

Case study

School meets acoustic targets using ROCKWOOL® products

Nottingham Girls' High School





The project

Nottingham Girls' High School is an independent school that educates girls from infants to sixth form.

Located in the heart of Nottingham, the school forms part of the Girls' Day School Trust, the UK's leading network of independent girls' schools. With the aim to expand the school's facilities, a performing arts centre consisting of a 275 seat auditorium was constructed. This £9 million centre marked an important milestone in Nottingham Girls' High School's development, providing a state-of-the-art facility for the performing arts department.

To coincide with school holidays, work began at the school towards the end 2015, with the first phase of the project installed by mid-December 2015. The whole project was completed by 30th July 2016.





The challenge

As a performing arts block within the school grounds, acoustic performance was an essential requirement for the flat roof system, so this dominated the specification process.

Tasked with completing the project's flat roof system, Nottingham-based roofing contractor, NRA Roofing and Flooring Services Ltd had to overcome two acoustic challenges which are common in performing arts buildings: prevent the breakout of sound from the auditorium to surrounding areas of the school, and provide an efficient acoustic environment within the centre to reduce or remove any impact from external noises, including rain. The contractor had to demonstrate that the roof had been designed and installed to provide suitable control of rain noise reverberation and achieve a noise performance standard of LAeq 30 dB.

NRA Roofing and Flooring Services Ltd had to take into consideration the requirements set out in Building Bulletin 93 (BB93), a document outlining minimum performance standards for the acoustics of school buildings. With all school buildings subject to detailed design checks and onsite inspections by building control bodies, NRA Roofing and Flooring Services Ltd had to ensure all sound regulations were met.

As well as focusing on the building's acoustic performance, the roof system was also required to meet thermal standards. As a new build auditorium, the building had to achieve thermal performances of 0.16, 0.18, and 0.20 W/m²K.



The solution

A combination of ROCKWOOL® flat roof solutions was specified to accommodate the building's thermal and acoustic performance requirements.

