

# UK PASSIVHAUS AWARDS 2015

## STEEL FARM

LEAP | a lovingly engineered architectural process

Passivhaus  
Trust  
Awards 2015



With unassuming courage Trevor and Judith Gospel dared to create the first Passivhaus in Northumberland. They did not want a traditional house. Nor did they want a home that was alien to its setting. They wanted a characterful home that would be enriched by the patina of time. It was a seemingly natural choice for this remote rural site. The construction technology exploits, and elevates, local skills and traditional craftsmanship of the materials match the onerous demands of an Area of Outstanding Natural Beauty. Steel Farm comes from the earth: sun kissed walls are natural stone drawn from the quarry nearest to the site; the roof is slate. Stripped back details beguilingly echo memories of the local vernacular. The character will evolve and soften over decades. Windows are positioned, sized and proportioned to carefully frame views so that daylight washes the interior.



### Project Overview

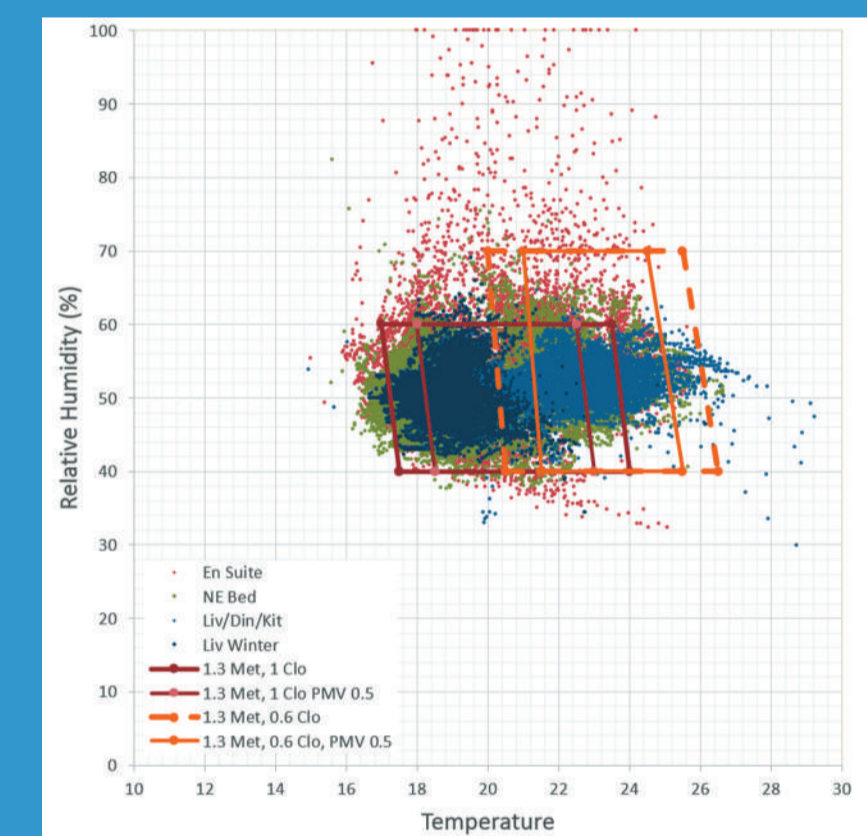
Name: Steel Farm  
Location: Northumberland, North East England  
Building Type: Single family house  
Construction type: Masonry construction, slate roof  
Completed in: February 2013  
Occupancy status: Occupied since February 2013  
Construction Cost: £1567/sqm

### Sustainability Features

Primary Energy Demand: 85 kWh/m<sup>2</sup>a  
Space Heating Demand: 14 kWh/m<sup>2</sup>a  
Heating & Cooling Load: 10 W/m<sup>2</sup>  
Ventilation strategy: Paul Novus MVHR, opening windows  
Heating strategy: Condensing LPG boiler, radiators  
Shading strategy: Design for daylight, deep set reveals  
U values: Wall 0.1 W/m<sup>2</sup>K, Roof 0.08 W/m<sup>2</sup>K, Floor 0.1 W/m<sup>2</sup>K, Windows 0.8 W/m<sup>2</sup>K, Doors 0.8 W/m<sup>2</sup>K

### Measured Performance

Sub-metering not possible (whole farm on one elec. meter). Space heating and DHW from one fuel source.  
Predicted space heating plus DHW: 26.2 kWh/m<sup>2</sup>a  
Measured space heating plus DHW: 24 kWh/m<sup>2</sup>a  
Winter Monitoring Temp.: Ave. 20°C  
Summer Monitoring Temp.: <25 °C > 98% of the time  
Relative Humidity: Winter 51%, Annual 51%  
Air pressure result: 0.32 ach @50Pa  
TFA: 151 m<sup>2</sup>



### Quote:

In our old accommodation, 2011 I think, it was warmer in the fridge ...we measured it. More than the savings in energy bills, and more than reducing our environmental impact, we are enjoying the comfort of our new home.

Judith Gospel, owner/occupier

### Case Study & Site Visit

Learn more about Steel Farm with an in-depth case study, and an opportunity to experience Northumberland's first Passivhaus.

- A detailed cost breakdown.
- Adopted strategy for cost savings & reducing risk.
- Overheating analysis undertaken during 2014 – "the warmest year ever" says MET Office.
- Whether or not the air in a Passivhaus can get too dry

Visit: [PassivhausOpenDays.com](http://PassivhausOpenDays.com)

### TEAM CREDITS

**Client:** Trevor and Judith Gospel  
**Architect & Passivhaus Designer:** Mark Siddall, LEAP  
**Mech. Services:** Alan Clarke  
**Contractor:** J.D. Joinery and Building  
**Airtightness, Windows, Doors & MVHR:** Green Building Store,  
**Certifier:** Kym Mead.

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