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ACOUSTICS BULLETIN



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Contacts

Publisher

Juliet Loisele

Contributions, letters and information on new products to:

Nicky Rogers

Email: nickyr@warnersgroup.co.uk

Tel: 01778 391128

Advertising:

Alex Shaida

Email: advertising@ioa.org.uk

Tel: +44 (0) 7936 536 399

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ACOUSTICS BULLETIN

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Technical articles review procedure

All technical contributions are reviewed by an expert identified by the IOA Publications Committee. This review picks up key points that may need clarifying before publication, and is not an in-depth peer review.



Cover image: At a recent IOA Early Careers Group webinar delegates learned more about the intricacies of festival acoustics and noise management, using Glastonbury's comprehensive noise management plan as a case study.

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The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration. It was formed in 1974 from the amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society. The Institute of Acoustics is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels.

The Institute has over 3000 members working in a diverse range of research, educational, governmental and industrial organisations.

This multidisciplinary culture provides a productive environment for cross-fertilisation of ideas and initiatives. The range of interests of members within the world of acoustics is equally wide, embracing such aspects as aerodynamics, architectural acoustics, building acoustics, electroacoustic, engineering dynamics, noise and vibration, hearing, speech, physical acoustics, underwater acoustics, together with a variety of environmental aspects. The Institute is a Registered Charity no. 267026

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Dear members

As the mornings turn crisp and the school bags reappear, it's my pleasure to welcome you to the September/October issue of Acoustics Bulletin. In acoustics, progress often hums quietly in the background and that's just how we like it. Here's a roundup of what's been happening at your Institute.

Council highlights: sound finances and solid foundations

Council signed off the 2024 accounts and the dip into reserves was smaller than expected – proof that careful stewardship still matters. We're strengthening the finance team, with a new Accounts Technician joining soon to keep things robust behind the scenes.

Digital refresh: website on the move

The new IOA website and content migration is well underway. Council will soon get a first look, with the full launch planned towards the last quarter of this year. It's shaping up to be clearer, more user-friendly and genuinely helpful – perhaps even the pleasant surprise that IOA members have long deserved.

Education: growing near and far

Our Distance Learning Diploma continues to draw interest from across the UK, Ireland, the Middle East and the Far East. Under Mary-Jane Newton's leadership, the IOA Education Team is updating content, improving delivery and forging new international links.

Careers: supporting the next generation

The IOA Early Careers Group is active, with more events and webinars in the pipeline. STEM outreach is thriving and Council has expanded the Membership Committee and CPD checks to include Associate and Technician members as part of our commitment to lifelong learning.

Strategy and standards

Council is shaping its next strategic plan and reviewing the risk register to keep us resilient. Committee elections are coming, so if you've got ideas, please consider standing. On standards, our consultation on BS 8233 revisions sparked lively debate. Online workshops will help us craft a strong IOA response.

Community, diversity, and policy engagement

The IOA EDI Committee is looking for new members to help support under-represented groups in acoustics. Branch and Specialist Group guidelines have been refreshed, including updated terms for both role-sharing and consultation on briefing notes. The IOA's presence at the policy table continues to improve, with the Parliamentary Liaison Group soon hosting a dinner at the House of Commons. Internationally, IOA members are stepping into leadership roles with ICA, EAA, and IIAV, raising our profile on the global stage.



Save the date: ACOUSTICS 2025 – 51st Anniversary Conference
Join us at the Doubletree by Hilton in Milton Keynes, 19–21 October, for our flagship event. Expect masterclasses, technical sessions, an exhibition and plenty of chances to catch up with colleagues. Whether you're presenting, learning, or just enjoying the sponsors' exhibition, there's something for everyone.

Conclusion

Thank you for your continued support. It's your ideas, energy and good humour that give the IOA its character. This autumn, I hope you'll get involved – stand for Council, attend the conference, support a STEM event, or simply offer a kind word to a fellow member. Warm regards,

A handwritten signature in blue ink that reads "David Waddington".

David Waddington,
IOA President

Engineering Division



The IOA Engineering Division will support you through the process to help you become one of more than 229,000 registrants that hold international professional recognition.

By Blane Judd BEng FCGI CEng FIET FCIBSE, Engineering Manager

Following our recent audit by the Engineering Council, we have been encouraged to increase the number of professionally registered members involved in the Continuing Professional Development (CPD) review process. While the panel reviews CPD submissions from all IOA members selected for audit, any submission from a registrant with the Engineering Council must be reviewed by another registrant. If you hold professional registration and are interested in supporting this important work, please contact us at acousticsengineering@ioa.org.uk and we will be pleased to connect you with the appropriate individuals. CPD is a core element of your IOA membership and is a formal requirement for those seeking registration as an Incorporated or Chartered Engineer. CPD encompasses more than just attending training courses – activities such as reading Acoustics Bulletin may count, provided they contribute to your learning or prompt professional reflection.

Further information on the IOA's CPD scheme is available at: www.ioa.org.uk/professional-development-scheme

When submitting your professional review reports, please follow the structure provided in the example document sent to you upon registering for the process. We continue to receive submissions that do not refer to **UK-SPEC version 4**, which is a key requirement. In addition to your review report, an initial professional development (IPD) report is required to explain your



The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)

Fourth edition

Published August 2020



Above: We are now interviewing using the Engineering Council UK SPEC version 4

progression from postgraduate study to professional practice. We also remind applicants not to wait until after payment to enquire about next steps, as all required documentation and guidance is set out clearly in the information provided at the start of the process. This includes details on sponsorship requirements and how to proceed if you are unable to secure IOA sponsors.

When you first express interest in registration, we will send you the full guidance document along with example support reports and we are always happy to review and provide feedback on your draft reports before final submission. To reduce the likelihood of needing multiple revisions, we strongly encourage you to include specific

evidence that demonstrates your underpinning knowledge and decision-making. For example, if you reference the use of acoustic modelling software, please explain why you selected it, its limitations, your expectations and how you validated the outputs. These details contribute directly to meeting competencies A and B.

Emma Lilliman will guide you through the initial stages of your application. You can access **UK-SPEC version 4** via the Engineering Council's website at www.engc.org.uk/ukspec

Neil Ferguson continues to support applicants who do not hold formally recognised qualifications. You may check your academic qualifications against the required standards here www.engc.org.uk/courses

If your qualifications are not listed, we can assist you through the **individual assessment** route to establish academic equivalence.

Professional review interviews are held several times a year, subject to candidate numbers. Our next scheduled sessions will take place on **2 October 2025 and 7 October 2025**.

If you are ready to begin your professional registration journey, please contact us at **acousticsengineering@ioa.org.uk**. Be sure to include your **CV** and copies of **all higher and further education certificates and transcripts** (not just your highest-level qualification). Please note that training course certificates are not required at this stage.

We are committed to supporting you throughout your professional registration journey and look forward to hearing from you.

The two routes to registration

The **recognised qualification** route, if you have achieved the required learning outcomes through recognised qualifications in acoustics. Qualifications which provide the required level of knowledge and understanding are for IEng and accredited Bachelor's degree and for CEng an accredited integrated Master's degree or a combination of accredited Bachelor's and Master's degrees (see table below).

Recognised qualifications

Incorporated Engineer (IEng) One of the following:	Chartered Engineer (CEng) One of the following:
An accredited Bachelor's or honours degree in engineering or technology	An accredited Bachelor's degree with honours in engineering or technology, plus either an appropriate Master's degree or engineering doctorate accredited by a licensee, or appropriate further learning to Master's level*
An accredited Higher National Certificate (HNC) or Higher National Diploma (HND) in engineering or technology started before September 1999	An accredited integrated MEng degree
An HNC or HND started after September 1999 (but before September 2010 in the case of the HNC) or a foundation degree in engineering or technology, plus appropriate further learning to degree level	An accredited Bachelor's degree with honours in engineering or technology started before September 1999
A National Vocational Qualification (NVQ) or Scottish Vocational Qualification (SVQ) at level 4 that has been approved by a licensee, plus appropriate further learning to degree level*	Equivalent qualifications or apprenticeships accredited or approved by a licensee, or at an equivalent level in a relevant national or international qualifications framework†
Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†	

* See: www.engc.org.uk/ukspec4th for qualification levels and HE reference points.

† For example, UNESCO's International Standard Classification of Education (ISCED) framework.

The **individual assessment** route, for applicants who do not have the recognised qualifications and who will have an individual assessment of their qualifications and any other relevant learning such as: formal academic programmes, in-employment training and experiential learning self-directed learning. In many instances, it is likely to be a combination of some or all these options.

Remember we are here to help you get through the process and advice and support is offered to every candidate personally.

For **individual assessment**, the Institute accepts several courses from certain academic centres in relevant subjects, such as audio technology, as being equivalent to accredited courses for the purposes of EC registration, without the need for further assessment.

The Institute recognises the IOA Diploma course and the several Master's courses linked to it as providing evidence if you are looking to gain CEng registration. You could also offer a PhD qualification, depending upon the content of the associated taught element. We can also offer support for registration via a 'technical report' route, if you do not have the relevant qualifications to help you demonstrate you are working as a professional engineer in acoustics. If you need to follow the technical route, we will discuss this with you before you embark on that process.

Election process

The election process is overseen by the Institute's Engineering Division Committee, which is made up of volunteers from the membership, to whom we are extremely grateful. They represent the ever-growing number of members holding EC registration and provide the essential peer review process that affirms that you are at the appropriate level for recognition as an Engineering Council Registered Professional Engineer. ☺

Our video explains how members can gain professional recognition and Engineering Council registration through the IOA.
Watch at <https://www.ioa.org.uk/video/recognising-your-professionalism-0>



IOA awards entry deadline

The IOA annually honours people whose contributions to acoustics or to the Institute have been particularly noteworthy.

The medals and awards programme is wide-ranging in its acknowledgment of academic achievement, practical engineering applications and innovations, student achievement, contributions to the Institute and to the world of science and technology.

Nomination forms are at <https://www.ioa.org.uk/about-us/medals-and-awards> All submissions must be received by **31 October 2025**.

Decisions will be made by Christmas and the winners will be announced early 2026.

The 2026 IOA medals and awards comprise:

The Rayleigh Medal (UK acoustician in 2025). This is the IOA's premier award, given to persons of undoubted renown for outstanding contributions to acoustics without regard to age.

The Tyndall Medal is awarded biannually to a UK acoustician, preferably under the age of 40, for achievement and services in the field of acoustics.

The AB Wood Medal (USA/Canada acoustician in 2025) is aimed at researchers aged under 40, whose work is associated with the sea.

The IOA Engineering Medal is awarded in even-numbered years to registered engineers at Chartered, Incorporated or Engineering Technician grade in recognition of their outstanding contribution in the field of acoustical engineering.

The Peter Lord Award is given annually for a building, project or product that showcases outstanding and innovative acoustic design.

The Richard Cowell Award for Sustainability in Acoustics is open to individuals or teams who can demonstrate and provide evidence of one or more of the following:

- an exemplar contribution towards the delivery of sustainability for today and for future generations;
- demonstration of value in all three key areas (societal, economic and environmental); or
- can clearly demonstrate a significant contribution through education, design, construction practices or guidance that promotes the implementation of sustainability through acoustics.

The Peter Barnett Memorial Award was inaugurated in 2001 by the Electro-acoustics Group, to honour Peter Barnett who died the previous year. This award, which is made annually, recognises advancements and technical excellence in the fields of electro-acoustics, speech intelligibility and education in acoustics and electro-acoustics.

The Dr Bob Peters Education Award celebrates the memory of the late Dr Bob Peters who is widely remembered for his outstanding contribution to acoustics education and his long-standing commitment to teaching and student success. It recognises excellence in the design, plan, delivery and management of acoustics education, or other significant contributions to education in acoustics. It can be for a single outstanding or significant contribution to acoustics education and training, or a sustained long-term activity in this respect.

The Award for Promoting Acoustics to the Public was created to encourage activity that generates greater awareness of the importance of acoustics to people without acoustical expertise. Nominations can be for individuals, charitable organisations or companies.

The IOA Early Careers Award for Innovation in Acoustical Engineering (sponsored by Cirrus) recognises excellence and achievement within acoustics among those who are aged under 35 or early on in their careers in industry.

The Award for Distinguished Services to the Institute was introduced so that the IOA could publicly acknowledge the debt owed to individual members who have provided sustained assistance over the years in some way with the running of the Institute.

The Geoff Kerry Long Service to the Institute Award acknowledges publicly the debt owed to individual members who have served the Institute in various ways for normally 20 years, but no less than 15. The award recognises significant contributions in any capacity, for example, by serving on Council, committees or working groups, being honorary officers or assisting with conference organisation or other projects. The service does not have to be continuous, but over their membership must have accumulated to at least 15 years of such activity. 🌐

More information and nomination forms are at <https://www.ioa.org.uk/about-us/awards>

Nominations should be submitted by 31 October 2025 to ioa@ioa.org.uk



The deadline for nominations for 2026 awards and medals is 31 October 2025.

IOA MEDALS AND AWARDS

Don't miss out, to nominate go to

www.ioa.org.uk/about-us/awards

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IOA EVENTS FOR 2025-26

12th INTERNATIONAL CONFERENCE ON AUDITORIUM ACOUSTICS 2025

8-10 September 2025

The Bristol Beacon, Bristol

IOA ANNUAL CONFERENCE AND EXHIBITION Acoustics 2025

19-21 October 2025

The DoubleTree by Hilton, Milton Keynes

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Organised by the Electroacoustics Group

18-20 November 2025

The Old Swan, Harrogate

Other event

54TH INTERNATIONAL CONGRESS AND EXPOSITION ON NOISE CONTROL ENGINEERING (Inter-Noise 2025)

24-27 August 2025

São Paulo, Brazil

<https://tinyurl.com/54internoise>

2026

ICUA 2026

INTERNATIONAL CONFERENCE ON UNDERWATER ACOUSTICS

15-18 June 2026

*University of Strathclyde Technology & Innovation
Centre, Glasgow*

The call for papers has been issued please visit

<https://www.ioa.org.uk/civicrm/event/info?reset=1&id=1022>

For more information on upcoming IOA events, please visit the IOA Events page at <https://www.ioa.org.uk/events>

Approved Membership Applications

The Membership Committee reviewed 64 application forms at their meeting held on 15 July 2025 at the IOA headquarters in Milton Keynes. Following the Committee's recommendations, the Council has recently approved 20 corporate applications. Of the applications reviewed, 34 were from new candidates seeking to join the IOA, while the remaining applications were from existing members requesting upgrades.

FIOA

Mark Scaife

Corporate members

Francesco Aletta

Safa Al-Gburi

Matthew Bull

Saif Bunni

Kelvin Carray

Roger Dentoni

Baden Fitzmaurice

Matt Hayes

Edward Lawrence

Sam Logan

Morgan Long

Kerith McClung

Scott McLean

Sam Norris

Colin Nugent

Duncan Rogers

Andrew Warren

Robb Young

Associate members

Manav Bhatia

Amber Binney

George Carruthers

Billy Clark

Conor Crossan Brady

Arran Forbes

Laurence Haines

Adil Hussain

Patrick Liew

James Lyall

Harry Matthews

Shinu Mohan

Shreyas Rajendran

Dean Redmond

Vanshika Shah

Ellis Stagg-Neal

James Storey

Ben Wiggett

Christopher Wilkinson

Ian Winter

Technician members

Dean Akhtar

Mark Emsley

Richard Cully

Aiden Heeley-Hill

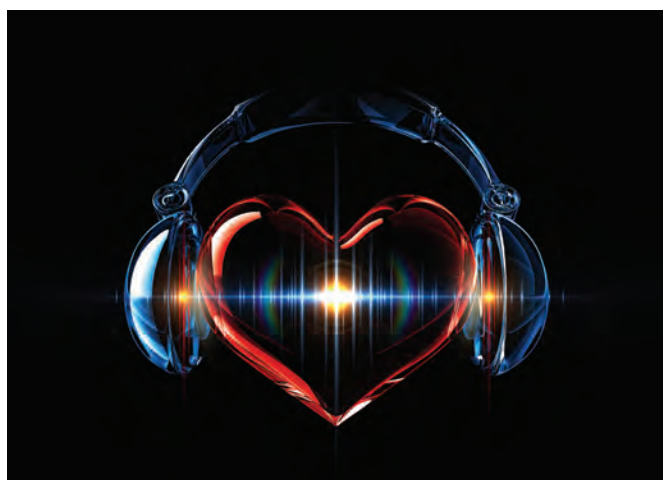
Lee Parkin

Norris Radhi

Josh Robinson

Affiliate member

Cormac Crehan



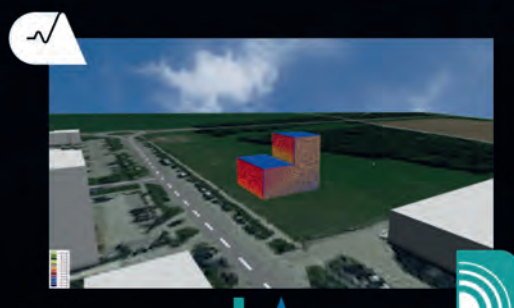


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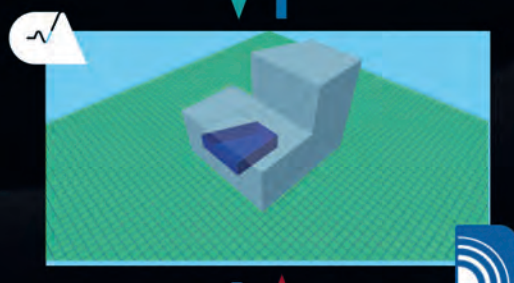
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Bursary Fund update

This month the Bursary Fund update includes the experience of not one, but two applicants!

By Reena Mahtani FIOA, Chair of the Bursary Fund

Rachel Barron tells us why she requested funding to attend *The Art of Being a Consultant* event and how she has found it helpful from a student perspective. We then hear from Jianqiao Cui, who attended Inter-noise last year to present his research on speech enhancement, on behalf of the University of Southampton and Tsinghua University in China. Turn to page 14 to read more about his experience and his paper.

By the time this issue of Acoustics Bulletin reaches you, we will be

reviewing the applications received during the Summer round, but the Autumn round will be open for applications from 1 October 2025. The application form is available on the IOA website, under the 'can we help' header (<https://www.ioa.org.uk/can-we-help/bursary-fund-application-form>). If you, or someone you know, could benefit from financial assistance from the Institute, please consider applying. The programme is open to any member of the Institute, including students.

When preparing the application, please pay careful consideration to the personal statement. The review panel needs to understand the circumstances of the applicant, why the Institute should fund the activity and if other means of funding such as a university or research centre have been considered. There is more information about the application process on the website, and if you have any questions, please feel free to send us an email to ioa@ioa.org.uk

Good luck!

Rachel Barron

The moment I discovered *The Art of Being a Consultant* while browsing the January 2025 IOA newsletter, I knew it was the ideal choice for my first conference.

The event, held on 27 March 2025 and organised by the IOA Early Careers Group, included a wide range of excellent presentations. The guest speakers provided insight into the minutiae of consultancy from broad definitions to precise report language. Most of this information was fresh from my perspective, with some highlights including the use of planning and time-management tools such as Notion, which I have found valuable and continue to use today.

