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**ANC** | ACOUSTICS &  
NOISE  
CONSULTANTS

# ACOUSTIC AWARDS

LEADING THE  
WAY IN NOISE  
AND ACOUSTICS

# 2014



# ACOUSTIC AWARDS 2014

The Association of Noise Consultants (ANC) awards promote and recognise 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. Work must have been undertaken in the last two years and the consultancy must be operating in the UK although the project may be elsewhere.

This year the Awards are:

<p><b>Architectural Acoustics</b></p> <hr/> <p>Sponsored by Ecophon</p>	<p><b>Environmental Noise Assessment</b></p> <hr/> <p>Sponsored by Bruel &amp; Kjaer</p>	<p><b>Sound Insulation</b></p> <hr/> <p>Sponsored by Robust Details Ltd</p>	<p><b>Transportation Noise Control</b></p> <hr/> <p>Sponsored by IAC</p>
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Eighteen entries were reduced to a shortlist of twelve across the four categories and all those entrants requested to make a brief presentation on their project immediately before the Awards ceremony. An award (sponsored by Rockwool) was made for the best presentation by one of the shortlisted projects and this was determined by those attending.

The judging panels were made up of representatives from other professions, academics, consultants and other interest groups.

The judges included:

<p><b>Geoff Leventhall</b> ANC Honorary Member</p> <hr/> <p><b>Alastair Blyth</b> Architect</p> <hr/> <p>Richard Cowell Arup</p>	<p><b>Trevor Cox</b> Salford University</p> <hr/> <p><b>Howard Price</b> CIEH</p> <hr/> <p><b>Lisa Lavia</b> Noise Abatement Society</p>	<p><b>Les Fothergill</b> ANC Honorary Member</p> <hr/> <p><b>Pam Lowery</b> HS2</p> <hr/> <p><b>And sponsor representatives.</b></p>
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Judges declared conflicts of interest in a few cases and did not participate in the decision making where appropriate. The Judges noted that they had not visited any of the projects or heard the results and so their decision is based on review of paperwork only.



# ARCHITECTURAL ACOUSTICS



## Winsford E-ACT Academy *WSP Acoustics*

This 12,500m<sup>2</sup> new build school for 1700 pupils, was delivered to a very tight budget of £18.1m achieving all relevant legislative and regulatory requirements, Building Bulletins as well as a BREEAM rating of “very good”. The Acoustician played a proactive role in successful design, without compromising quality, performance or budget.

Acoustics is often considered late in the design process, leading to less efficient, more costly, design solutions. The project considered the acoustic design from the outset and fully integrated it into the design, which was only possible by engaging the full scope of acoustic consultancy services from the outset. In some instances, the acoustic design dictated the architectural and structural appearance of the building. Such areas include The Street (main circulation space), Art and Design Technology Departments and the Sports Hall.

The judges noted that a range of acoustic solutions had been employed

and they were very effective in difficult spaces with a limited budget. It was most encouraging to see the integration of acoustics with the design from the earliest stage which had resulted in a successful acoustic environment being created. Talking to the architect at an early stage was an innovative element of this project and an approach which should be adopted wherever possible.

The testimonial of the headmaster admirably illustrates why this project is the winner of the 2014 Architectural Acoustics Award: “I can honestly say the acoustics in our new academy build are of the highest standard. I have lost count of the amount of times visitors and staff have commented on the quality of sound. This is an open environment by design and the potential for noise pollution is great without an acoustic design which absorbs the noise and buzz of learning at its most

potent. The Theatre is acoustically brilliant. Professional actors and performers never fail to comment on the quality of sound. The acoustic design is without doubt one of the most, if not the most, impressive aspect of this new environment”.



### HIGHLY COMMENDED

#### Fundacion Calouste Gulbenkian, Lisbon

*Arup Acoustics*

This project required design of an orchestral rehearsal room, whose volume and geometry were fundamentally inappropriate for their intended use. The radical approach resulted in a successful construction in a listed building – the home of the Gulbenkian Orchestra. Unfortunately, there was insufficient volume within the existing building to accommodate such a large room as would normally be required using a conventional design approach and so a unique and radical approach involving controlling loudness, and strong reflections together with the installation of an electroacoustic enhancement system was taken to fulfil the acoustic aspirations of the room.

The judges agreed this was an innovative solution as the consultant had managed to achieve the impossible within a space that lacked the required volume or size.

