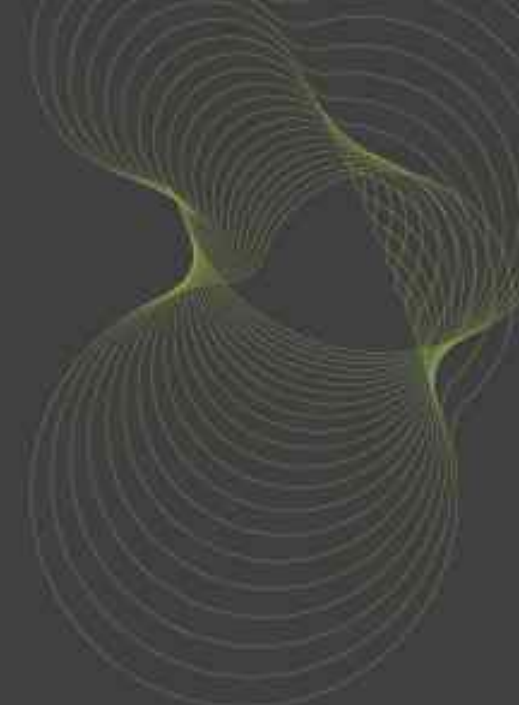




BRE and the Renewable House EIHA conference May 2010

Nicholas Corker
Sustainable Development

Overview

- Introduction to BRE and its history
- The Innovation Park
- The Renewable House
- Future work



Building a Better World...

