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The ANC Sustainability Series

Quality Education

Raising the profile of sustainability within ANC member companies

ANC Sustainability Committee

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Introduction

Access to high-quality education is not just about the quality of teaching in school, but also about providing a suitable environment to allow students and teachers to communicate effectively, clearly, and study, free of distraction.

The UN's Sustainable Development Goal 4 (quality education) identifies the need to ensure that people have access to inclusive and equitable education and that all have the opportunity to lifelong learning. It is proposed that without providing high quality education to as many people as possible many of the solutions that are key to our survival on this planet and ultimately achieving the remaining UN's Sustainable Development Goals are unlikely to be achieved [1].

This document provides details on the existing guidance and standards available to demonstrate good acoustic design for education establishments.

What does sustainable education look like?

Sustainable education design will "*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*" (UN Sustainable Development Goal 4).

This means providing education opportunities for all learners in facilities from pre-school to higher education. Education should be accessible to the range of people who use the spaces, and equally accessible to the education providers teaching in these buildings.

To meet the UN goal, it is proposed that it is not just sufficient to provide good acoustic environments for new and refurbished works to appropriate guidance, but to aim to identify existing spaces that fall short of modern regulations and upgrade them to ensure appropriate educational environments for all.

Designing sustainably will include, but is not limited to, the consideration of:

- Materials used in the build
  - Longevity of materials
  - Environmental impact of build and supply process
  - End of life management of material
- Auditory experience for users
- Inclusive environment design that can provide suitable spaces and support systems for all users (neurotypical, neurodiverse, those with hearing differences, those with learning differences, English as an Additional Language etc). This might include providing a variety of spaces and acoustic flexibility for users
- Reducing speech / voice strain for teachers
- Design of external spaces and the soundscape of the facility
- Optimising build costs to allow for more/better facilities to benefit the students/users

Compulsory Education

Together the School Premises Regulations 2012 [2], Independent School Standards 2019 [3] and The Standards for School Premises 2015 [4] apply to every type of teaching environment in England for Primary and Secondary aged school children. This is irrespective of any requirement to comply with the Building Regulations; for example, during low-level refurbishments, or changing the use of a teaching space.

All of these recognise the need to ensure that schools meet the need of students and comply with The Equality Act 2010 [5], which clearly states that schools must implement accessibility plans to accommodate the needs of disabled students.

These documents apply to all school premises and any associated land, including temporary accommodation. They promote the provision for 'suitable' environments to cater to students' specific needs, and identify the need for all schools to be able to cater to any "special requirements" that a pupil may have. This includes physical, medical, sensory, learning, emotional or behavioural difficulties which require special provision.

Acoustic design of schools: performance standards – Building Bulletin 93 (BB93) [6] and the *Building Regulations Approved Document E: resistance to the passage of sound* (Part E) [7] are referenced in the Standards for School Premises as the primary way of designing a suitable acoustic environment. They also identify the need for rooms used for the teaching of SEN students to have lower reverberation times and ambient noise levels, and the requirement for teaching and learning spaces to be suitable for the activities taking place within them, which is reflected in the BB93 guidance.

BB93 and the associated design guide, therefore, form an integral part of the design for all school buildings. Although compliance with the document will ensure compliance with Part E4 of the Building Regulations, it remains important that the design considers the practical use of the spaces.

For this reason, it is often appropriate for the acoustic design to exceed the criteria set out in BB93 to ensure a functional building.

Early Years Education

Early years education, such as pre-school and nursery buildings, are not covered under Part E of the Building Regulations unless part of a wider school complex [6].

However, as an education facility the premises still need to comply with The Standards for School Premises, including nurseries, community, community special, foundation, foundation special and voluntary schools and to pupil referral units [4].

As discussed, these regulations clearly identify the need for good acoustic design, and The Standards for School Premises references BB93 as the primary document to set suitable performance standards for the acoustic design.

Further and Higher Education

Whilst design guidance like BB93 sets out clear design objectives for pre-school nurseries, primary and secondary schools, it does not apply to further education facilities such as sixth-form colleges, universities, and higher education colleges. (It is worth noting that some sixth-forms are considered schools rather than institutes of further education, and so whether a sixth-form falls under requirement E4 often must be clarified by the Local Authority)

BB93 does state that "*...in the case of universities or colleges of further and higher education many of the acoustic specifications are desirable and can be used as a guide to the design of these buildings.*"

Often acoustic related BREEAM credits mean that BB93 is adopted for higher education facilities, however, it is recognised that in the absence of BREEAM or Employers Requirements, there is no specific acoustic performance standard requirement for further education buildings. In addition to providing an appropriate teaching environment for students, there is a clear advantage for further education establishmentsto demonstrate that their facilities are built to a high standard. High quality facilities will ultimatelyresult in better perceived value for students considering whether to enrol, better student engagementand ultimatelymore interestin the establishment; all desirable outcomes to create sustainable teaching environments.

