

UK PASSIVHAUS AWARDS 2014

Hart Lea Encraft



MISS RAINES, FIRST RESIDENT - HART LEA SCHEME

A 236 sqm timber frame Passivhaus new build in Sandiacre. The certified building consists of three terraced houses. Six other dwellings were built on the same site, including four semi-detached houses and two bungalows. All were built to the same specification but only the terraced row of three was certified due to its favourable orientation and form factor. The site is part of a multi-million pound regeneration programme by social housing provider emh homes to provide housing that is both sustainable and affordable in the East Midlands region. A key client requirement was that the scheme should meet Level 4 of the Code for Sustainable Homes without the need for bolt on renewable energy or complex technologies. Encraft's whole life costing analysis was used to inform decisions and a fabric first approach preferred by emh homes (even though it might mean higher build costs) because it delivers very low fuel bills for their residents as well as low maintenance costs.



HART LEA OPENING



HART LEA FLOOR PLANS AND ELEVATIONS



PASSIVHAUS CERTIFICATION: FROM L - R SIMON GREGORY (LINDUM), CHAN KATARIA (EMH HOMES), CLLR. HART (EREWASH BOROUGH COUNCIL), HELEN BROWN (ENCRRAFT)

"We're proud to report the Hart Lea scheme was delivered on time and under budget. These houses are energy efficient, and are affordable too as fuel bills are extremely low."

Simon Gregory - Managing Director
Lindum Group

Project Overview

Name: Hart Lea
Location: Sandiacre, Leicestershire
Building Type: Residential
Construction type: Timber frame
Construction period: 44 weeks
Completed in: November 2013
Occupancy status: Occupied since December 2013
Construction Cost: £1423/m²
TFA: 236.3m²

Sustainability features

Primary Energy Demand: 111 kWh/m².a
Heating Demand: 19 kWh/m².a
Heating & Cooling Load: 10 W/m², no cooling
Air pressure result: 0.54 ach @50Pa
Ventilation strategy: Airflow DV72 MVHR system with inline battery heater and Airflex Pro distribution box
Heating strategy: Glow Worm Ultracom 12sxi 89.5% efficient condensing gas boiler, supplying two towel radiators and domestic hot water cylinder.
U values: Ground floor: 0.106 10W/m²K, Walls: 0.090 W/m²K, Roof: 0.098 W/m²K, Windows: 0.78 W/m²K

Other features: The Hart Lea properties all meet Code for Sustainable Homes Level 4 and have been designed to Lifetime Homes Standards so they can easily be adapted to meet a wide range of needs, such as for elderly residents, to enable independent living.

Cost Innovations

Encraft were able to ensure the cost effectiveness of the scheme by aligning design criteria for the site with the best performing plots. The project went out to tender on a Passivhaus inspired fabric first specification, in which the u-value and air tightness targets were made a contractual requirement, but Passivhaus certification was not.

Contractors, Lindum Construction recognized an opportunity to deliver their first Passivhaus certified scheme and subsequently employed Encraft, not only to help them deliver to the tender but also to make certification possible. Lindum chose an offsite, closed-panel, timber frame wall (Val-U-Therm) and kept costs low at the estimating stage by planning for more traditional ground floor and roof elements, rather than using the complete offsite build system. However, connecting the Val-U-Therm walls to traditional elements onsite proved to be time consuming, both in the design and implementation, particularly in regards to air tightness and thermal bridge details.

Cost effectiveness was further ensured by switching from a Passivhaus certified MVHR unit to a cheaper model, supplied by Airflow. The 12% penalty applied in PHPP was just manageable, in part because we mounted the unit directly against an external wall, keeping cold ducts short. External access to the MVHR and boiler plant room ensures these services can be easily maintained.

TEAM CREDITS

Client: emh homes
Passivhaus Consultant: Encraft
Developer: Lindum Construction
Architect: Geoff Carter Architects
Certifier: BRE
Quantity Surveyor: Ridge and Partners
Structural Consultant: BSP Consulting

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