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B&K HYBRID SOLUTIONS

Haileybury SciTech Centre Hertford, UK

Haileybury School in Hertfordshire, UK, opened its SciTech Centre in March 2025 with Dame Jocelyn Bell Burnell, renowned astrophysicist, conducting the ribbon-cutting ceremony. The project has gone on to receive widespread praise from the client, staff, and students and the mass timber architectural community. Founded in 1862, Haileybury is an independent school for ages 11-18, both day and boarding pupils.

This incredible project doubled the size of the school's previous facilities while supporting their Net Zero sustainability goals. The new facilities provide state-of-the-art laboratories and IT and robotics suites, and inspires students to see themselves as scientists, engineers, and mechanics in the architecturally striking timber extension.

Architectural concept

A design competition led to Hopkins Architects being appointed to lead the design team, which also included Integral Engineers, Atelier Ten, Adrian James, and Kier as the main contractor.

One of our trusted UK partners, B&K Hybrid Solutions (BKHS), were selected to design, manufacture, and erect the cross-laminated timber (CLT) and glue-laminated timber (GLT/glulam) elements for the structural frame of the three-storey, 50-metre-long teaching block and the two-storey, 15-square-metre research block. An elegant, light-filled cloister links the two buildings and offers a focus for the square formed by the old and new buildings.

The architectural concept involved opening up the back of Herbert Baker's grade II-listed science building to create an axial connection between one side of the cloister and the contemporary Design Technology building opposite.

A new teaching building containing biology and computational laboratories was arranged in a linear block, three storeys high, as an extension to one of the wings of the Baker Building.

The classrooms are located at either end of the block allowing for windows on all three sides to maximise daylight and views.

The fourth side of the courtyard is formed by the two storey top lit research block with a butterfly rooflight.

Structural timber systems

While the roof forms a truncated pyramid featuring a central butterfly roof, the glulam beams cantilever from the spine wall, propped at each end by hip beams extending down to the perimeter ring beam. The elegant design of the connections between the hip members and the tension and compression rings was key to the success of the final design.

Specialist timber engineer Engenuiti devised multiple unique connection details for the complex roof designs. Harry Snook of Engenuiti said, "The aesthetics of the Research Block roof details work through ring action, requiring complex nodes and connections. We optimised the pitch of the roof beams to ensure diagonals could be end-chamfered where they meet the wall, matching the height of the perimeter ring beams, allowing dowel/bolt patterns to be aligned. BKHS then fully modelled these connections to deliver these details within very tight tolerances."

LCA (Life Cycle Assessment) led design

For Haileybury, sustainability and the school's net-zero carbon goals were key considerations during the design stages. Integral Engineers assessed the initial stages, presenting three alternative structural framing solutions along with their respective embodied carbon values. The application of Sylva CLT elements by Stora Enso provided a substantial saving in embodied carbon over steel or reinforced concrete framing options, and visual features have been made of the use of Sylva™ throughout the design.

In total, 668.5 m³ of PEFC certified Sylva™ CLT elements and 47.9 m³ of PEFC glulam sections were delivered by BKHS' partners, sequestered approximately 544.3 tonnes of CO_2

By consolidating the existing buildings within a small footprint, much of the site is now free for future development.

Offsite manufacturing and rapid install

Offsite manufacture presented various advantages over non-renewable construction methods, enabling the project team to overcome complex logistical and programme challenges. The use of prefabricated mass timber elements reduced on-site variations, ensuring budget predictability, and required a smaller workforce and minimal transport, further reducing costs.

As with many educational projects, speed of delivery was a key factor. Schools often require expedited construction phases to coincide with term times, but sensitive heritage extensions can be painfully long. Prefabrication of details in the factory, rather than on-site, helped achieve an impressive delivering rate of progress on-site of 90 m³ per week.

Lifting devices were installed for optimal load capacity and stability based on element weight and centre of mass automatically calculated from the 3D manufacturing model. This provided a high degree of precision in tightly controlled factory conditions. As a result, when the CLT elements arrived on-site, they were ready for immediate installation.

The modern building solution of stiffened fabricated brackets fixed to the blocks also allowed the masonry package to be installed before the cloister beams, creating significant programme savings - a matter of weeks instead of months.

