Wellfield Academy

ares LANDSCAPE ARCHITECTS

AHR

GenZero and Nature-based Design in Practice

Project Case Study / Design / MMC / Sustainability / Wellbeing

14 October 2025

Wellfield Academy

- Secondary school in Leyland, Preston
- 550 Students, an increase of approx. 200 students in the past 3 years
- Previously a Lancashire County Council school before joining Endeavour Learning Trust in December 2023 – Supported by Endeavour since 2018
- Condition surveys indicated more than £2million investment required across 4 years
- Nominated for the SRP in 2022 due to poor condition and awarded

- **Built for numbers, not experience** – designed simply to house local students, with little thought for quality of environment
- **Spaces not purposeful** – classrooms and communal areas were generic, offering limited flexibility for different activities. Lots of small spaces resulting in loss of togetherness
- **Poor thermal comfort**– poor insulation and ventilation meant spaces were often too hot in summer and cold in winter.
- **Outdoor areas underused** – dominated by tarmac with little greenery, shade, or opportunity for outdoor learning
- **No focus on wellbeing** – the design did not consider comfort, inspiration, or connection to nature

Wellfield Academy

ares LANDSCAPE ARCHITECTS

AHR

Strategic Approach

GenZero – Setting the scene

2020
Research
Gen Zero Prototypes

Development of standardised approaches to architecture, building services and Landscape for two idealised sites – constrained and unconstrained.

2021
Research
COP 26 Glasgow
Classroom prototype

Designed with biophilic environment.

2021
Pilot
St Mary's Academy Primary

Pilot project used by the DfE to test Gen Zero detailing and develop, establish and test the principles of Biophilic Design.

2022
Pathfinder
Northumberland College

Framework project to be delivered using Gen Zero principles.

2024
Pathfinder
Wellfield Academy

DfE Framework project to be delivered using GenZero principles.

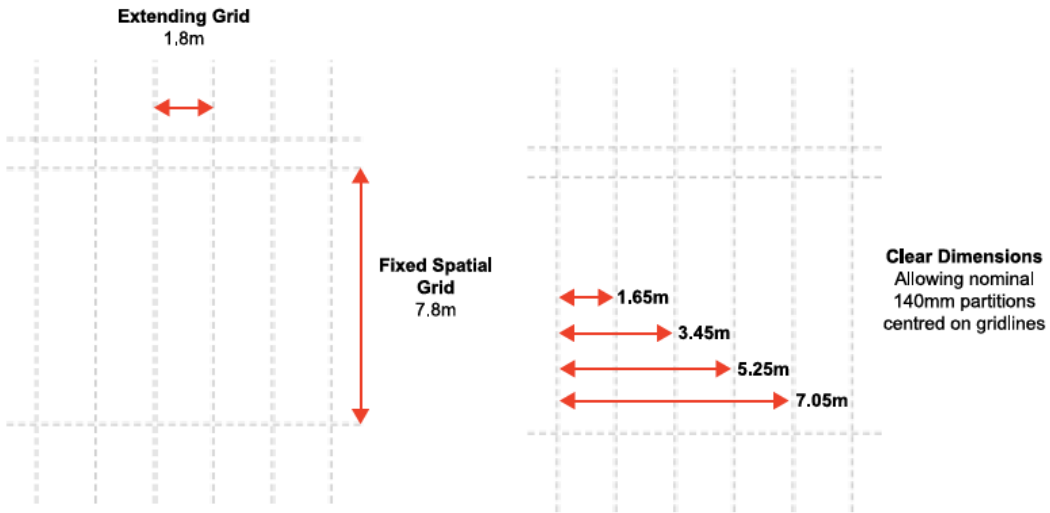
2025
New framework
CF25

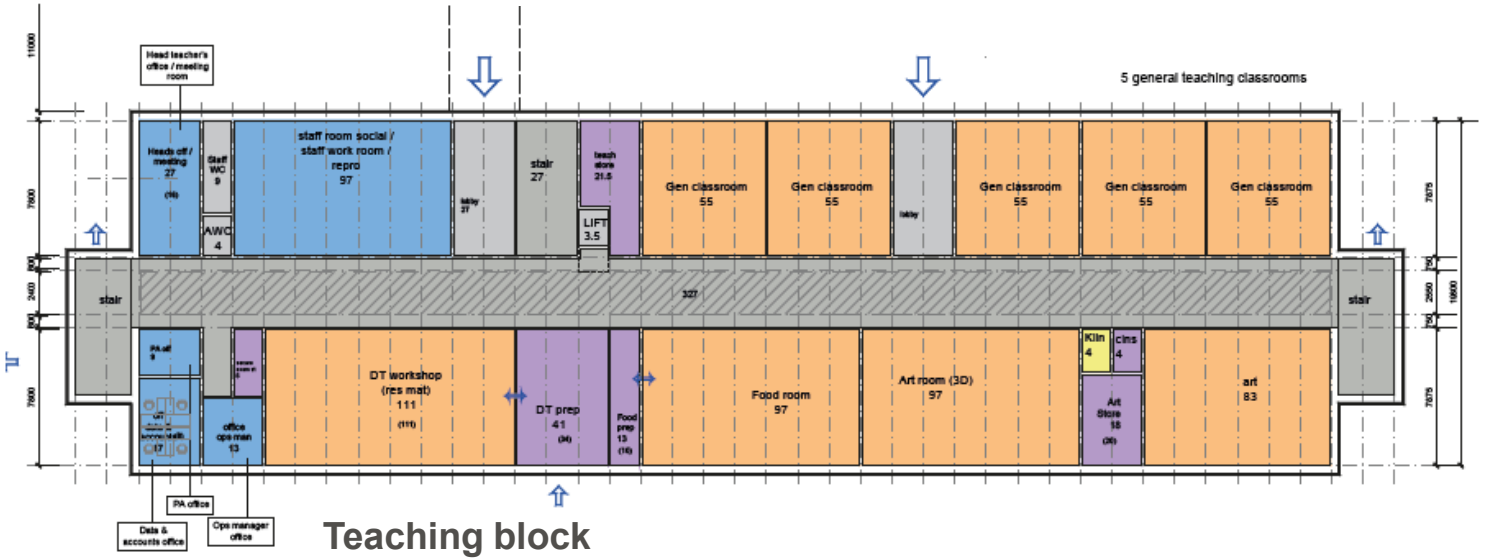
Framework with learning from research, pilots and pathfinders embedded.