During the Q&A after the talks, I was particularly captivated by a discussion about being an expert witness. The speaker panel explained that thorough preparation is the best cure for nerves and that specific training is available if a consultant wishes to hone their skills for presenting in court. The Q&A was followed by an informal social, where I benefitted from my first opportunity – aside from my IOA diploma tutorials – to network with the wider acoustics community in person. **P14**

Below:
Rachel Barron
with a colleague,
working at the
IOA Diploma
Liverpool lab



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Experiencing the inclusivity of the acoustics community first-hand was exciting, and I have retained many of the connections which were forged during the social segments of the conference. It was fascinating to see the variety of backgrounds across attendees: university lecturers, consultants, engineers and video game designers; acoustics is truly a diverse field. It was also inspiring to be able to put faces to the names of some of the people whose reports I have referenced during my diploma coursework. This event benefitted Early Careers Group members with the opportunity to create and discuss a wide pool of shared knowledge.

During my degree in chemistry and physics at the University of St Andrews, I had the opportunity to research the intonation of guitar strings made from different polymers. Classical guitarists have observed that the third nylon string is prone to issues; it can sound dull or suffer from poor intonation. I observed that polymer strings with higher operational engineering strain had fewer intonation issues, and the physical design could be optimised to achieve a brighter sound. This project was of great interest to me as it combined areas of material science with my long-held passion for acoustics and design. Following this and a year of experience with IC Audio Engineering, I recently decided to pursue acoustic consultancy. To support this goal, I enrolled in the IOA Diploma in Vibration and Noise Control. This has been a superb foundation of vocational knowledge in physics, engineering and legislation pertaining to sound. The Art of Being a Consultant offered a natural extension to the diploma skill set; demystifying the administrative and client-facing elements of a consultant's work.

How the IOA Bursary Fund helped

While planning my attendance at the conference, I discovered the IOA Bursary Fund, which would help financially support young consultants and students like myself. The application process was smooth thanks to clear online guidance and prompt confirmation emails from the IOA Bursary Fund Team. The form was succinct, asking for just a few important details about myself and the event, expense

estimates and a brief summary of my motivation for attending. The IOA has been efficient and generous throughout the process, and I do not hesitate to recommend applying for this bursary.

I would like to sincerely thank the IOA for granting this bursary. The knowledge and inspiration I gained from attending my first conference will be invaluable to my performance as an early-career acoustician. Their financial assistance makes this event and others like it more accessible to fledgling acousticians and, ultimately, facilitates a developing acoustic industry. The acoustics profession itself will benefit since this event will boost my fascination for the field. Ultimately, I will pass along what I learn to others through mentorship and recommending the conference in future years.

Jianqiao Cui

In 2024, I had the privilege of attending Inter-noise where I presented my research, *From simulation to reality: tackling data mismatches in speech enhancement with unsupervised pre-training*. The conference, held in Paris, brought together leading acousticians, researchers and industry experts to share cutting-edge advancements in noise control and signal processing. My participation was made possible by the generous support of the IOA Bursary Fund and I am deeply grateful for their sponsorship, which enabled me to showcase my

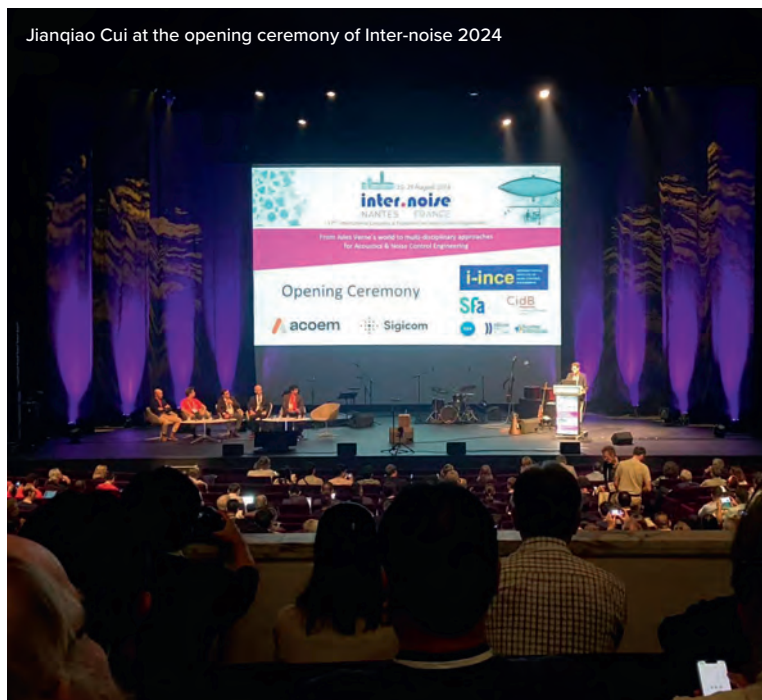
work and engage with the global acoustics community.

Presenting my research: bridging the gap between simulation and reality

My presentation focused on an innovative approach to speech enhancement, a critical technology for applications like telecommunication systems, hearing aids and smart speakers. Traditional methods often struggle with data mismatch – the discrepancy between simulated training data and real-world noisy environments. To address this, I proposed a hybrid framework combining unsupervised pre-training with supervised fine-tuning, leveraging unpaired noisy and clean speech data to simulate supervised learning without requiring costly paired datasets.

At the heart of my method is a generative adversarial network (GAN) architecture, featuring a generator that processes both magnitude and complex-domain features, alongside a discriminator optimised for perceptual metrics like PESQ and STOI. Through rigorous experiments, I demonstrated that this approach outperforms state-of-the-art techniques, particularly in real-world scenarios with unseen noise conditions. The audience responded enthusiastically, with many expressing interests in the potential applications for assistive technologies and remote communication. ☺

Jianqiao Cui at the opening ceremony of Inter-noise 2024



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Acoustic challenges with air source heat pumps – a London Branch one day conference

By Dr Haydar Aygun, LSBU, on behalf of the IOA London Branch

The IOA London Branch and the Renewable Energy Advisory Group (REAG) hosted an event at LSBU about the acoustics challenges of air source heat pumps, where 140 members from industry, academics, local authorities and policy makers met to discuss and share recent developments and findings on heat pump-induced noise.



Overview of the day

The event started with an overview on ASHP policy by Joseph Rogers, which covered the technology, the wider policy landscape for ASHPs and the Department for Energy Security and Net Zero work on ASHPs. A talk on the regulations around Permitted Development Rights (PDRs) and their compliance with the Microgeneration Certificate Scheme MCS 020 was given by Rebecca Hogg and included the new MCS 020 a) planning standard noise assessment methodology and how ASHP installations in the retrofit market could be eligible for the government Boiler Upgrade Scheme grant.

Jack Harvie-Clark then further discussed MCS 020 a) and other relevant standards with an emphasis on the models from Scotland and EU and alternative criteria that could be used. Calum Maclean emphasised the importance of performance factors for the long-term roll-out of ASHPs. Nicola Stedman presented a comparison of ASHP assessment methods investigating the potential differences between three methodologies including manufacturers' sound data used for the assessment of ASHP-induced noise.

A talk on the financial and efficiency cost of ASHP noise mitigation was delivered by Andy Varley, based on a case study on noise mitigation for a new housing estate, stating that beyond the direct cost of noise mitigation, the impact of noise mitigation **P18**

The application of air source heat pumps (ASHPs) in the buildings industry contributes to reduction in carbon emission.

Noise from ASHPs, however, can be a main source of annoyance and most importantly, can have detrimental consequences on people's health and wellbeing. For example, it could cause annoyance to owners and the nearest noise sensitive residential receptors. The degree of noise annoyance from ASHPs can be affected by acoustic features of the noise, where they are located, how they are installed and sensitivity of noise receptors.

Above: 140 delegates in attendance for Calum Maclean

Noise annoyance is defined as *a feeling of disturbance or dissatisfaction caused by noise*. Recent study shows that ASHPs could increase annoyance significantly, especially in rural areas where background noise levels are lower. More than 20 million heat pumps are expected to be installed to meet net zero targets by 2050 but increased implementation of heat pumps to reach net zero emission, coupled with other environmental noise sources, contributes to overall urban environmental noise.

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Richard Collman shared the insights on enclosing ASHPs, claiming that acoustic panels of enclosures could create quarter wave resonances and standing waves that could exacerbate low frequency tonal noise emitted by the pump's compressor/s. Commercial and private ASHP noise assessments were examined using some case studies by Jonathan Riley. Sound pressure levels of an ASHP in cold weather over 15-day period of real life-use for a typical domestic property were measured and compared with manufacturer data by Josh Rodell. The event was finished with a panel Q&A, hosted by the REAG.

Delegates saw the cost of installation, public perception/misinformation, and installation complexities as main barriers to ASHP uptake. They considered the quality of manufacturers' data, lack of consistency in assessments across the industry, and overly stringent noise limits as the biggest frustration when it comes to noise assessments of ASHPs. Delegates thought that the lack of funding/grants is having the biggest impact on slowing the uptake of ASHPs, followed by misinformation, policy limitations and lack of awareness.

Attendees considered that the compliance with the 37 dB(A) limit could also be demonstrated by means other than the MCS-20 calculation procedure. The majority of delegates consider 37 dB(A) as an appropriate noise limit for ASHPs for permitted development and they also considered that there should be a higher permitted development limit in areas with a background sound level greater than 37 dB(A). All felt that there is a need for further guidance.

[illegible]

Rank	Reason
1st	Provide technical guidance on assessments
2nd	Influence government policy
3rd	Provide education/literature
4th	Raise awareness

We would like to thank all the speakers and panel for sharing their insights. We hope all those who attended took something useful away from the day, and special thanks go to Ben Southgate and Sheema Ali for organising the event with the support from the rest of the IOA London Branch and REAG. 

33

Yes

34

No

BS 4142 absolute levels considered 'low' should align with MC020a for rural areas	Onus on planners to not reject unnecessarily or impose unrealistic requirements	Onus on manufacturers to present more data	Develop a third step, between MCS and planning with BS 4142, such as desk based risk assessment based on open data considering ambient noise, context, and possibly urban/rurals/day/night target levels
Preserving acoustic amenity, and not allowing for 'polluting up' to a sound (noise) level	Introduction of LFN criteria	A measurement verification procedure	Means to consider noise impacts at different subsets of night-time

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Panel discussion

The panel discussion hosted by REAG was chaired by Richard Perkins, Technical Director for Acoustics at Mott MacDonald. The panel comprised Andrew Butt, Planning Team Leader at Octopus Energy Services; Somayya Yaqub, Head of Corporate Health and Safety at Ealing Council; Jack Harvie-Clark, Managing Director at Apex Acoustics Ltd; and Rebecca Hogg, Technical Manager for Acoustics at BSRIA Ltd. The range of perspectives provided valuable discussion points from installation companies, local authorities, acoustics consultancy and ASHP research and development respectively.

The current challenge

The discussion opened with Richard Perkins drawing parallels between current ASHP noise assessment challenges and those faced by the wind energy sector two decades ago. The lack of consistent methodology and inconsistent policy support has led to significant variations in how local authorities approach ASHP applications, creating considerable uncertainty for developers, installers and residents alike.

Andrew Butt offered insights into the practical realities facing installers, disclosing that whilst Octopus Energy achieves an 80% approval rate for planning applications, the remaining 20% face significant challenges that often prove commercially prohibitive. He noted that approximately half of their planning applications result in predictions within a single decibel of the current permitted limit, highlighting how the existing 37 dB L_{Aeq} threshold and compliance with MCS 020 a) creates practical difficulties even for carefully designed installations that would intuitively seem acceptable.

The financial implications proved particularly stark, with customers frequently abandoning ASHP installations when faced with acoustic assessment costs (that may exceed £1,000), instead reverting to conventional gas boilers. This outcome directly conflicts with policy objectives around decarbonising domestic heating and achieving net zero targets.

Domestic versus commercial assessment

A fundamental question emerged around whether ASHPs should be treated as domestic or commercial noise sources, with significant implications for the assessment methodologies applied. The panel reached remarkably strong consensus that ASHPs serving dwellings should be treated as domestic noise sources, regardless of their technical classification but perhaps accounting for heating capacity. Rebecca Hogg suggested using the limit of 45 kW heating capacity for a single ASHP, to align with MCS Standards.

Andrew Butt argued that applying BS 4142 assessment methods to domestic ASHPs represents using 'a hammer too big for the nail,' particularly given the overarching policy drive toward net zero emissions. The standard was developed for industrial facilities and commercial operational noise, not for domestic heating systems that happen to be located externally.

This contrasted with some views from the audience, who believed that BS 4142 did allow for a nuanced argument about context and thus; other routes to demonstrating compliance. However, when installation rates in the hundreds of thousands are required to meet climate demands, all members of the panel believed that a full assessment to BS 4142 for each installation would present a significant obstacle to rollout. On the whole, the audience was split about whether ASHPs should be considered commercial or domestic sources, although in situations where an ASHP installation serves a single dwelling, there was support for this to be treated as domestic.

Jack Harvie-Clark suggested that a differentiation could be based on heating capacity rather than location-based classifications such as urban or rural that can prove arbitrary and inconsistent. This approach could better reflect the actual scale and impact of installations whilst maintaining proportionate assessment requirements.

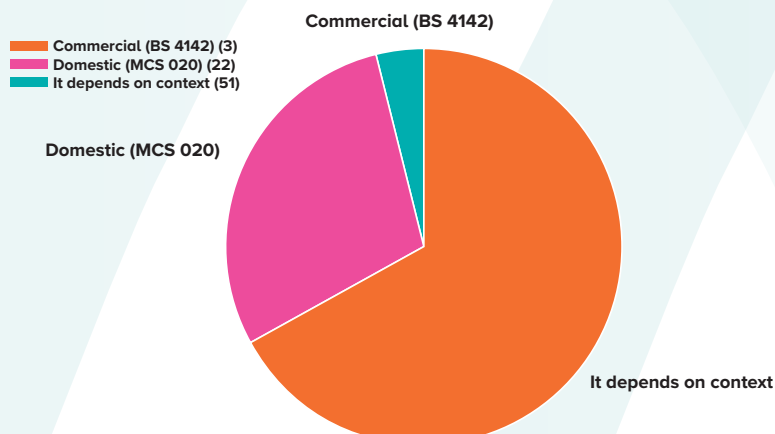
Somayya Yaqub, representing the environmental health perspective, emphasised the critical need for proportionate assessment whilst maintaining appropriate public health protections. She stressed that "we need to enable these installations because it is very important for the future, but not at the expense of public health." This perspective highlighted the delicate balance required between facilitating decarbonisation and protecting residential amenity.

The 37 dB(A) limit: origins and appropriateness

Perhaps the most contentious subject proved to be the appropriateness of the current 37 dB(A) limit for permitted development installations. Richard provided historical context, pointing out that this figure derived from a BS 4142 style approach with an assumed background noise value, but was also consistent with wind turbine guidance, specifically the 35 dB L_{A90} limit plus a 2 dB correction factor.

The industry perspective, articulated primarily through Andrew's practical experience, suggested that the limit may be excessively restrictive for its intended purpose. Many installations not eligible for permitted development could operate comfortably within [P22](#)

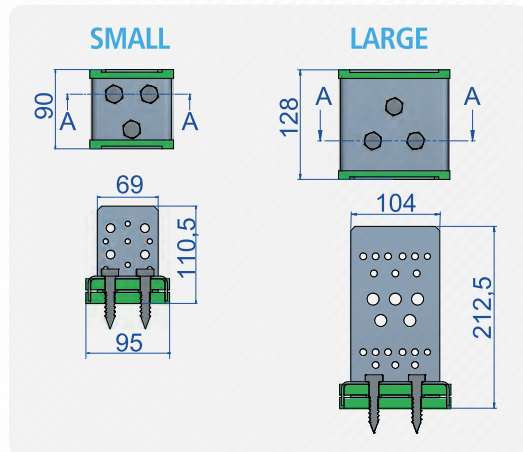
Right:
Figure 1: Policy aside, noise from ASHPs serving dwellings should be assessed as...



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INSTALLATION
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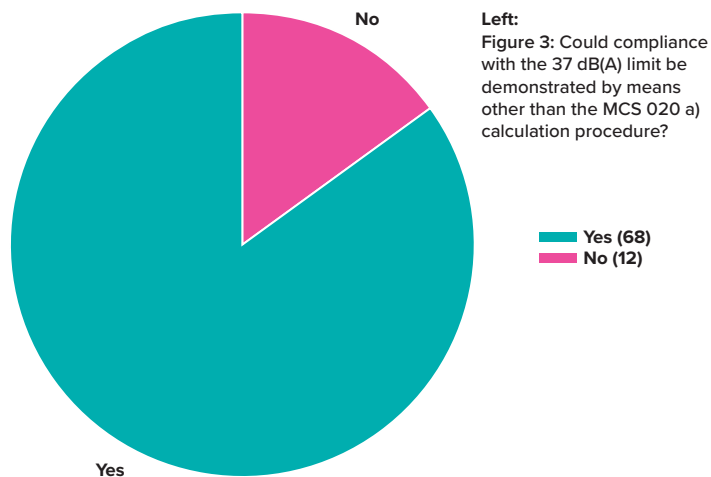
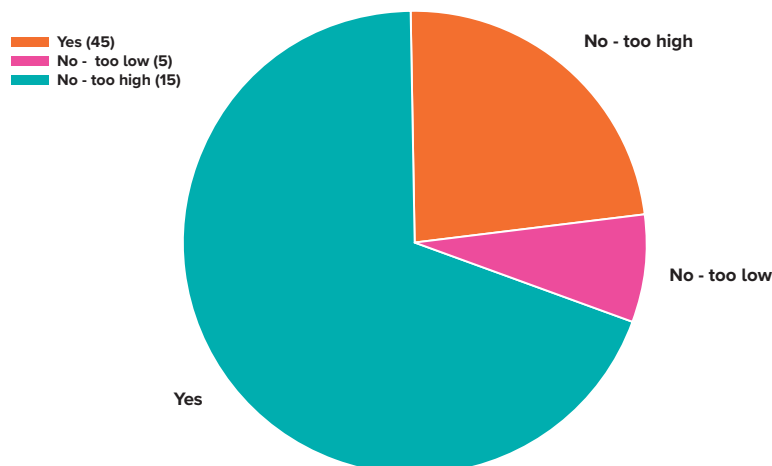
the limit but still require expensive acoustic assessments due to more conservative approaches by planning authorities, with customers ultimately choosing conventional heating systems when faced with disproportionate assessment costs.

Somayya Yaqub and Rebecca Hogg both advocated for maintaining the current limit until more comprehensive evidence becomes available, emphasising the importance of data-driven policy decisions rather than reactive changes based on commercial pressures. This cautious approach reflects legitimate concerns about protecting residential amenity whilst acknowledging the lack of comprehensive post-installation monitoring data.

Research perspectives, particularly from Jack Harvie-Clark, highlighted that 37 dB(A) appears approximately consistent with night-time limits in other European countries, where daytime limits are typically 45 or 50 dB(A). He suggested that separate daytime limits might prove beneficial given the different usage patterns and ambient noise levels throughout the day. The temporal variation in ASHP operation, with higher demand during colder periods when windows are typically closed, adds complexity to the assessment challenge.

Audience polling revealed the divided nature of professional opinion on this topic, with 45 respondents considering 37 dB(A) appropriate, whilst five found it too low and 14 too high. This distribution suggests the current limit may represent a reasonable compromise position, though the significant minority considering it inappropriate could indicate room for refinement.

Right:
Figure 2: Is 37 dB(A) an appropriate noise limit for ASHPs for permitted development?



Left:
Figure 3: Could compliance with the 37 dB(A) limit be demonstrated by means other than the MCS 020 a) calculation procedure?

