIONAL CONFERENCE ON ACOUSTICS

to be held in Rotterdam, The Netherlands website www.nag-daga.nl/index.html

5th-8th April

NOISE AND VIBRATION: EMERGING METHODS

ISVR conference to be held at Keble College, Oxford, website www.isvr.soton.ac.uk/novem2009/

28th-29th April

INSTITUTE OF ACOUSTICS SPRING CONFERENCE 2009

Environmental Noise Management in a Sustainable Society, to be held at Dunchurch Park, Warwickshire, Linda Canty, 01727 848195

18-22 May

NOISE ACTION WEEK

Coordinated by Epuk, website www.noiseactionweek.org.uk

17th-19th June

WIND TURBINE NOISE 2009

3rd International Conference on Wind Turbine Noise to be held in Aalborg, Denmark <http://www.windturbine2009.org/>

23rd June

DID YOU HEAR THAT?

concepts of audibility and inaudibility Measurement & Instrumentation, IoA meeting to be held at The Royal Society, London contact Linda Canty, 01727 848195

23-28th August

INTERNOISE 2009

to be held in Ottawa website www.internoise2009.com

26 - 28 October 2009

EURONOISE 2009



to be held in Edinburgh, website www.eurnoise2009.org.uk

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