Despite commercial advantages, it must be remembered that further education facilities have a duty of care to their students and must still ensure that they undertakes their duties in accordance with The Equality Act 2010 [8].

In the absence of other guidance, BB93 is a reasonable basis for the design of further education buildings. One obvious pitfall however is the room types identified in BB93 do not often match those in Universities or Colleges.

Properly considering the needs of the users is a foundation of sustainable design.

Good stakeholder engagement is necessary to fully understand the user requirements for the space. In some education facilities, this might include talking to existing students and faculties to understand their learning needs, as well as researchers and even equipment suppliers to understand the range of acoustic conditions that will best serve the users. This will sometimes lead to modifications and adaptations to the criteria in BB93 to meet the bespoke needs of the users (which in turn has sustainable material benefits as we avoid over or under design).

Special Needs and Inclusivity

The Department for Education Building Bulletins identify the need for good acoustic design for children with Special Educational Needs and Disability (SEND).

These documents identify the need for acoustic design at the design stages, but do not provide any criteria. More detailed guidance for SEND students is contained in Building Bulletin 93 (BB93).

A common misconception is that the SEND provisions of BB93 only apply to students with a hearing impairment. The SEND provision, however, is intended to accommodate a wide range of disabilities and specialist requirements, including:

- speech, language, and communication differences
- visual impairments
- fluctuating hearing impairments caused by conductive hearing loss
- attention deficit hyperactivity disorders (ADHD)
- an auditory processing disorder or difference
- being on the autistic spectrum
- English as an additional language
- Other needs such as social, emotional, and mental health, and dyslexia

It must be remembered that during the lifetime of the school building, a significant number of pupils taught in a school are likely to exhibit one or multiple of the above needs or disabilities.

In the case of schooling provided by Local Authority, failure to accommodate the needs of students can result in alternative accommodation having to be sourced, paid for, and provided by the Local Authority. This is normally accessible to the child's guardian through the tribunal process [9].

In addition to the Building Bulletins the Equality Act 2010 is relevant to acoustics as it highlights the legal requirement for inclusive design for students with special needs, and students whose first language is not primarily being used in the school environment.

It is important to understand that the criteria for SEND teaching spaces and ancillary rooms used by SEND students is relatively broad and it is not sufficient to simply apply the BB93 criteria without first understanding the use of the space.

For example, many specialist schools value flexibility, so students are able to retreat from the main teaching areas when overwhelmed. In these cases, often a flexible approach needs to be considered. For example, staff may wish to let students work in corridors to act as a low-level calming space that is not too distant from the classroom.

However, this is clearly not appropriate for students that are vocally distressed and often strategically placed calming rooms or sensory spaces need to be used while minimising the disturbance to other students.

As previously discussed, for true sustainable design, the school premises regulations and independent school standards promote inclusive design in all schools, and not just those who wholly cater to SEND students.

References

[1] https://ora.ox.ac.uk/objects/uuid:029aa484-678f-4804-ae0d-2cc66766e7d1/download_file?file_format=pdf&safe_filename=Walid_Y_Alali_Contribution_of_Education_to_Development-Ver-03.pdf&type_of_work=Dataset#:~:text=No%20economic%20development%20can%20be,micro%20level%20of%20the%20family.

[2] https://www.legislation.gov.uk/uksi/2012/1943/contents/made

[3] https://assets.publishing.service.gov.uk/media/5cd3fc2fe5274a3fd6ee74b0/Independent_School_Standards-_Guidance_070519.pdf

[4] https://assets.publishing.service.gov.uk/media/5b339888e5274a55b88ed342/Advice_on_standards_for_school_premises.pdf

[5] https://www.legislation.gov.uk/ukpga/2010/15/contents

[6] https://assets.publishing.service.gov.uk/media/5a8170d3e5274a2e8ab54012/BB93_February_2015.pdf