### COMMENDED

#### Radegund Hall, Coleridge Community College, Cambridge

*Max Fordham LLP*

This centrally placed Hall ties the school buildings together and is an important space for informal meetings and break time. A bank of tiered seating and mezzanine gallery provide scope for watching music and drama performances. An innovative acoustic design ensures that despite hard floor and soffit finishes, an excellent acoustic environment is achieved. Three bespoke acoustic absorption solutions support the architect’s aesthetic vision whilst eliminating excessive reverberation and harsh reflections. The Radegund Hall won the Cambridge Design & Construction Award 2013 for Best New Building over £1 million.

The judges noted that the absorption solutions were entirely appropriate and worked well to harmonise the acoustic and visual requirements. There was good collaboration with the architect and the space was designed to work for a variety of uses.

# ENVIRONMENTAL NOISE ASSESSMENT



## High Speed Two – Sound Demonstrations

Arup

The UK has very little existing high speed rail, and very little railway with noise mitigation. Hence the public has almost no experience of what High Speed 2 will sound like. This understandably increases public concern about potential noise impact.

The demonstrations have been played to leaders of community groups, MPs and central government officials. An estimated 25,000 people have heard what HS2 will sound like in their community, and are now better informed about the character, level and impact of high speed rail.

This project has, for the first time, used verified state-of-the-art 3D auralisation to complement design and consultation on a nationally-significant infrastructure project, including new techniques for:

- Auralising the same train travelling at different speeds
- Auralising the effect of the length of trains

- Auralising the effect of noise barriers on train sound
- Auralising the effect of aerodynamic shaping of trains
- Determining sound levels for edited ambient soundscapes
- Developing a robust method of calibrating the demonstrations
- Delivering sound demonstrations to a range of audiences through a number of mediums
- A method of playing ambisonic sound demonstrations over headphones

The judges were impressed by the practical and extremely useful nature of this project which provided a means to demonstrate noise in a way the general public would understand. It was an approach

that others should adopt and the engagement with those affected was a good example to follow on similar projects.



# SOUND INSULATION



## Racecourse Estate, Sunderland

Apex Acoustics

As of January 2012 the Racecourse Passivhaus Estate in Houghton-le-Spring, Tyne and Wear, was the largest residential Passivhaus scheme in the UK, built as part of a sustainable legacy. This was a pioneering development for the UK in terms of design and scale delivering Passivhaus with a more traditional UK design aesthetic as well as a new approach to customer education and engagement.

In the acoustic design, the performance achieved is of the highest quality - these may be the first dwellings to be measured in the UK to achieve the Class A categories for both sound insulation and ambient noise according to the Acoustic Classification Scheme proposed under COST Action TU0901, now to be adopted as an ISO Standard. Further, the method used to assess the sound insulation design is highly innovative and is transferrable to other design and testing assessments.

The judges noted that this project combined high performance thermal design with good sound insulation which offered a good way forward for sustainable development. They were pleased to see a post-occupancy assessment was undertaken and that ambient noise and noise from the ventilation system was considered. Using the latest information from the COST programme was an illustration of innovative and original thinking which helped this project to be declared the winner.

Mark Siddall, Project Architect commented: "As architects, we are often confounded by the demands of acousticians, but we were delighted by the approach taken by Apex Acoustics on this project. They were flexible in their approach, and always had suggestions that overcame the problems of detailing the junctions to

control thermal bridging and maintain the integrity of the air tightness in a buildable way, while also clearly remaining responsible for the sound insulation performance."



### HIGHLY COMMENDED

#### Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effect

Hoare Lea Acoustics

This entry provides detailed and ground-breaking scientific research and is the largest study of its kind to date. The findings represent a significant advancement in the scientific understanding of specific atypical features of wind turbine noise, including their causes and potential mitigation strategies. The success of the project relies heavily on the practical experience of the consultant and represents a prime example of how noise consultants not only apply existing good practice, but can also be at the forefront of developing a deeper fundamental understanding of previously unexplained acoustic phenomena.

The judges agreed that this was innovative and original and it stands out for the significant acoustics element compared to some other entries. Finding ways of identifying AM noise will be beneficial and useful and this project contributes to achieving that aim.

### COMMENDED

#### Calculations of Noise Levels from Road and Rail Sources for END Round 2 Mapping

Hepworth Acoustics

The project is the world's largest noise mapping calculation project in terms of the number of calculation locations (approximately 950 million) and calculation results (approximately 15 billion). However, it is not only the size of the project that makes it special, but the fact that the project involved staff from a number of SMEs working in five offices located in four European countries working simultaneously to complete the work to a very tight timescale. Whilst the scale of the project was unprecedented, it was the organisation of the work procedures and work flows that made the project special. It demonstrated how SMEs can tackle the largest of acoustic calculation projects and meet project requirements on time and on budget.