Jack Harvie-Clark also suggested that compliance with the 37 dB(A) limit could be demonstrated using methods other than the noise assessment procedure from MCS 020 a). This is likely to mean calculation using ISO 9613 in most situations, which has been demonstrated to calculate lower levels at receptor locations. The audience reacted very positively to this suggestion.

Assessment method challenges and inconsistencies

The discussion revealed alarming disparities in how different assessment methods are applied across local authorities, creating a postcode lottery for potential ASHP adopters. The MCS 020 a) standard provides a simplified calculation procedure with an absolute 37 dB(A) limit, offering clarity and consistency but potentially lacking the nuance required for complex acoustic environments. Rebecca Hogg reminded the audience that MCS 020 a) is an acoustic standard used by non-acousticians and must therefore be acoustically robust but also useable for ASHP installers.

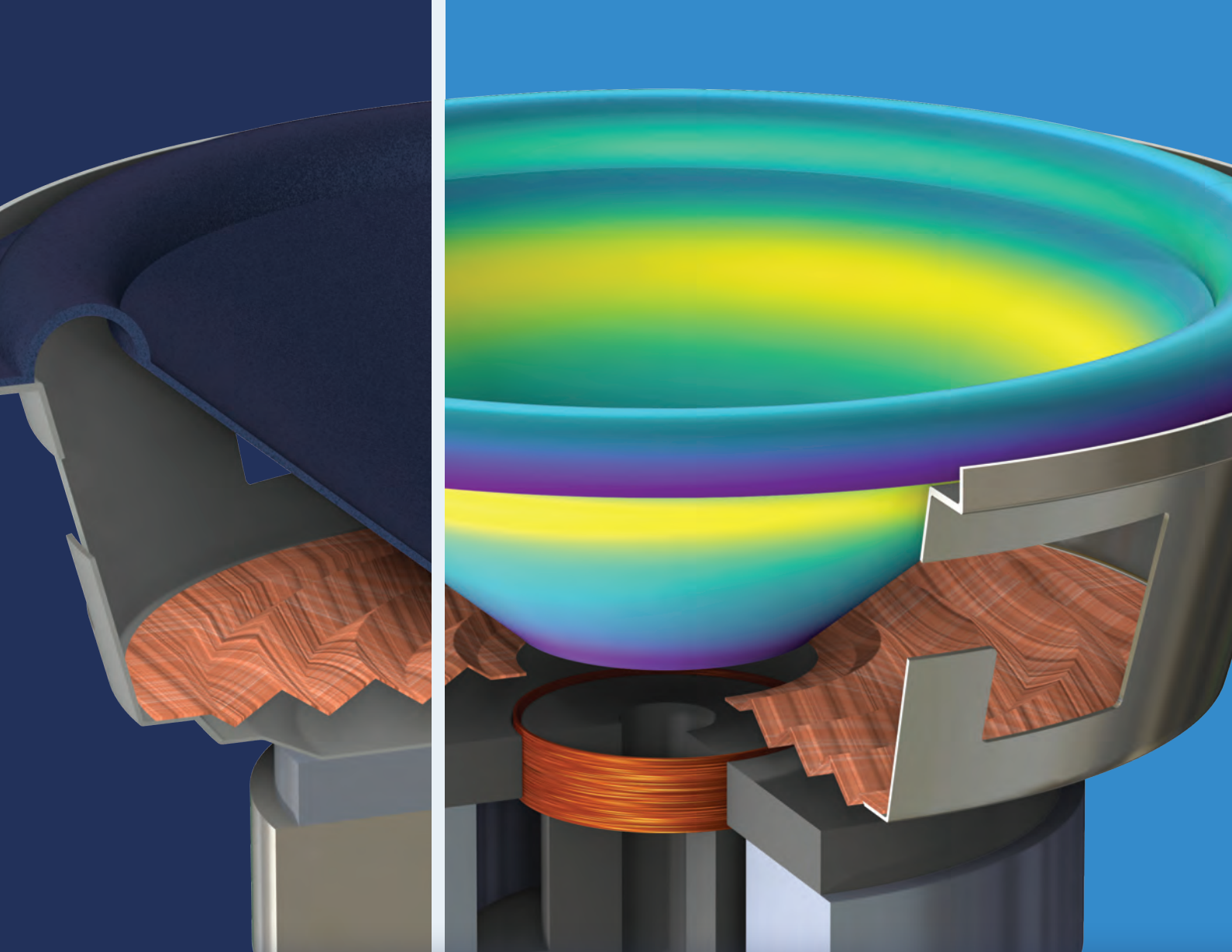
Conversely, BS 4142 offers more sophisticated analysis by comparing ASHP noise against background noise levels but requires expensive baseline surveys and specialist acoustic expertise that add significantly to project costs. The standard was developed for commercial and industrial noise sources and includes penalty factors for tonal, impulsive, or intermittent characteristics that may not be appropriate for domestic heating equipment, and cannot be known at the design stage.

Andrew Butt described reviewing ASHP applications across several local authorities. The approaches varied dramatically, ranging from straightforward approvals for installations predicting 44-45 dB with minimal conditions, to authorities demanding comprehensive BS 4142 assessments both before and after installation, effectively doubling the assessment burden.

Some authorities appeared to apply standard conditions regardless of individual circumstances, whilst others demonstrated more nuanced understanding of the technology and its acoustic characteristics. This inconsistency creates significant commercial uncertainty and may discourage ASHP adoption in areas where more stringent interpretations apply.

Practical solutions and industry innovation

Several practical solutions gained considerable traction during the discussion. The concept of a tiered assessment methodology attracted particular support, where MCS 020 a) would serve as the



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primary assessment tool for most installations, with BS 4142 reserved for edge cases or acoustically complex situations. Clear, objective triggers would determine when enhanced assessment becomes necessary, reducing subjectivity in decision-making.

The discussion emphasised that installation quality frequently matters more than equipment specifications in determining actual noise impact. Many complaints stem from poor installation practices, inadequate vibration isolation, or inappropriate siting rather than inherent equipment characteristics. This observation highlights the crucial importance of installer training, quality control and adherence to manufacturer guidelines.

the complex mix of urban, suburban and rural characteristics found in many areas. The existing planning system's complexity would be further increased by introducing additional zoning criteria, potentially creating more confusion rather than clarity.

The path forward: guidance development and industry collaboration

Strong support emerged for updated IOA guidance, with polling showing 59 participants in favour and only three against. The proposed guidance should include clear examples for different scenarios covering rural, urban, retrofit and new-build installations. Practical advice for planners and

environmental health officers would help reduce the current inconsistencies in application and interpretation.

The guidance development process should involve collaboration with the Chartered Institute of Environmental Health and other relevant stakeholders to ensure broad professional acceptance. This collaborative approach proved successful with wind turbine noise guidance and could provide a template for ASHP acoustics.

Richard Perkins announced plans to expand the existing ASHP working group to develop this updated guidance, drawing on the insights from this panel discussion and ongoing stakeholder

International context and comparative approaches

Jack Harvie-Clark provided valuable international perspective, noting that most European countries have zonal planning systems with different noise limits for rural and urban areas. These systems recognise that appropriate noise levels vary significantly with local acoustic environments, from quiet rural settings to busy urban locations with substantial traffic noise.

However, the panel acknowledged practical challenges in defining such zones consistently across the UK, particularly given

Below:
Figure 4:
Is further guidance
necessary?

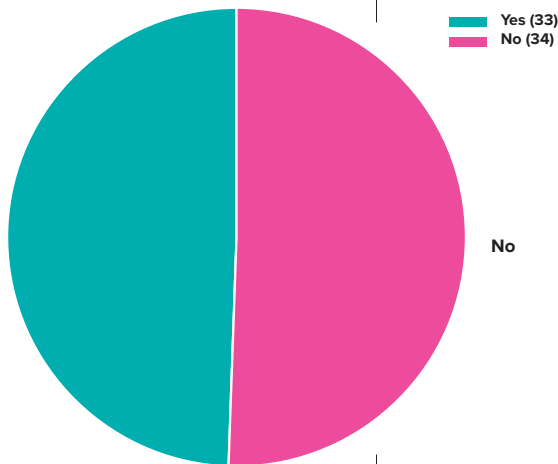


engagement. The working group would benefit from volunteers with practical experience across different aspects of the industry.

Regulatory reform and policy implications

The discussion highlighted a critical policy tension between enabling net zero ambitions and maintaining appropriate noise protections for residents. The current regulatory framework, whilst well-intentioned, creates unnecessary barriers for straightforward installations whilst potentially under-protecting residents in genuinely problematic situations.

The broader question of whether planning applications should automatically adopt the same requirements as permitted development gained mixed support, with 33 participants in favour and 34 against. This close division suggests participants prefer the idea of more nuanced approaches rather than blanket harmonisation.



Quality assurance and professional standards

The discussion revealed variations in professional practice, with some acoustic consultants applying over-conservative interpretations to minimise planning hold-ups. The IOA has an important role in promoting consistent, appropriate professional standards through guidance, training and continuing professional development.

Installation quality emerged as a critical factor, with poor workmanship often creating noise problems that proper design and installation would avoid. This highlights the importance of installer competence schemes and quality



Above: Members of the panel LR Andrew Butt, Somayya Yaqub, Jack Harvie-Clark, Rebecca Hogg

assurance processes, particularly as the market expands rapidly to meet government targets.

The MCS certification scheme provides some quality assurance, but participants suggested this could be strengthened with more specific acoustic requirements and post-installation monitoring. Learning from complaints and resolving installation issues provides valuable feedback for improving future practice.

Conclusion and future prospects

This panel discussion successfully demonstrated both the challenges and opportunities in ASHP noise assessment. Whilst technical solutions clearly exist, the primary barriers prove to be inconsistent application and lack of practical guidance rather than fundamental technical limitations.

The industry consensus on treating ASHPs serving single dwellings as domestic noise sources, combined with support for flexible, tiered assessment approaches, provides a solid foundation for developing improved guidance. A key takeaway was that 37 dB(A) was generally

considered to be an appropriate limit in most domestic situations. The IOA's commitment to updating its guidance, which had acted as a 'bridge', whilst the MCS noise assessment procedure was under review, can now be informed by this discussion and ongoing stakeholder engagement. It offers potential for resolving current inconsistencies and supporting the UK's transition to sustainable heating systems as positively as possible.

The success of previous IOA guidance on wind turbine noise, which helped standardise assessment approaches and reduce planning conflicts, provides a positive precedent. With appropriate collaboration between industry, local authorities and acoustic professionals, similar progress should prove achievable for the ASHP noise assessment, noting that this is in a domestic setting.

REAG welcomes input from members interested in contributing to ASHP guidance development, recognising that broad professional engagement will be essential for developing guidance that proves both technically robust and practically applicable. ☺

Contributors to this article:

Jack Harvie-Clark, Managing Director at Apex Acoustics Ltd

Rebecca Hogg, Technical Manager for Acoustics at BSRIA Ltd

Richard Perkins, Technical Director for Acoustics at Mott MacDonald

Peter Rogers, Managing Director at Sustainable Acoustics Ltd

Matt Torjussen, Acoustics Lead at ANV Measurement Systems

ANC award winners announced

The acoustics community came out in force to celebrate project successes across the sector at the ANC 2025 Awards.

Held after the ANC's annual conference in June, the awards were presented by BBC science correspondent, Pallab Ghosh.

Earlier in the day, the shortlisted entrants each gave four-minute presentations, setting out the highlights of their individual award entry.

Promoting and recognising excellence among UK acoustic consultants, the awards look for examples of work that display innovation and originality in acoustic design or approach to a particular project. They were judged by a panel made up of consultants, academics, suppliers and those with specialist knowledge of each award category.

The awards ceremony capped a highly successful conference at the Crowne Plaza, Birmingham, which covered three main subject areas; the health effects of noise, emerging technologies and applications of bespoke assessment methods.



Justifiably jubilant ANC Award winners



Results

Sustainability (sponsored by the Institute of Acoustics)

Winner: SRL Technical Services, for Beaulieu Park Primary School

Highly commended: Ion Acoustics, for Mulberry Academy, London Dock

See more about the Beaulieu Park Primary School project here:

www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Sustainability-Award.pdf

Building acoustics (sponsored by AcSoft)

Winner: Cundall, for Pattern Shop

Highly commended: Create Consulting Engineers, for Ironworks

Commended: Ion Acoustics, for Mulberry Academy, London Dock

See more about the Pattern Shop project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Building-Acoustics-Award.pdf

Sports and leisure (sponsored by Cirrus Research)

Winner: Adrian James Acoustics, for Roarr! Dinosaur Theme Park

Highly commended: Peninsular Acoustics, for Formby Village Padel Club

See more about the Roarr! project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Sports-Leisure-Award.pdf

Vibration prediction and control (sponsored by Getzner)

Winner: Cahill Design Consultants, for Oseyo, London Bridge

Winner: Create Consulting Engineers, for St George's Hospital

Highly commended: Hoare Lea, for Oxford Instruments

See more about the Oseyo project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Vibration-Cahill.pdf

Performance spaces (sponsored by CMS Danskin)

Winner: Sandy Brown, for The Halls, Wolverhampton

Highly commended: SRL Technical Services, for Co-op Live, Manchester

Commended: Acoustic Consultants, for Albert Hall, Swansea

See more about The Halls project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Performance-Spaces-Award.pdf

Studios and clubs (sponsored by CDM Stravitec)

Winner: Hoare Lea, for Eastbrook Studios

Highly commended: Suono, RBA Acoustics and Hoare Lea, for Corsica Studios

Commended: Hunter Acoustics, for New Recording Studio Facilities, Care for the Family

See more about the Eastbrook Studios project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Studios-Clubs-Award.pdf

Environmental noise (sponsored by ANV Measurement Systems)

Winner: Red Twin, for De-Tuning of Whistling Brise Soleil

Commended: WSP, for Tungsten West

See more about the Red Twin project here: www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Environmental-Noise-Award.pdf

Innovation (sponsored by Mason)

Winner: Stantec, for BBC Innovative Noise at Work Risk Management System

Highly commended: Buro Happold/Vanguardia, for Visa Live at le Louvre

Commended: Peninsular Acoustics, for Formby Village Padel Club

Commended: SRL Technical Services, for Co-op Live, Manchester

Commended: WSP, for Tungsten West

See more about the BBC Innovative Noise at Work Risk Management System here:

<https://www.association-of-noise-consultants.co.uk/wp-content/uploads/2025/06/ANC-Awards-2025-Innovation-Award.pdf>

More details about all the 2025 award winners can be found at

<https://www.association-of-noise-consultants.co.uk>

ANC sponsors new award for sound sustainability solutions

In partnership with the Association of Noise Consultants (ANC) and ANV Measurement Systems, a new award recognising the development of sustainable solutions in acoustics has been launched under the 2025 John Connell Awards.

The John Connell Sustainable Development Award has been introduced as a new category and it is open to government, local government, industry, organisations and individuals throughout the UK and internationally, when there is also a benefit to the UK.

The John Connell Awards recognise innovative and/or novel services, campaigns, products and programmes that are shining examples of community co-operation, co-production, diversity and inclusivity, education and outreach, and creative solutions to cut noise and deliver sustainable soundscapes and good quality liveable, 'listenable' places.

The new John Connell Sustainable Development Award will recognise and encourage the development of sustainable development products, services and solutions that reduce noise and/or improve sound to benefit the environment, society in terms of health and wellbeing and the economy in line with the relevant/applicable areas of the UN Sustainable Development Goals.

The category is purposely broad to reflect Lindsay's Wheel of Acoustics and the wide-ranging impact of the acoustics industry on sustainability.

Entries for this award should meet at least one of the following criteria:

- new or enhanced product(s) or solutions demonstrating significant and/or novel sustainability in technological, managerial and/or process advancement(s) to resolve noise and/or improve the sound environment, and/or
- organisations demonstrating a history of sustainable development for more than two years to resolve noise and/or improve the sound environment.

Louise Beamish, Chair of the ANC, said: "The new John Connell Sustainable Development Award is a welcome addition and will recognise the importance of acoustics in sustainability."

Find out more

More details can be found at <https://www.theanc.co.uk/john-connell-sustainable-development-award-2025/>

All submissions should be made to info@theanc.co.uk by Friday 19 September and finalists will be announced by Tuesday 7 October 2025.

Award winners will be announced at the John Connell Awards held at the Palace of Westminster on Wednesday 22 October 2025. ©



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association-of-noise-consultants.co.uk/events

You're Banned!

Early positive and inclusive experiences of STEM careers (including acoustics) are essential to widening access and interest in 'non-traditional' subjects and careers.

By Jenny King

This summer marked the fourth consecutive year that IOA STEM Ambassadors have visited

St Oscar Romero's School in Worthing to deliver the *You're Banned!* activity, designed by Richard Collman. This year, we were joined by AECOM's acoustic summer placement student, Harry, who bravely stepped up to help deliver sessions after just one week of acoustics experience! The two pairs of ambassadors each delivered six lessons, reaching more than 250 students over the course of the day.

Intended to teach students about sound insulation and the properties of various materials, the *You're Banned!* task aims to provide economically viable sound proofing for a music practice room.

By integrating theoretical knowledge with hands-on experience, the activity aims to make the principles of sound insulation tangible and memorable for the students.

The lesson began with a brief introduction to soundwaves, how they travel and the concept of sound insulation. The STEM Ambassadors explained the basics of acoustics in an engaging and accessible manner, so that the students could grasp the concepts.

The project

Following the introduction, the students were divided into groups and given various materials such as foams of different densities, wood and metal along with a metal frame that the materials could be clipped into. Each group was tasked with constructing a small model room and selecting partition materials to insulate it from an internal sound source. Each material had a cost and the group was given budget to spend on insulation. The objective



Above: (L-R): STEM Ambassadors: Andy Wardle (Academy of Contemporary Music), Matt Muirhead (AECOM), Harry Vivian (AECOM) and Jenny King (AECOM)

was to minimise the amount of sound that could penetrate the walls of their model room, whilst staying within the budget.

Throughout the activity, the STEM Ambassadors moved between groups, providing guidance, answering questions and offering insights into the properties of different materials. This hands-on approach allowed students to experiment with various combinations of materials and observe their effectiveness in real-time.

Testing times

One of the standout moments of the activity was the testing phase. Each group had one test measurement to see the current performance of their set up. Whilst trying to get a low background sound level for consistent testing (this proved difficult in a classroom!), a sound source was placed within each test rig and the break out noise was measured using a sound level meter app. This allowed the students to listen and observe the immediate impact of their material choices. Those who had left air gaps quickly realised that they needed to be filled. Some of the best-performing teams had used all available materials but exceeded the budget, prompting them to reconsider which

materials were most cost-effective to remove without compromising performance. A final test and tot up of money spent on materials revealed the winner with the best cost/benefit ratio!

Students compared results, discussed what worked best, and theorised why certain materials performed better than others. This experiential learning process not only reinforced their understanding of acoustics but also encouraged critical thinking and collaboration.

Ready for next year!

As our relationship with the school continues to grow, it's been incredibly rewarding to see the enthusiasm from students year after year. We were also pleased to see the school's brand-new sixth form building, which we used as a real-life example of construction noise during our visit last year! We're proud to play a small part in encouraging young people to explore careers in acoustics and we're already looking forward to returning next year.