The 14 GenZero objectives

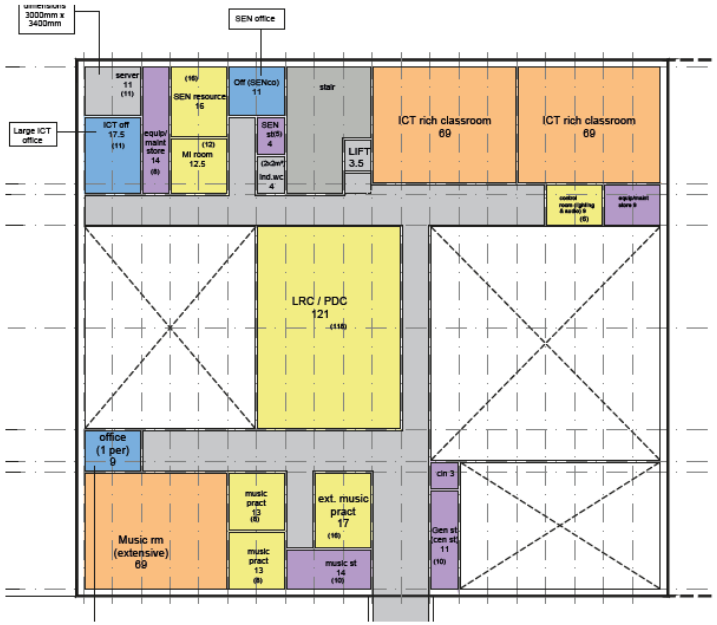
- Compliance with carbon target of 525 / 325 kgCO2/m2
- Blocks defined for separate purposes with separate construction methods
- Sequestration in panelised timber / structural technology
- GenZero grid
- Enhanced landscaping and UGF targets
- Airtightness of 1.6 m3/h.m2
- Incorporate off site volumetric construction
- Adoption of ventilation hierarchy
- Removal of short life, VOC and high embodied finishes
- Mobile furniture / FF&E and flexible internal layout strategy
- ICT integrated with M&E, design and operation
- Innovative smart building technology
- Distributed hub room approach
- Solar thermal technology integrated into building fabric

Rules of assembly – The grid





Teaching block

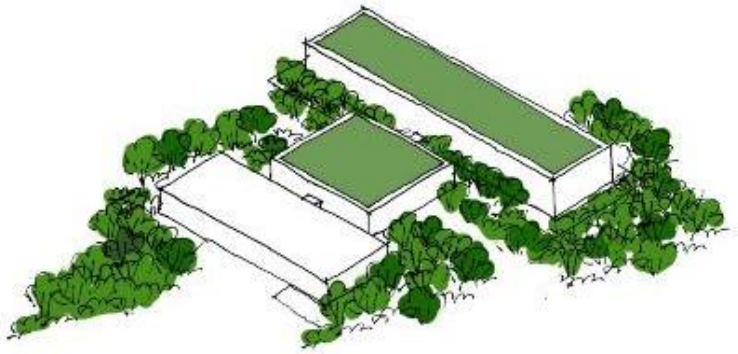


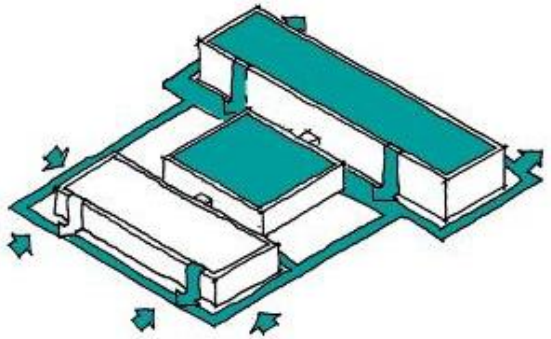
Commons block

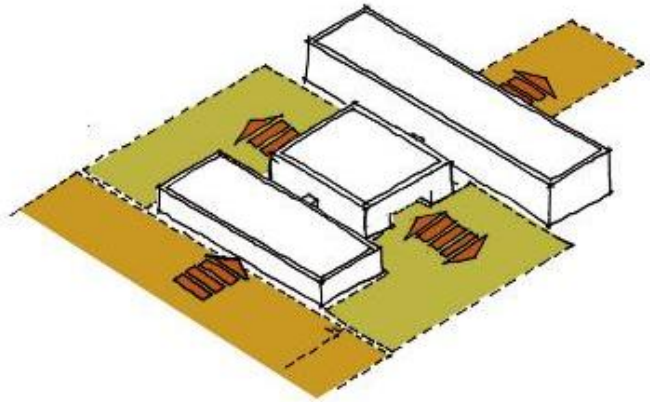
Designed with nature

Landscape areas of research for GenZero to be delivered on pathfinder projects

- The external school environment plays a **fundamental role** in supporting the principles of zero carbon design and operation
- With a considered approach that allows for the building and its site to operate together as one, a **protective landscape** creates a measurable performance improvement for buildings utilising natural ventilation
- **Tree planting** is a fundamental aspect of creating this protective, nurturing environment, and also addresses all other aspects required for Zero Carbon school
- **Purposeful spaces** ensure every aspect of the school's operational requirements are met by the outdoor environment







Wellfield Academy

ares LANDSCAPE ARCHITECTS

AHR

Landscape and External Appearance


Wellfield Academy


Wellfield Academy

Wellfield Academy

ares LANDSCAPE ARCHITECTS

AHR

Materiality and Interiors

Wellfield Academy

ares LANDSCAPE ARCHITECTS

AHR

Outcomes and Legacy

- **Happier learners** – calming, nature-inspired spaces that reduce stress and improve mood
- **Better focus** – natural light and fresh air shown to improve attention and concentration
- **Healthier environment** – improved air quality and temperature control support physical wellbeing
- **More creative spaces** – flexible classrooms and outdoor areas encourage imagination and problem-solving
- **Stronger connections** – spaces that promote collaboration, friendships, and a sense of belonging
- **Love for learning** – inspiring, purposeful environments that make school a place children want to be

The challenge ahead

- **Maintenance of green features** – living walls, planting, and landscaped areas require ongoing care and seasonal upkeep
- **Specialist systems** – natural ventilation, shading, and smart controls may be new to staff and need training to manage effectively
- **Upkeep costs** – some sustainable finishes and natural materials can be more expensive to repair or replace

The opportunities ahead

- **For students** – improved wellbeing, stronger focus, richer opportunities for outdoor and creative learning
- **For staff** – healthier workplaces, new ways of teaching, and professional growth in sustainability and innovation
- **For the trust** – the chance to learn from the benefits of this approach, share best practice across schools, and align our future developments with biophilic principles
- **For education –** embedding sustainable practices into teaching and learning, helping children develop values and skills for the future

Thank you

Stay in touch

Imran Kassim
Director
AHR

E: Imran.kassim@ahr.co.uk
T: +44 (0)7817 060 234

Ben Handley
Director
Ares

E: ben@aresdesign.co.uk
T: +44 (0)7890 570 834

Jack Snowdon
Director of Estates
and Operations
Endeavour Learning Trust
E: J.Snowdon@endeavourlearning.org
T: +44 (0)1772 817 904

Mitigating screen time effects with Mirror Architecture

Introduction

Challenge:
Excessive screen time is increasingly prevalent in children's lives, leading to negative impacts on their health, learning, and overall well-being.

Solution Focus:
We explore how Mirror Architecture can counteract these effects. By creating engaging environments that reflect the restorative qualities of nature, we aim to support healthier development and learning for children.