The judges considered this whilst the acoustics element of this project was relatively straightforward, it deserves recognition due to the impressive nature of the project and the efficient management required.

### HIGHLY COMMENDED

#### One Hyde Park, London

Clarke Saunders Associates

The scale, value and profile of the project put it in a class of its own from the outset. The consultant faced, and then delivered upon, an exacting client brief which required practical implementation advice to numerous sub-contractors, the management of potential conflicts and ensuring consistency throughout. Sound insulation proved especially challenging due to several factors including the location of the project, the bespoke nature of the individual dwellings and the high expectations of the clients. Original project specific solutions were developed in a number of key areas, providing super-robust wall and floor constructions, a façade interface material which has since been taken to market and perfecting the sound insulation of sliding glazed balcony doors which open onto one of the noisiest junctions in London.

The judges agreed that this displayed innovation and pioneering acoustic design in responding to an extremely demanding specification.

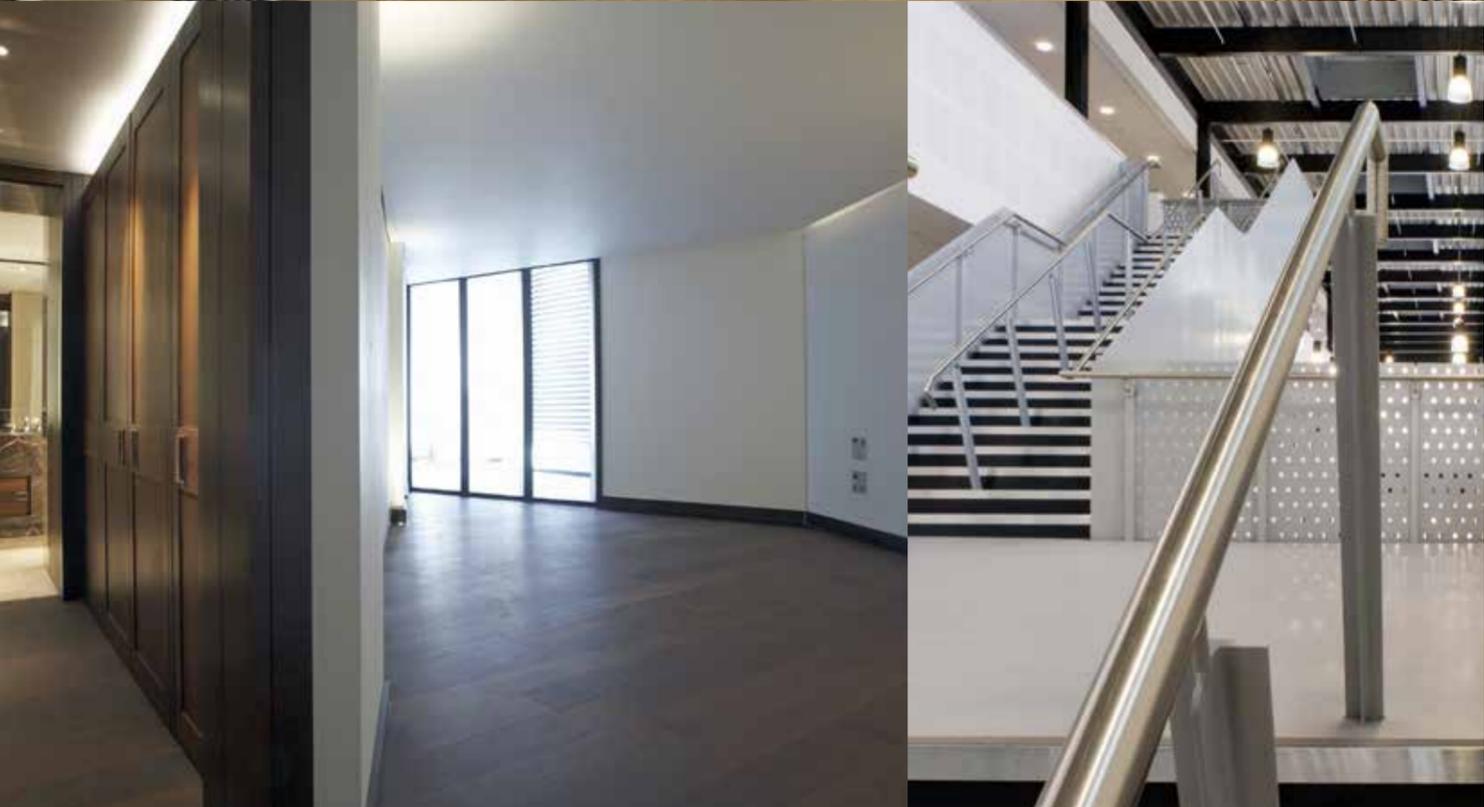
### COMMENDED

#### Saw Swee Hock Student Centre, London School of Economics

Arup

A very demanding brief had been devised with diverse functions and adjacencies – a music venue; places for reflection, a pub, café and juice bar, office spaces, exercise spaces, broadcasting suites, etc - packed into an extremely tight, awkwardly-shaped site, with neighbouring buildings and properties hard-up against the building line on all sides. In addition to internal isolation and ventilation one of the most onerous tasks was to successfully isolate sound between the building's 1000 person-capacity music venue and the adjacent Peacock Theatre and also to control noise egress to the surround environment.

The judges noted that the high degree of isolation that had been achieved using established techniques which had been customised to suit the difficult site. It demonstrated inspirational design in seeking appropriate resolution to the problems posed.



# TRANSPORTATION NOISE CONTROL



## Ground-borne sound and vibration from trains

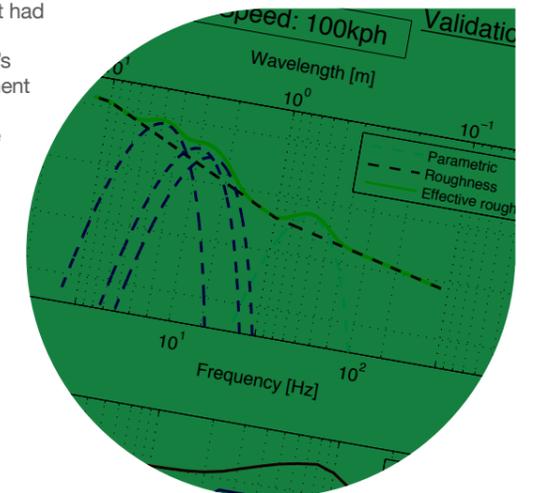
*Arup*

High Speed 2 is a nationally-significant project, high in the public's awareness. In terms of track km, this project is the largest implementation of a ground-borne sound and vibration prediction model in the UK. It is also the first time a project has implemented a method to predict ground vibration from trains in revenue service at speeds of up to 360km/h. Consideration of these speeds has led to a better understanding of the parameters that are most important vibration generation and hence how HS2 can be designed so that it minimises the impact of ground-borne sound and vibration.