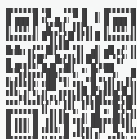
After the event, science teacher, Pete Clarke, wrote: *Many thanks Matt for visiting us again and for getting through 12 classes! Please pass on my thanks to Andy, Jenny and Harry. We are really grateful that this has become an annual event!* 🌀



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Current parliamentary and policy news

It might be summer holidays for some, but consultations linked to noise continue to keep members busy. Our response to the consultation on revised ETSU-R-97 guidance on noise rating for onshore wind turbines will be online once it is finalised, Wales have published consultations on revised guidance incorporating soundscapes and on vehicle idling, and Northern Ireland have consulted on industry noise action plans. These come as latest European research reminds us of the health impacts of transport noise on land and at sea.

Onshore wind strategy includes update of ETSU-R-97

A consultation on updating guidance on the assessment and rating of onshore wind turbines – ETSU-R-97 – first published in 1996 – was undertaken during the summer. The Department for Energy Security and Net Zero (DESNZ) stated the aim of this technical guidance is to provide advice to local authorities on appraising planning applications for onshore wind; aid the deployment of suitable wind developments and ensure noise is robustly controlled. They further state that proposed updates have been developed working closely with acoustic experts and leading scientists and aim to align the guidance with available evidence, developments in turbine technology and wind turbine noise. The IOA held an online meeting, co-ordinated by Richard Perkins, via which they shared a questionnaire to inform our response which will be submitted once approved. This was launched alongside the Onshore Wind Taskforce Strategy. The strategy sets out steps to help deliver up to 29GW of onshore wind by 2030. This includes a pledge to consult on revised permitted development rights to support small-scale deployment and repowering by the end of 2025. It states that permitted development rights for stand-alone or building-mounted onshore wind turbines only currently apply to detached houses, and as these rules have not been updated since 2011, increased demand for small-scale onshore wind turbines may allow for an update.

See the proposed wind turbine noise guidance updates here: <https://tinyurl.com/ETSUR97> and the proposed onshore wind strategy updates here: <https://www.gov.uk/government/publications/onshore-wind-strategy>

Transport noise exposure in Europe – new report

A report published by the European Environment Agency (EEA) in June finds long-term exposure to transport noise in Europe is linked to negative health impacts including cardiovascular diseases, mental illness, diabetes and premature death. It finds children and adolescents are particularly vulnerable, reporting new research finds noise exposure in children contributes to reading impairment, behavioural problems and obesity. The report says noise pollution from transport sources results in annual economic costs of 0.6% GDP each year. It is based on reporting by EEA Member States under the Environmental Noise Directive and examines the impacts of noise on human health, biodiversity and protected natural areas. Disruption of marine life by underwater noise pollution from shipping, offshore construction and marine exploration is also covered. Areas with the highest underwater noise exposure in Europe include parts of the English Channel. It concludes progress in decreasing exposure to harmful noise levels has been slow, and that the EU zero pollution objective to reduce the number of people chronically disturbed by transport noise by 30% by 2030 is unlikely to be met without additional measures. Read the full report here: <https://tinyurl.com/eeaharmfulnoise>

Northern Ireland consult on industry noise action plan

The Northern Ireland government have consulted on a Round 4 Industry Noise Action Plan setting out how the Department of Agriculture, the Environment and Rural Affairs (DAERA) will deliver its obligations under NI environmental

noise regulations. The action plan analyses the results of the industry maps for the Belfast agglomeration to identify the numbers of people affected by the highest levels of industrial noise and targets the top 1% for further investigation.

Read the consultation here: <https://tinyurl.com/Nlround4>

Northern Ireland consults on Transport Strategy

The Northern Ireland Department for Infrastructure are consulting on a Transport Strategy to 2025. It is intended that the Transport Vision for 2035 will be transport that is resilient and sustainable, supports connected and inclusive communities, is safe and healthy and supports green growth. While the need to improve air quality and the quality of the urban environment are acknowledged in the draft, there is no reference to addressing noise from transport. The consultation is open until 16 September 2025.

Read the strategy here: <https://tinyurl.com/Nltransportstrategy>

Agent of Change to protect premises from noise complaints

The Department for Business and Trade announced they plan to introduce the 'Agent of Change' principle into national planning and licensing policy. A new National Licensing Policy Framework is proposed which will "streamline and standardise the process for securing planning permission and licenses", removing the patchwork of local rules that currently delay or deter small businesses from opening. This means that entrepreneurs looking to turn empty shops into cafes, bars or music venues will face fewer forms, faster decisions, and lower costs." P32



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The reforms aim to protect long-standing pubs, clubs, and music venues from noise complaints by new developments and make it easier to convert empty shops into social spaces. A call for evidence is anticipated to inform the new policy framework, which 'will be delivered as soon as possible.' Full announcement: **Red tape slashed to revamp high streets with new cafes and bars - GOV.UK**

Standard monitoring of underwater noise from windfarms proposed

Underwater noise was identified as one of the six criteria best suited to standardised monitoring. It was identified in the Marine Management Organisation's (MMO) Strategic Renewables Unit's (SRU) project to progress the implementation of post-consent monitoring standards for offshore wind farms in English waters, for receptors where agreed standards already exist and where standardisation would be appropriate. The project team reviewed the many publications identifying best practice in collecting and reporting offshore wind monitoring data – other environmental receptors chosen were marine mammals, seabirds, benthic habitats¹, fish and shellfish and geophysical surveys. [Read the Standardisation of Post-Consent Environmental Monitoring for Wind Farms in English Waters here: https://tinyurl.com/windfarmsEnglishwaters](https://tinyurl.com/windfarmsEnglishwaters)

Scotland: report on noise influence on whale stranding

Following a mass stranding of 55 pilot whales on the Isle of Lewis in July 2023, the Scottish Government Marine Directorate undertook research to determine whether underwater noise might have played a part in the incident. Acoustic data available from the area in the week leading up to the stranding was analysed. Information from the Ministry of Defence did not suggest any activity that might have impacted the whales. While some sounds from ship echo sounders were noted, given the location of the sound source and of the pilot whales prior to the stranding,

it cannot be determined whether the pilot whales were exposed to these sounds so any potential influence in the stranding is unknown.

[Read the full report here:](#)

Full report

Wales: new guidance covers noise and soundscapes

The Welsh Government has updated its local air quality management guidance, to reflect the noise and soundscape obligations in the Environment (Air Quality and Soundscapes) (Wales) Act 2024. A chapter on Noise outlines responsibilities and points to guidance for Local Authorities in the Planning Guidance Technical Advice Note 11 (TAN11): noise, which the WG also intend to revise in 2025 to include noise and soundscapes.

[Air quality management: guidance for local authorities | GOV.WALES](#)

Wales: consultation on engine idling

The Welsh Government are consulting on new measures to manage noise, air pollution and fuel wastage from stationary vehicle idling. An example given is outside school, where children may be exposed to vehicle emissions, and residents impacted by noise. Communications and behaviour change strategies to discourage idling are proposed, with penalties as a last resort. Currently a Fixed Penalty Notice of £20 can be issued to a driver refusing to turn off their engine. It is proposed to provide local authorities with flexibility to determine a penalty level to reflect local needs, in the range £50 to £100, bringing the penalty more in line with other environmental offences. The consultation is open until 30 September 2025.

<https://www.gov.wales/stationary-vehicle-engine-idling>

Wales: awareness raising consultation

In a consultation setting out a delivery plan for raising awareness, focusing primarily on air pollution, the Welsh Government also acknowledge the health impacts of noise on the well-being of the people and wildlife in Wales. They refer to World Health Organization findings that one in three individuals is annoyed during the daytime, and one in five has disturbed sleep at night because of traffic noise. The draft action plan focuses on education measures around air quality - with one action around raising awareness of firework noise, and another on collating evidence on aspects of indoor environmental quality. The consultation is open until 28 October 2025.

www.gov.wales/promoting-awareness-air-pollution-delivery-plan

Noise labelling for tumble dryers

The Department for Energy and Net Zero (DESNZ) have consulted on new eco-design standards for tumble dryers which include noise ratings. The consultation recognised that 'excessive noise emission can cause disruption especially in open-plan living spaces, apartments and small homes.' The current energy label displays noise emission in decibels (dB(A)) expected from a household tumble dryer during a drying cycle, however, there is currently no standardised classification system to help consumers compare models based on relative noise, from A-D, for noise, to be displayed on the energy label. The new standards aim to improve the efficiency of models on the market, work towards a circular economy and ensure product standards are consistent with key trading partners.

[Read more here: https://www.gov.uk/government/consultations/raising-product-standards-for-household-tumble-dryers](https://www.gov.uk/government/consultations/raising-product-standards-for-household-tumble-dryers) ©



About the author:

Mary Stevens supports the IOA to bring acoustics to the attention of policy makers

References

- ¹ Benthic habitats refer to the ecological region at the lowest level of a body of water, including the sediment surface and some subsurface layers.

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Something for everyone Acoustics 2025

This year's IOA annual conference is to be held on Monday 20 and Tuesday 21 October 2025 at the Doubletree by Hilton Hotel at the Milton Keynes Stadium, where you can meet the sector's leading experts offering topical updates. Make the most of the rare networking opportunities and browse an exhibition of professional advisers and companies dedicated to providing high quality services to the acoustics sector.

By Martin Lester, Chair of the Institute of Acoustics' annual conference



Over the two days we feature the keynote Rayleigh Medal lecture, papers covering topics that dovetail with the Institute of Acoustics' Special Interest Groups listed below, an exhibition and conference dinner.

- Environmental Sound Group,
- Noise & Vibration Engineering Group,
- Musical Acoustics Group,
- Speech & Hearing Group,
- Early Careers Group,
- Physical Acoustics Group,
- Building Acoustics Group,
- Sound Noise & Health Group,
- Measurement & Instrumentation Group,
- Renewable Energy Advisory Group, and the
- Regulation, Governance & Guidance Group.

Keynote

Phillip Joseph, this year's recipient of the Institute of Acoustics' Rayleigh Medal, will deliver his lecture just before lunch on the Monday. The IOA AGM is scheduled for day one, followed by the drinks reception (sponsored by Farrat Isolevel Ltd) and conference dinner. Throughout the conference, the exhibition space will be the hub for refreshments, networking and the chance to discover what our exhibitors have to share.

Pre conference events

There are two social events on the evening before the conference (19 October):

- **18.30:** Sponsored by Mason UK, the Early Careers Group event at Lane7, 38, Midsummer Place Shopping Centre, Milton Keynes MK9 3GA where mentors and buddies can meet before the conference begins),
- **18.30:** Sponsored by Mason UK, the IOA Central Branch social event at Brew Dog, 316 Midsummer Blvd, Milton Keynes MK9 2EA (everyone is invited). 

CONFERENCE DETAILS

**Monday 20 and
Tuesday 21 October 2025**

Doubletree by Hilton Hotel,
Stadium Way West,
Milton Keynes MK1 1ST

Register and book here:

<https://qrco.de/acoustics25>

or scan the QR code.



Below: Phillip Joseph, this year's recipient of the IOA's Rayleigh Medal, will deliver his lecture on day one of the conference



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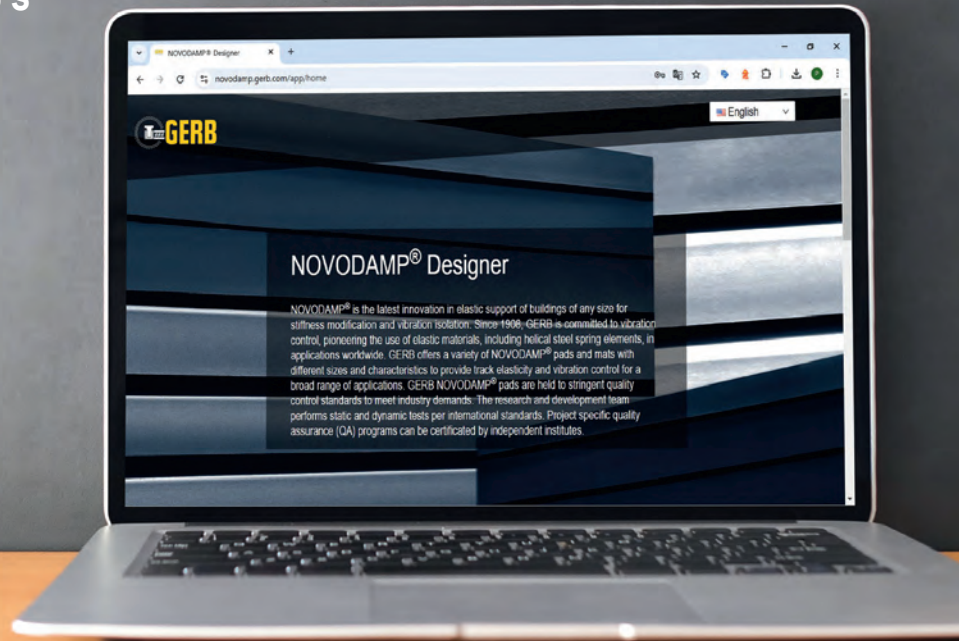


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EARLY CAREERS GROUP

An introduction to auditorium acoustics presented by Chris Hunt

At a recent IOA Early Careers Group webinar held on 2 July 2025, Daryl Prasad shared his extensive experience in the world of festival acoustics and noise management.

By Aaron Tomlinson

A senior acoustic consultant at Vanguardia specialising in live events, Daryl has worked on hundreds of festivals and currently dedicates more than 200 days a year to noise management across the UK and internationally.

A festival of unparalleled scale

To illustrate the sheer size of Glastonbury Festival, Prasad noted that if it were mapped onto central London, it would cover an area encompassing nine Tube stations – an amusing thought given how welcome a functioning Underground system would be on-site. He also highlighted the historical context of large-scale gatherings, tracing legislation back to pivotal events such as Woodstock and early Isle of Wight festivals.

These events, which attracted unexpectedly vast audiences, were key triggers for regulations requiring a license for any gathering of over 5,000 people.

Throughout his talk, Prasad was keen to reframe perceptions of festival noise consultants. “We’re not the noise police,” he explained. “Think of us more like noise lawyers – our goal is to help the festival stay compliant while ensuring the best possible experience for the audience.” This balancing act is central to his work with local authorities and event organisers. In the case of Glastonbury, the event’s licence – governed by the Licensing Act 2003 – includes specific noise conditions aimed at preventing disturbance. These typically specify permitted days, times and sound level limits at local receptor points.

Planning and monitoring: the heart of noise management

A comprehensive noise management plan (NMP) is essential to any major event. Daryl described how the NMP outlines not only pre-event planning and modelling, but also live mitigation protocols. These range from deploying off-site monitoring teams who report back in real time, to implementing stage-specific limits and adapting systems in response to environmental factors.

Initial planning for new events typically begins with predictive noise modelling. Here, the consultant assesses whether ideal audience levels can be met without breaching off-site limits. If not, relocation may be advised.

Glastonbury specifics: power, wind and receptors

At Glastonbury, sound system power is carefully managed across six site zones, labelled Groups A to F. The Pyramid Stage, for instance, is capped at 100 kW, with other stages operating at reduced levels

At Glastonbury, sound system power is carefully managed across six site zones, the Pyramid Stage, for instance, is capped at 100 kW



depending on time and zone – some late-night tents might drop to as little as 200 W after midnight.

The festival also employs monitoring systems to track sound levels both on- and off-site. Three main off-site receptors – Bush (NE), Old Vicarage (NW), and Mount Pleasant (SW) – play a key role in determining whether on-site levels need adjusting. Wind direction is a crucial factor; for example, a north-westerly wind generally allows for optimal conditions, while other directions may carry sound more directly to sensitive receptors.

Real-time response and stakeholder communication

An essential aspect of the on-site noise management team's role is complaint response. Daryl explained that any complaints from the public are investigated within 10 minutes for locations inside Pilton and within 20 minutes for those outside. These are logged and addressed as part of post-event reporting to stakeholders. On average, Glastonbury sees around 10–20 complaints per event, although this can vary based on the artist and atmospheric conditions. In the event of a breach – such as a shift in wind or temperature – there is often a gradual increase rather than a sudden spike, allowing time for investigation and mitigation. Rain, however, presents a unique challenge; local rain noise can falsely inflate measurements at receptors, making accurate monitoring difficult or impossible.

Daryl Prasad's presentation offered an illuminating look into the complexities of festival acoustics. Far from being a behind-the-scenes technicality, noise management is central to the viability and success of live events. Through careful planning, real-time monitoring and ongoing collaboration with stakeholders, acoustic consultants are a necessity to ensure that festivals can continue to delight audiences – without disturbing the peace.

If teams span across countries, language and cultural barriers may be introduced. Consultants need to be careful to fully explain the abbreviations they use and the rationale for their choices



Acoustic design of the Etihad Rail Passenger Stations Project and lessons learned – a talk by Monika Pachla

By Zach Simcox

Monika Pachla, a senior acoustic consultant at Cundall who specialises in delivering architectural acoustics projects across the Middle East, spoke with the ECG about her experiences with the Etihad Rail Passenger Stations Project.

Monika gave an overview of the design stages for large infrastructure projects, from the concept design to detailed architectural drawings and construction. Understandably, many parties are involved in the process, from stakeholders, to architects, contractors and consultants. This can introduce challenges.

For example, if teams span across countries, language and cultural barriers may be introduced. Consultants need to be careful to fully explain the abbreviations they use and the rationale for their choices.

Monika explained the importance of clear communication throughout the project. Design changes need to be shared across all parties and kept within the defined scope of the project. Failure to do this can lead to problems with conflicting designs between consultants, a breakdown of professionalism between parties and ballooning budgets and timescales.

Thanks again to Monika for sharing her time and experience with the ECG. Keep a lookout for future ECG events on the IOA website at www.ioa.org.uk/events 

Is the third octave method for assessing the audibility of tones in sound fit for purpose?

BS 4142: 2014¹ advises that if the subjective method is not sufficient for assessing the audibility of tones, the one-third octave method and/or the reference method should be used as appropriate.

By Michael Breslin BSc MIOA

The reference method for the assessment of tonal noise in BS 4142 is the Joint Nordic 2 method².

This is based upon the critical band model of masking tones by noise. This model was originally postulated in the 1930s and has been refined and underpinned by extensive subjective testing and analysis³.

The third octave method is described in the title of Annex C as 'the objective method for assessing the audibility of tones in sound'. The text of Annex C is reproduced in full below.

'The test for the presence of a prominent, discrete-frequency spectral component (tone) typically compares the $L_{\text{Zeq,T}}$ sound pressure level averaged over the time when the tone is present in a one-third-octave band with the time-average linear sound pressure levels in the adjacent one-third-octave bands. For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the one-third-octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

The level differences between adjacent one-third-octave bands that identify a tone are:

- 15 dB in the low-frequency one-third-octave bands (25 Hz to 125 Hz);
- 8 dB in the middle-frequency one-third-octave bands (160 Hz to 400 Hz); and
- 5 dB in the high-frequency one-third-octave bands (500 Hz to 10 000 Hz).'

There is no psychoacoustic model or widely established subjective response data underpinning the third octave method.

There are three principal reasons that the third octave method could mislead practitioners who are trying to establish the audibility of tones in a sound:

1. many, perhaps most, real-life noises containing tonal components have many spectral peaks across a range of frequencies resulting in the elevation of several third octave bands rather than a single third octave band in isolation;
2. tones with frequencies near the boundary between two third octave bands will raise the level of both third octave bands making some pure tones undetectable; and

3. at frequencies above around 500 Hz the critical band and third octave band widths are very similar. For tones near the centre of third octave bands, a measured third octave band would contain both the energy from the tone and the energy from masking noise in the surrounding critical band. Under these circumstances the third octave method could identify a tone when no audible tone was present.

