

UK PASSIVHAUS AWARDS 2013

Lancaster Cohousing Project

Andrew Yeats (Eco Arc Architects) & Alan Clarke



TERRACE A PASSIVE HOUSE & COMMON HOUSE VERANDA

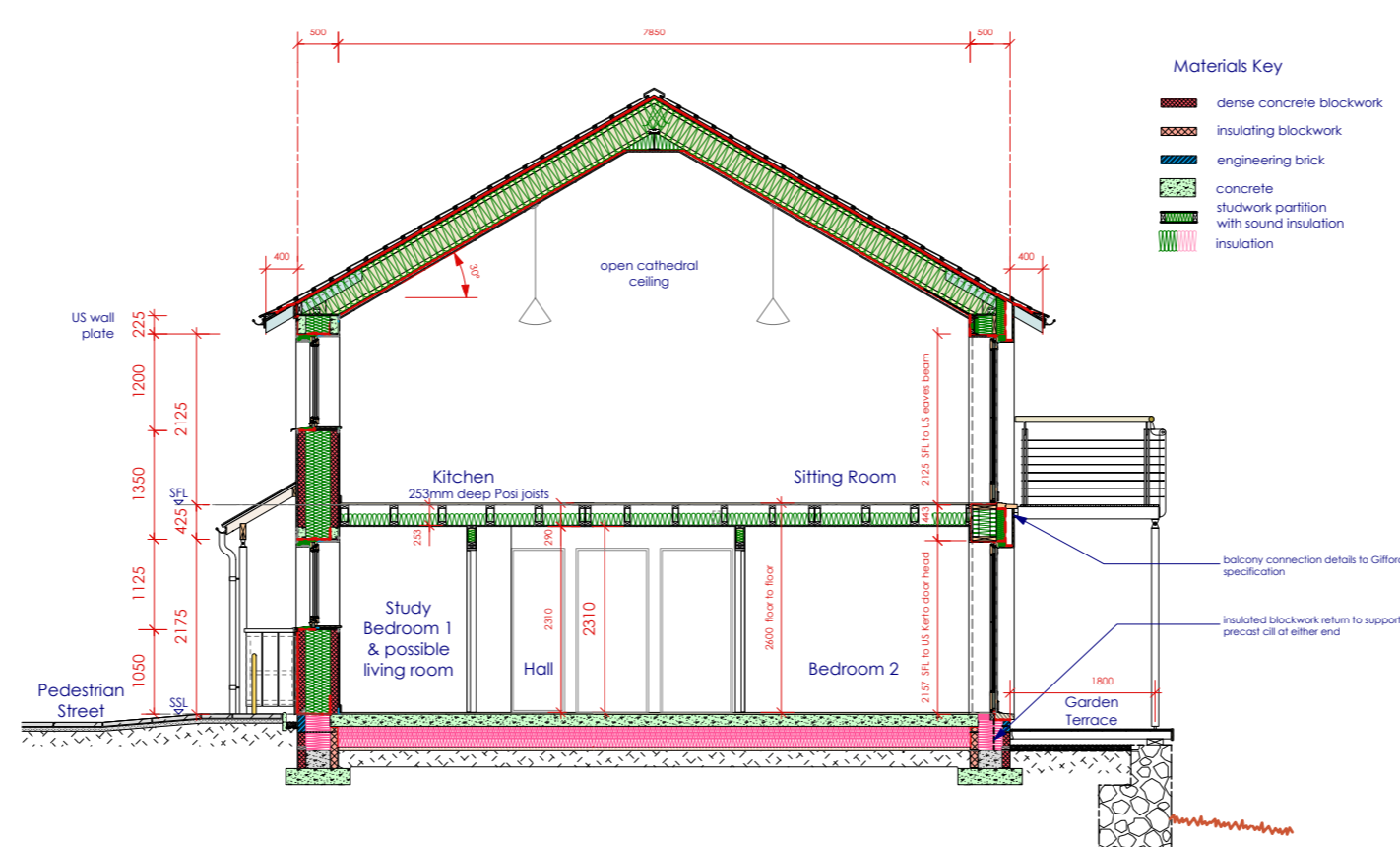
Lancaster cohousing is currently the largest completed Passivhaus housing development in the UK, and also meets Code for Sustainable Homes level 6 and Lifetime Homes, with site-wide renewable energy systems, all at affordable costs.