This project developed an accurate prediction method for ground-borne noise and vibration which is able to extrapolate to train speeds greater than 300km/h by ensuring that the mechanisms that generate ground-borne vibration, such as wheel and rail roughness, are appropriate for the required speed range and by

maximising the goodness of fit of the model with the available data at lower speeds.

The judges noted this work was pioneering, as a model to predict GBNV from trains in excess of 360km/h did not exist and were encouraged to see that input had been sought from an expert group throughout the model's development. The development of the model is a significant step forward in groundborne sound and vibration modelling, possibly discovering something that was unknown previously and so receives the transportation noise control award.



### HIGHLY COMMENDED

#### British Airways East and West Base Ground Running Pens

*Clarke Saunders Associates*

The acoustic design of two new ground running pens for the Airbus A380 aircraft, the largest passenger aircraft in the world, was a unique design and validation opportunity in the development of a modern ground running system to address both the critical noise control and aerodynamic challenges for the Airbus A380.

The judges agreed that the consultant had demonstrated an ability to use their acoustic knowledge to seek innovative solutions to problems. The resulting pens do not just appear to be fit for purpose but also compliant with the noise limits agreed with the local authority.

### COMMENDED

#### Park House, London

*Hann Tucker Associates*

This is one of the most complex vibration isolated buildings with exceptional sound insulation performance, and detailed internal noise climate dominated by carefully designed building services. The project involved development of a model to predict the ground borne noise and vibration from the railway travelling beneath the building and developing a strategy for the mitigation.

The judges considered this demonstrated a wide range of skills particularly of innovative design thinking. Through engagement at an early stage with the client, a challenging goal was set in relation to groundborne noise levels and the consultant showed willingness to be aware of the practical implications of the acoustic design.

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