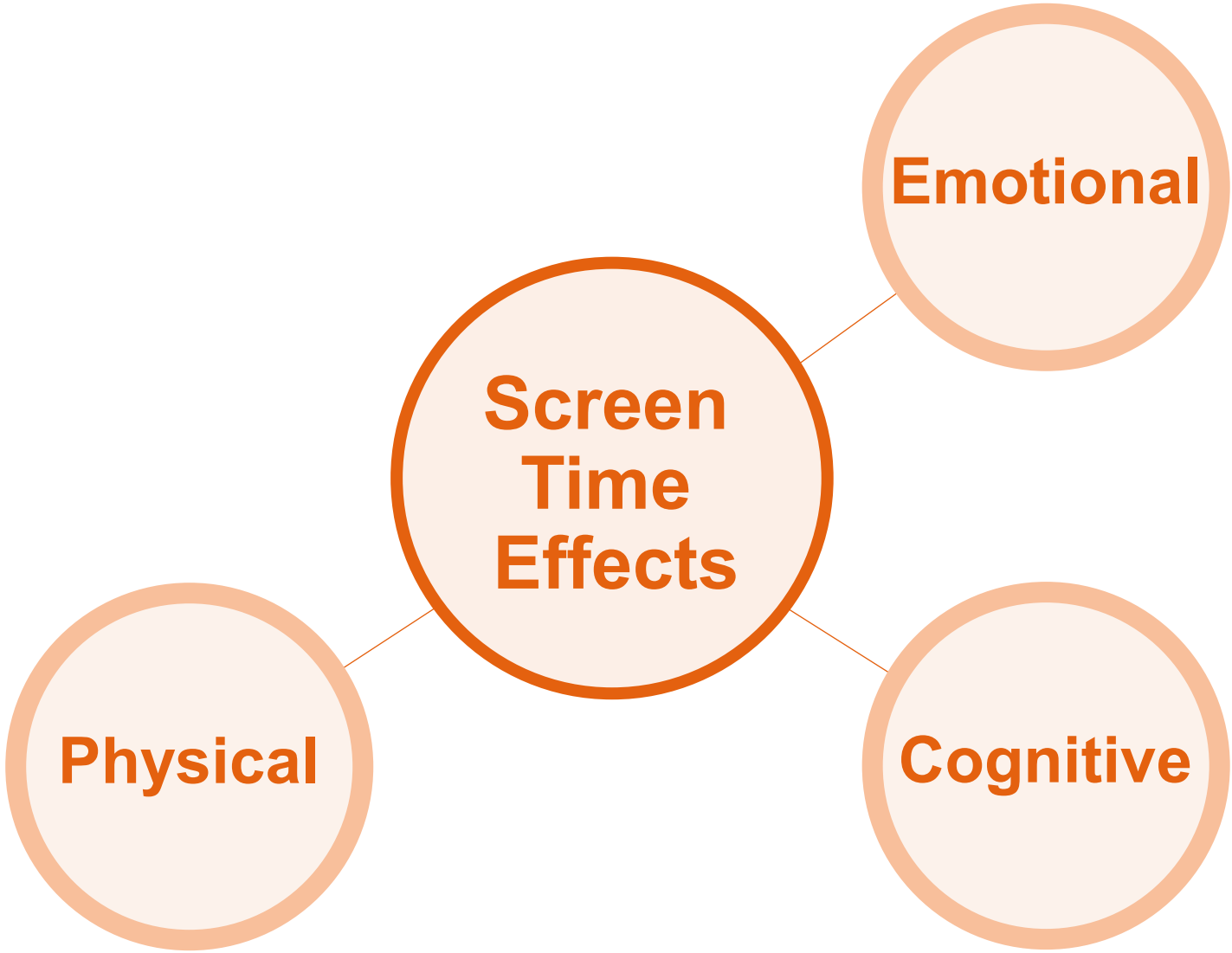
Presented by:
Simone Conti, *Project Lead Education Arcadis*
Andrew King, *Headteacher Riverhead Infant School*

The Problem: Screen Time Effects

Eye Strain & Poor Posture:
Headaches, blurred vision, and dry eyes. Prolonged screen use also contributes to poor posture and increased rates of back and neck pain in children.

Reduced Attention Span:
Children exposed to more than two hours of recreational screen time per day scored lower on measures of cognitive control and sustained attention.

Increased Anxiety:
Increased levels of anxiety and depression among young people, particularly when screen use displaces sleep and physical activity.



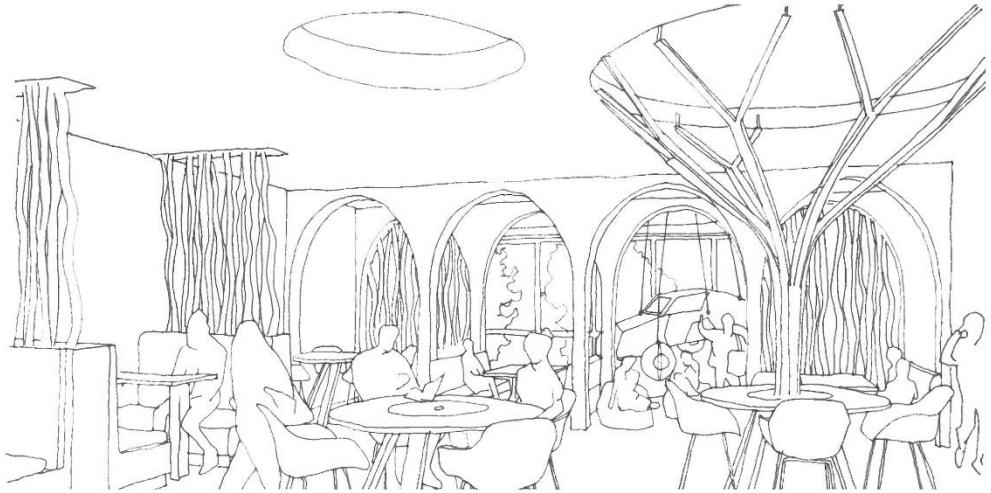
Mirror Architecture: Principles & Philosophy

Design Approach: Balances modern and historical elements (“Look Back to Move Forward”, Genius Loci).

Core Values: Focus on sustainability and cultural responsiveness.

Learning Connection: Emphasises how thoughtful design directly supports children’s well-being.

Courtesy of Gate of Nations - *Bâdgir* in Persian [Wind Catcher]



CSIC – *Arcadis*

Mirror Architecture: Principles & Philosophy

Design Approach: Balances modern and historical elements (“Look Back to Move Forward”, Genius Loci).

Core Values: Focus on sustainability and cultural responsiveness.

Learning Connection: Emphasises how thoughtful design directly supports children’s well-being.

GeniusLoci


Kaufmann House – Frank Lloyd Wright


Farnsworth House – Mies Van Der Rohe

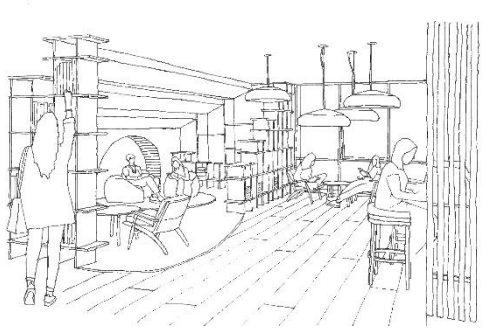
Design Strategies and Benefits

Nature-Inspired Spaces:
Use of natural light, reduction of visual clutter, calming designs.

Outcomes:
Enhanced focus, reduced stress, improved well-being.

Neurodivergent Support:
Purposeful design for diverse needs.

Learning Point Connection:
Practical strategies and neurodivergent support.



