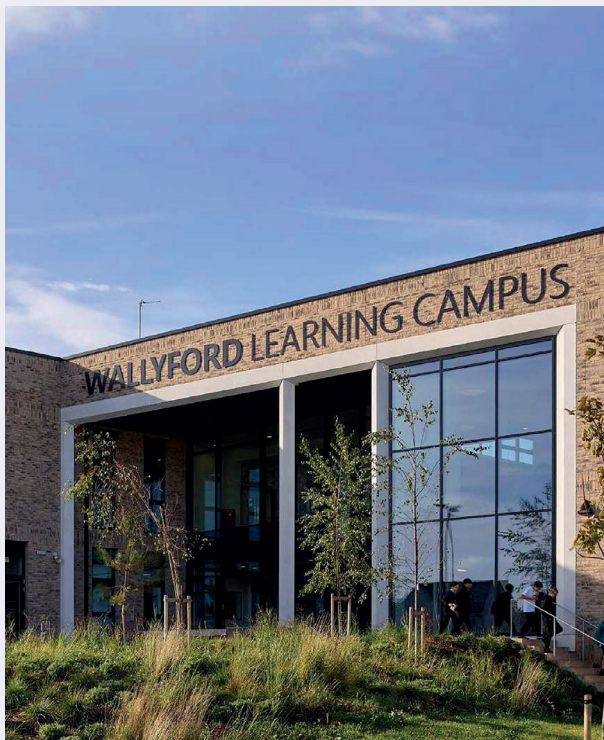


Shared Learning Event

Completed LEIP Projects

Lessons Learned



Introduction



Context

This Shared Learning Event was the first of 2024, and was designed to promote discussion and sharing of best practice.

The theme for this event was 'Completed LEIP Projects - Lessons Learned' which was born out of discussions and areas of interest raised in previous Shared Learning Events, and from the Learning Estate Efficiency Discussion (LEED) organised by Scottish Futures Trust on 19th January 2024.

It was hosted and facilitated by Scottish Futures Trust's (SFT) Learning Estate Infrastructure Team, alongside Architecture and Design Scotland (A&DS). The event was open to all Local Authorities across Scotland to provide an open forum to discuss initiatives and share ideas, best practice and challenges.

Event

The event was held on MS Teams on Thursday 21st March 2024 and brought together 100 delegates from Local Authorities across Scotland, including representatives from Scottish Government Learning Directorate.

It included presentations from:

- Perth & Kinross Council with Architype on Riverside Primary School
- West Lothian Council with Norr on Beatlie School Campus
- East Lothian Council with JM Architects on Wallyford Learning Campus

Following each presentation were discussion slots where delegates were invited to bring forward any comments or questions they had.

Case Study 01

Riverside Primary School



“We truly believe the success of the project was down to the genuine collaboration and open communication between the design team.”

Jonathan Hines

Jonathan Hines

Architype

Robert Meiklejohn

Perth & Kinross Council

Riverside Primary School is a 2 stream 500 pupil Passivhaus Primary School, Nursery and dedicated ASN facility located in Perth. With a project value of circa £20m, it is Scotland’s first Passivhaus Primary School and Architype’s first steel frame Passivhaus project. It started on site in November 2021 and achieved practical completion in June 2023 when the school was fully occupied.

Design Philosophy

We know from our extensive experience of delivering passivhaus schools and through our PEO work, that healthy design makes for better learning and greater productivity. Our design philosophy aspires to:

- Prioritising building occupants and their health and wellbeing
- Reflect Pedagogy
- Future Flexibility
- Focus on sustainable and locally sourced materials

As in all Architype projects, our design philosophy inherently focusses on:

- Maximising good quality natural daylight
- Air Quality – we’ve seen from previous schools that children are more alert and benefit from the constant supply of fresh air.
- Prioritising views to external green spaces
- Building in transparency between spaces,

allowing for passive supervision whilst making internal spaces feel light and generous

