



Providing a BB93-compliant reverberation solution in primary school renovation

PROJECT DETAILS:

Location	Liverpool, North West England
Objective	Optimised acoustic environment within newly refurbished spaces
Client	Arnot St Mary's Primary School
Sector	Schools
Hush Products	Hush Absorber 50, Hush Circular Absorbers

A key design goal for the architects was to ensure that the acoustic conditions within these new spaces would be fully compliant with BB93, the Building Regulations associated guidance for school buildings in England & Wales. The architects had developed a deeper understanding of how to achieve this goal during a recent CPD presentation delivered by Hush, a training session which enabled a provisional design to be developed featuring absorber panels.

The Challenge

The initial sound absorption proposal was insufficient to meet the target reverberation time (RT) stipulated in BB93. This is the time it takes for sound to decay by 60 decibels (dB) in a space after the source stops. In the bulletin, a maximum average RT of between 1.5 and 2.0 seconds, measured across a range of frequencies, is required in educational spaces of this type.

As is common in rooms where many hard surfaces are present, such as plastered walls and wooden floors, there is little scope for soundwaves generated through everyday activities including speaking and music playing to be absorbed. This results in a high level of sound bouncing back off the hard surfaces into the room, causing the space to feel uncomfortably noisy and making it unsuitable for an education environment.



Background

A renovation project at Arnot St Mary's Primary School, led by ABW Architects, sought to deliver an optimised acoustic environment within newly refurbished spaces.

The project at the large school in Walton-on-the-Hill, Liverpool, involved redeveloping existing out-dated Early Years classrooms within the Grade II listed building by opening them up and transforming them into vibrant, playful spaces.

The aim here was to celebrate the original Victorian features of the school, which dates back to 1884 and provides education for over 400 children aged 2-11, whilst providing staff and children with joyful areas for teaching and learning.

The redesign of a large proportion of the ground floor accommodation has created a new 134 sq. m Early Years teaching area along with a smaller 62 sq. m Baby Room, separated by a corridor which provides access to toilet facilities and a staff kitchen.





The Solution

To ensure compliance, the architects invited Hush to propose a solution for managing the potential for reverberation and echo. This process started with an assessment of the newly reconfigured spaces, taking into account the types of surfaces present, the size of the rooms and anticipated usage.

The Hush technical team helped to create an absorption specification through the use of its computer modelling software to accommodate the low RT times in all the areas that needed treatment. This collaborative approach enabled Hush to offer valuable specialist input in relation to the number and type of absorption products required to deliver the necessary coverage.

Following a series of calculations, Hush were able to propose a solution involving several of their Class A absorber products, a category representing the highest levels of absorption. The combination of these products, positioned strategically, would significantly reduce the potential for soundwaves reflecting back into the room.

Installation was completed by Acoustic Design (North West), a highly experienced specialist sub-contractor that regularly partners with Hush Acoustics on projects designed to address reverberation issues. The partnership illustrates how Hush can help to facilitate the installation of its products including through logistical support to ensure products are delivered to site on time, as expected.

The most visible anti-reverberation products installed at Arnot St Mary's are the Hush Circular Absorbers, acoustic absorber rafts, hanging from the ceiling. These 40mm thick, 1200mm diameter acoustic rafts create an attractive visual feature within the rooms, with their outer fabric finished in two colours – Apple and Slip – to complement the rest of the décor.

A total of 44 acoustic absorber rafts were installed, enabling additional absorption to be added to the ceilings without being constrained by the position of pipework and services.

More discreet absorption was provided by Hush Absorber 50 panels installed within the surface areas available on the ceilings and in selected wall locations. These were finished in white to match the neutral tone of the walls and ceilings so they could blend in rather than be a noticeable feature.

The Results

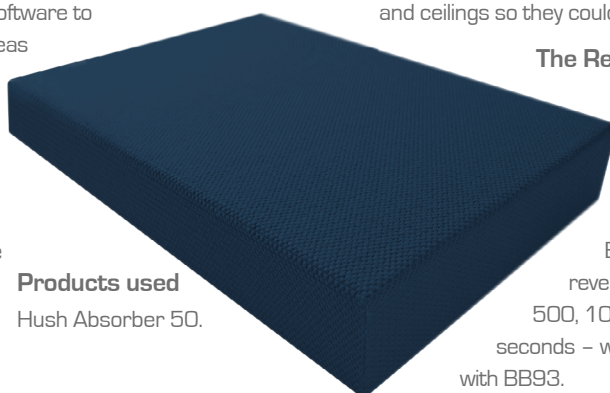
A total of 237 Hush Absorber 50 panels were installed in a variety of sizes to maximise the absorption area within both the Early Years and Baby Room environments.

By installing this package of absorber products, reverberation calculations conducted at frequencies of 500, 1000 and 2000Hz revealed an average RT of 0.8 seconds – well within the 1.5-2.0s range required to comply with BB93.

The project architect said:

"Creating the right acoustic environment within the remodelled spaces at Arnot St Mary's Primary School was extremely important given how excessive noise can negatively impact on learning and development. By engaging with Hush early, we were able to develop a highly effective strategy to prevent reverberation and echo within these rooms to levels required under BB93, but also one that contributes to the visual appeal of the spaces."

For specialist acoustic insulation advice and support, and to find out more about the products available from Hush Acoustics, call **0114 551 8681** or visit www.hushacoustics.co.uk.



Products used

Hush Absorber 50.