Research based consultancy, testing, certification and training

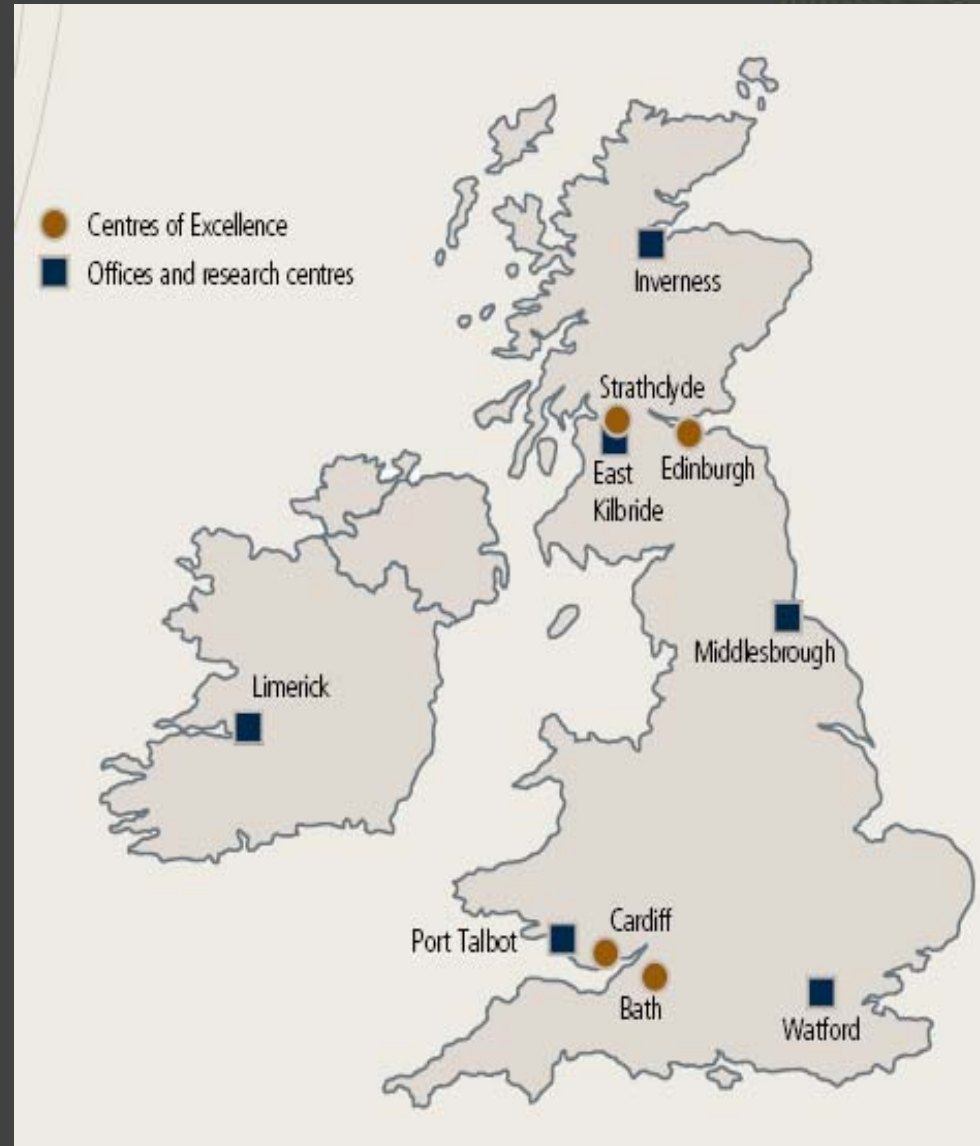


Working in the built environment, but also
transport, manufacturing, electronics, agriculture...

BRE offices & Centres of Excellence

Centres of Excellence

- Fire Safety
- Energy Utilisation
- Sustainable Design
- Innovative Materials



History of BRE: 'new materials and processes'

- 1920 Building Research Board
- 1921 – 1925 Building Research Station, (at Acton)
- 1925 at Garston
- 1972 Building Research Establishment
- Since 1997 *BRE*



The first dining and reading room !