- Always pushing for the use of natural materials with warm, natural finishes, sustainably sourced and with low VOCs
- Making the GIFA work hard - prioritising flexible and generous circulation and learning spaces
- Access to dedicated external play and learning spaces

Early stage Design Team Appointment

One of the keys to the success of the project was the early appointment of the design team through the Hub procurement process: This allowed for:

- Client ACR refinement
- Proposals developed holistically
- Cost Certainty
- Enhanced clash detection and coordination at RIBA each stage
- Architype as PH Designer + Architect

Site Challenges

One of the biggest challenges of the site was designing propositions around the existing school, which would remain operational for the duration of the build.

Operationally this resulted in a tight construction site that would require consideration of a careful phasing plan.

There was limited construction traffic access, and the demolition of the nursery was required to facilitate the new build. In addition, it required a reduction in playground for duration of the build.

Case Study 01

Riverside Primary School

Key site moves

- Locating the new proposal to the south of the site.
- Flipping the orientation of the school to provide a public face to the south.
- Maximising playground and external teaching spaces to the north.
- Dedicated secure garden spaces to the south for ASN and nursery.
- Creating a new civic presence for the building which the current school doesn't have at all

Design Proposals

- Main teaching block running east west to maximise north and south glazing for beneficial solar gains and reduce overheating from the east and west
- Nursery to south east with dedicated garden sheltered by existing mature trees.
- ASN to south west with dedicated garden space.
- Games hall and kitchen to north west with dedicated vehicular and out of hours access.
- Form factor of '2.2' – which is optimal
- Considerations given to reducing overshadowing of the building itself, and prioritising natural light in classroom spaces
- Daylighting strategy to maximise good quality daylight whilst avoiding overheating aided by shading devices to the south and allowance for clerestory windows or roof lights.

Steel frame Construction

Significantly, despite being CLT frame until RIBA stage 3, the project was eventually procured as

a steel frame building. As a result of this and the growing interest in steel frame particularly in Scotland, the Passivhaus Trust issued a technical briefing note in Feb 2022 based on modelling assumptions and outcomes from a number of projects from a working group involving other architects across the UK working on steel frame passivhaus projects.

Steel frame for Passivhaus is bringing unique challenges for design teams from both a design and delivery perspective. But the current context of the Scottish market lends itself to steel frame being the most viable option. Riverside is Architype's first steel frame Passivhaus project and as such they have had to develop new details and methodologies to overcome the following key challenges:

- Movement
- Fire protection
- Complex geometries
- Connection detailing
- Airtightness
- Sequencing
- Complexities of heat loss and condensation risk

Key Insight Gained

- Early design team appointment critical
- PH Champion involved as early as possible
- Invest in upskilling and knowledge sharing
- Value in open communication and collaboration
- Fully Understanding Sequencing
- It can be done!



Case Study 02

Beatlie School Campus



**Laura Cameron &
Catherine Campbell**
West Lothian Council
Kevin Cooper
Norr

Beatlie School Campus is the replacement of an existing facility not fit for purpose in Livingston, West Lothian. It is an all through ASN facility for Severe and Complex Needs, with 44 Pupils (38 Primary and Secondary + 6 Nursery). The project was procured through Hub SE and is part of LEIP Phase 1 funding award.

Project Overview

- Construction completion – August 2023
- GIFA – 2,519m² (2,286m² school and 233 for CDC)
- Development cost £15.7m (£14.517m school and £1.183m for CDC)
- £6,233/m²; 52m² per pupil
- Delivered on programme and within budget

Lessons Learned - Design

- Evidence based briefing
- Fundamental importance of stakeholder engagement
- Empathy
- Bringing people on the journey
- Relevance of metrics
- External spaces can be wonderful

- Tension between technical performance requirements and sensory perception
- Energy performance isn't everything – design is always holistic in nature

Lessons Learned - In Use

The new school campus provides a number of spaces the previous facility did not contain. These include:

- Hydrotherapy pool
- Accessible outdoor space
- Rebound therapy room
- Interactive sensory room

Multi-Sensory Room

Audio-visual controller for sound, projection and light control. Sound emitted from ceiling mounted speakers to match projection scenes.

