

# Dunlop Early Childhood Centre

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



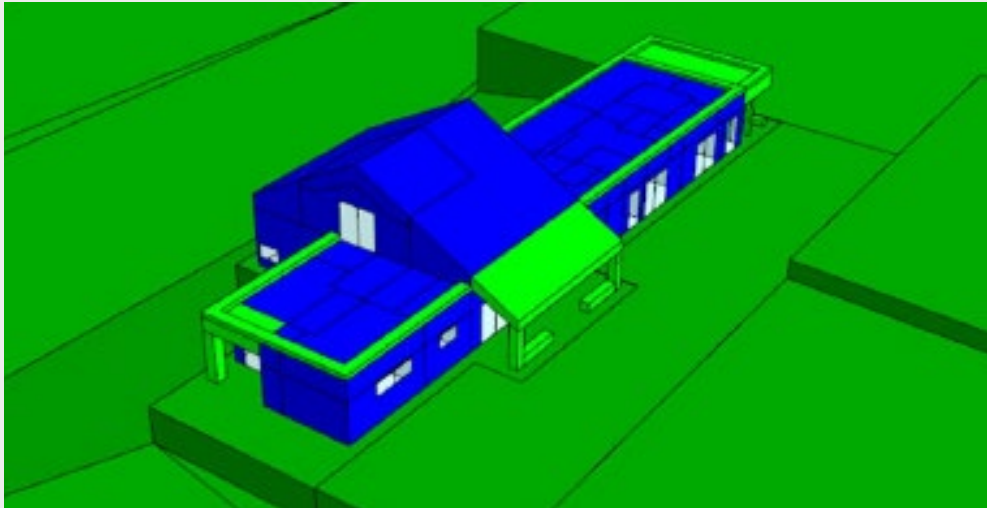
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# Early Learning Centre

Application of the Standard



## Project details

**Building type**  
Early Learning & Childcare

**Standard review stage**  
Detailed design stage

**Area**  
377 m2 (GIA)

## Reduction in climate impacts

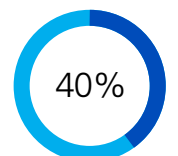
**Typical energy use**  
249 kWh/m<sup>2</sup>/year

↓ 77%

**Predicted energy use**  
~ 57 kWh/m<sup>2</sup>/year

**Construction Embodied Carbon**  
Recommended 650 kgCO<sub>2</sub>eq/m<sup>2</sup>  
being considered by project team

The Standard saves  
an average of 40%  
embodied carbon



## Project background

Plans for the new Dunlop Early Childhood Centre (ECC) in East Ayrshire Council developed in response to an increase in pupil numbers and to address the limitations for extension.

This will be a facility where children can develop in a stimulating environment, learning through play, exploring, and retreating in both internal and external environments.

The Dunlop Early Childhood Centre will encompass the ethos of the Curriculum for Excellence and the Space to Grow design guidance.

**The new voluntary Standard supported East Ayrshire Council to meet its net zero commitments for the new Early Childhood Centre, influencing the project from detailed design stage.**

“ 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 ”

**East Ayrshire Council feedback on the Standard**

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## Working towards the Net Zero Public Sector Buildings Standard

### Place

Many of the key 'Place' decision have been reviewed during the Detailed Design Stage.

The project team was able to demonstrate that many of the desired aspects of a Place-based approach were taken into account.

The project was based upon an identified 'need' to accommodate increasing pupil numbers, improve poor building conditions and address limited potential for expansion and improvement to external areas.

The project design has been undertaken with reference to good practice such as the Scottish Futures Trust planning metric guidance for Early Childhood Centres.

### Carbon

The building is being developed to the Passivhaus Standard to help translate design aspirations into impressive actual energy performance. The designers have used both the Passive House Planning Package (PHPP) and Dynamic Simulation Modelling.

The Pathfinder process focused on the detail of modelled aspects which may make a substantial difference to the energy performance, this includes free flow access, the use of unregulated energy (e.g. catering equipment) and a zero direct emissions heat source (e.g. air source heat pump).

Construction embodied carbon and circularity was considered during material selection. At the project stage there were limitations in terms of possible changes to previous material specifications, but options were investigated by the project team.

Further suggestions on the specification of the substructural elements (with the potential of 40% saving on embodied carbon) and guidance was provided for contractor documentation on best practice waste minimisation.

### Internal and external environment

The application of Passivhaus was intended to lead to a high-performance internal environment.

The Pathfinder process helped consider the detail of the design to include aspects such as the application of sensors to monitor air quality.

Areas of risk were highlighted at the detailed design stage which included the effect of centralising ventilation control on smaller areas of the building which are solely dependent on mechanical ventilation.

The Pathfinder process also helped to identify where more detailed assessment of internal equipment load profiles could minimise the risk of overheating (e.g. kitchen areas).

The wider Environmental Aspects of the building also featured good practice with an emphasis on retaining a natural landscape and encouraging biodiversity.