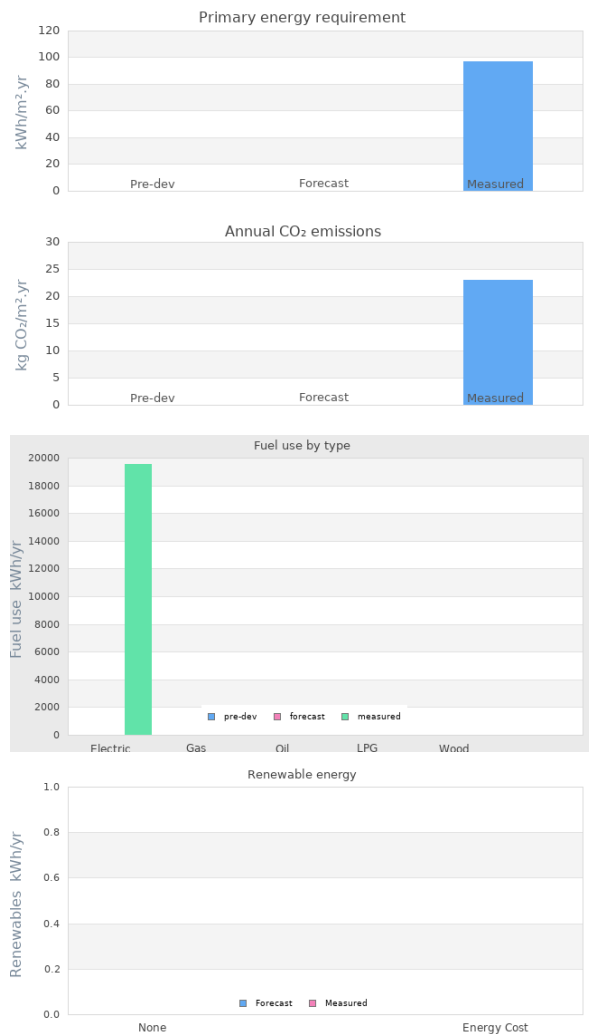


## Project name Longwall house

**Project summary** Refurbish and extend a 3 bedroom detached house to a 4 Bedroom , 2 bathroom home and new detached single storey home office , to achieve approximately AECB silver standard. , Project undertaken by SJ Construction



## Project Description

Projected build start date

Projected date of occupation

Project stage Occupied

Project location Wallingford, Oxfordshire, England

Energy target other

Build type Mixed

Building sector Private Residential

Property type Detached

Existing external wall construction Masonry Cavity

Existing external wall additional information additional external wall insulation added to existing elements

Existing party wall construction

|                               |                    |
|-------------------------------|--------------------|
| Floor area                    | 250 m <sup>2</sup> |
| Floor area calculation method | APPROX             |

## Project team

Organisation

Project lead James Ingram

Client private

Architect

Mechanical & electrical consultant(s)

Energy consultant(s)

Structural engineer

Quantity surveyor

Other consultant AECB Forum / Green building forum

Contractor S J Construction

## Design strategies

Planned occupancy Family home and office

Space heating strategy GSHP with UFH and rads to upper floor , wood burner in lounge

Water heating strategy GSHP

Fuel strategy Mains supplied electricity , no mains gas

Renewable energy generation strategy Possible future addition PV , depending on planning , as site is a conservation area

Passive solar strategy

Space cooling strategy

Daylighting strategy

Ventilation strategy Trickle vents and Mechanical extraction from ktchen / bathrooms

Airtightness strategy Attention to detailing during refurb.

Strategy for minimising thermal bridges External wall insulation on existing cavity walls

Modelling strategy

Insulation strategy Working to approximate AECB Silver Standard

Other relevant retrofit strategies Ducting/ pipework supplied for future use of onsite well for water supply to toilet , washing machine and garden use

Other information (constraints or opportunities influencing project design or outcomes) 250m2 includes wooden kit build home office

## Energy use

### Fuel use by type (kWh/yr)

| Fuel            | previous | forecast | measured |
|-----------------|----------|----------|----------|
| <b>Electric</b> |          |          | 9705     |
| <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><br>(kg CO2/m <sup>2</sup> .yr)    | -        | -        | 23       |
| <b>Primary energy requirement</b><br>(kWh/m <sup>2</sup> .yr) | -        | -        | 97       |

### Renewable energy (kWh/yr)

| Renewables technology                | forecast | measured |
|--------------------------------------|----------|----------|
| <b>none</b>                          |          |          |
| -                                    |          |          |
| <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           | -            | -           |

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

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

### Whole house energy calculation method

Other energy calculation method      No calculations made , other than by GSHP supplier for sizing equipment

Predicted annual heating load      -

Other energy target(s)

## Building services

|               |                                    |
|---------------|------------------------------------|
| Occupancy     | Family of 5 and home office        |
| Space heating | GSHP , with UFH and rads           |
| Hot water     | GSHP using mains pressure cylinder |
| Ventilation   | standard                           |

|                                         |                                |
|-----------------------------------------|--------------------------------|
| Controls                                | Weather compensation           |
| Cooking                                 | Electric                       |
| Lighting                                | Low energy lighting throughout |
| Appliances                              | Use of existing                |
| Renewables                              | none                           |
| Strategy for minimising thermal bridges | external wall insulation       |

## Building construction

|                                        |                                                                                                                                                                                                                                                     |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storeys                                | 2                                                                                                                                                                                                                                                   |
| Volume                                 | 250m <sup>3</sup>                                                                                                                                                                                                                                   |
| Thermal fabric area                    |                                                                                                                                                                                                                                                     |
| Roof description                       | Pitched , Hipped Gable 400mm quilt insulation                                                                                                                                                                                                       |
| Roof U-value                           |                                                                                                                                                                                                                                                     |
| Walls description                      | Main house ; Existing walls; Acrylic render / 70mm EPS / Brick / 60mm filled cavity / brick / 2 coat plaster. New work ; Cedar clad / Durablock / 100mm filled cavity , slab 32 / durablock / 2 coats plasterOffice ; German timber frame kit build |
| Walls U-value                          | 0.25W/m <sup>2</sup> K                                                                                                                                                                                                                              |
| Party walls description                |                                                                                                                                                                                                                                                     |
| Party walls U-value                    |                                                                                                                                                                                                                                                     |
| Floor description                      | Screed with UFH on 100mm PUR                                                                                                                                                                                                                        |
| Floor U-value                          |                                                                                                                                                                                                                                                     |
| Glazed doors description               | Door to same standard as windows                                                                                                                                                                                                                    |
| Glazed doors U-value                   |                                                                                                                                                                                                                                                     |
| Opaque doors description               |                                                                                                                                                                                                                                                     |
| Opaque doors U-value                   |                                                                                                                                                                                                                                                     |
| Windows description                    | German manufactured double glazed, oak ,high spec windows and doors on main houseGerman triple glazed soft wood windows on home office                                                                                                              |
| Windows U-value                        | 1.50W/m <sup>2</sup> K uninstalled                                                                                                                                                                                                                  |
| Windows energy transmittance (G-value) |                                                                                                                                                                                                                                                     |
| Windows light transmittance            |                                                                                                                                                                                                                                                     |
| Rooflights description                 | Velux double glazed rooflights                                                                                                                                                                                                                      |
| Rooflights light transmittance         |                                                                                                                                                                                                                                                     |
| Rooflights U-value                     | 1.40W/m <sup>2</sup> K uninstalled                                                                                                                                                                                                                  |

---

## Project images





