

Zero Carbon Case Study
Eildon rural green living

*Aiming for net zero now to build a
more sustainable future*

Project: **affordable green homes in the Borders, part of a five-year strategy for inclusive growth across the region**

Stepping off the brink in the Borders

Eildon Group is working towards net zero housing

The Eildon Group has, according to Development Project Manager Kevin Scott, been 'on the brink' of a sustainability commitment for some time, incorporating elements like air source heat pumps and PV panels in its new builds. Now, as part of a five-year strategy for growth both in the business and in housing provision in the Borders, the Group has committed to a series of projects with a full focus on sustainability.

“ We know the government wants to target net zero carbon. These projects will help us see now what our future looks like, instead of waiting until we're behind the curve. ”

Kevin Scott, Development Project Manager, Eildon Housing



THE BACKGROUND

Eildon Group is made up of parent company Eildon Housing Association Ltd and Eildon Enterprise Ltd. It provides housing, care and support services across the Borders region, and is recognised as one of the leading housing providers in Scotland.

As part of its growth strategy over the next five years, the Group plans to invest heavily in four pilot projects in Westruther, Broughton, Denholm and Innerleithen, each of which will explore a different sustainability standard of build – Passivhaus, Energiesprong, Volumetric and traditional timber frame.

The four trial developments will deliver up to 50 new homes in an area where demand is exceptionally high, and it's not uncommon to see up to 17 bidders for individual properties for sale.

THE RURAL GREEN LIVING STUDY

This pilot programme is a three-way partnership between Eildon, the Construction Scotland Innovation Centre (CSIC) and Glasgow School of Art (GSA), supported by additional funding from Scottish Borders Council.

Its aim is to create a selection of homes built to future-forward standards, and to monitor their energy performance over a period of around two years after completion. The study will not only show which sustainability standards perform best for the Scottish Borders, it will also help Eildon learn about and adopt more sustainable building practices from now on.

Covering everything from construction costs and supply chain feasibility to air quality and perceptions about the techniques and

technologies being used, the study will create a picture of every aspect of the design and build of the new homes. It will then, with the assistance of the people living in the homes, present a complete picture of their performance.

Although the project is still in the relatively early stages, Eildon anticipates that it will, in future, adopt a combination of techniques to ensure all homes they build meet both sustainability targets and quality expectations of residents.



Eildon's plan will create quality, affordable, sustainable homes in an area of high demand

THE COST OF NET ZERO CARBON

Among one of the biggest challenges Eildon has faced to date is managing costs. Some quotes, perhaps due to relative inexperience in the techniques being used, were extremely high, which for a short time looked as though they'd stop the project before it got started.

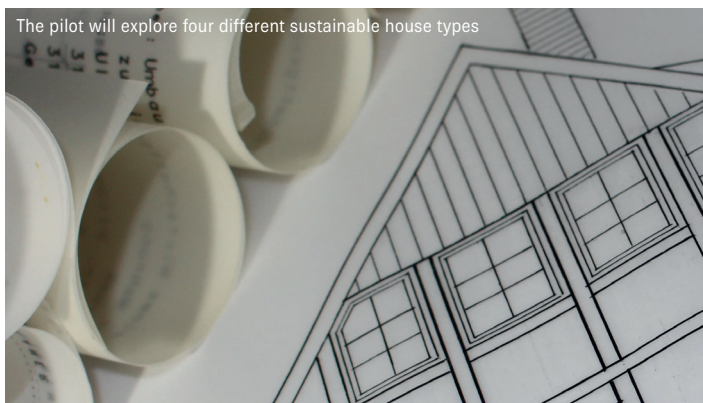
The over-inflated quotes meant the project was no longer feasible, as they would simply skew the results. Actual gains in terms of energy efficiency and carbon reduction would be offset by the costs, which would be too high to allow for affordable housing, a key goal of the project.

After negotiations and conversation, Eildon has been able to secure more realistic costs, while other concerns relating to planning and site issues have been relatively easily resolved.

“ We need to make a fundamental change, because everybody's going to have to play their part in CO2 reduction. Simply to keep going the same way we always have isn't going to cut it in the future. ”

Kevin Scott, Development Project Manager, Eildon Homes

The pilot will explore four different sustainable house types



IMMEDIATE EXPECTATIONS

The four construction methods this study will explore will not all deliver net zero carbon on their first go-round. Of the four, Eildon anticipates that Energiesprong will come closest – in fact, it's likely to reach the target because the entire model is designed to achieve energy self-sufficiency. The other three are not, although they will contribute towards a net zero result.

The current goal, however, is simply to find viable ways of moving forward towards a sustainable future for the construction industry, rather than waiting until change is imposed from the outside. The study is creating an opportunity to explore and develop design and construction, and to consider the skills, raw materials, delivery methods and supply chain associated with it.

Eildon will be sharing its findings as it goes and in full when the study is complete. It's working with Borders College Heriot Watt to find ways of helping the next generation of designers and builders to understand what's expected of them.

It's also applying learnings to other current projects. For example, a flatted development in Galashiels needed an alternative to gas

boilers. Stacking individual air source heat pumps around the outside would not have been aesthetically pleasing, or particularly efficient in terms of energy use. So the decision was made to create a communal air source system that would feed into each flat.

Similarly, Eildon is exploring the possibility of battery storage to store the power being generated by the PV panels on the roof of the building, which would otherwise have to feed into the grid. The idea is that the batteries would charge during the day and power the heat pump in the evenings, further reducing the building's CO2 footprint.

On another project, a single-dwelling refurbishment, Eildon is applying learnings from the pilot and early indications are that it might be very close to achieving net zero – a first for the business in terms of a refurb.

TARGETING NET ZERO

Planning ahead and getting the right advice is crucial to achieving net zero goals, according to Eildon's Development Project Manager Kevin Scott.

"You've got to carefully look at how you're going to do it," he says. "Think up front and plan properly. Speak to the experts. Use them. Get their advice. Then you'll have a better idea of what can do to get to net zero."

"That's how we've got to where we are, with one development we think will reach the net zero mark, and others that we think won't be too far behind. With a few tweaks here and there, and an ongoing commitment to learning and development, net zero is an achievable goal."



THE EILDON PROJECT AT A GLANCE:

- **Up to 50 new homes** in Westruther, Broughton, Denholm and Innerleithen
- **4 construction models**
Passivhaus, Energiesprong, off-site construction, timber frame
- Creating **quality, affordable, sustainable** homes
- Study will take place over **two years** from completion of build
- Will deliver learnings on
Cost
Construction
Energy efficiency
Public and industry perception
- Working with Borders College Heriot Watt to inspire **future builders**
- Aim to achieve
net zero carbon
less fuel poverty
improved living quality



This case study was prepared by Construction Scotland Innovation Centre on behalf of the Scottish Construction Leadership Forum – March 2021.

**CONSTRUCTION
SCOTLAND
INNOVATION
CENTRE**