Riverhead Infant School

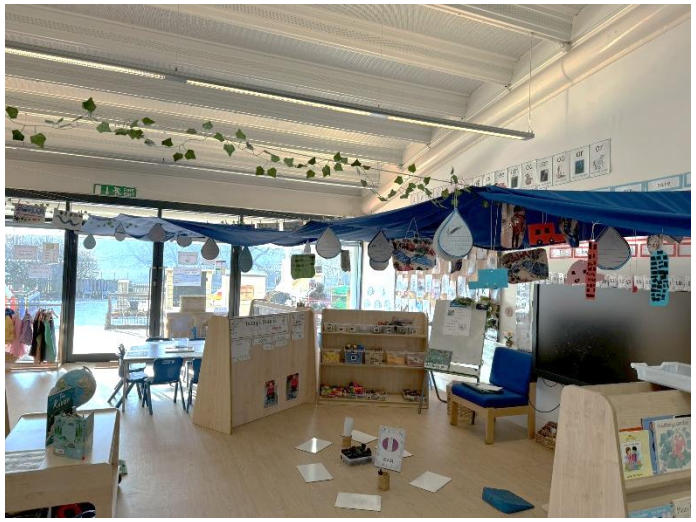



Image for illustrative purposes only
BIN STORE
ROLL
CLIMB
FENCE
1
2
3
4
5
6
7
③ Low planter
④ Clamber net
⑤ Tree platform
⑥ Clamber stack
Infants' School
Image for illustrative purposes only
Image for illustrative purposes only
Image for illustrative purposes only

Thank you

Arcadis. Improving quality of life.

Tilbury Douglas

St Mary's Catholic Voluntary Academy

The UK's first purpose built Biophilic school

Post Occupancy Findings

Department for Education

UNIVERSITY OF DERBY

Tilbury Douglas

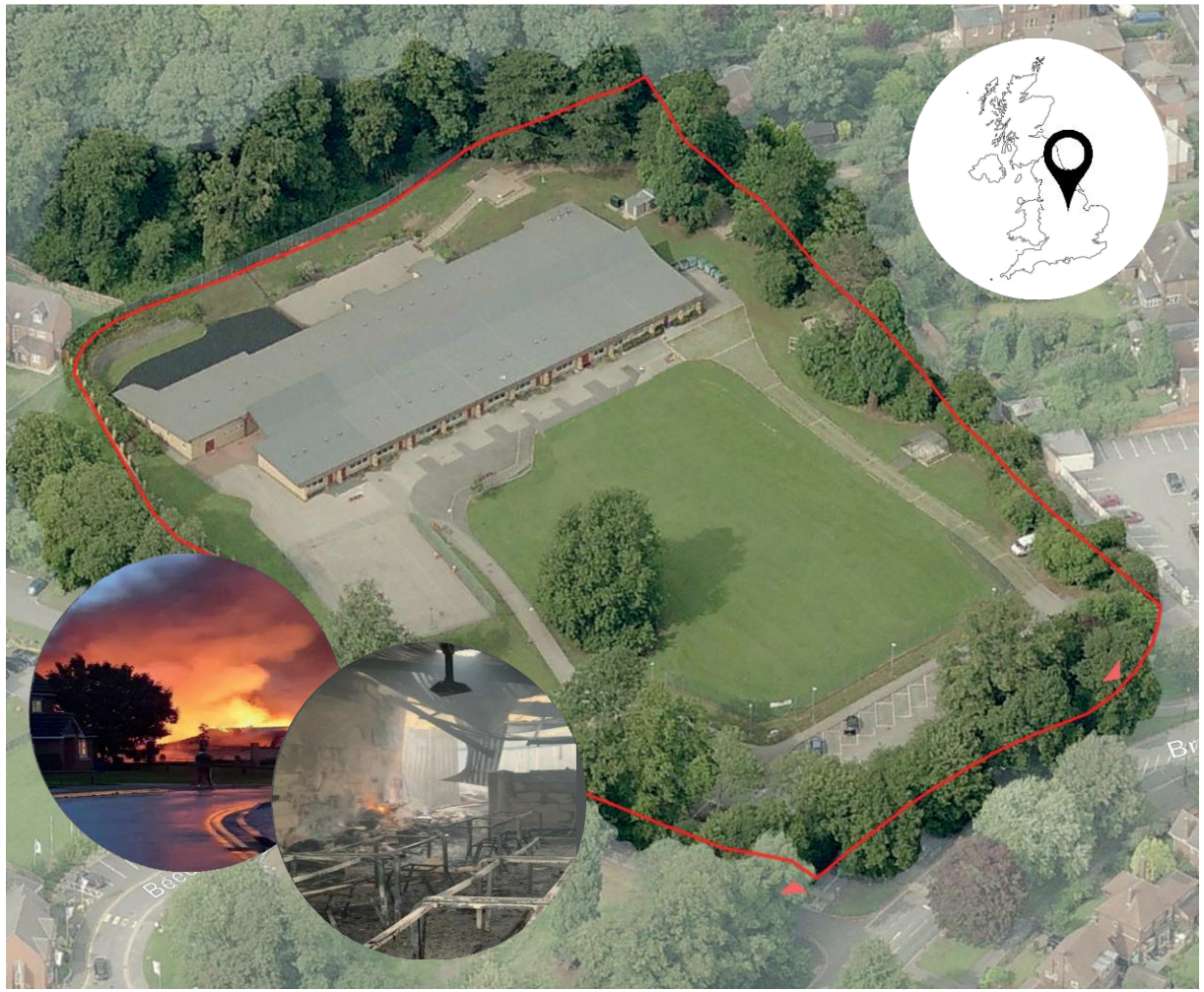
St Ralph Sherwin Catholic Multi Academy Trust

