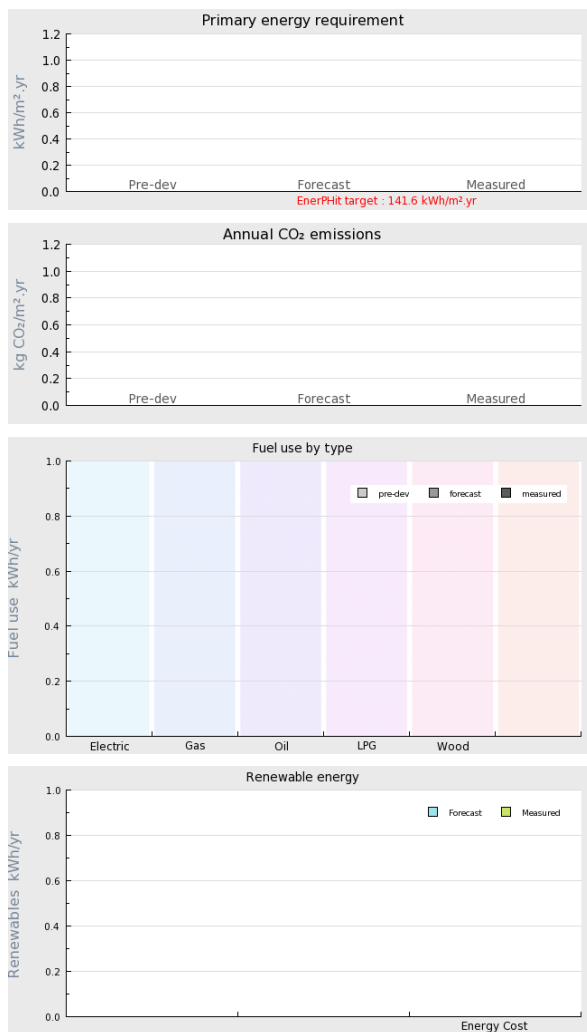


Project name Cre8 Barn

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 ² |
| 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 |
|-----------------|----------|----------|----------|
| Electric | | | |

| Fuel | previous | forecast | measured |
|-------------|----------|----------|----------|
| Gas | | | |
| Oil | | | |
| LPG | | | |
| Wood | | | |
| | | | |

Primary energy requirement & CO2 emissions

| | previous | forecast | measured |
|---|----------|----------|----------|
| Annual CO2 emissions (kg CO2/m ² .yr) | - | - | - |
| Primary energy requirement (kWh/m ² .yr) | - | - | - |

Renewable energy (kWh/yr)

| Renewables technology | forecast | measured |
|--------------------------------------|----------|----------|
| - | | |
| - | | |
| Energy consumed by generation | | |

Airtightness (m³/m².hr @ 50 Pascals)

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

Annual space heat demand (kWh/m².yr)

| | Pre-development | forecast | measured |
|--------------------------|-----------------|----------|----------|
| Space heat demand | - | 33 | - |

Whole house energy calculation method

PHPP

Other energy calculation method

Predicted heating load

17 W/m² (demand)

Other energy target(s)

Building services

Occupancy

Space heating

Hot water

Ventilation

Controls

Cooking

Lighting

Appliances

Renewables

Strategy for minimising thermal bridges

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 ² K |
| Walls description | Timber I beam with Gutex fibreboard and Earthwool Frame therm |
| Walls U-value | 0.13W/m ² K |
| Party walls description | |
| Party walls U-value | |
| Floor description | RC Slab with PIR insulation |
| Floor U-value | 0.11W/m ² K |
| Glazed doors description | Timber aluminium composite with thermal break |
| Glazed doors U-value | 0.78W/m ² K installed |
| Opaque doors description | |
| Opaque doors U-value | |
| Windows description | Timber aluminium composite with thermal break |
| Windows U-value | 0.78W/m ² K installed |
| Windows energy transmittance (G-value) | 49% |
| Windows light transmittance | |
| Rooflights description | |
| Rooflights light transmittance | |
| Rooflights U-value | |

Project images