At the core of the package is a product that allows new technology to be integrated as and when it becomes available. The system also enables the users to create and upload content of their own videos to create personalised immersive experiences.

The Interactive Floor is created by sensors in the ceiling allow users to interact with the projected image to trigger audio-visual effects and reveal new layers. From splashing through water to kicking autumn leaves and revealing layers' underneath, this fully customisable system brings an added layer of interactivity to your immersive space.

"Children love the magic of this area. It has allowed a fully immersive experience for all pupils, allowing them to interact with the pictures with their hands or feet. They have been very engaged in learning in this space."

Case Study 02

Beatlie School Campus

Home Automation System

A place to learn innovative assistive technologies within the safe environment of the school.

Ability to control smart home tech with adaptive switches, via mobile application.

- Touch Control
- Joystick
- Sip and Puff

Integrate technologies around the home, such as:

- Smart LED Bulbs
- Alexa Speakers & App
- Lightwave (lighting and heating control)
- Smart Plug appliances

Integration of Amazon Nanoleaf

Gaming platform, with adaptive controller that can interface a variety of assistive hardware.

Hygiene Room

- Multi-sensory elements introduced into Hygiene Rooms to improve the experience of pupils within these spaces.
- LED Skylights display an external scene, replacing standard ceiling panels.
- Dimmable static images through local switch.
- Alexa installed within each space to play calming music. Alexa can be controlled through mobile devices interfaced with adaptive controls – pupil independence.
- Battery operated scent diffuser within each hygiene room, customizable scents and long-life operation.

Guldmann Dynamic Hoist

- Specialist hoist equipment for dynamic weight relief.

- Allows children with complex needs and who are confined to wheelchairs to stand / move.
- Research has shown positive effects of neurological pathways in the brain for people who are able to be support vertically and practise gait movement.
- Proposal to include in specific rooms due to size

Outdoor Spaces

- Fountain installation within sensory play area of landscaping or within pond
- Drive Deck System Independent movement with integral controls to navigate along a defined path. Joystick, head and foot controls can be incorporated.

Best Practice

- Assistive Technology – Sensory, Interactive Switching and Control, Advance Wheelchair assistance, Home Automation Station.
- Smart Technology – IBMS / Energy Analysis and feedback
- Location of plant space
- Carbon and Energy Risk Workshops, Existing Energy Use review and Educating the Educators
- Design Sprint to ensure client requirements are understood and interpreted correctly
- Early Market Engagement (Soft Market Testing at Stage 1 & Key Appointments early in Stage 2 to improve construction quality through advance co-ordination (MEP, FF+E) -> early cost certainty (30%)
- Letter of Intent to Purchase Materials / Secure Prices
- 3 years POE



Case Study 03

Wallyford Learning Campus

East Entrance
(Images credited to David Cadzow)



“A place for the community to meet and learn together.”

Eddie Reid
East Lothian Council
Adelle Jess
JM Architects

Wallyford Learning Campus is home to Rosehill High School, a 950 pupil secondary school, as well as a dedicated science, technology, engineering, arts and maths (STEAM) centre, a 45-50 pupil severe and complex needs school, hydrotherapy pool and the Acorn Hub, a specialist community provision for adults with complex needs. Wallyford Community Centre and Library were also relocated within the building to upgrade facilities, provide opportunities for shared use of key spaces and condense the local authority's estate into one efficient building that is accessible, active and open all year round.