The off-site manufacture of timber elements by Stora Enso, combined with meticulous precontract planning, resulted in a flawless onsite phase. Now open and receiving high praise from students and staff, timber has been pivotal to the project, creating a sustainable and energy-efficient exemplar for the education sector.

In the end, the Haileybury SciTech Centre was completed within a 12-week programme, maintaining high standards of accuracy and visual quality while minimising disruption to school life.

Exposed wood

A mixture of non-visual and visual-grade CLT was specified to optimise the use of raw materials and harness the aesthetic benefits of exposed timber.

Exposed timber's biophilic benefits are proven to help lower blood pressure and are ideal for a learning environment. Wood's inherent thermal mass can moderate temperature and absorb moisture from the air to regulate humidity, creating optimal indoor air quality.

Read more about this in our whitepaper.

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Technical excellence

The teaching block features a hipped roof with pitched glulam beams, clear spanning at regular centres with stainless steel ties, offering visual lightness and material efficiency. The research block, linked via a glulam-framed cloister, has a central spine wall supporting the first floor and roof. The stairs were assembled on site and extend from ground to first floor, trimmed with glulam beams.

Wood origins

The Sylva™ elements were made with wood sourced from PEFC-certified and FSC certified forests, ensuring that the timber used comes from sustainably managed forests. These certifications are two of the most trusted and widely recognised certifications for sustainable forest management in the world.

Operational energy efficiency

The project supports Haileybury School's Net Zero sustainability goals. Timber construction was pivotal, creating a sustainable and energy-efficient exemplar for the education sector. The use of CLT and glulam not only enhances the building's structural integrity but also contributes to its environmental performance with a high level of embodied carbon.

Operational energy performance data

On-site energy generation 20% (predicted)

Heating and hot water load 7 kwh/m2/yr (predicted)

Design life 60 years

Annual CO2 emissions9 KgCO2eq/m2 (predicted)

Source

Collaboration

Haileybury exemplifies proactive collaboration and the success that occurs when the timber subcontractor and its engineer are brought onboard earlier than usual, so their experience could be incorporated into the design.

From design to manufacture, transport, and onsite installation, the team used the latest digital tools collaboratively to ensure the project's speedy and accurate construction. Full and early design collaboration between the project team - including full 3D modelling - enabled a compressed and efficient programme, resulting in a quicker overall speed of delivery. The client commented: "We're delighted that our architects have provided a design which meets the highest environmental standards. We're proud that the buildings feature many sustainable elements as we bring science to life and strive to reach our net zero targets."

Client's view

The client commented to the Architects' Journal (AJ)

"SciTech is an amazing and beautiful building which brings together, in a seamless and historically appropriate way, several new and existing teaching functions. The real benefit of these buildings goes beyond the physical classrooms - the collaborative space enables our pupils to not simply learn science, or read about engineering but become scientists, engineer new creations and use their cross-disciplinary knowledge to become true innovators".

Martin Collier, Master, Haileybury

Architects view

Hopkins Architects reflecting on the project said to the AJ: "Historically schools have tended to divide up subjects into separate accommodation to encourage specialisation. This project breaks down those barriers by linking existing buildings with new architectural elements to form a single science and technology department. Not only will it provide first-class facilities in all disciplines, it will also encourage cross-fertilisation across practical and academic subjects. I think it is a very stimulating and inspirational model and wish I had been taught like that!"

Mike Taylor, Principal, Hopkins Architects

Structural Timber Awards 2024 Engineer of the Year

Sustainability Award at the 2024 Wood Awards

Education Project of 2024 Offsite Awards

Photo credit: Airey Spaces / Alan Bennett

General

Delivery year

2023

Building type

Education

Area (m²)

2,369

Storeys

2

Units

2

Products

Products and Services

Sylva™ CLT Floors and Roofs, Sylva™ CLT Walls, Preinserted lifting devices

Product quality

Visual quality and non-visual quality

Product volume (m³)

668

StoraEnso

Team

Partner of Stora Enso

B&K Hybrid Solutions Ltd

Developer

Haileybury College

Architect

Hopkins Architects

Structural Engineer

Integral Engineering Design

MEP Designer

Atelier Ten

Main contractor

Kier Construction Ltd

Timber Engineer

Engenuiti

Others

Construction cost (€)

13,220,000

Construction duration (months)

44

Timber superstructure erection duration (weeks)

12