Building a better future **together**

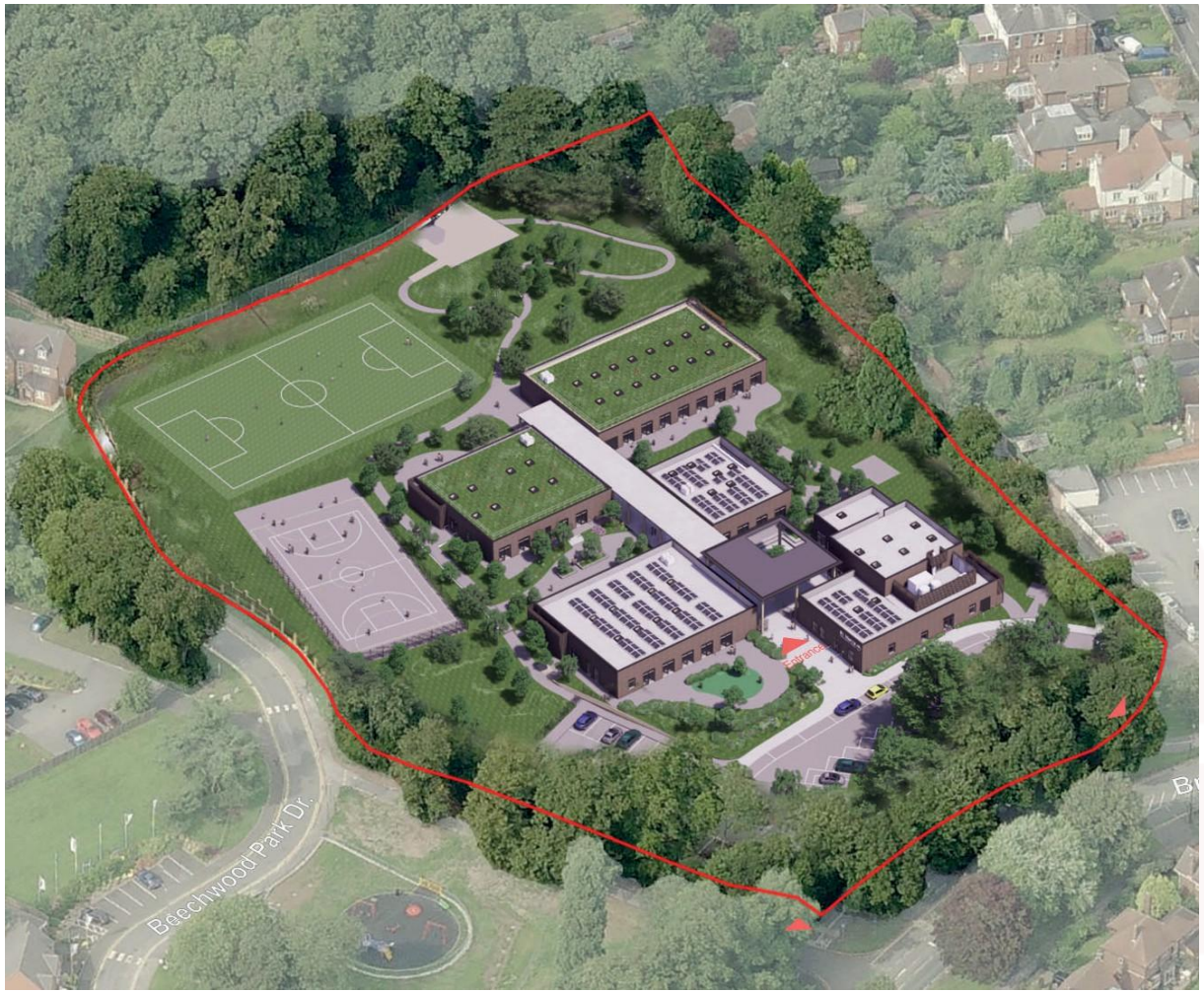
Opportunity from tragedy

Department for Education

Tilbury Douglas



The destroyed old school



The new school woven into the landscape

Holistic approach

Department for Education

Tilbury Douglas

An opportunity for change…

- **Operational**
- **Embodied**
- **Whole Life**

- **Biophilic design**
- **Enhanced landscape**
- **Timber**

Low Carbon

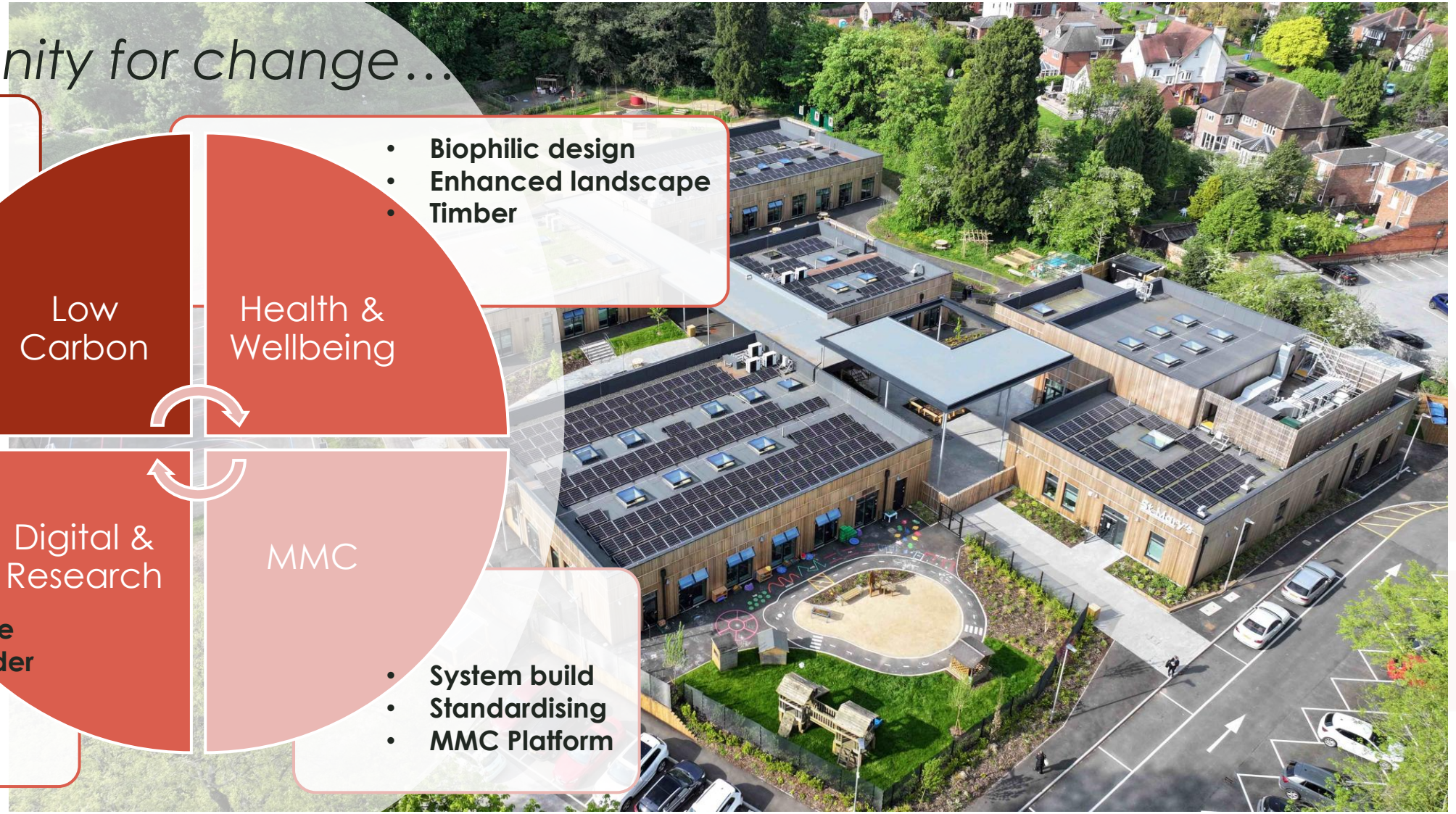
Health & Wellbeing

Digital & Research

MMC

- **University of Derby research programme**
- **Contributing to a wider body of evidence**
- **Sensors/air quality**
- **Energy use**