These issues are discussed in more detail in the following three sections.

The conclusions of this article are given in the final, fifth section.

Tonal components in real life complex sounds are often invisible in third octave spectra

A pure tone is a sinusoid. However, there may be several tonal components in noise emanating from a commercial or industrial source and they may not be sinusoidal. Non-sinusoidal periodic waveforms analysed in the frequency domain will have a number of components. The combination of several non-sinusoidal periodic components can result in a quite dense cluster of 'spikes' when viewed as a Fast Fourier Transform (FFT).

References

- 1 BS 4142: 2014 +A1:2019. Methods for Rating and Assessing Industrial and Commercial Sound.
- 2 Objective Method for Assessing the Audibility of Tones in Noise. Joint Nordic Method – Version 2. T H Pedersen. M Sondergaard. B Andersen. Published by DELTA Acoustics and Vibration 19/11/1999.
- 3 Psycho-acoustics Facts and Models. E Zwicker and H Fastl. Second Edition. Springer, Berlin 1999. ISBN 3-540-65063-6.

Figure 1 shows the waveform of some industrial noise which has more than one tonal component above the threshold of audibility. Many industrial and commercial operations incorporate fan/pumps which usually have tonal components associated with their blade-passing frequencies and harmonics thereof.

The waveform in **Figure 1** looks to contain a degree of low frequency periodicity upon which other periodic and non-periodic elements are superimposed.

No tonal components are clearly evident from the Z weighted L_{eq} third octave spectrum (see **Figure 2**). Analysis of the level differences between adjacent octave bands does not indicate the presence of a discrete-frequency spectral component in accordance with Annex C.

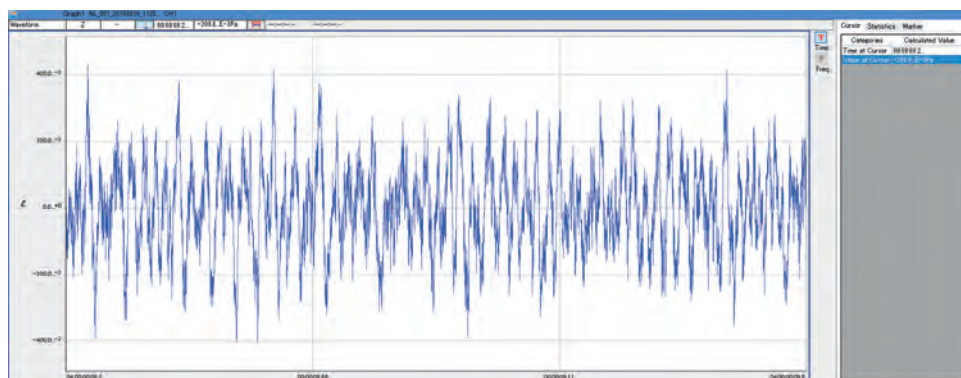
Figure 3 shows the linear averaged, 1.46 Hz resolution, Hanning Window, A-weighted FFT for the same signal up to 6 kHz. It is immediately obvious that there are maxima of at least 8 dB above the surrounding masking sound in the spectrum indicating the presence of audible tones (see Note 2 under D2.2 in Appendix D of BS 4142).

Figure 4 shows the averaged, A-weighted FFT for the same signal up to 1 kHz with a very prominent peak at around 430 Hz.

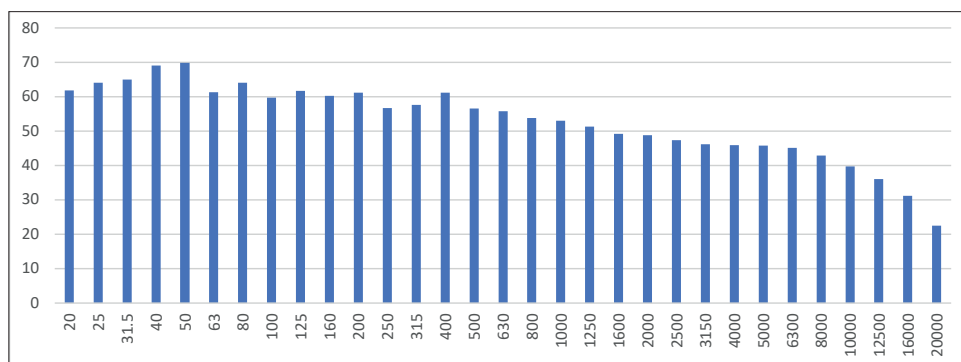
Running a full Joint Nordic 2 assessment of the sample confirms that the 430 Hz component is in the most affected critical band (resulting in a correction of 4.8 dB) but it is clear from the FFT that there are plenty of additional tonal components that are likely to be above the audible threshold and could affect the subjective response to this sound. Nothing in the third octave spectrum suggests the existence of any tonal components.

Some points of detail which are important to note:

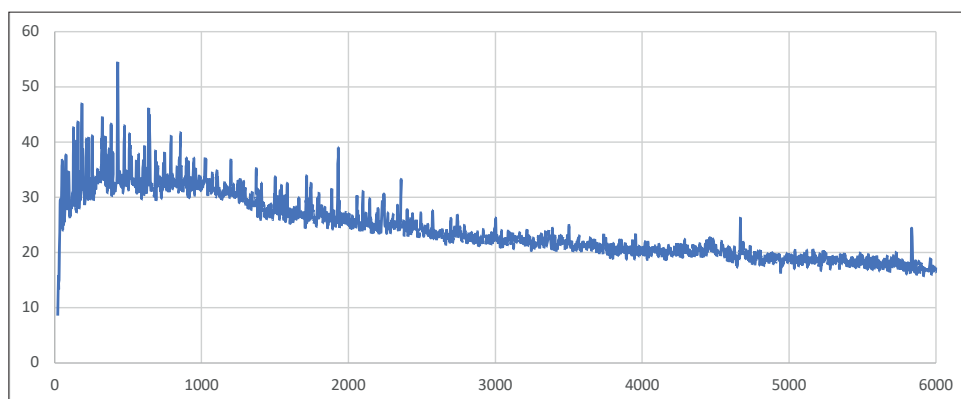
- the Joint Nordic Method 2 only applies corrections when the tonal components are 5 dB or more above the masked threshold (so a correction of 4.8 dB corresponds to 8.8 dB above the masked threshold; and
- the third octave method did not only miss the 430 Hz tone; it missed numerous other audible tones throughout the spectrum. **P40**



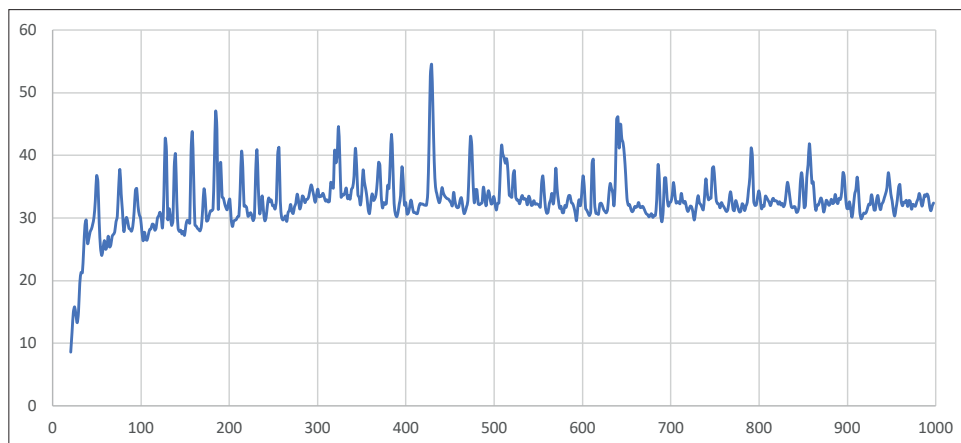
Above: Figure 1: Example industrial noise with some tonal components in the time domain



Above: Figure 2: Third octave band spectrum for sample industrial noise with some tonal components



Above: Figure 3: FFT spectrum for example industrial noise with some tonal components



Above: Figure 4: Zoomed FFT spectrum for example industrial noise with some tonal components

Right:
Figure 5:
Further examples of
industrial noise with
tonal components
not evident using
third octave method

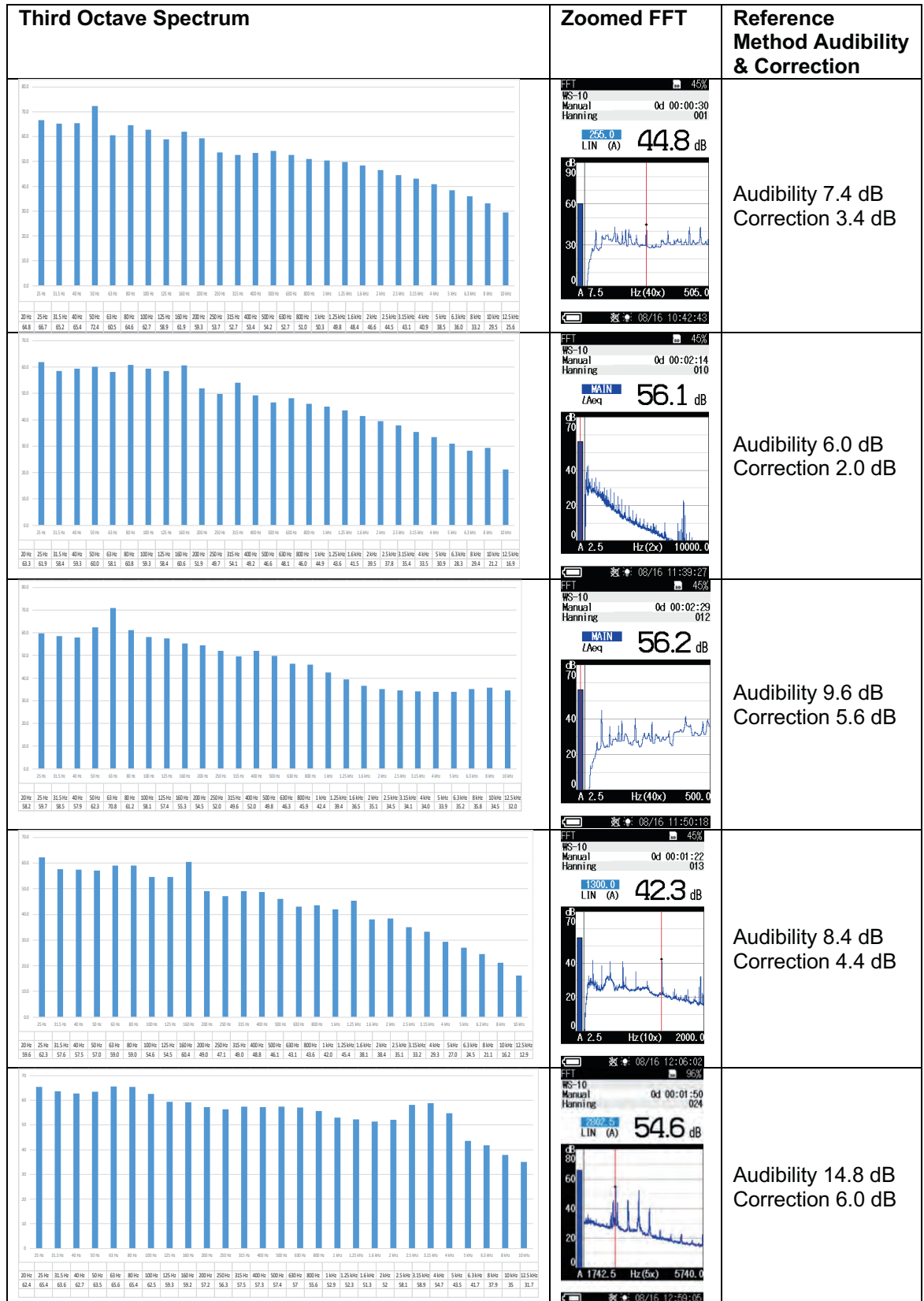
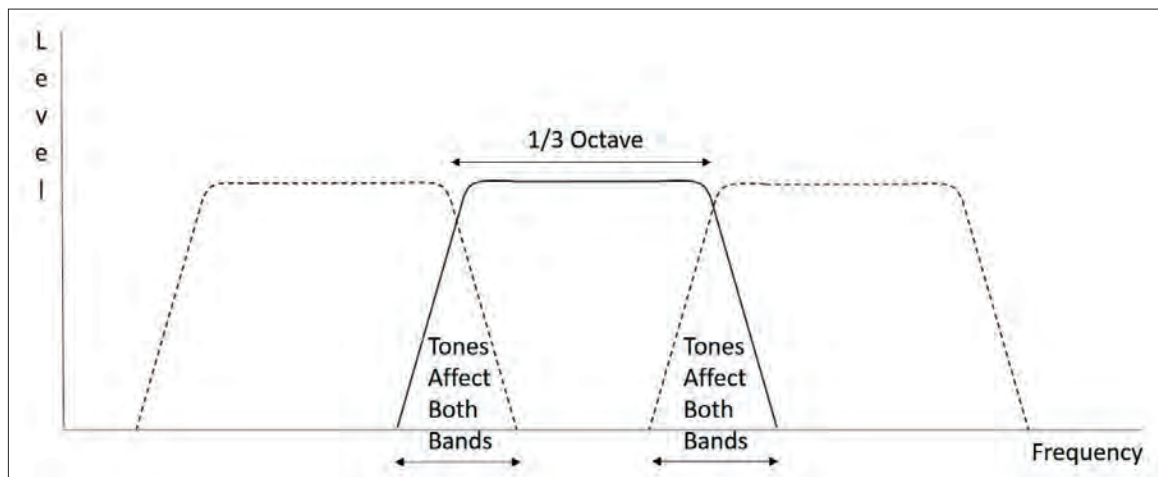


Figure 5 shows five further examples of industrial noise containing tonal components where the third octave method did not identify a tone but applying an FFT and the reference method indicated that audible tonal noise was present.



Above:
Figure 6: Illustration of overlapping filter skirts

•	< 24.2 Hz;	•	550.8 – 573.2 Hz;
•	26.1 – 30.4 Hz;	•	693.2 – 721.5 Hz;
•	32.8 – 38.3 Hz;	•	872.5 – 907.9 Hz;
•	41.4 – 48.2 Hz;	•	1098.7 – 1143.5 Hz;
•	51.9 – 60.6 Hz;	•	1383.1 – 1439.7 Hz;
•	65.4 – 76.5 Hz;	•	1740.6 – 1811.6 Hz;
•	82.4 – 96.3 Hz;	•	2191.9 – 2281.3 Hz;
•	103.7 – 121.1 Hz;	•	2759.6 – 2872.7 Hz;
•	130.6 – 145.9 Hz;	•	3472.9 – 3614.9 Hz;
•	171.7 – 181.9 Hz;	•	4374.1 – 4552.5 Hz;
•	216.2 – 231.2 Hz;	•	5507 – 5729 Hz;
•	272.2 – 291.2 Hz;	•	6931 – 7211 Hz;
•	342.6 – 366.3 Hz;	•	8729 – 9083 Hz; and
•	431.1 – 454.9 Hz;	•	>10987 Hz.

Left: Table 1: Tonal noise 'blind-spots' where the third octave method did not indicate the presence of discrete tonal components even though a pure tone was the only input to the third octave analyzer

Tones with frequencies near the boundary between two third octave bands will raise the level of both third octave bands rendering some tones undetectable using the third octave method.

Real octave and third octave filters are not rectangular. Their upper and lower cut-offs have slopes which overlap resulting in pure tones at some frequencies being significantly represented in the band levels of two adjacent third octave bands.

As a result of this there will be a ranges of frequencies at each boundary between adjacent third octave bands for which it will be impossible for tones (even pure sinusoids) to be detected using the inter-band differences specified in the third octave method i.e.:

- 15 dB from 25 Hz to 125 Hz;
- 8 dB from 160 Hz to 400 Hz; and
- 5 dB from 500 Hz to 10 000 Hz).

for the calibration of octave and third octave filters. To illustrate this problem, measurements were carried out using a Stanford Research Systems DS 360 Ultra Low Distortion Signal Generator connected via a suitable dummy microphone to a BS EN 61672⁴ Class 1 Integrating Sound Level Meter equipped with IEC 61260: 1995⁵ Class 1 third octave filters (Base 10). The sound level meter and filter specifications are representative of the highest performance units currently used by practitioners.

Pure tones were input into the sound level meter via the dummy microphone and the frequency ranges where the third octave test did not detect the presence of discrete frequency spectral components (tones) were noted. The maximum expanded uncertainty for these measurements was

estimated to be ± 0.2 dB, based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a coverage probability of approximately 95%.

The results demonstrated that, using the Class 1 instrumentation, the third octave method was unable to detect pure tones (without any masking noise) in the frequency ranges set out in **Table 1** (above) (because the specified difference in adjacent third octave bands was not achieved).

Graphing the ranges over which the third octave method would detect a pure tone in isolation and the gaps where it cannot work on linear and logarithmic scales illustrates that these gaps are:

- small in absolute terms but proportionally large at low frequencies; and
- larger but proportionally small at higher frequencies. [P42](#)

References

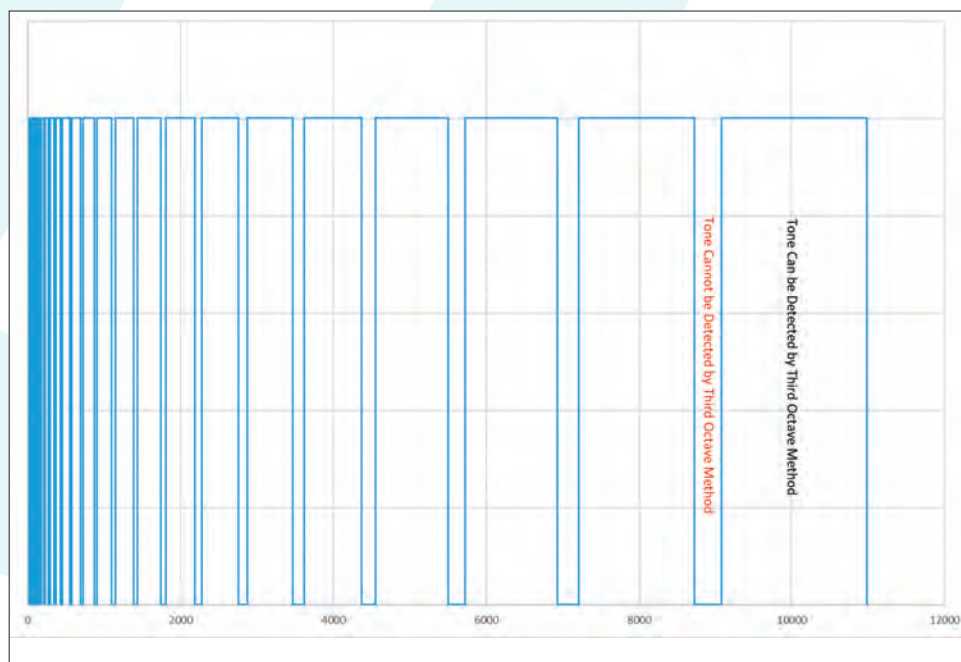
4. BS EN 61672-1:2003. Electroacoustics – Sound Level Meters – Part 1: Specifications.
5. IEC 61260: 1995. Electroacoustics – Octave-Band and Fractional Octave-Band Filters.

