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White Paper

Insights from Innovarés workshop on Exploring Biophilic School Design Through Offsite Construction and Lessons from the Delivery of St Mary's Catholic Voluntary Academy.

BIOPHILIC & FORREST SCHOOLS

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In June 2026, Innovaré Offsite hosted a workshop focused on the practical application of biophilic design within education. Using St Mary's Catholic Voluntary Academy in Derby, the UK's first biophilic school, as a live case study, the event brought together architects, designers, contractors, and education professionals to explore how biophilic design principles can be translated into real projects through modern methods of construction.

The session examined what biophilic design looks like in practice and how it can influence the design of learning environments. Discussions focused on the role of natural materials, the lessons learned through the delivery of St Mary's Catholic Voluntary Academy, and the relationship between biophilic principles, low carbon construction, and school design. Participants also considered the opportunities and challenges associated with future education projects, alongside the role of timber offsite construction in supporting project outcomes.

Throughout the workshop, there was considerable interest in how biophilic design may influence future school design. At the same time, attendees recognised the practical realities that accompany any design approach, including maintenance obligations, operational budgets, safeguarding requirements, carbon performance targets, and compliance with building regulations.

Understanding Biophilic Design

Biophilic design is based on the principle that people have an inherent connection with nature. Within the built environment, it seeks to strengthen that connection through the deliberate integration of natural elements into the design of buildings and spaces.

A recurring theme throughout the workshop was that biophilic design extends well beyond planting schemes or the introduction of greenery into a building. Effective biophilic design considers a broad range of factors, including access to natural daylight, opportunities for fresh air and ventilation, views of nature, the use of natural materials, landscape integration, building layout and overall sensory comfort.

Attendees discussed how these elements must be considered from the earliest stages of the design process if they are to contribute meaningfully to the performance of a building and the experience of those who use it. When approached in this way, biophilic design becomes part of the architecture itself rather than an additional feature applied later in the project.

Biophilic Design in Education

Much of the discussion centred on the role of biophilic design within educational settings and how nature connected environments can support both learning and wellbeing. Participants reflected on the growing body of research that links natural environments with improved wellbeing, concentration, and educational outcomes. At the same time, it was.

acknowledged that school design must also respond to safeguarding requirements, curriculum delivery, operational management, and long-term maintenance considerations.

One attendee observed that biophilic principles have relevance within SEND environments, where carefully designed spaces can help support emotional regulation and comfort. However, it was also recognised that these benefits must sit alongside effective teaching practices and the practical day-to-day operation of a school.

The discussion reinforced the view that successful school design requires a balanced approach. Wellbeing, educational outcomes, safety, operational requirements, carbon performance, and long-term maintenance all need to be considered together.

The St Mary's Catholic Voluntary Academy Case Study

St Mary's Catholic Voluntary Academy was developed following the destruction of the school's previous building in an arson attack. The replacement school became a Department for Education Pathfinder project, providing an opportunity to explore how sustainability, wellbeing and modern methods of construction could be integrated within a live education environment.

The completed project is recognised as the UK's first biophilic school and provides a practical example of how nature-inspired design principles can be incorporated into a modern educational setting.

One of the defining characteristics of the school is its campus-style arrangement. Rather than a single building, the school is formed of five separate buildings distributed across the site. This approach encourages regular interaction with outdoor spaces, requiring pupils to move between buildings throughout the day and increasing their connection with the surrounding environment.

The relationship between the buildings and the landscape was another important feature of the design. Existing mature trees were retained where possible and supplemented with additional planting, helping to strengthen the school's connection with nature and create a series of outdoor learning and social spaces.

Daylight was also a key consideration throughout the design process. Large areas of glazing, combined with carefully considered daylighting strategies such as light shelves, help distribute natural light deeper into classroom spaces and support comfortable learning environments.

The project also incorporates natural ventilation principles through a combination of building design and automated systems. This strategy supports thermal comfort while helping to reduce operational energy demand.

Learning from Post Occupancy Research

An important aspect of the St Mary's project is the post occupancy research being undertaken in partnership with the University of Derby. Workshop attendees heard how researchers are gathering

feedback directly from pupils to better understand how different spaces within the school are used and experienced. The study is exploring.

preferred learning environments, areas associated with wellbeing and relaxation, outdoor spaces, social environments, and patterns of behaviour throughout the school.

This ongoing work is expected to contribute to a growing evidence base around biophilic school design and provide greater insight into how pupils interact with nature-connected learning environments.

Timber as the Material of Choice

The workshop also explored why timber was selected as a key material within St Mary's Catholic Voluntary Academy. Timber plays a key role in biophilic design because it provides a direct connection to natural materials within the built environment. At the same time, it can support wider project objectives relating to carbon reduction and building performance.

Innovarés timber i-FAST panel system formed the primary structural solution for the school. Participants discussed how the system supported the delivery of the project's sustainability objectives through reduced embodied carbon, strong thermal performance, and improved airtightness. The use of factory-controlled manufacturing processes also provided quality assurance benefits and supported efficient onsite assembly.