Vision

East Lothian Council had a clear vision for the project with these aspirations and principles at the centre:

- to create an environment which eases the transition between school and the workplace or higher education
- a building design which is adaptable and flexible for a changing and evolving curriculum
- a facility which is configured to enable ease of use by a range of school and community groups throughout the day and the year
- a layout which is easily read, with visual and physical connectivity, providing a variety of spaces to support independent and collaborative learning
- an environment considering passive sustainability, where natural daylight is maximized

- a true community building, facilitating intergenerational learning, supporting, engaging and integrating local people

Level 00

The building has no front or back as such but a series of entrances to accommodate the various user groups. Facilities with large volumes such as sports and creative arts are placed to the north to allow the 10m level change across the site to be used to reduce the scale of what is essentially a 3 storey building sitting opposite 2 storey housing.

Level 01

At the heart and anchoring the building together is the central dining atrium which is surrounded by teaching accommodation on the upper levels and provides accommodation for the school primarily but also includes a series of flexible learning spaces which with careful time tabling can be utilised by others to create further learning opportunities. Community accommodation is situated to the south to form a link with the new proposed local centre and a pedestrian corridor that aligns with the masterplan.

Level 02

Teaching accommodation on the upper levels is a mix of traditional cellular teaching bases and large learning plazas all with visual and physical links to showcase the learning opportunities available and inspire users. Key at this level is the link between Science, Technology, Engineering, Art and Maths which form the STEAM Centre.

STEAM

On the upper level the layout of departments forming the STEAM centre promote the idea of integration and allow pupils to experience links similar to those in a working environment where a product can be designed in one department and made in a workshop or Lab.

Case Study 03

Wallyford Learning Campus

Top left: STEAM Centre Entrance
 Top right: Assembly & Performance Hall
 Middle left: Central Atrium
 Middle right: Margaret Oliphant Library
 Bottom: Central Atrium

Placement and orientation of space was also key, the carefully positioned art department benefits from north light and a terrace with views across the forth and to arthurs seat, whilst Multiskills workshops linked to delivery bays and construction yards at ground level are over looked by design skills classrooms above similar to a factory environment.

Performance Targets

The building's design has taken a holistic approach to energy efficiency to achieve carbon reduction targets set by the funding mechanism and Local Development Plan Policy, but there was an understanding that to be truly sustainable it needed to go further than technical energy performance.

Sustainability as Place

WLC's allocated site opposite the new primary school and proposed local centre is perfectly located to establish a heart for the village, where the old and new meet whilst promoting the idea of a self-sufficient neighbourhood with services and facilities within a 20-minute walk or cycle distance. All supported by safe active travel routes through Wallyford and the surrounding area. Key community services were brought over to condense their estate whilst upgrading facilities to give one efficient building that is active all year round. With its strong visual and physical connections, the building is accessible, inclusive and promotes a sense of community.

Designed as an open campus, pathways and routes through the grounds allow users to explore the opportunities and facilities on their doorstep.

Landscape

Beyond the building is a Learning Landscape designed as a space for community, learning, health and wellbeing. Surrounded by a variety of spaces for curricular use and wider sporting activities,

the external landscape design minimises areas of hardstanding. Terraced amphitheatres utilise the topography and promote interaction and socialising while private gardens serve the community accommodation to the south to provide sensory areas and growing space. This results in varied character and improved biodiversity across the site.