Above around 500 Hz third octaves could contain both a tone and the noise in the critical band that would mask it.

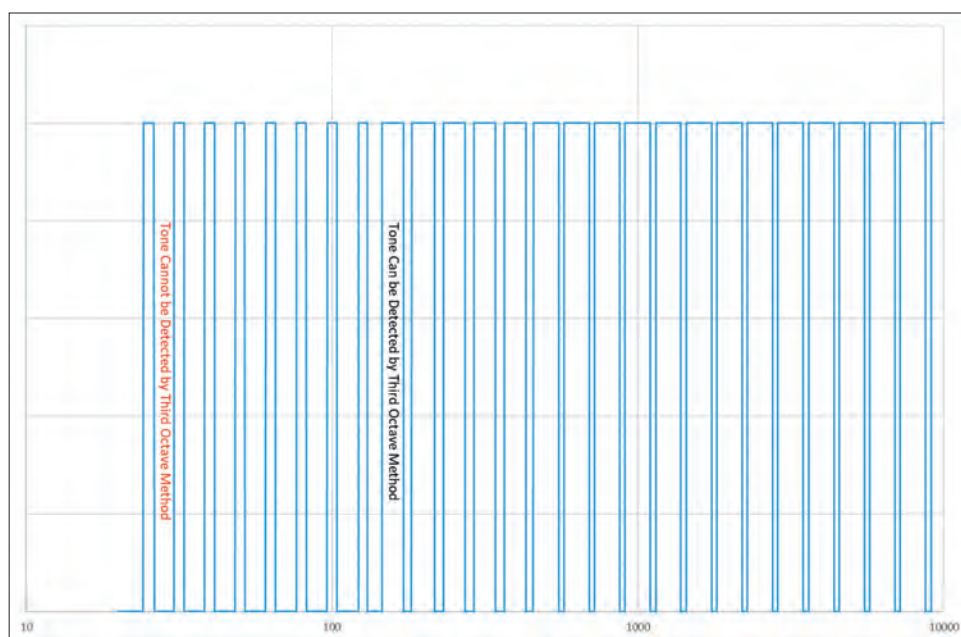
At frequencies of 500 Hz or more the critical bandwidths are 20% of the centre frequency. The third octave bandwidth is a constant 23.2% of the centre frequency. So at 500 Hz and above the critical band and third octave band bandwidths are very similar.

Consequently, for tones near the centre of third octave bands, a measured third octave band would contain both the energy from the tone and the energy from masking noise in the surrounding critical band.

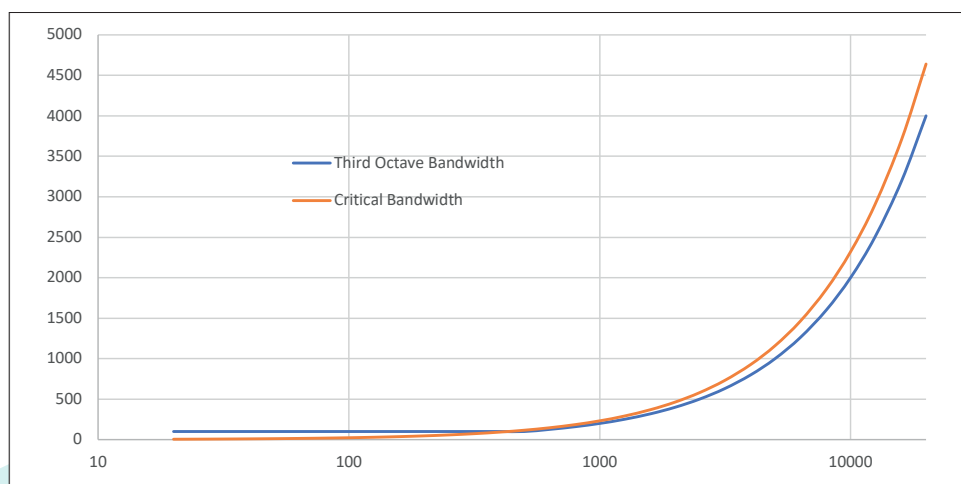
There is, therefore, the potential for the third octave method to indicate the presence of a prominent, discrete-frequency spectral component (tone) when the reference method indicates that the tone is inaudible.



Above: Figure 7: Gaps in linear frequency range where third octave method cannot work



Above: Figure 8: Gaps in log frequency range where third octave method cannot work



Above: Figure 9: Comparison of third octave and critical bandwidths

The signal shown as an FFT in **Figure 10** was generated by superimposing a 1 kHz tone, pink noise with high and low pass filters at 891 and 1122 Hz respectively (the lower and upper limits of the 1 kHz third octave band) and broad-band pink noise.

The third octave spectrum is shown in **Figure 11**. The 1 kHz third octave band is about 6 dB higher than its neighbours indicating the presence of a prominent tone.

However, the applying the reference method indicated that the tone was around 7 dB below the level of noise in the surrounding critical band, so about 5 dB below the threshold of audibility.

Conclusions

The reference method for assessing the audibility of tones in sound is based upon long-established critical band theory which has been extensively tested and refined since first being postulated in the 1930s.

The third octave method has no such provenance and can lead to results which contradict those generated by the reference method.

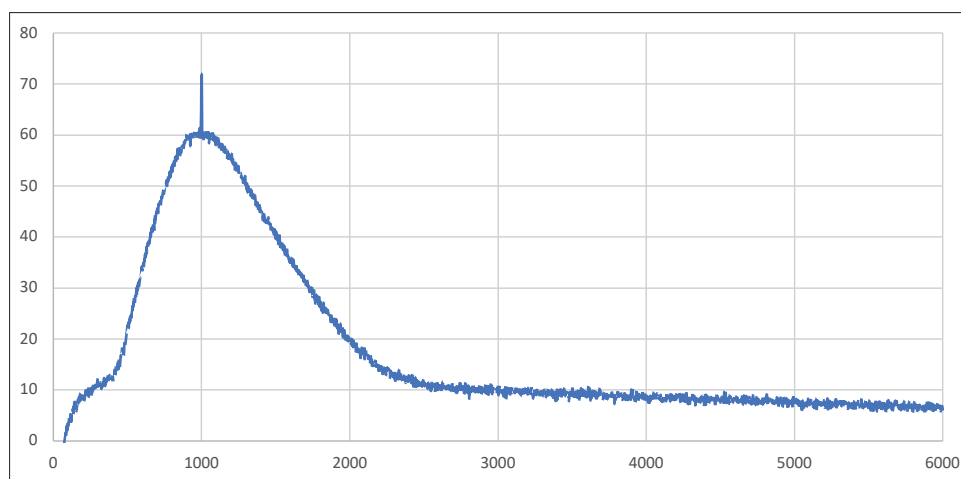
Perhaps the most serious and practical problem is that real-life industrial and commercial sounds often contain multiple non-sinusoidal periodic waveforms which, when viewed with sufficient resolution in the frequency domain, have many spectral peaks. The resulting density of spectral peaks makes it likely that the third

octave method will not identify audible tones when narrow band analysis and the reference method demonstrate the presence of one or more audible tonal components.

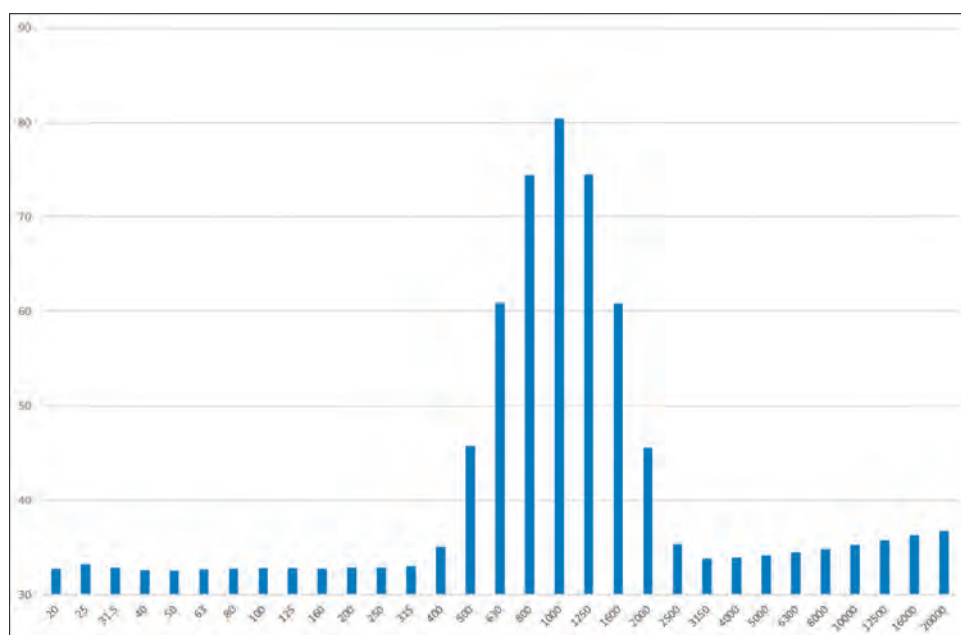
The second serious practical problem results from the real-life performance of third octave filters. There are frequency ranges near the boundary between adjacent third octave bands where the levels of both third octave bands will be affected by a discrete tone. This results in a series of blind-spots where even a discrete tone in isolation could not be detected using the third octave method and Class 1 instrumentation.

The third problem is perhaps more of a theoretical possibility than a practical problem which is likely to be common. The critical band model has established that in a steady sound containing both a tone and noise at frequencies between 500 Hz-10 kHz, the audibility of the tone is principally dependent upon the relative level of the tone and noise which lies within a band defined by $\pm 10\%$ of the frequency of the tone. Third octave band widths are very similar (23.2%) to critical band widths (20%) between 500 and 10 kHz. Consequently, when considering tones near the centre frequencies of third octave bands, the third octave band level would be the combined level of both the tone and noise in the critical band (i.e. both the tone and the noise which would mask it). The third octave method could therefore indicate the presence of a prominent tone when the reference method indicates that the tone is inaudible.

In the author's view, therefore, the third octave method cannot be relied upon to demonstrate the presence or absence of audible tones in noise and the results of it can contradict those obtained using the better-founded reference method. ☹



Above: Figure 10: FFT of 1 kHz tone, band limited and broad-band pink noise



Above: Figure 11: Third octave spectrum of 1 kHz tone, band limited and broad-band pink noise

Acoustics is heard in the UKGBC Climate Resilience Roadmap

After years and years of campaigning by generations of acoustics experts, the subject is now firmly a part of the climate resilience conversation, having been incorporated into the UK Green Building Council Climate Resilience Roadmap.

By Richard Grove, Director of Integrated Consulting at RWDI



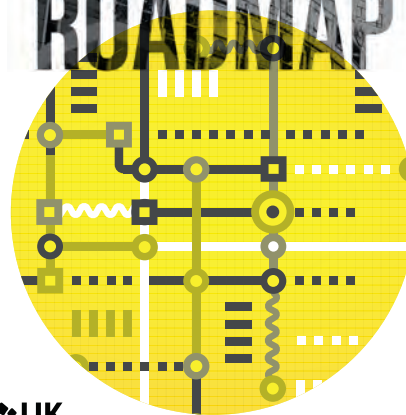
The UK Green Building Council (UKGBC) is a non-profit organisation dedicated to transforming the built environment to be more sustainable, resilient and inclusive

Established in 2007, UKGBC serves as a catalyst for change across the construction and property sectors, bringing together industry leaders, policymakers and innovators to tackle the environmental and social challenges facing buildings and infrastructure in the UK.

UKGBC's mission is to accelerate the transition to a net-zero carbon built environment by 2050, while also promoting biodiversity, climate resilience and social equity. It provides guidance, research and advocacy on key issues such as energy efficiency, circular economy, nature-based solutions, health and wellbeing in buildings and the wider built environment.

With a membership network spanning over 700 organisations including developers, architects, engineers, local authorities and academic institutions,

CLIMATE RESILIENCE ROADMAP



UKGBC fosters collaboration and knowledge-sharing to drive systemic change. Its work is grounded in science-based targets and aligned with global frameworks such as the UN Sustainable Development Goals and the Paris Agreement.

The Roadmap

The UKGBC's Roadmap is the first of its kind to provide sector-wide guidance on climate resilience. Developed in collaboration with industry, it translates complex climate data into practical, scalable solutions for architects, engineers, planners and policymakers.

Key goals of the Roadmap include:

- embedding resilience into every stage of planning, design, and construction;
- addressing five major climate hazards (flooding, overheating, drought, wildfires and storms);
- establishing national targets for resilience standards; and
- promoting nature-based solutions and low-carbon design.

The Roadmap is a call to action wrapped up in a technical manual, urging all of us who can have an impact to move beyond mitigation and embrace adaptation as a core design principle.

Where acoustics fits in

Acoustics has traditionally been associated with controlling noise, be that noise from a piece of equipment, noise from neighbours, noise from outside, or when fortunate enough, sound quality in internal environments. However, there is no denying it, acoustics is generally concerned with eradicating noise and providing 'a quiet place' to live. If you've seen the movie, a quiet place doesn't always mean 'a nice place', 'a pleasant place' or 'a place I'd like to spend time in'. In a seismic shift in thinking, the UKGBC Roadmap recognises that acoustic design is integral to climate resilience.

Staying cool and breathing easy

One of the Roadmap's key recommendations is to prioritise natural ventilation over carbon-intensive mechanical cooling systems. This shift supports energy efficiency and reduces greenhouse gas emission. However, it brings with it significant acoustic challenges which the industry is engaged in solving. Opening windows and façade vents for airflow can, of course, increase exposure to external noise, which has proven to be a challenging issue to balance especially in urban environments. Even in rural environments, you may consider the natural world 'too loud' when only looking at the dBs without considering the quality of sound. This advocacy of the UKGBC to consider acoustics will drive further development of soundscape application, ensuring we are balancing quality and quantity of sound when planning for acoustic effects without compromising health and quality of life (of humans and beyond!).

Healthy environments and positive noises

When considering acoustics in sustainability, two key terms crop up repeatedly:

1. health and wellbeing; and
2. pollution.

The UKGBC Roadmap emphasises the need for healthy environments, acting as a catalyst for designers to consider our health and how all of the environmental impacts that surround us can contribute to our health and wellbeing.

Research has demonstrated a burgeoning link between exposure to excessive noise from anthropophonic sound such as road traffic, construction noise and building services, leading to stress, sleep disruption and physiological impacts as well as reduced cognitive performance.

In contrast, positive soundscapes where geophonic and biophonic sounds are enhanced, such as birdsong, water rushing, or gentle winds, has been documented to contribute to the enhancement of our mood and improvements in our mental health.

As cities adapt to climate hazards, acoustic design contributes to the development of calm and vibrant zones in high-density areas and the integration of green infrastructure that can contribute to biodiversity and support more permanent noise control methods. Developing research into soundscape mapping and prediction for design will be critical in producing positive urban plans which address all of our senses, providing a wide variety of soundscapes in diverse and interesting destinations to align with the Roadmap's vision of resilient, liveable cities.

Material choices

Reducing noise and enhancing sounds all require materials. Materials to damp vibrations, materials to absorb reverberant sound, materials to add mass, materials to add movement, and materials to take it away. Without the challenges of controlling acoustic impacts, buildings and the built environment would be likely to be able to reduce their material use altogether, albeit the world would probably sound terrible and terrifying! Often these materials are, in principle, recyclable, though this may not always be possible for myriad reasons. Recycling in itself requires energy to be implemented.

The dilemma of adding materials into a design to create a positive world whilst ensuring these materials are sustainable leave the world of acoustics at an impasse, requiring careful consideration towards how to approach our designs.

The UKGBC Roadmap encourages the use of low-impact, regenerative materials, which applies just as much to acoustics as it would do to any other design discipline. Critical to this is that the

Roadmap encourages materials to now meet both performance and sustainability criteria.

When considering materials in design, taking a few key steps can help move acoustics from an advisory position to become a driver in creating resilient designs which meet standards, contribute to our health and wellbeing, and critically are climate resilient.

- **Is the design optimally arranged for acoustic purposes?** This

may not always be possible for wider reasons, but every effort should be made to understand the user needs and optimise the arrangement.

- **Do the standards and criteria suit the user brief?** It is important to

maintain a critical view of guidance and standards. These documents are invaluable to provide traceability and a basis for the design, however are also designed for a broad range of uses which may lead to over design. Focusing the criteria on the use can drive material savings from the start.

- **How far has the material travelled?** Logistics produce noise

and pollution, often sounds which impact wildlife and biodiverse environments. Considering carefully the materials provenance can drive key decisions in reducing early scope emissions.

- **What is it made of?** The million dollar question! Being cognisant of what materials are made from is critical in contributing to a resilient future. Consider factors such as how it is manufactured, how recycled is 'recycled', what is the material and, can it be recycled or better still, decompose naturally.

P46



Acoustics for biodiversity

The Roadmap also intersects with biodiversity, another pillar of sustainable design. Green roofs, living walls and urban gardens all provide important habitats to contribute to biodiversity net-gain as well as offering some positive acoustic effects, whether physical or psychological.

The convergence of subjects and how acousticians interact beyond their technical understanding, will add weight to the concepts tabled by fellow designers. Anything introduced for the purposes of improving biodiversity will inevitably contribute in some way to improving the acoustic environment, either through the absorption or scattering of sound, attracting biodiverse and natural soundscapes that support wildlife and human relaxation, and draw upon wider environmental phenomena to both enhance the soundscape and protect from noise due to changing environmental conditions.

Moreover, acoustic design must consider wildlife sensitivity to its soundscape. Construction noise on land and at sea, and urban

sound pollution can disrupt nesting, migration and communication among species. To this end, the Roadmap encourages wildlife-sensitive acoustic planning, especially near green corridors and conservation zones.

