



The Renewable House was delivered by the NNFC with funding from the Department of Energy and Climate Change (DECC). For further details or to arrange a visit contact NNFC, or visit The Renewable House website. The design development and construction of this demonstration project was Project Managed by contractor The Linford Group. They worked with design partners Empyer Homes and Archial Architects. The key building material was provided by product manufacturer Lime Technology and the development overseen by client's agent Benchmark Property.

Project Partners



NNFC
Biocentre
York Science Park
Heslington
York, YO10 5DG
T: 01904 435182
www.nnfc.co.uk
info@nnfc.co.uk

Department of Energy
and Climate Change
3 Whitehall Place
London
SW1A 2HD
T: 0300 060 4000
www.decc.gov.uk
enquires@decc.gsi.gov.uk

Linford Group
Suite 405
Fort Dunlop
Fort Parkway
Birmingham B24 9FD
T: 0121 386 8080
www.linford.com
info@linford.com

Empyer Homes
Suite 4 The Pembroke
Centre
Cheney Manor Industrial
Estate
Swindon SN2 2PQ
T: 01793 614895
www.empyerhomes.co.uk
info@empyerhomes.co.uk

Archial Architects Ltd
2 St Stephen's Court,
15-17 St Stephen's Road
Bournemouth, BH2 6LA
T: 01202 554625
www.archialgroup.com
info@archialgroup.com

Lime Technology Limited
Unit 126, Milton Park
Abingdon, Oxfordshire
OX14 4SA
T: 0845 603 1143
www.limetechnology.co.uk
info@limetechnology.co.uk

Benchmark Property Limited
The Lodge
The Wartnaby Estate
Wartnaby
Leicestershire
LE14 3HY
T: 01664 823893
www.benchmarkproperty.co.uk
info@benchmarkproperty.co.uk

The Renewable House

Low cost and low carbon are compatible from the NNFC at the BRE Innovation Park



Low cost and low carbon are compatible

The Renewable House uses renewable materials to deliver an affordable everyday home with extraordinary environmental credentials.

The Renewable House demonstrates the exceptional sustainability of renewable materials, but without compromising on style or affordability. By choosing renewable materials, The Renewable House meets Level 4 of the Code for Sustainable Homes with limited additional technologies. The design also enables enhancement to meet Level 5 and 6.



Going renewable doesn't cost the earth. The Renewable House costs only £75,000, excluding groundworks and utilities, making it particularly suitable for the affordable housing market. Designed as a three bedroom detached home, the concept can also be extended to semi-detached and terraced housing.

Long term monitoring of the house is a fundamental part of the project. The house will be subject to rigorous independent testing over three years.



Key facts

- **Low carbon**
From build to end of life, The Renewable House reduces CO₂ emissions by minimising the embodied carbon during construction and minimising energy in use.
- **3 bedroom detached home**
Designed by Archial Architects, this comfortable family home can also be built as a semi-detached or terraced house.
- **Timber frame and Hemcrete® walls**
Renewable and sustainable structure delivers a U value of 0.19 W/m²K and has been designed to achieve an airtightness of 2.0 m³/(hr m²).
- **Triple glazed timber windows**
The FSC certified timber windows deliver a U value of 1.3 W/m²K, and careful attention to detailing has minimised conductivity.
- **Renewable insulation**
Thermafleece™ insulation, made from British sheep's wool, keeps the carbon footprint down.
- **Renewable materials**
Extensive use of sustainable renewable materials in the paint and furnishing provide a comfortable environment.
- **Energy strategy**
Highly energy efficient design. Careful attention to detail has minimised cold bridging and maximised insulation. Hemcrete® walls inherently provide high levels of insulation and thermal inertia. Hot water and space heating is provided by an air source heat pump and heat recovery ventilation system.
- **Lifetime home**
Designed for changing needs, the house is built to be flexible. A bedroom can be used as a home office to reduce the need for commuting. The house can be adapted to different life stages with a downstairs bathroom or a lift between the ground and first floor.



A sustainable solution

Renewable materials provide us with an unending resource for the construction industry. They are derived from plants that absorb CO₂ from the atmosphere as they grow, so building with renewables locks this greenhouse gas into the fabric of the building. Because less energy can be used in manufacturing, the embodied energy of renewable materials is also low: renewables give a lifetime of low emissions.

The properties of renewable materials make for an attractive, healthy and comfortable home. Delivering high levels of insulation, breathability and airtightness, renewable materials mean performance isn't sacrificed for principles.

Renewable Materials:

- Reduce our dependence on fossil fuels
- Reduce net CO₂ emissions
- Can be replenished
- Have unique properties
- Encourage enterprise and put the UK at the forefront of new industries



Development of the concept

The Renewable House concept can be extended to three storey town houses, semi-detached and terraced houses. The design is adaptable enough to be contextualised, with options like bays and balconies and a variety of facing materials available.

The changing age profile of the population means homes have to be built to last and flexible to accommodate evolving needs.

The Renewable House is a Lifetime Home. The downstairs washroom can be modified to include a shower at a later date if required. A lift can also be fitted from the dining space to the main bedroom.



The build programme



The Renewable House is particularly suitable for production of affordable homes at high volume. For the demonstration project at BRE the build time was as follows:

- Total build time 12 weeks
- Timber frame erected in 1 week
- Casting of Hemcrete® walls in 4 days

It is anticipated that future commercial developments could substantially reduce the timescale.



The completed house

The house demonstrates that choosing renewable materials lets you reach CSH Level 4 affordably.

The Renewable House can be upgraded to Level 5 and 6 at a reasonable cost as a single dwelling or as multiple units on typical sites.



www.renewable-house.co.uk