

NVA CASE STUDY:

WINFORD PRIMARY SCHOOL

Application:

Vented Facade

Cross Ventilation

Requirement:

BB93

BB101

Key Products/Services:

Environmental Survey

Consultancy

NAT Vent Attenuator (NVA)

Partners:

Stride Treglown

Awards:

BREEAM 'Very Good'

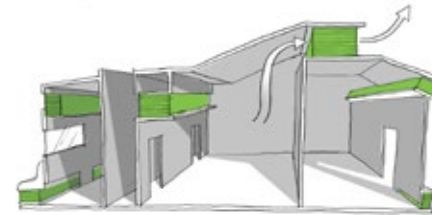


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PRODUCTS

Winford school is located directly under the flight path of Bristol Airport, as such noise ingress is a significant issue. During the design stage of this building several design options were reviewed.

The school is a prime example of the versatility of the NVA and MACH Acoustics. Facade ventilation is incorporated through window and horizontal louvres. Cross ventilation is applied through internal benches and exhausted through atrium vents.

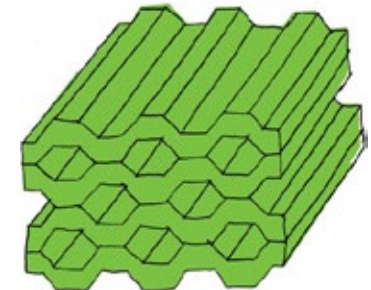
Project Features.



For the design of this building cost was a primary factor. There was a desire to naturally ventilate but under the flight path of Bristol Airport and with cost limits it was a challenge acoustically.

A full natural ventilation strategy was designed in partnership with Stride Treglown Architects. Air would enter the building through openable windows and horizontal louvred ducts and exit through the roof of a central atrium known as the 'heart'.

NAT Vent Attenuator.



One of the main difficulties in designing low energy buildings is the prevention of noise break-in from the many noisy sources affecting modern buildings, including motorways, dual carriageways, trains, airplanes and inner city noise.

The NVA was designed to form a unison between natural ventilation and acoustics, without having to design your building around large bulkheads accommodating big heavy attenuators.

Sustainable Acoustics

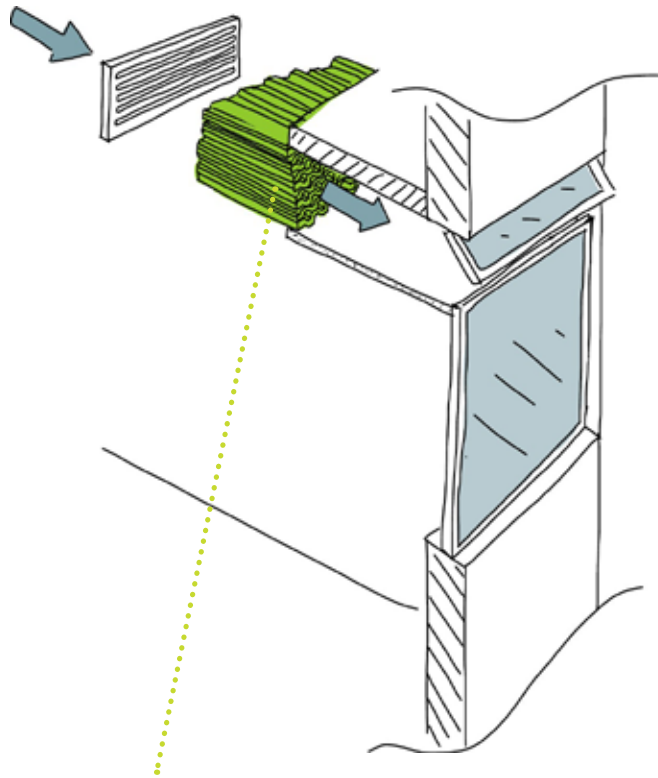
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Window Facade.

In order to increase the feeling of space in the classrooms, the window bulkheads were installed externally, using a letterbox system of plasterboard ducts.

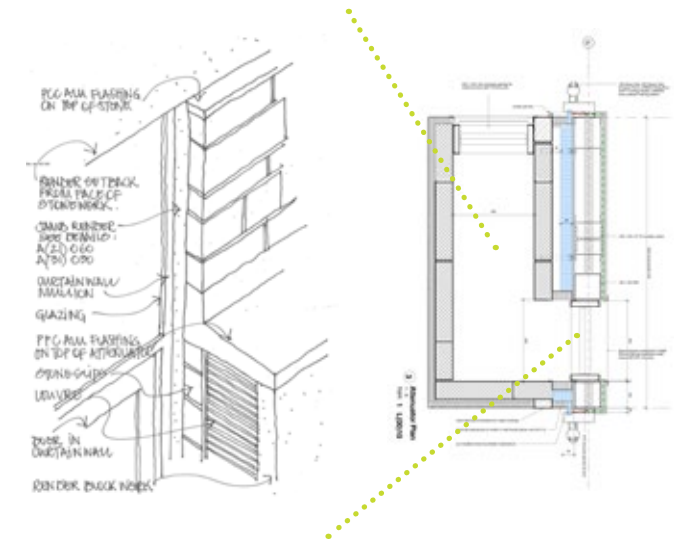
Rather than resorting to actuated thermal dampers and adding addition costs, the NVA placed directly behind the BMS managed window.



Following the construction of a plasterboard bulkhead, the NVA foam is slid into place in layers to form the honeycomb arrangement

Horizontal Facade.