Policy implications and future standards

One of the Roadmap's most urgent messages is to highlight the lack of national resilience standards. Acoustics has the benefit of multiple regulations, standards and guidance documents, drawing on decades of research and experience. The recent shift placing climate resiliency in sharp focus requires acoustics practitioners to understand how these standards and guidance fit with climate resilience frameworks such as the UKGBC Roadmap, taking a critical view as to their suitability and applicability to an increasing variety of uses in the built environment. Indeed, our demand for flexibility and choices in our built environment makes it even more important to consider carefully how we implement our existing legislation, and the direction of

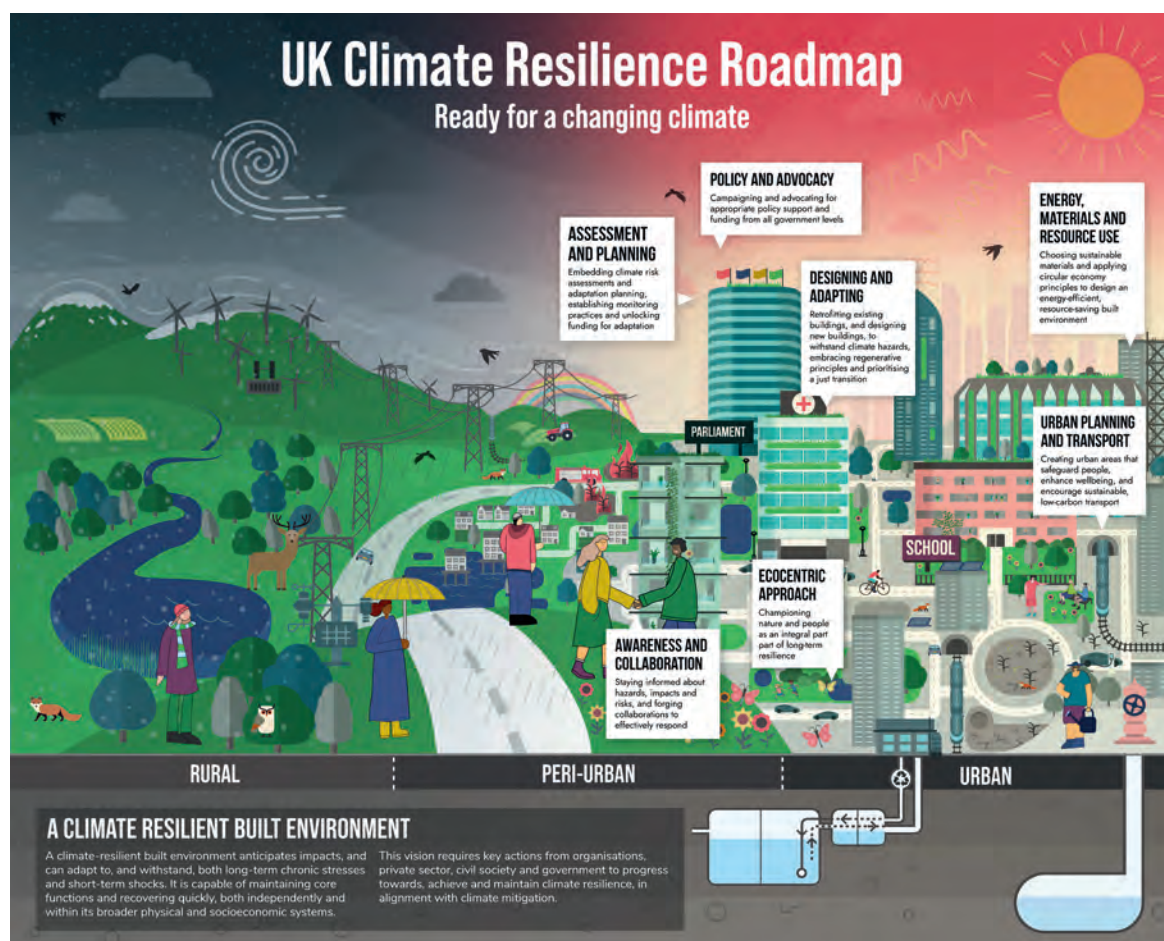
travel of any updates being made, ensuring these are aligned with wider standards and guidance.

Conclusion: sound decisions for a resilient future

The UKGBC's Climate Resilience Roadmap marks a turning point in how we think about the built environment. It challenges architects, engineers and policymakers to design not just for today's needs, but for tomorrow's uncertainties. It also challenges acousticians to think differently.

Acoustics, once a niche concern, is now recognised as a critical component of resilience. From natural ventilation to biodiversity, from material sustainability to mental health, sound shapes how we experience and adapt to our changing world.

As the Roadmap gains traction, the industry must embrace holistic acoustic strategies that support climate goals, enhance human wellbeing and protect ecological integrity. In doing so, we can build spaces that are not only resilient but also harmonious and work for life to thrive not simply survive. 🌍



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A DAY IN THE LIFE OF

Valerie Van den Hende

The population comprises people with many different backgrounds, creating a rich diversity of culture. Why then, is the acoustics profession and engineering more widely, not as diverse as the situations it faces?

It is essential that the acoustics profession, and the IOA with it, strives for a membership representing everyone. The IOA does this by creating an environment in which people can openly be themselves and gain the support they need to achieve their full potential. We cannot improve the diversity of our profession by working alone – we need to work together to understand the challenges faced by our peers and how we can work together to overcome them or remove them entirely.

There are many benefits of inclusivity and diversity, and perhaps the most essential is the improvement of collective intelligence. More immediately, acoustics and engineering professions generally, face a skills shortage, and surely, encouraging people from all social and ethnic backgrounds into the profession must increase the pool of available acousticians.

In this second article of our EDI series we meet **Valerie Van den Hende**, an associate at Sandy Brown (SB). She is also an examiner for the Association of Noise Consultant's (ANC) Pre-Completion Testing Scheme and Chair of the ANC Membership Steering Group Committee.

Recently diagnosed with autism she also has an inherited connective tissue disorder affecting her joints (hypermobility) resulting in chronic pain and fatigue. She obtained a formal autism diagnosis primarily so that she could better understand her disorder and this diagnosis gave her a platform to have sensible conversations with her employer about reasonable adjustments. It has allowed her to be more flexible in how she does her job and this includes planning ahead for when she has reached the stage where she needs time to recharge her batteries.



Valerie Van den Hende

Valerie had an unconventional entry into the acoustics industry by doing a physics and music degree at Cardiff University. Relatively early in her career she was loaned by her employer, part time, to London City Airport where she led their environment department for around five years. This gave her wide experience in both technical matters and dealing with the public, as well as keeping an ailing noise monitoring and flight-tracking system up and running and keeping swans off the runway. Valerie said: "It was a fantastic opportunity and I really valued all of the people I worked with at the airport who were outside of the acoustic community, especially the exceptionally supportive and unconventional Director of Operations."

She now works four days a week for SB, which she describes as 'a beautiful neurodiverse haven' where she can be herself. She said: "If you are EDI, you have to market yourself with things you can do, carve out your own job and make yourself valuable."

Just six months into her London-based job with SB, she announced a very much unplanned move to the Leeds area. Valerie's boss wasn't thrilled at the thought of losing her skills so solved the potential problem by opening a Sandy Brown Leeds office, where she has recently been joined by another colleague, Kane Mitchell.

As an employer, SB plough their own furrow, Valerie has been helping develop the SB EDI response and, as part of this, has given internal and external talks on neuro and aural diversity in acoustic design, essential when one in six has a hearing difference. At the same time, other people in the company are doing a huge amount of work on LGBTQ+.

Through the diagnosis process it became clear to Valerie that she has significant communication differences and some of these are insurmountable. She finds it impossible to reconcile verbal communication with all but very explicit accompanying body language so she misses cues, but she says it's a question of acknowledging this and developing other ways and adaptations because this will never change for her. She misses subtle social cues so requests for action or instructions from colleagues often pass her by

as usually, neurotypical individuals speak in non-specific and vague ways. Many neurodiverse people can't hide anything and can sometimes speak very precisely and bluntly and can become very frustrated if their instructions aren't followed – this may also resonate with people with attention deficit hyperactivity disorder (ADHD).

In her late 20s her connective tissue disorder (then undiagnosed) started to affect her health. She remembers wearing herself out trying to complete commercially with healthy young men. Prior to starting a family, Valerie would work intensely as expected, full time and full on, so a pattern developed where her body would crash every now and again and she would need to recuperate. She realised then that she had to find a different path and, after taking maternity leave, made an effort to take her career in a different direction, specialising in building acoustics and developing her strengths rather than worrying about her weaknesses. As her career and life has progressed, she has learned to work as much as she can and needs to, while keeping her mind and body on an even keel. Valerie says she is also slowly learning how to unmask and explore what she needs as an autistic person.

She works part-time, mainly from home and is doing a job she loves, especially the mentoring part; watching people learning how to apply their new-found skills. She has the privilege of a supportive employer who is happy for her to take time off when she needs to and compromises are made that allow her enough time to look after herself – this allows her to continue working at her current high level. The key is, she says, is to work out what you need, be direct and make necessary arrangements for self-care.

1. What first sparked your interest in science and acoustics?

I idolised my eldest sister growing up and she fostered my interest in physics, helping me understand mechanics and friction by rolling toy cars down rulers. Everyone in my family is also a musician (some professionally), so it made sense to add the two together and arrive at acoustics.

2. How long have you been working in this industry?

It has been over 20 years now! But there is so much variety both in terms of the types of projects, technical work and people, that it honestly doesn't feel like that.

3. What gives you most job satisfaction?

Teaching. My back-up career was to teach physics, which in retrospect I realise would not have suited me from a sensory perspective, but that is still something that brings me joy. A day when I can see an engineer learn a new skill and grow in confidence is a good one.

4. Given your diagnosis of autism, what is the most challenging aspect of your job?

As one becomes more senior in consultancy, the work is less about the technical aspects (which have been mastered) and more about people, communication and negotiation. This does present challenges with autism, where reading between the lines or dealing with people who are not entirely candid does not come naturally. But having a very direct communication style can be helpful and the relationships that do develop with colleagues and clients are authentic and sincere. There are also other autistic traits that have been an advantage to me in my job, such as having a good eye for detail (which had me checking reports from very early in my career), enjoying research and data analysis, having a different perspective when problem solving and being able to see the puzzle pieces in how a big project comes together.

5. How do you get your job out of your hair?

Playing music calms my brain and it's something I've always used to find balance; I'll even play for 20 minutes during my lunch break to reset myself for the afternoon. Otherwise, I have discovered gardening since we moved to Yorkshire and find pulling weeds very cathartic. **P50**

6. How much contact do you have with other acousticians?

I see most of my team daily and really appreciate that my roles with the ANC allow me to interact with engineers at all stages in their careers whether through site work or meetings. I also really enjoy bumping into old colleagues at IOA events. There is such a wealth of knowledge across the industry and it's fantastic that so many of us are prepared to share that and improve services despite the commercial competition.

7. What is your desert island book/film/luxury?

My guitar, with an infinite supply of strings please.

8. What is the most important quality an acoustic consultant should have?

Technical engineering capabilities are obviously paramount, from being able to interpret what one is hearing to 'doing the maths', but it is difficult to progress meaningfully without learning to write well. I have also found that writing well can help distract from shortcomings in social skills.

9. What is the best bit of professional advice you have been given? What piece of advice would you pass on to someone new to the industry?

I have been given some wonderful advice and some that was truly awful. The best was to find something technically challenging and become the go-to person for your company. The worst was 'to ask fewer questions' when asking what I needed to focus on to progress my career. So my advice would be to 'ask as many questions as you can, then ask some more!' Regardless of how new you are to the industry there is always something to learn and being curious is a wonderful attribute.

10. What do you dislike about your job?

I have realised that the things I dislike about my job are very much related to my autism. This type of neurodiversity goes hand-in-hand with anxiety and therefore sudden external changes to schedules or processes can receive a negative reaction. I am lucky that I can discuss this with my boss when I need to – recognising what is happening and why is half the battle.

11. Who has been the most influential person in your life?

Definitely my mother. She taught me how to be resilient and keep chipping away at things even when you don't feel like it, while at the same time offering compassion and understanding. Without that worth ethic and ability to push through I would not be where I am now.

12. What do you see as your next steps professionally?

I'm really excited to be part of the growth of Sandy Brown's Leeds office and am looking to bring whatever I can to make it a success and help train the next generation of engineers.

13. If you had the chance, what would you change about your career – have you taken any wrong turns?

This is one of those questions that, if you're happy where you are currently, you say that you would not have changed a thing as it's part of the road that got you there. I am however immensely grateful to a friend who saw that I was struggling and suggested that I would be happy at Sandy Brown. If I were to offer advice to others, it would be that each company is unique and it can take time to figure out what suits you best, so if it's not working, try somewhere different.

14. What would you consider to be the biggest advancement in this industry during your career?

Sophisticated computer modelling was taking off during the first five years of my career, and I think that has made a huge difference not only in the complexity of the scenarios that we can quickly explore, but also how we communicate acoustics to clients. It is a wonderful tool, but I am glad that I started out the hard way as going back to basics to sense check the output is also hugely important. I expect AI will be the next advancement, but I hope this is used to pick up the repetitive and less interesting and time-consuming tasks, rather than taking away real design work where human ingenuity and creativity takes place.

15. What question would you like to put to the next acoustician in this series of articles?

What do you do to remain positive about equity, diversity and inclusivity at a time when it feels like there is such a huge backlash to all of the progress which has been made recently? 🌀

If you know someone who might like to take part in this 'Day in the life' series of articles, please contact the editor at nicky@warnersgroup.co.uk



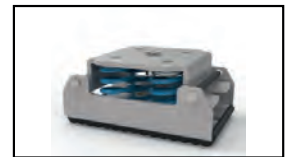
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Eastern Branch

By Jody Blacklock and Sam Riley

Acoustic panels and enclosures factory tour

On 17 June IOA Eastern Branch members visited HF Bond & Co's acoustic panels and enclosures factory in Clopton, near Ipswich. The event was hosted by dB Attenuation(dBA) and included a technical presentation from dB Consultation(dBC). There was a really good turnout and the event ran over schedule due to the interest in the talk and tour and the number of questions.

Initially, Danny Blacklock of dBA gave a brief introduction of their manufacturing partnership with HF Bonds, the history of the companies and relationship with dB Consultation.

The attendees were split into two groups; presentation and factory tour.

Mick Lane, Acoustic Director at dBC, gave a cradle to grave presentation of an electrical substation case study, discussing the monitoring, modelling of the site, mitigation measures, installation of acoustic enclosures (including post installation commissioning tests) and why these enclosures are so important in the electrical distribution industry. Particularly informative was the timeline from agreeing the mitigation measures to resolution on site. Typically the six-12 week lead-time

from design through manufacture and then installation on site is often dwarfed by the planning process. The electrical network strategy, compensation for and the facilitating of the required changes to arrange outage work windows on site often takes years to arrange – not always a quick fix!

Darren Stevenson, Ian Hart and Andy Heffer-Lammond of HF Bond enthusiastically conducted the factory tours demonstrating the automated and very precise laser cutting machine, CN press-brake facility and the new COBOT welding bay. There was a display of both acoustic and fire separation panels and support steel framework at various stages of development and access to the paint room.

Afterwards members retired to the First Coffee Shop where dBA treated everyone to all you could eat fresh oven-baked pizza and, very generously, John Campbell of Campbell Associates Ltd paid for everyone's drinks.

Thank you to dBA and dBC for organising the evening and the informative presentation and also to HF Bond for their warm welcome and hosting the event at their factory.

Future events

On 25 September 2025 there will be a talk by the HSE on noise at work. Also planned are talks by a local authority environmental health officer on their perspective and a talk on kennel noise, with other events later on this year, so keep your eyes peeled for more information on these events and for other topics.

Should you wish to present or have a topic suggestion please get in touch. We are also open to suggestions for venues across the region, so please get in touch if you have any suggestions or are able to host a branch meeting. Please contact either Jody Blacklock or Joise Nixon at jody.blacklock@createce.co.uk or Josie.Nixon@HA-Environmental.co.uk

Make sure you have registered with the Eastern Branch to find out about all upcoming events or keep an eye out on the IOA event website page at www.ioa.org.uk/events

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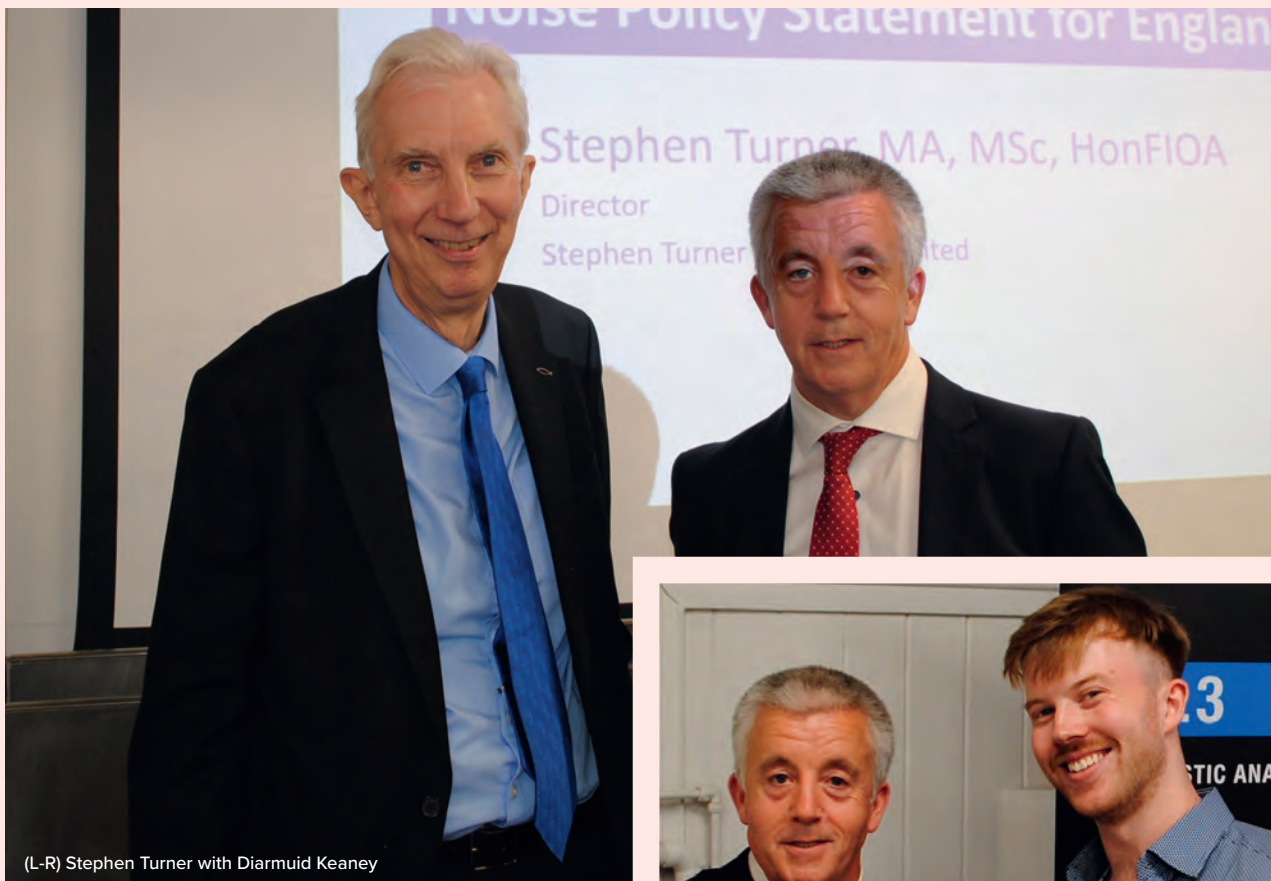
IOA Eastern Branch members fueling up after their HF Bond factory tour



Irish Branch

By Sarah Middleton

Irish Branch June meeting report



Trinity College, Dublin was the venue for the Irish Branch's most recent meeting in June 2025.

Members were treated to an interesting and insightful talk by Stephen Turner of STAcoustics on the development and implementation of the Noise Policy Statement for England and lessons learned.

The meeting was very well attended by professionals from across several different disciplines, bringing together policy makers, acousticians and engineers. Stephen brought us through the genesis of the policy from its origins in the early 2000s to its publication in 2010. The myriad considerations and semantics that had to be employed to manage expectation and allow the policy to be both dynamic and useful across multiple sectors were explored and discussed.

A testament to this is that the Noise Policy still stands today, 15 years on from its publication. The Policy has provided a pragmatic and realistic framework around which new legislation and guidance documents have been and continue to be developed. Whilst a policy of this nature has not yet been developed in Ireland, participants were keen to hear Stephen's views on the benefits and challenges of the policy.

The evening also provided an opportunity to present Jacques Dalton with the award for the Best Diploma Performance by an Irish Candidate in the 2023-2024 Diploma in Acoustics and Noise Control.



London Branch

By Shaliny Denardi Vattathara

This summer's London Branch meeting on Wednesday 9 July brought together a total of 90 attendees, both online and in-person, for an insightful presentation on the acoustics chapter of the newly released *BCO Guide to Fit-out 2025*.