- **System build**
- **Standardising**
- **MMC Platform**



Biophilic design

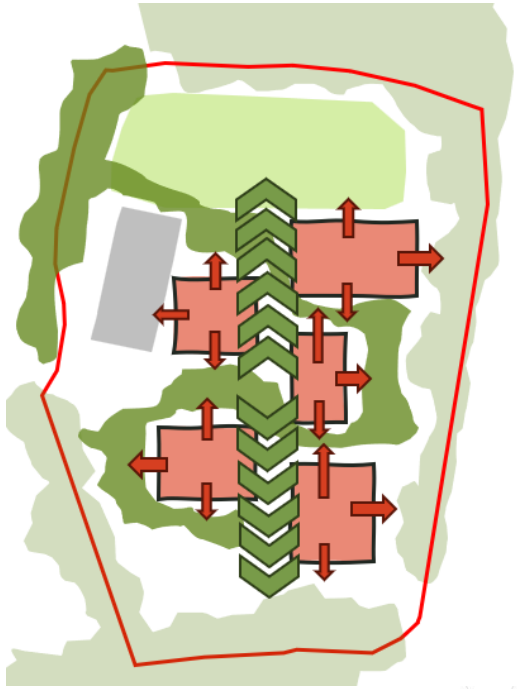
Department for Education

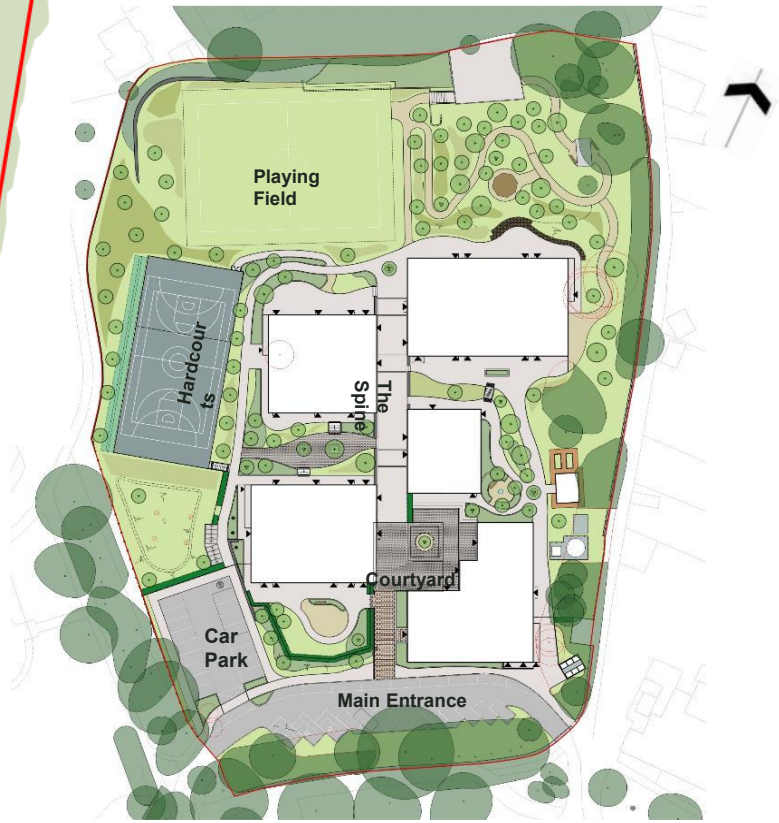
Tilbury Douglas

A driver in all design principles:

- Putting the students and school in harmony with the natural world
- Delivering rich & rewarding learning environments
- Creating a connection with nature, educating us in what we must cultivate & protect
- Delivering genuinely regenerative design, giving back more than we take

Biophilic Approach





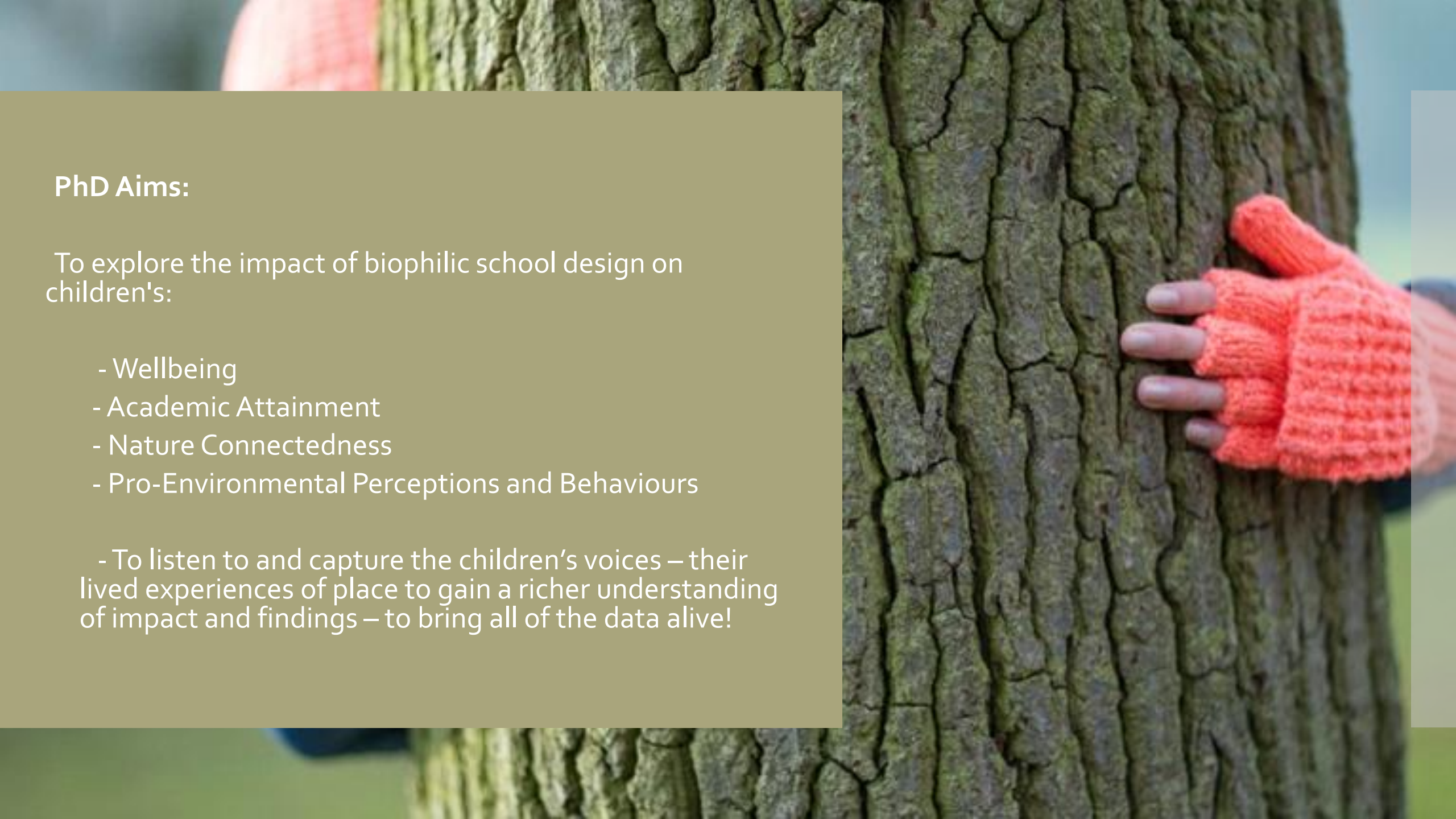
- **Massing and form driven by biophilic approach**
- **All classrooms have access to outside courtyards**
- **Courtyards developed to allow for greater sharing of space**

PhD Findings

Sophie Rickard

PhD Student – University of Derby

UNIVERSITY OF DERBY



PhD Aims:

To explore the impact of biophilic school design on children's:

- Wellbeing
- Academic Attainment
- Nature Connectedness
- Pro-Environmental Perceptions and Behaviours

- To listen to and capture the children's voices – their lived experiences of place to gain a richer understanding of impact and findings – to bring all of the data alive!

How?

Data collection methods we used with children.

Phase 1 -

SURVEYS

(collected pre and post move)

A series of questions to measure children's:

- Wellbeing
- Nature Connectedness
- Pro-Environmental Perceptions and Behaviours.