Partnerships

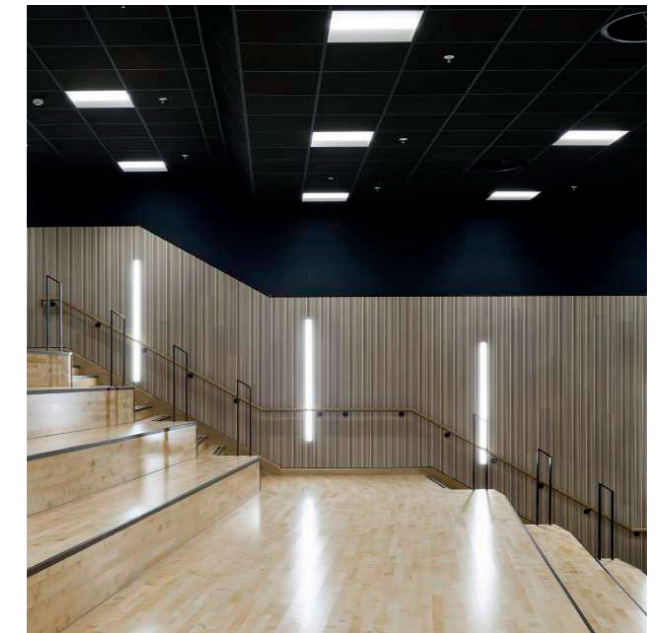
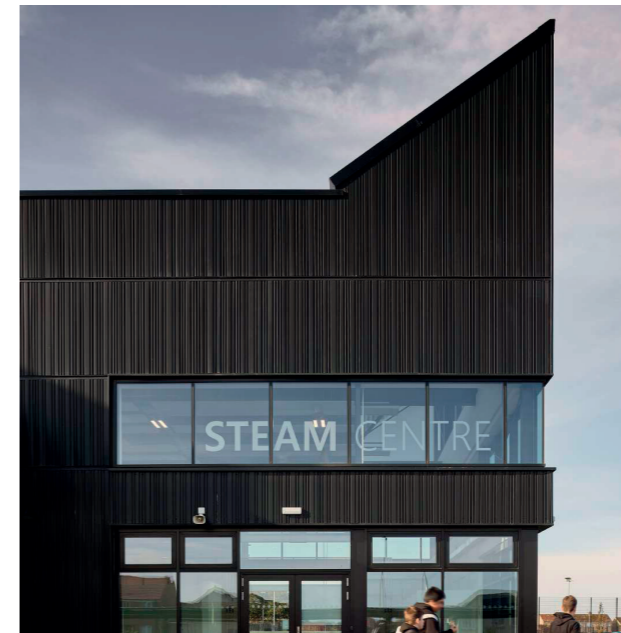
Consultation on this project was extensive to ensure all spaces within the campus not only meet current needs but also provide opportunities for local people and some of these are facilitated through learning partnerships which ELC have formed. The overall aim was to provide a building which facilitates routes into further and higher education as well as employment.

Interior Design

Guided by a clear vision from the client the initial ID strategy was developed by SpaceZero. Embracing biophilic design principles, a palette of contrasting neutral tones with feature colours derived from nature the visualisations reflected ELC's aspiration for spaces that inspire and promote wellbeing. By combining architecture of a mature nature with a new vocational approach to education, the design aims to ease the transition between school and the working environment.

Time was afforded to the programme for weekly workshops between client, architect and contractor. Key to that process was having the expertise of ELC's Interior Designer who together with the team carefully selected the finishes of each space and tied this in with their own palette when selecting the loose FFE for each space.

Carefully selected supergraphics display images of local context and history to route the building within its surroundings and really give it a sense of place and relevance. The time afforded to this process on the Wallyford project really made the difference and is worth taking note of.



Further Support

Further Support

As well as a forum for Local Authorities to join together, the Shared Learning Events are designed to complement support that is available on any aspect of the LEIP, from SFT's Learning Estate Infrastructure Team and wider stakeholders as appropriate. For relevant contacts at SFT and A&DS please see below;

SFT Contacts

Steven Anderson

Steven.Anderson@scottishfuturestrust.org.uk

Stephen Long

stephen.long@scottishfuturestrust.org.uk

Sarah Burnett

sarah.burnett@scottishfuturestrust.org.uk

A&DS Contacts

Lesley Riddell Robertson

lesley@ads.org.uk

Danny Hunter

danny.hunter@ads.org.uk

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Get in touch:

www.ads.org.uk
[@ArcDesSco](https://twitter.com/ArcDesSco)
T: 0131 556 6699
E: info@ads.org.uk

www.scottishfuturestrust.org.uk
[@SFT_Scotland](https://twitter.com/SFT_Scotland)
T: 0131 510 0800
E: mailbox@scottishfuturestrust.org.uk