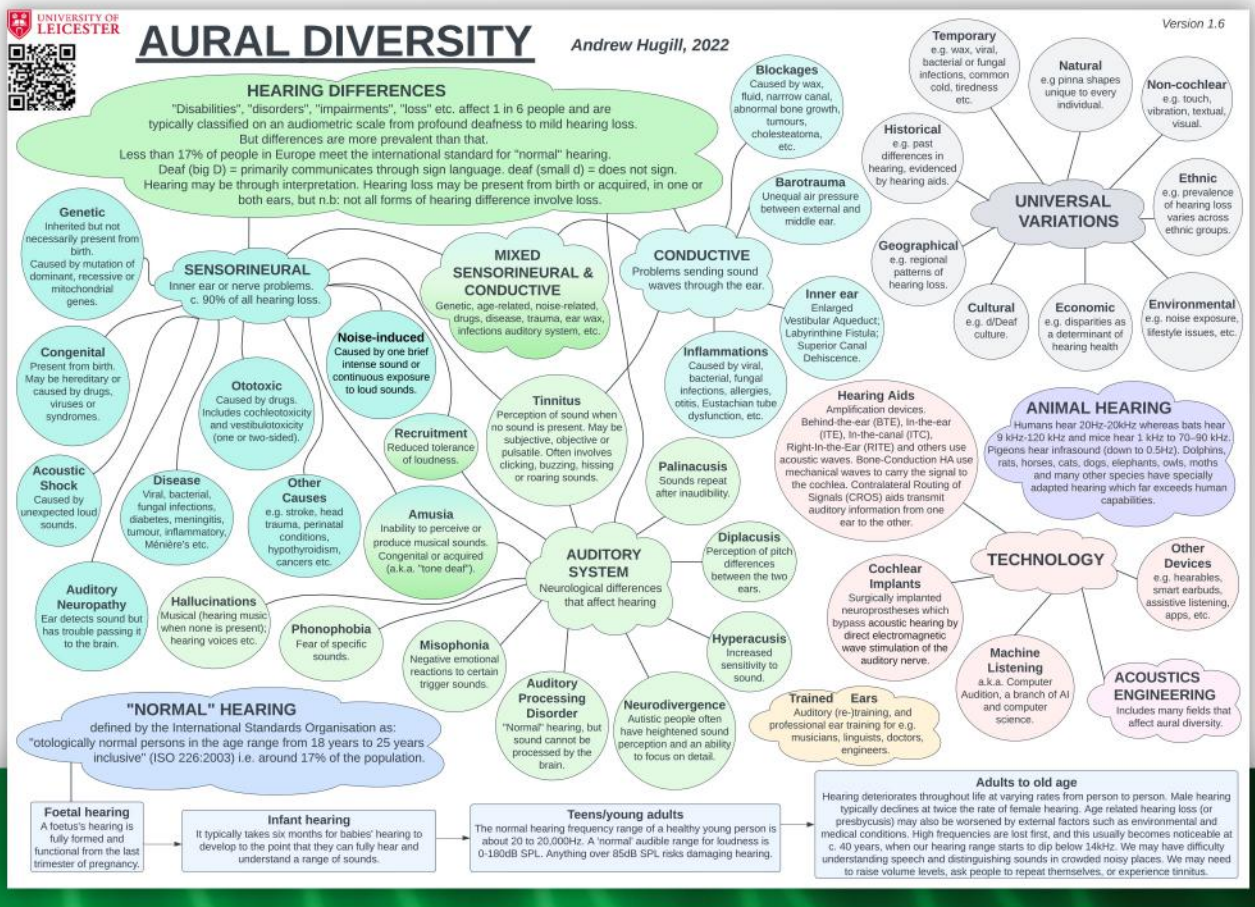
[7] https://assets.publishing.service.gov.uk/media/5a809c4fe5274a2e87dbacb9/ADE_LOCKED.pdf

[8] https://www.strath.ac.uk/media/ps/sees/disabilityservice/equalityanddiversity/fehe_students_guide_Nov_2012.pdf

[9] - https://www.gov.uk/courts-tribunals/first-tier-tribunal-special-educational-needs-and-disability

Further related resources:

On aural diversity and the range of user experience requirements:
https://auraldiversity.org/network.html