Attainment from termly Maths, Reading and Writing scores.

Phase 2 -

PHOTOVOICE x FOCUS GROUPS

10 children from each year group volunteered to take part in a photo-taking task:

Things they like most about their:

- School Building
- Classroom
- Outdoor Spaces.

Followed by a focus group.

Phase 3-

PLACE MAPPING TASK

Each class was given an ariel view map of the school and ask to place:

Green Stickers – place you most like to have your breaks in.
Blue Stickers – place you most like to learn in.
Yellow Stickers – place you feel most connected to nature.
Red Stickers – place you least like.

Write 3 reasons why.

Survey Data Results!

NATURE CONNECTEDNESS

- A small but sustained increase in nature connectedness post-move.

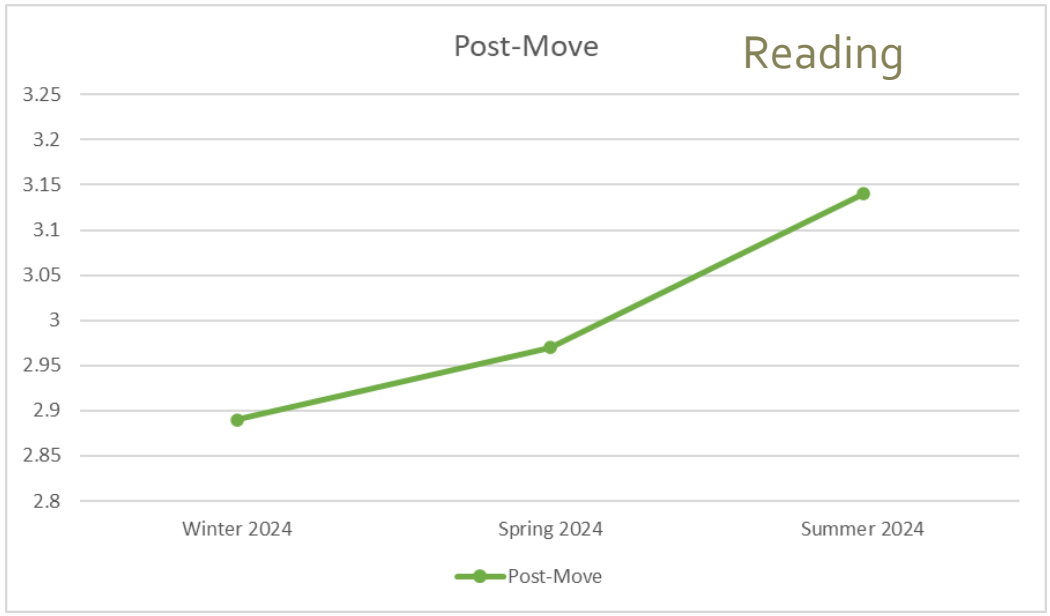
WELLBEING

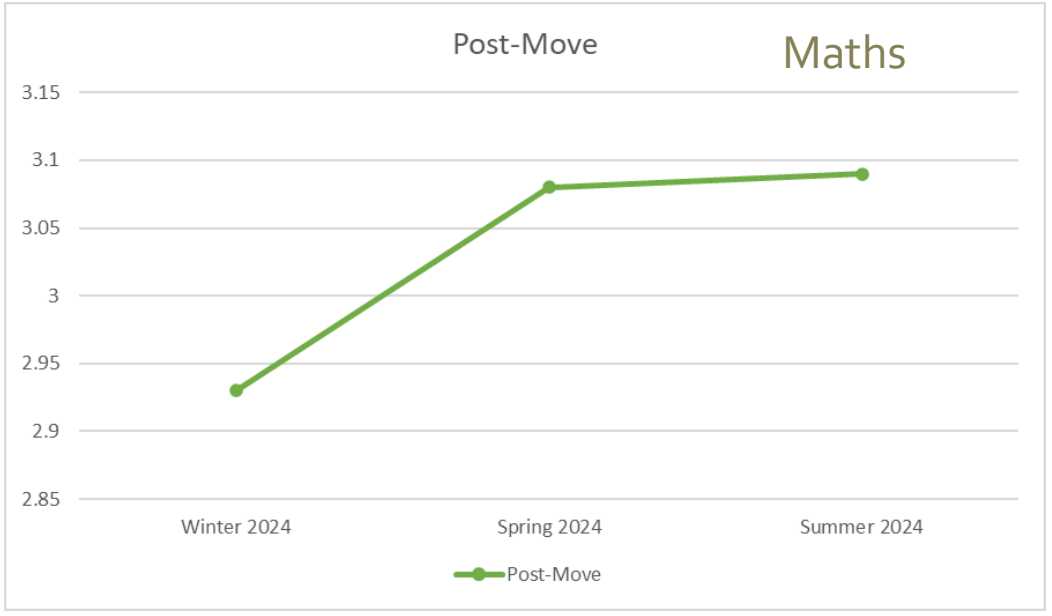
- A sustained increase in life satisfaction scores post-move, a minor dip in the Summer 2024 term.
- St Mary's Positive Mood scores were sustained post-move.

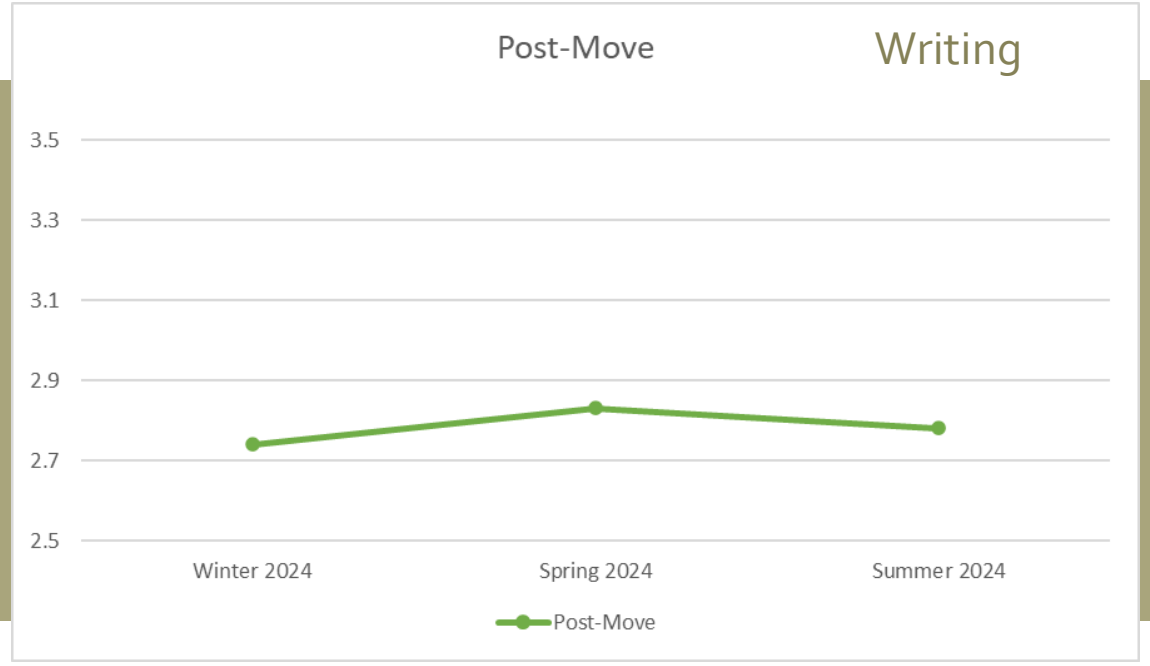
PRO-ENVIRONMENTAL PERCEPTIONS & BEHAVIOURS

- A continued increase in pro-conservation behaviour post-move.
- Stronger environmental perceptions scores post-move.

