

St Sophia's Primary School

Application of the Net Zero Public Sector Buildings Standard (the Standard)



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School

Application of the Standard



Project background

The Standard influenced the renovation of the St Sophia's Primary School in East Ayrshire Council. It involved influencing the planning of the major 1950s building refurbishment. The approach reflected desire from the local community to keep and enhance their existing buildings.

The Council were keen to explore best practice around refurbishment, embedding skills and learnings for this type of project and future refurbishments.

In line with recommendations from the Standard, the refurbishment adopted the EnerPHit approach and aims to demonstrate exemplary energy performance and internal environment.

The new voluntary Standard supported The East Ayrshire Council to meet its net zero commitments for the refurbished St Sophia's Primary school building, influencing the project from detailed design stage.

Project details

Building type
Primary Schools

Standard review stage
Detailed design

Reduction in climate impacts

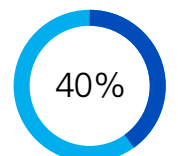
Typical energy use
194 kWh/m²/year

↓ 71%

Predicted energy usage
56 kWh/m²/year

Construction Embodied Carbon
Project specific 500 kgCO₂eq/m² with a stretch target of 300 kgCO₂eq/m²

The Standard saves an average of 40% embodied carbon



“I think the Net Zero Public Sector Buildings Standard will be a great tool in setting clear targets and agendas from the beginning of the projects, helping designers and the whole project team to plan the project better rather than applying varying standards retrospectively.”

Magnus Dowie, Sustainability & Building Services Manager, East Ayrshire Council

School

Application of the Standard

Working towards the Net Zero Public Sector Buildings Standard

Place

The decision to retain and enhance the existing school, rather than opting for a new building at a new site was supported by the local community.

The East Ayrshire Council carefully evaluated their needs for the school and their options to sustainably refurbish the building.

The **Place Principle** from the Standard was therefore applied to achieve better outcomes for the community, which resulted in a significant reduction in embodied carbon, equating to 40%.

It was found that very high energy and internal environmental standards could still be achieved.

Carbon

A refurbishment project presents energy performance challenges. In line with recommendations from the Standard, The East Ayrshire Council opted to apply the EnerPHit approach to building design and construction.

The Council hope to achieve high operational energy performance in fabric design and high-quality internal environments as dictated by the EnerPHit approach.

Together, these commitments mean that the Concept Design stage of the project modelled an approximate operational energy performance of just 56 kWh/m²/year, pending refinement at the detailed design stage.

The Council made significant effort to understand the embodied carbon from building construction. Recognising that refurbishment offered significant embodied carbon reductions, compared to building new.

Modified and stretch targets are being considered for construction embodied carbon, depending on final project costs.

Internal and external environment

The East Ayrshire Council sought to greatly improve the **internal environment of the primary school**.

The Standard mandates a high standard of internal environmental quality, combined with meeting key recommendations for indoor air quality, thermal comfort, natural light, acoustics, and water hygiene.

At the detailed design stage, it was intended that the project team would refine the Dynamic Simulation Modelling which fed into the internal services design, energy modelling and indoor environmental quality modelling.

A limited budget and physical constraints influenced the **external environment**, however by reconfiguring the school's access arrangements, the project was able to improve public access, reduce traffic congestion and make public transport more accessible.

The project proposed a package of targeted external improvements, designed to maximise outdoor learning space, improving the school's **external environment**.