The horizontal facade featured a 90° bend: reducing the protrusion and increasing acoustic attenuation.



The thermal damper was actuated by the building management system (BMS).



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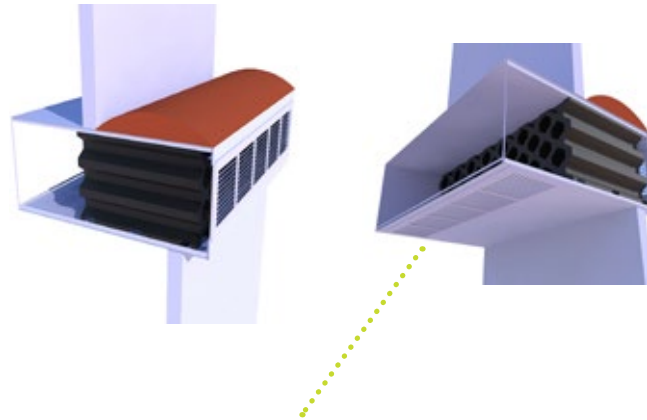
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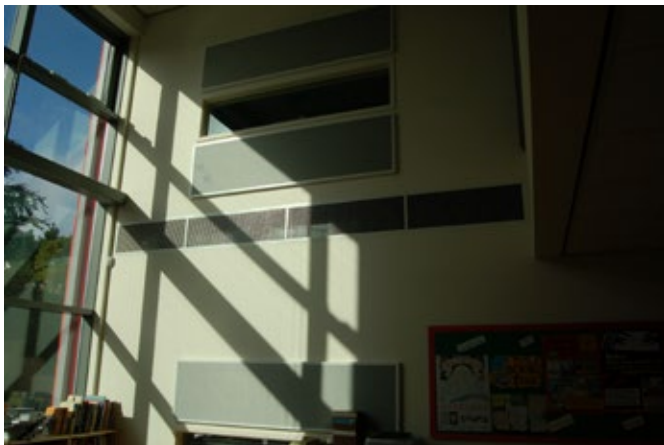
Cross Ventilation.

To optimise the space within the school, the cross ventilation between floors used a dog-leg type of duct, opening through discrete ducts within benches - in addition to classroom-atrium cross vents.

Like the horizontal facade, the 90° bend minimises the impact of the duct but also increases the acoustic attenuation.



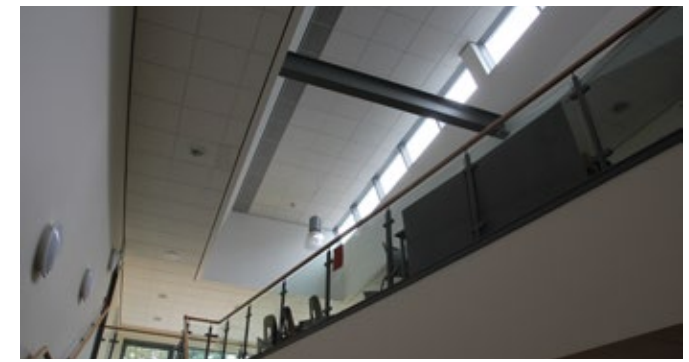
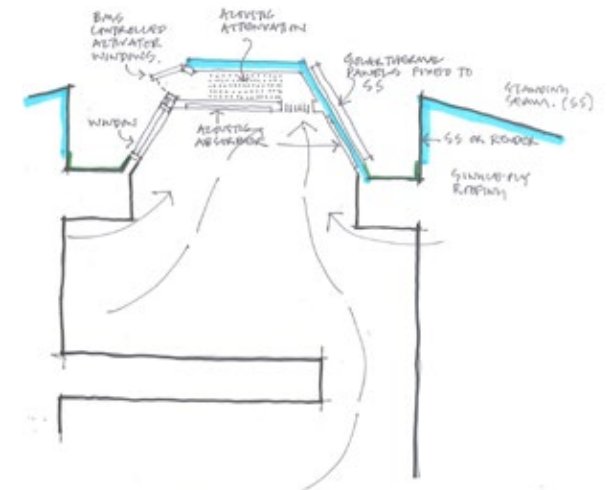
The tessellating foam is horizontally arranged in the bulkhead, forming the honeycomb formation. The process is the same whether installing to MF tracks or a pre-fabricated bulkhead like this bench.



Plenum.

The central 'heart' of the building includes a plenum, where the hot air will exit the building. The design included a NVA bulkhead, mounted with BMS controlled actuated windows.

Working with Strides, the flexibility and bespoke nature of the NVA allowed for this design and enabled the same space to include solar thermal panels.



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Result.

- 1 The externally mounted window bulkhead.
- 2 The internal windows
- 3 The atrium

- 4 Green discrete cross-vent bench
- 5 Cross-vent bench ceiling grill
- 6 Another view of atrium



The school was fully compliant with BB93, confirming exceptional acoustic design considering the potential clash between natural ventilation and the busy Bristol Airport flight path.

Importantly, the reception of the building has been extremely positive, with teachers, parents and pupils heaping praise for the spacious and pleasant working environment. Winford's pupils, who, according to parents are now 'excited' to go to school, enjoy day lit, naturally ventilated internal spaces with glazed screens between them so that all activity is in view.

The build received a BREEAM 'Very Good' rating and will generate a minimum of 15% of predicted energy consumption, thanks in part to the well executed natural ventilation system.



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