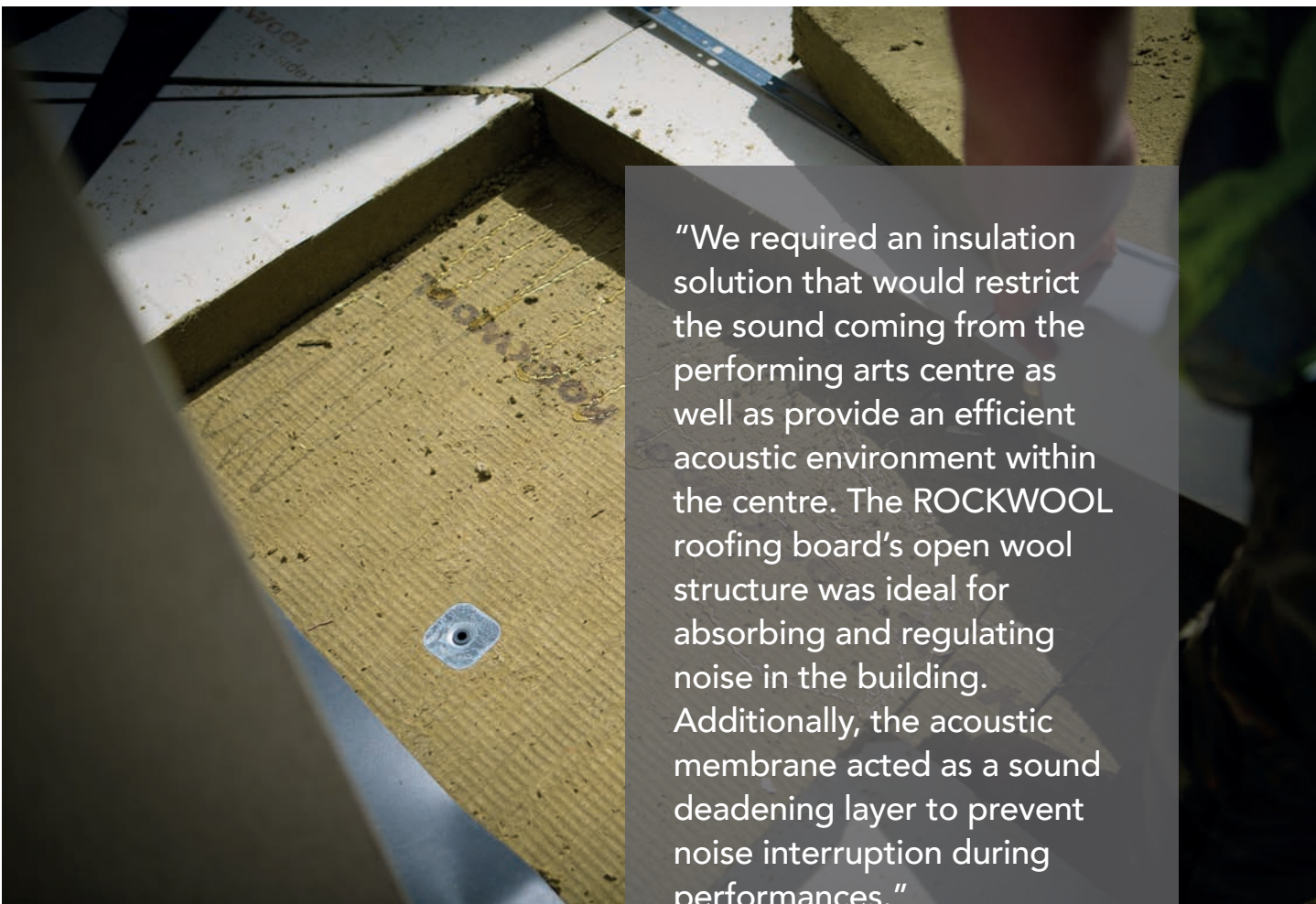
The team at NRA Roofing and Flooring Services Ltd installed two layers of 5mm acoustic matting, followed by a polythene vapour control layer. The team then installed 319m² of 150mm HardRock® Multi-Fix Dual Density (DD) underlay, 638m² of HardRock Multi-Fix (DD) Tapered, over 325m² of HardRock Multi-Fix (DD) in 60mm, 85mm and 185mm thicknesses and 1,010m² of 10Kg/m² ROCKWOOL Acoustic Membrane onto the roof. The roof was completed with a bonded, single-ply waterproofing membrane.

Offering high density and exceptional dimensional stability, HardRock Multi-Fix (DD) boards were installed with staggered and tightly butted joints on the roof.

The HardRock Multi-Fix board helped to deliver a comprehensive thermal, sound and non-combustible solution suitable for this type of application. Designed to reduce the risk of ponding and standing water by creating a gradient, HardRock Multi-Fix (DD) Tapered boards were used to help maintain the acoustic ambience below the roof.

HardRock Multi-Fix products provide excellent sound absorption and are fully compatible for use with other flat roofing systems to offer a thorough noise reduction scheme.

In addition to HardRock Multi-Fix products, a ROCKWOOL Acoustic Membrane was laid directly onto the structural deck of the roof with the HardRock Multi-Fix (DD) Underlay placed across the roof.



“We required an insulation solution that would restrict the sound coming from the performing arts centre as well as provide an efficient acoustic environment within the centre. The ROCKWOOL roofing board's open wool structure was ideal for absorbing and regulating noise in the building. Additionally, the acoustic membrane acted as a sound deadening layer to prevent noise interruption during performances.”

Kevin Dixon
Project Manager
NRA Roofing and Flooring Services Ltd



The result

The inherent acoustic properties of ROCKWOOL products provided the performing arts centre at Nottingham Girls' High School with a highly efficient sound prevention system that met the project acoustic requirements. In addition, ROCKWOOL insulation also provided the school with optimum thermal conditions.