Four of the chapter's authors from Arup, Quantum Acoustics, Hann Tucker and Sandy Brown, delivered a technical overview of key content relevant to acoustic consultants. They covered a range of topics including design principles and acoustic criteria related to room acoustics, speech privacy and sound insulation performance for office spaces. The presenting team brought a mix of experience and perspectives from across the industry making it a valuable session for anyone involved in office design projects. After the presentation we headed to the pub for a chance to catch up and continue the conversation.

If you were unable to attend the meetings, IOA members can catch up on the excellent presentations at <https://www.ioa.org.uk/video-category/branch-and-group>



Edward Farrer of Sandy Brown, presenting to London Branch members

Midlands Branch

By Matt Torjussen

The Midlands Branch hosted a hybrid meeting on 16 July 2025 at the University of Derby's Markeaton Campus, when Professor Anna Hansell from the University of Leicester presented her research on the public health burden from transport noise.

Professor Hansell, who serves as Professor of Environmental Epidemiology and Director of the Centre for Environmental Health & Sustainability at the University of Leicester, presented work conducted in collaboration with the UK Health Security Agency to quantify the health impact of transport noise across England. The research, published in *Environment International* in 2023, represents the first comprehensive assessment of noise-related health burden in England and revealed substantial impacts:

- road traffic noise accounts for approximately 97,000 disability adjusted life years (DALYs) lost annually;
- railway noise contributes around 13,000 DALYs; and
- aircraft noise roughly 17,000 DALYs.

These figures, based on 2018 data, represent the sum of years of life lost due to premature mortality and years of healthy life lost due to disability.

The methodology combined systematic reviews of epidemiological evidence with noise exposure data from

Environmental Noise Directive mapping and demographic health data at local authority level. A sensitivity analysis for London included minor roads alongside major roads, revealing a more realistic distribution of noise exposure. The study examined health outcomes including high annoyance and sleep disturbance across all noise sources, and chronic diseases including ischaemic heart disease, stroke and diabetes where sufficient evidence existed. The findings showed that 27% of England's population are exposed to road traffic noise above WHO 2018 guidelines, whilst 2.9% are exposed to harmful levels of railway noise.

Professor Hansell emphasised the multiple pathways through which noise affects health beyond simple annoyance, including:

- sleep disturbance impacts on physical health;
- stress responses increasing cortisol levels; and
- direct cardiovascular effects.

Recent experimental studies have demonstrated measurable effects on blood vessels, lipids and inflammatory markers, providing strong biological plausibility for the epidemiological findings. The analysis revealed that whilst the majority of noise-related health burden stems from annoyance and sleep disturbance, significant impacts from chronic diseases were also identified.

Addressing questions about confounding with air pollution, Professor Hansell presented evidence showing that noise effects are independent of air pollution exposure despite sharing common sources. The biological mechanisms differ sufficiently to support independent health impacts. The research has achieved remarkable policy traction, being referenced in the House of Lords Inquiry on noise impacts, cited in parliamentary debates and used by transport regulators. The work was recognised with the John Connell Innovation Award in October 2024.

Looking forward, DEFRA is working to update their noise costing methodology to incorporate the new health evidence, including consideration of hypertension as a costed health outcome. The research establishes transport noise as the second most important environmental risk factor for health after air pollution and provides a framework for evidence-based approaches to transport planning and noise management, emphasising the importance of considering health impacts in cost-benefit analyses for transport infrastructure projects.

The Midlands Branch is grateful to Professor Hansell for presenting and a video of the talk is already live on the members' pages of the IOA website at www.ioa.org.uk/video-category/branch-and-group

Southern Branch

By Sebastian Woodhams, QinetiQ

IOA Southern Branch meeting: half day hybrid event on sustainable construction

In May, the IOA Southern Branch welcomed members to a half day event on sustainable construction, in-person at KP Acoustics research labs Southampton and online via Zoom. The event was hosted by Peter Rogers of Sustainable Acoustics who had recently been awarded the first IOA Richard Cowell Sustainability Award for his efforts leading the way in sustainability in acoustics.

Peter began the event by explaining why net zero is only half the story and why it matters to us as acousticians, before handing over to our first speaker, Heulwen Peters of SRL Technical Services. Huelwen discussed the ANC guidance available on energy, materials, quality education spaces, inclusion and biodiversity. The guidance contains useful advice on sustainable design such as early stakeholder engagement and adapting criteria to suit the specific needs of the users of acoustically sensitive spaces, thereby avoiding under design or overdesign.

Adam Fox and Tom Davis Van Dongen of Mason UK discussed the challenges of modern methods of construction and retrofitting older buildings with vibration isolation systems. They presented a detailed review of the embodied carbon of various building

methods and how well they perform acoustically, with the upsides and downsides of choosing performance over sustainability and vice versa.

Momo Hoshijima of WSP talked about how acousticians could specify materials with a consideration of their sustainability. Momo discussed embodied and operational carbon and how they combine into whole life carbon, the total amount of carbon emissions associated with the lifecycle of the material. Faith van Jaarsveld of the Environment Agency introduced a metric for assessing the sustainability, cost and efficacy of acoustic materials developed during her time undertaking the IOA Diploma in Acoustics and Noise Control. Faith presented an assessment she had undertaken of several insulation products, giving them a final score based on their GWP, weighted absorption coefficient, recyclability and financial cost.

To finish, Peter held a session discussing how we as acousticians can put everything we had learned together for the future. The speakers and the in-person and online attendees worked together to develop a list of ideas of how we can help to make construction more sustainable.

New noise prediction standard for railway noise source terms

By Oliver Bewes, HS2

For their June meeting, the Southern Branch hosted Ben Warren of the Rail Safety and Standards Board (RSSB), Oliver Bewes of HS2 and Daniel Lurcock from the ISVR for an online presentation on the latest proposals for new noise prediction methods for road and rail in the UK. The purpose of the session was to disseminate a recently completed report, funded by RSSB, making proposals concerning the technical proposals for the part of the standard relating to calculation of railway vehicle sound power emissions.

The RSSB is the independent safety, standards and research body for Great Britain's rail network, and is funding this work. As Emissions Principal at the RSSB, Ben leads work on air quality, carbon emissions and noise. Ben described the Sustainable Rail Blueprint, the industry-wide blueprint for realising sustainable rail, which covers 11 sustainability topics including 'A Quieter Railway'. Ben also reminded the audience of the extensive

library of technical guidance relating to noise from rail, which is available on the RSSB website.

Oliver Bewes, who was representing the BSI Transportation Noise Committee on the day, explained the work being led by the committee to create a new four-part prediction standard for calculating noise from road and railway sources in Great Britain. The work has been partially funded by Defra, National Highways and RSSB and it is intended that the standard will replace the calculation of road traffic noise and the calculation of rail noise. The current report is Stage 1 of the work relating to rail noise and will be followed by a draft standard for railway noise source terms and some validation in Stage 2.

Daniel Lurcock then went into the technical proposals in more detail. The approach will broadly follow work undertaken by the HARMONOISE and IMAGINE projects with some small modifications. These projects were

the precursor to the European Union's common assessment method, CNOSSOS. It was decided not to adopt the CNOSSOS approach as some simplifications were carried out to make it more suitable for strategic noise mapping. The proposed multiple source height approach will include methods for characterising rolling noise, traction noise, aerodynamic noise, bridge noise, curving noise, braking noise, impact noise and train horns. The standard will provide default terms for implementation in the UK and guidance for predicting and measuring new terms.

With more than 200 attendees online this was one of the Southern Branch's most popular events to date which led to a lengthy Q&A session with many contributions. This demonstrates the interest and importance of the work to the industry. The RSSB 'Quieter Railway' has recently been published and is available here <https://www.rssb.co.uk/sustainability/a-quieter-railway> 

We're all ears!

By Matt Torjussen

In collaboration with the IOA Speech and Hearing Group and the IOA Noise and Vibration Engineering Group, the IOA Midlands Branch, hosted a joint meeting titled 'We're All Ears!' at the University of Derby on 8 July 2025.

The event brought together researchers, practitioners and regulators to explore contemporary challenges in hearing protection, noise management and acoustic research across seven technical presentations.

Regulatory perspectives and implementation challenges

Jacqueline Patel from the Health and Safety Executive opened the programme with her presentation, *Protecting hearing through application of the law*, where

she demonstrated concerning statistics on occupational hearing loss. Over half of 2023 employers' liability tracing office inquiries related to noise-induced hearing loss, with 12,000 people reporting work-related hearing problems in the three years ending 2024.

Patel outlined significant gaps in current hearing protection practices revealed through HSE inspections:

- 67% of employers hadn't been told how to check hearing protection condition;
- 80% lacked training on proper fitting with other PPE; and
- 95% hadn't assessed the impact on safety-critical communication.

She presented the HSE's CUFF framework (Condition, Use, Fit, Fit for purpose) as practical guidance for effective hearing protection implementation.

Specialised applications

The meeting featured several presentations addressing situations where standard hearing protection approaches prove inadequate. Bruce Wiggins shared his research into *The brass kazoo: hearing protection for brass players*, explaining how conventional hearing protection creates an 'occlusion effect' that severely impairs musicians' ability to judge ensemble balance and maintain proper intonation. His testing of various commercial products using both objective measurements and subjective assessments found that even expensive professional grade custom earplugs performed poorly for brass players, whilst his improvised prototypes achieved better results.

Gurmail Paddan from the Institute of Naval Medicine discussed noise management across the Ministry of Defence, emphasising the priority of controlling noise at source. His case studies included reducing line thrower noise from 160 dB to 145 dB by switching from gun-based to compressed air systems, and achieving 10 dB reductions in saluting guns through lower charges.

Communication and behaviour change research

Chris Sumner presented research on audiovisual speech perception, examining how visual information from lip reading



Above: Jacqueline Patel, Health and Safety Executive



Above: Bruce Wiggins' testing of commercial products found that even expensive professional grade custom earplugs performed poorly for brass players

combines with auditory information to improve speech understanding. His team developed models that predicted approximately 90% of audiovisual speech perception variance using only audio only and visual only performance data, with potential applications for hearing aid fitting, cochlear implant decisions and acoustic design.

Sam Couth from Manchester addressed hearing protection uptake in recreational settings. Despite WHO statistics showing 1.1 billion young people at risk from recreational noise exposure, only 2% regularly use hearing protection. His research at Blue Dot Festival achieved 80% uptake of free high fidelity earplugs, with participants who attached earplugs to personal items showing significantly higher usage rates six months later.

Industry initiatives and data standards

Adam Hill presented the HELA (Healthy Ears, Limited Annoyance) Initiative, which addresses the challenge facing touring engineers who encounter different noise regulations in every location, for example: 124 different regulations exist within California alone. The initiative has developed a certification programme with two levels: HELA Core (45 minutes) for non-technical staff and HELA Complete (3.5 hours, eight modules) for technical and managerial staff. A £500,000 EPSRC-funded research cooperative launches in September 2025.

Demi Oshin from Nottingham concluded the programme with her development of a Common Data Model for Sound Level Data. The model addresses inconsistent data formats across different sound monitoring systems, which hampers data consolidation and analysis. Her validation using data from the 10-day Serendipity Arts Festival demonstrated the model's ability to prevent data misuse and enable standardised analysis.

Reflections

The 'We're All Ears!' meeting demonstrated the breadth of current acoustic research and highlighted how real-world factors often overlooked in standard approaches can significantly impact hearing health and noise management.



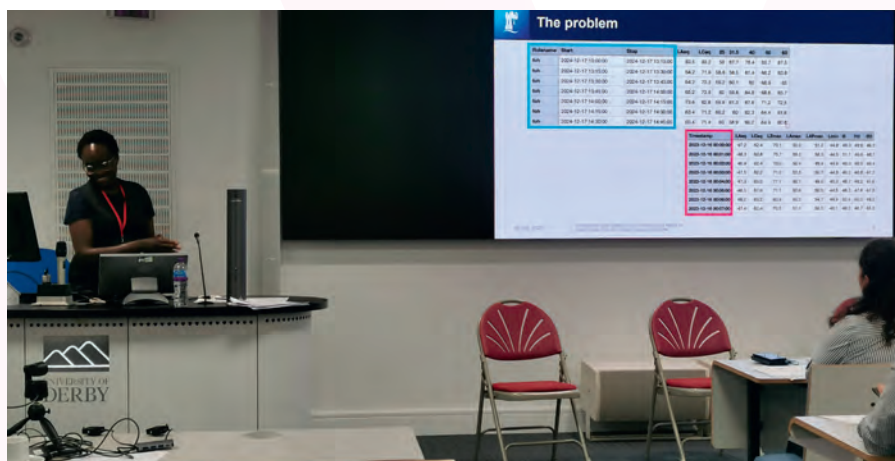
Above: Gurmail Paddan, Institute of Naval Medicine



Above: Round table for second session with Demi Oshin, Adam Hill, Sam Couth and Chris Sumner, chaired by Aglaia Fonteinou (standing)



Above: Chris Sumner presenting research on audiovisual speech perception



Above: Demi Oshin describing her development of a common data model for sound level data

The presentations spanned regulatory enforcement, behavioural psychology, military applications and festival acoustics, illustrating the diverse challenges facing the acoustics community.

The collaborative format between three IOA specialist groups enabled cross pollination of ideas and approaches across different areas of practice. The Midlands Branch thanks all presenters

and the University of Derby for hosting the event. A particular thanks goes to Matt Torjussen and Aglaia Fonteinou for all their hard work helping organise the event.

The meeting was recorded and presentations are available online through the IOA website. Members can access the videos by logging into the members' area and navigating to members' videos. ©

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CELEBRATING

Tony Clayton's career

One of the most respected voices in environmental noise regulation, Tony Clayton, has retired. In this article, his son Dan looks back at Tony's influential working life.

By Dan Clayton, MIOA

Right:
Tony Clayton



Tony's career spanned more than four decades in two very different fields.

Beginning in chemical engineering and manufacturing, Tony eventually found his calling in environmental noise regulation, where he became one of the UK's most respected voices. With his recent retirement from the Environment Agency, it feels like the right time to reflect on his journey and the impact he has made.

Tony's career started in 1976 as a youth trainee at ICI, joining a cohort of 10 at the Welvic 1 site before moving to the MDI plant at Thornton (Hillhouse), Blackpool. Those early years were formative; he worked as an operator before being identified for his potential to become an engineer. Day release and on the job training led him to a degree in chemical engineering from Strathclyde University in 1995, earned through distance learning while raising a family and working full time. At ICI he became responsible for key process machinery including acid gas compressors and refrigeration units.

As the UK chemical industry contracted in the 1990s, Tony

looked for a new path, so in 1998 he joined the Environment Agency as an inspector in the Process Industries Regulation team in the North West. It was an adjustment from the private sector's pace to the bureaucratic systems of regulation, but colleagues recall how Tony's approach stood out. Rather than wielding enforcement bluntly, he worked with operators to solve problems and improve outcomes. "His approach was to help solve some of their problems rather than stepping back and using our regulatory powers," recalls former colleague, John Isherwood. "He was a valuable member of the team and always willing to lend a hand."

Raising standards

Noise entered Tony's life almost by chance. Early in his regulatory work he encountered noise complaints that sparked both frustration and fascination. He enrolled for the IOA Diploma in 2007, famously introducing himself as the oldest student in the class and energetically challenging lecturers. George Gibbs, a fellow diploma student, remembers Tony "walking the fine line between insightful and outright heckler" and later becoming a generous source of regulatory guidance.

Noise soon became Tony's professional specialty and passion. He became the Senior Advisor (Noise) at the Environment Agency, shaping industrial noise regulation and contributing to British Standards, national policy discussions and IOA articles and training. Colleagues across the UK Environment Agencies credit Tony with fostering consistency and raising standards. Jim McIntyre of the Scottish Environment Protection Agency (SEPA) calls him "one of the best

allies we could wish for," praising his relationships with academia, consultants and fellow regulators.

Tony's influence extended beyond policy and committee rooms. He was known for his booming laugh at IOA events, his direct but fair manner in meetings and his willingness to mentor newer colleagues. Nick Jenkins of Natural Resources Wales recalls how Tony's inclusive approach helped their team develop confidence in noise regulation after structural changes in 2013. Jon Tofts, who worked with Tony for 15 years, simply notes: "He transformed industrial noise regulation in the UK."

For me as his son, Tony's career is personal as well as professional. By a quirk of timing, we both found our way into acoustics around the same time, him as a regulator and me in consulting. In my early career he gave me exposure into noise and vibration problems on waste sites and helped me understand the regulator's perspective. A fantastic practical grounding that helped me get where I am today. He has even inspired me to push for better regulations in Canada, where I now live.

Not all work

Outside work, Tony's practical streak has always been part of him. Whether restoring big American cars or working on houses, he approaches life with the same hands on curiosity he brought to his career. He's also ready to reignite his passion for music, with talk about more guitars and amplifiers.

Tony's retirement marks the end of an era in UK industrial noise regulation and fantastic foundation for what comes next. His blend of chemical engineering rigour, musical instinct, and straight talking pragmatism has left a lasting imprint on the profession and the people in it. The acoustics world will indeed be quieter without him, but richer for what he's given it. ☺

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DAY	DATE	TIME	MEETING
Tuesday	7 October	All Day	Engineering Interviews
Thursday	9 October	11.00	Publications
Thursday	16 October	10.30	Engineering Meeting
Thursday	23 October	10.30	Membership
Tuesday	28 October	10.30	Research Co-ordination
Thursday	30 October	10.30	Meetings
Tuesday	4 November	10.30	CCWPNA Examiners
Tuesday	4 November	13.30	CCWPNA Committee
Wednesday	5 November	09.30	CCBAM Examiners
Wednesday	5 November	10.30	CCENM Examiners
Wednesday	5 November	13.30	CCENM Committee
Thursday	6 November	10.30	Diploma Tutors & Examiners
Thursday	6 November	13.30	Education
Tuesday	18 November	10.30	ASBA Examiners (Edinburgh)
Tuesday	18 November	13.30	ASBA Committee (Edinburgh)
Tuesday	25 November	11.00	CPD Committee
Thursday	27 November	10.30	Executive
Thursday	4 December	10.30	Council

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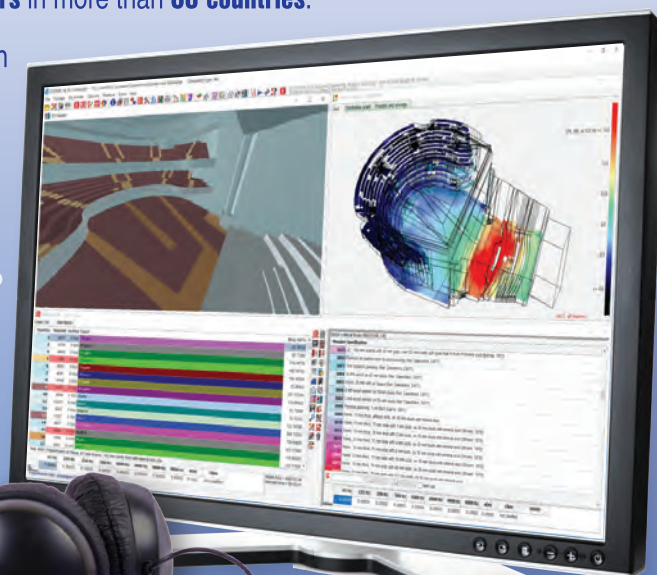
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