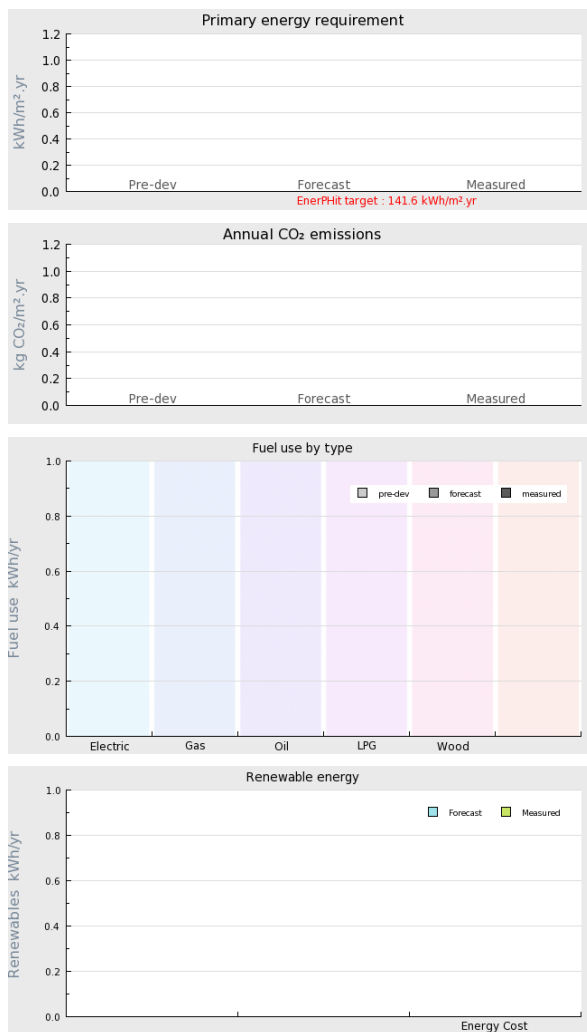


## Project name Cre8 Barn

**Project summary** WINNER of the UK Passivhaus Awards 2015 - The Cre8 Barn project is an innovative barn conversion to EnerPHit standard, which has transformed a derelict cow byre into an education centre for Yorkshire Wildlife Trusts Stirley Community Farm. The project features a box within a box structure (inner timber frame building within outer masonry barn) which preserves the outer appearance of the barn, while offering high levels of airtightness and continuity of insulation. The timber frame construction not only ensures thermal performance, but also helps provide structural stability to the outer masonry walls.



## Project Description

Projected build start date	01 Sep 2012
Projected date of occupation	01 Sep 2013
Project stage	Occupied
Project location	Huddersfield, West Yorkshire, England
Energy target	EnerPHit
Build type	Refurbishment
Building sector	Public
Property type	Detached

Existing external wall construction	Other
Existing external wall additional information	Box within a box timber frame within masonry
Existing party wall construction	
Floor area	98 m <sup>2</sup>
Floor area calculation method	PHPP
Building certification	Passivhaus certified

## Project team

Organisation	Green Building Store Design & Build
Project lead	
Client	Yorkshire Wildlife Trust
Architect	Derrie OSullivan & Sue Heywood
Mechanical & electrical consultant(s)	Green Building Company
Energy consultant(s)	Green Building Company
Structural engineer	Stuart McCormick, SGM Structural Engineers
Quantity surveyor	
Other consultant	Certifier - WARM: Low Energy Building Practice
Contractor	

## Design strategies

Planned occupancy
Space heating strategy
Water heating strategy
Fuel strategy
Renewable energy generation strategy
Passive solar strategy
Space cooling strategy
Daylighting strategy
Ventilation strategy
Airtightness strategy
Strategy for minimising thermal bridges
Modelling strategy
Insulation strategy
Other relevant retrofit strategies
Other information (constraints or opportunities influencing project design or outcomes)

## Energy use

Fuel use by type (kWh/yr)

Fuel	previous	forecast	measured
<b>Electric</b>			

Fuel	previous	forecast	measured
<b>Gas</b>			
<b>Oil</b>			
<b>LPG</b>			
<b>Wood</b>			

#### Primary energy requirement & CO2 emissions

	previous	forecast	measured
<b>Annual CO2 emissions</b> (kg CO2/m <sup>2</sup> .yr)	-	-	-
<b>Primary energy requirement</b> (kWh/m <sup>2</sup> .yr)	-	-	-

#### Renewable energy (kWh/yr)

Renewables technology	forecast	measured
-		
-		
<b>Energy consumed by generation</b>		

#### Airtightness ( m<sup>3</sup>/m<sup>2</sup>.hr @ 50 Pascals )

	Date of test	Test result
Pre-development airtightness	-	-
Final airtightness	-	0.35

#### Annual space heat demand ( kWh/m<sup>2</sup>.yr )

	Pre-development	forecast	measured
<b>Space heat demand</b>	-	33	-

Whole house energy calculation method

PHPP

Other energy calculation method

Predicted heating load

17 W/m<sup>2</sup> (demand)

Other energy target(s)

## Building services

Occupancy

Space heating

Hot water

Ventilation

Controls

Cooking

Lighting

Appliances

**Building construction**

Storeys	1
Volume	
Thermal fabric area	
Roof description	Timber I beam with Gutex fibreboard and Earthwool Loft roll
Roof U-value	0.10W/m <sup>2</sup> K
Walls description	Timber I beam with Gutex fibreboard and Earthwool Frame therm
Walls U-value	0.13W/m <sup>2</sup> K
Party walls description	
Party walls U-value	
Floor description	RC Slab with PIR insulation
Floor U-value	0.11W/m <sup>2</sup> K
Glazed doors description	Timber aluminium composite with thermal break
Glazed doors U-value	0.78W/m <sup>2</sup> K installed
Opaque doors description	
Opaque doors U-value	
Windows description	Timber aluminium composite with thermal break
Windows U-value	0.78W/m <sup>2</sup> K installed
Windows energy transmittance (G-value)	49%
Windows light transmittance	
Rooflights description	
Rooflights light transmittance	
Rooflights U-value	

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## Project images