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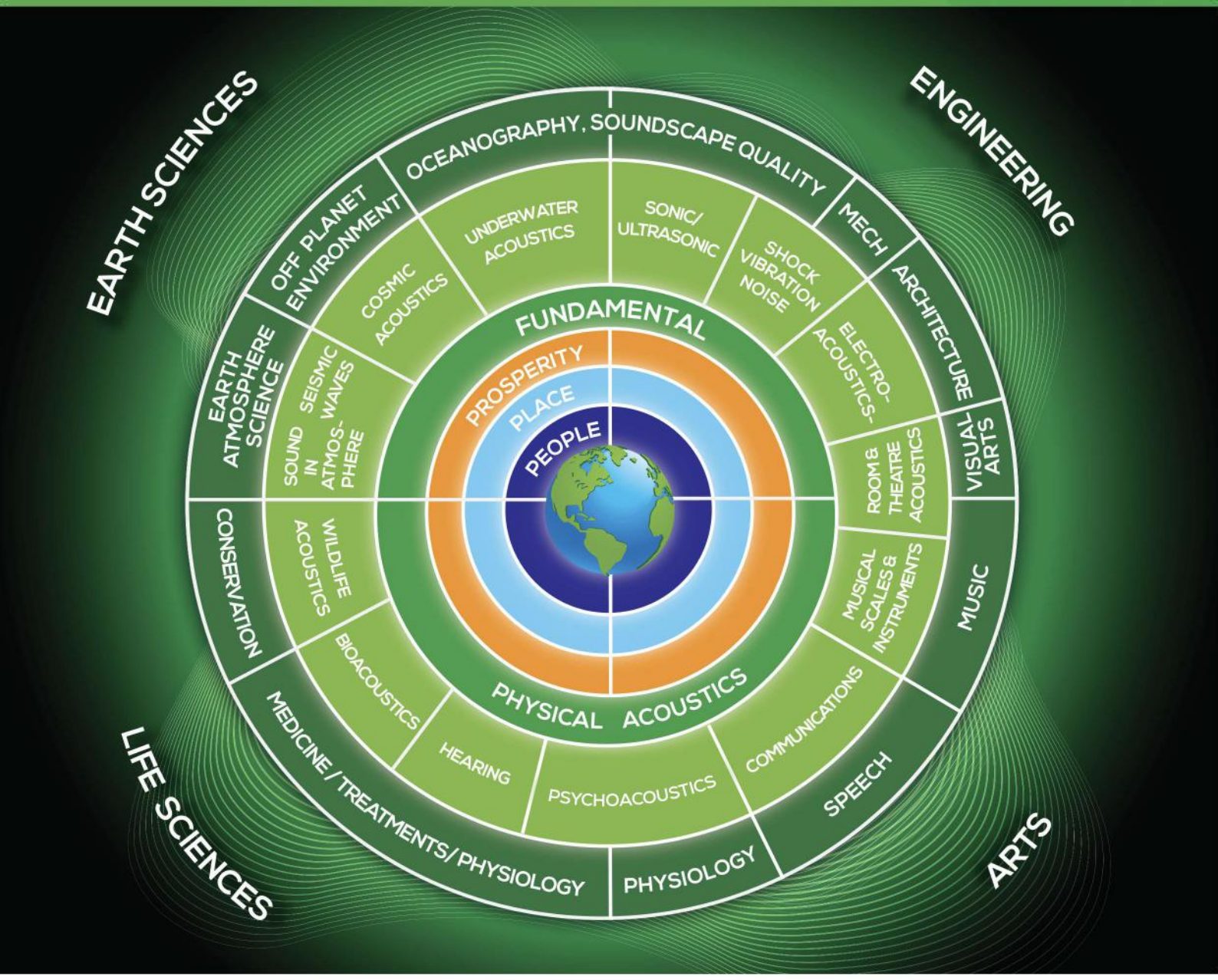
A MODEL OF SUSTAINABILITY IN ACOUSTICS



The Lexicon of Sustainable Acoustics

The lexicon of Sustainable Acoustics, developed by ANC member Peter Rogers in his Internoise paper in 2022, sets out a vision for how acoustics can deliver sustainability. It provides a lens through which ANC members can begin their thinking at the centre with the planet central in their minds adding in the elements like a priority of thoughts through to the rim, on which their discipline may reside. By doing this as a process, the aim will be to embed sustainability into the acoustic solution along the way. An evolution of Lindsay's Wheel of Acoustics, which emerged in 1966 in the Journal of the Acoustical Society of American, identifying eight specific fields, this Sustainable Acoustics graphic illustrates how diverse the area of acoustics is and remains relevant to this day to humanity but also that all species should be considered. It sets out a vision that includes some updates for the new and emerging fields, which will evolve in time, as acousticians need to. This lexicon provides a new framework which acousticians can use to think through and communicate how they deliver acoustics, which combines acoustics and sustainable principles as a lens through which challenges should be approached, can be objectively quantified at delivery in a transdisciplinary way.

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