Importantly, timber was not simply viewed as a construction material. It formed part of the wider architectural response to the biophilic brief, contributing to both the environmental performance of the building and its connection to the natural world.

The project achieved an embodied carbon figure of approximately 390kgCO_2e/m², providing an example of how low carbon design strategies and timber construction can contribute to reduced whole life carbon performance. While every project has its own constraints and requirements, St Mary's demonstrated what can be achieved when sustainability objectives are considered from the outset.

Biophilic Design and Climate Resilience

A key workshop discussion explored whether biophilic design can support the delivery of climate responsive schools. Attendees considered the role that biophilic principles can play in helping educational environments respond to changing climatic conditions while continuing to support pupil wellbeing and learning.

Several examples were discussed during the session. The landscape design at St Mary's includes mature trees and additional planting, which can provide seasonal shading and help reduce solar gain as the landscape matures. Participants also reflected on the importance of daylight in school design. When carefully managed, natural daylight can reduce reliance on artificial lighting while contributing to comfortable and productive learning environments.

Natural ventilation formed another part of the discussion. Well-designed ventilation strategies can improve indoor environmental quality and support energy efficiency objectives. Material selection

was also recognised as an important consideration. Timber, as a natural building material, can. contribute to lower embodied carbon outcomes while supporting the wider design ambitions associated with biophilic environments.

The discussion concluded that biophilic design should not be considered solely from a wellbeing perspective. When integrated into the wider design strategy, it can also support sustainability objectives and contribute to the delivery of low carbon, climate responsive schools.

Challenges and Considerations

While there was broad support for the principles of biophilic design, attendees also highlighted several practical considerations that require careful thought during project planning and delivery.

One of the most frequently discussed topics was ongoing maintenance. Questions were raised about how landscape features, outdoor learning spaces and biodiversity measures are maintained once a project has been handed over to the school. Attendees noted that successful long term outcomes depend on having the resources and support necessary to manage these spaces effectively.

Budget constraints were also identified as an important consideration. Schools continue to operate within challenging financial environments, making it important that biophilic design features remain practical and manageable throughout the life of the building.

The application of biophilic principles within existing school estates was highlighted as another area for further exploration. While projects such as St Mary's demonstrate what can be achieved through a new build approach, many schools will require refurbishment or extension projects where site constraints and existing building conditions may present additional challenges.

The discussion also touched on the evolving regulatory environment. As the industry continues to respond to changing requirements around fire safety, carbon performance and building compliance, participants agreed that testing, evidence gathering and collaboration across the design and delivery team remain important. For timber construction in particular, continued development of standards, guidance and supporting evidence will play a key role in building confidence and supporting future adoption.

Conclusion

The discussions throughout the workshop demonstrated that biophilic design is increasingly being considered as part of the wider conversation around school design, wellbeing, sustainability, and climate resilience. While there was broad agreement on the potential benefits of stronger connections to nature within learning environments, participants also highlighted the importance of balancing these aspirations with the practical realities of education delivery, school budgets, maintenance requirements, and long-term building performance.

St Mary's Catholic Voluntary Academy provided a valuable case study through which many of these themes could be explored. As the UK's first biophilic school, the project demonstrates how nature-inspired design principles can be integrated into a live education setting through thoughtful planning, collaboration, and material choice. The scheme also highlights the role that natural materials,

daylight, ventilation, and outdoor connectivity can play in creating learning environments that support both pupils and staff.

The workshop reinforced that biophilic design extends beyond planting and landscaping. It requires a considered approach to architecture, landscape, building performance and user experience. Participants recognised that successful outcomes depend on these elements working together as part of a cohesive design strategy rather than being introduced as individual features.

Timber construction was identified as an important contributor to both biophilic and low carbon objectives. Through projects such as St Mary's, timber has demonstrated its ability to support reduced embodied carbon, strong thermal performance, and the use of natural materials within the built environment.

Looking ahead, continued post occupancy research and performance monitoring will be critical in building a stronger evidence base. The work currently being undertaken at St Mary's will help provide valuable insight into how pupils and staff interact with biophilic learning environments and how these spaces perform over time.

While many questions remain around implementation, maintenance and future policy direction, the workshop highlighted a shared interest in understanding how biophilic principles can be applied in practice. The conversations demonstrated that the topic is no longer solely about aesthetics or wellbeing, but increasingly forms part of wider discussions around sustainable, resilient, and effective learning environments.

About Innovaré Offsite

Innovaré Offsite specialises in the design, manufacture and installation of low carbon, fire safe timber construction systems for the education sector.

Having supported the delivery of St Mary's Catholic Voluntary Academy, the UK's first biophilic school, Innovaré continues to share project experience and lessons learned through CPD sessions, workshops, and collaboration with professionals across the education, design, and construction sectors.

By combining offsite manufacturing with timber construction, Innovaré supports the delivery of learning environments that respond to the challenges facing modern education, including carbon reduction, building performance, programme certainty, and long term value.