Academic Attainment Results







The Photovoice & Focus Group Results.

THE CLASSROOMS

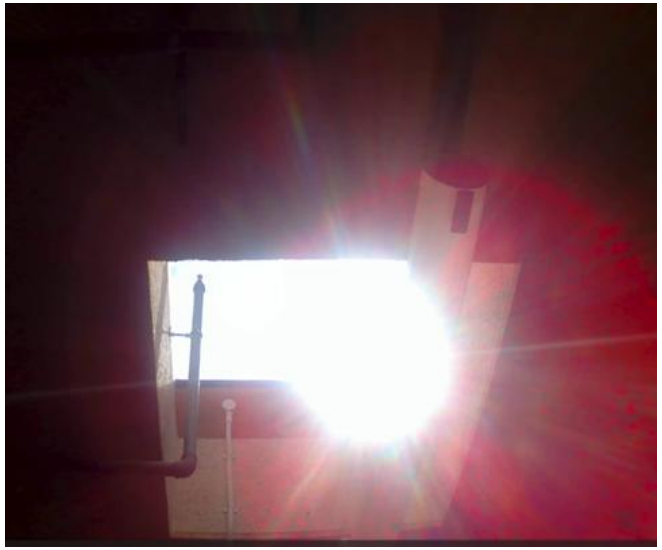
Children were asked to take three photographs of:

1- Favourite thing about your classroom.

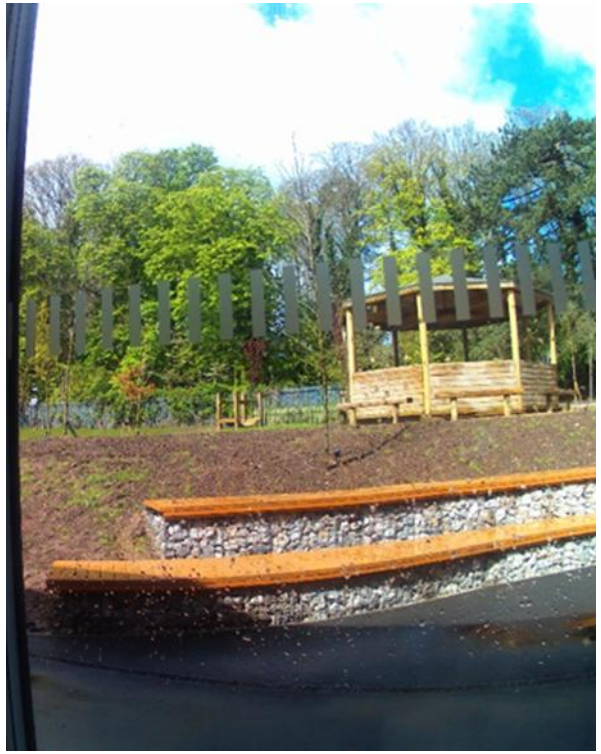
2- Something that makes you feel calm.

3- Something that helps you with your learning.

Favourite thing about your classroom.

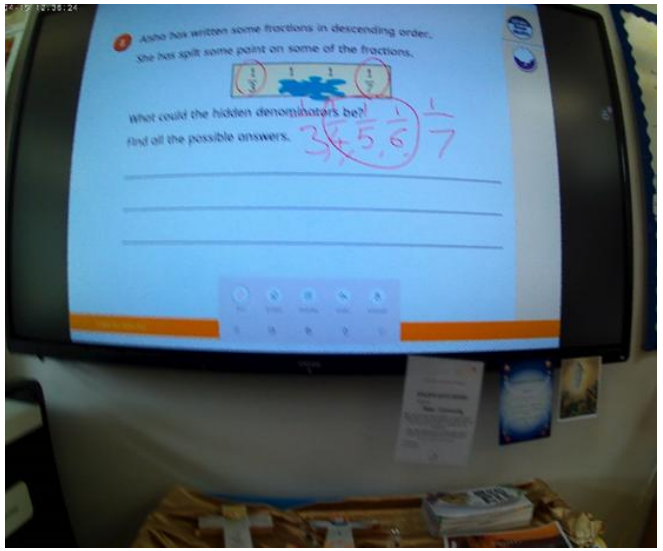


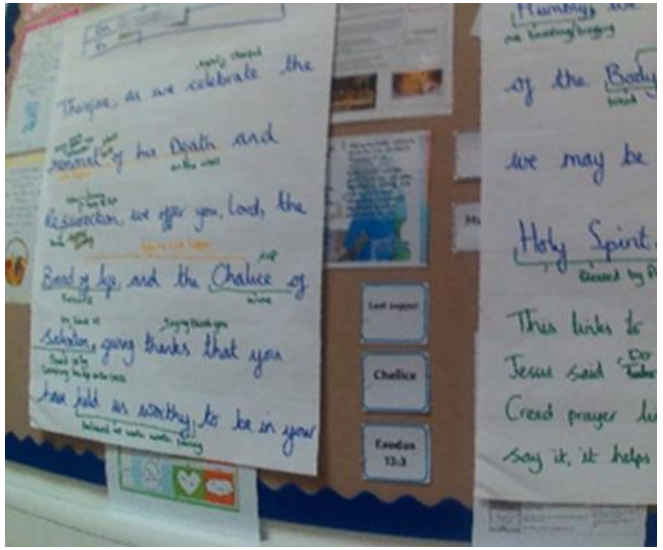





Something that helps you to feel calm.

Something that helps you with your learning.





The School.

Children were asked to take a photo of three of their favourite things about their new school.

Focus on building design.




Place you most like to go at break time.



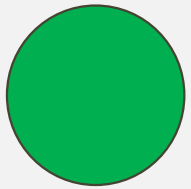

Place you most like to go to find sanctuary.





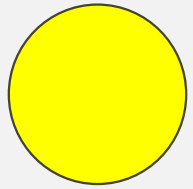
Place you would most like to learn or have lessons in.

The Mapping Task Results.

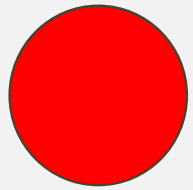


Most like to go at breaktime.

Would most like to learn in.



Feel most connected to nature.



You least like.

The children wrote three reasons why for each on a separate piece of paper.

The Places Year 3 chose

The Places Year 4 chose

Most like to go at breaktime.

Would most like to learn in.

Feel most connected to nature.

You least like.

The Places Year 5 chose

The Places Year 6 chose

Most like to go at breaktime.

Would most like to learn in.

Feel most connected to nature.

You least like.

What St. Mary's Provides

- Choice
- Positive and Manageable Risk – develops autonomy, self-belief and coping strategies.
- Opportunities to self-regulate emotions
- Exposure to peace and tranquillity
- Short, medium and long-term benefits.

Richardson, M., Barnes, C. & Owen, K. (2025). Nature Connection in Schools. University of Derby.

Introducing Our Newest Guide: Nature Connection in Schools | Finding Nature