This owner-occupied project evolved through a participatory design process with the individual householders and Eco Arc Architects. It follows the cohousing model with 41 private houses in a car-free site, alongside shared community facilities including a common house, laundry, orchard, gardens, children's room and play areas, and on-site work spaces for rent.

The result is a neighbourhood based upon ecological values, where, as interviews with the residents have shown, it is very easy to live a low carbon, sustainable lifestyle in comfort.



CAR FREE PEDESTRIAN STREET



CROSS SECTION OF UPSIDE DOWN HOUSE WITH CATHEDRAL CEILING



SHARED COMMON HOUSE KITCHEN/ DINING/ LIVING SPACE

A TSB Building User Survey (BUS) was undertaken with 100% return of questionnaires. The results produced were excellent. Residents were very positive about how well it performs. Responses for all eight main categories: air quality, comfort, design, perceived health, lighting, needs, noise, and temperature were all higher or better than the UK 2011 BUS Housing benchmark. In five of the categories the project was either the highest or second highest performer when compared against other studies.

"An exceptional achievement!"
Fionn Stevenson

Project Overview

Name: Lancaster Cohousing Project
Location: Halton Lancaster
Building Type: 41 Owner Occupied Houses
Construction Type: Wide Cavity Masonry & Timber Frame
Completed: Phased Completion August 2012 to May 2013
Occupancy Status: Houses Occupied from August 2012
Construction Cost: **£1825m²** average, including considerable post industrial site remediation and site stabilising costs. Cost **£1505m²** excluding abnormal costs & external work costs.

Sustainability Features

Primary Energy Demand: **81kWh/m².a**
Heating demand: **12kWh/m².a**
Heating and Cooling Load: Heating **9W/m²**, no cooling
Ventilation strategy: Paul focus MVHR
Heating strategy: Living room and bathroom radiators, central biomass boiler + solar hot water & district heating
Shading strategy: Roof overhang and open web balcony
U values: Exterior wall **0.12**, Roof **0.09**, Floor **0.14**, Windows (including glazed doors) **0.89 (W/m²K)**

Other features: Co-housing arrangement with communal laundry and common house; private electricity grid with solar PV input (PV not linked to individual houses); low car ownership with car pool; work space to rent in adjacent renovated mill building

Measured Performance (average figures):

Energy delivered to houses:
DHW average: **26kWh/m².a**
Space heating: **13kWh/m².a**
Electricity: **22kWh/m².a**
Primary energy total (inc distribution losses): **77kWh/m².a**
Air pressure test: **0.5 ach⁻¹ @ 50 Pa**
(Best figure achieved on terrace D: **0.35 ach⁻¹ @ 50 Pa**)

Occupant Feedback:



"The Lancaster passive house I live in has exceeded all my expectations with regard to comfort, warmth and air quality. The utility bills are exceptionally low and the systems are easy to use. From my personal experience I would have no hesitation recommending these Passive House Designs to others"

Dr. Jan Maskell, Cohousing Resident

"After living in a Victorian house for the last 20 years, I thought cold draughts were a fact of life but our new passivhaus has none! Everybody who walks in asks us if we have our heating on as it feels so warm - we don't. This is seriously impressive technology we're living in."

Hue Johnson, Cohousing Resident

TEAM CREDITS

Client: Lancaster Cohousing (Representative Jon Sear)
Architect: Eco Arc Architects: Ecological Architecture Practice: Andrew Yeats, Vincent Fierkens, Lucy Nelson
M & E Passivhaus Consultant: Alan Clarke, Nick Grant
QS Project Manager: Turner & Holman: D. Fotheringham
PH Certifier: WARM: Peter Warm, Karl Parsons
Structural Engineer: Ramboll: Gary Willis, David Tasker
Contractor: Whittle Construction: Graham Bath
Photography: Luke Mills

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