BRE: Watford



Building 16: Low energy office block

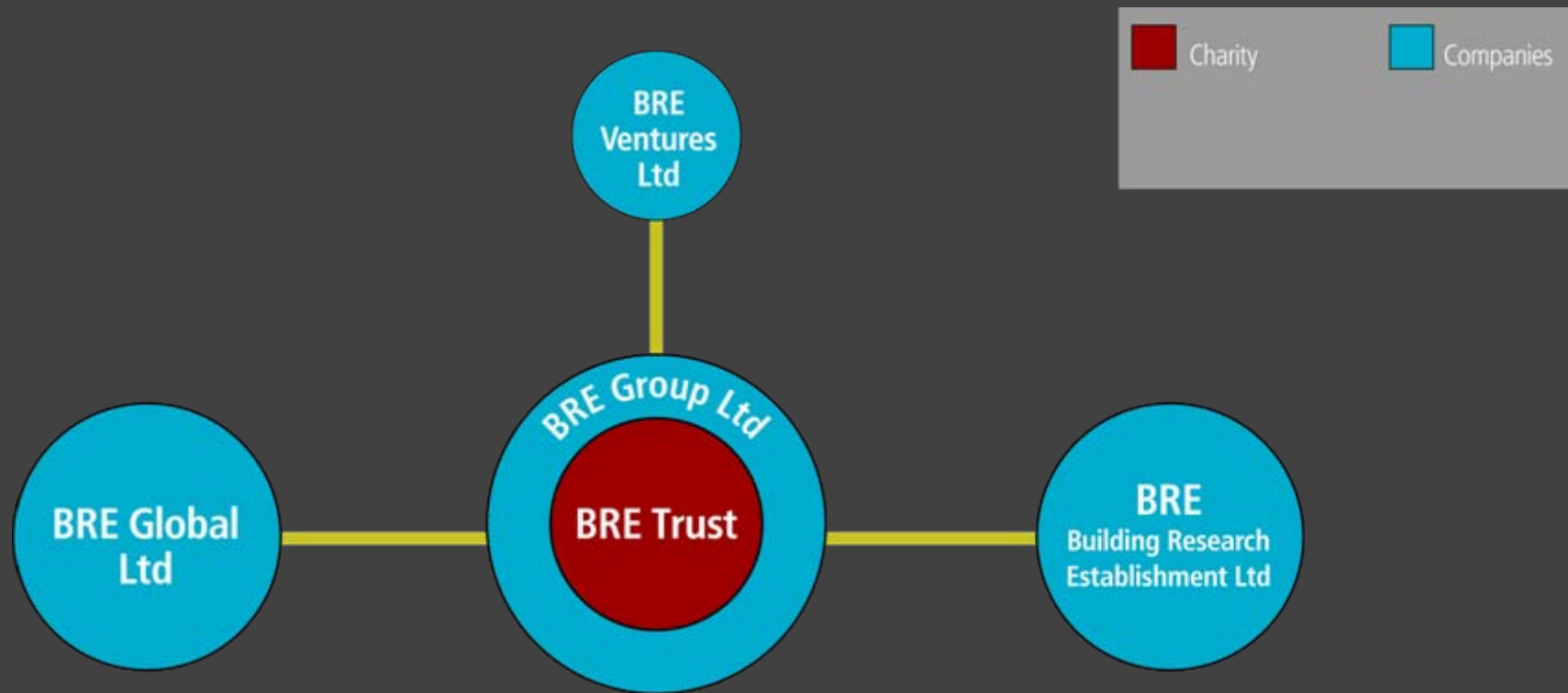


Victorian Terrace

BRE's flagship refurbishment project



Corporate and Management Structure



Research & publications

EXPERIMENTAL COTTAGES

A REPORT ON THE WORK OF THE DEPARTMENT
AT AMESBURY, WILTSHIRE

By

W. R. JAGGARD, F.R.I.B.A.

SUSTAINABILITY THROUGH PLANNING

Local authority use of BREEAM, EcoHomes and the Code for Sustainable Homes

Josephine Prior and Claire Williams



HEMP LIME CONSTRUCTION

A guide to building with hemp lime composites

Rachel Bevan and Tom Woolley

With contributions by Ian Pritchett, Ralph Carpenter, Peter Walker and Mike Duckett

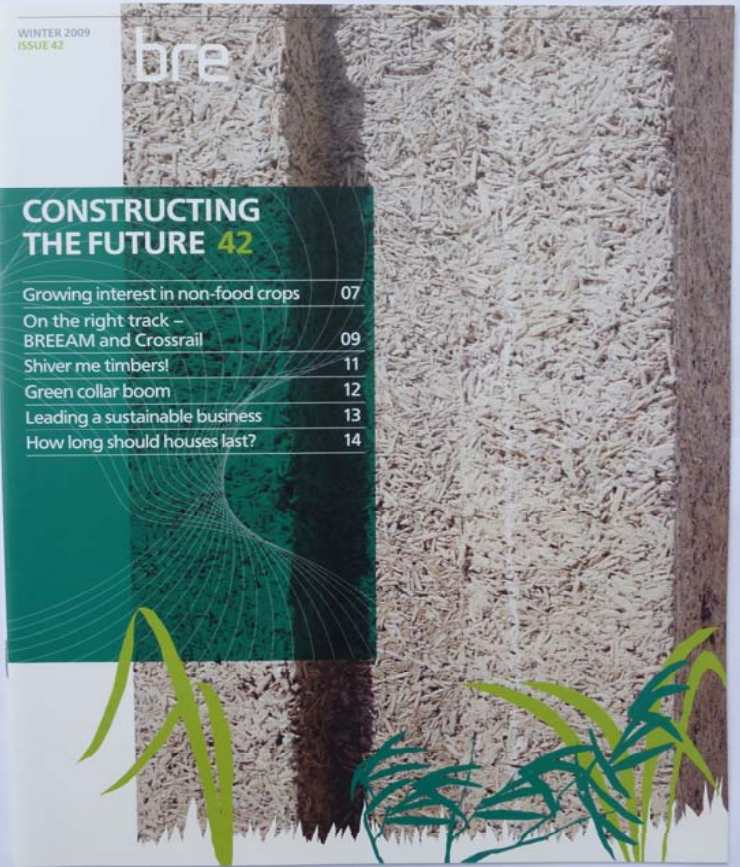


WINTER 2009
ISSUE 42

bre

CONSTRUCTING THE FUTURE 42

Growing interest in non-food crops	07
On the right track – BREEAM and Crossrail	09
Shiver me timbers!	11
Green collar boom	12
Leading a sustainable business	13
How long should houses last?	14



bre



bre press

Early BRE work on hemp construction

August 2002 report by BRE on Haverhill social housing assessed the construction for:

- Relative structural, thermal, acoustic, water and air permeability and durability qualities
- Reduction in waste generated on site
- Environmental impact
- Construction costs



Location of the Innovation Park, 1950s



The BRE Innovation park

- Currently 10 innovative houses
- medical centre/school
- Code level 4 plus
- First zero carbon house in UK
- Home zone
- SUDs
- 30,000 + professional visitors/ yr.





breinnovation park











Renewable House - Code 4



Key facts

- 3 bedroom detached house – ‘affordable housing’
- Life Time Homes, (lift space)
- Built to code level 4 in 12 weeks
- Triple glazed
- FSC timber
- 30-40% less CO2 in construction
- U value of 0.19 (300mm walls)
- Sheep’s wool insulation
- Completed in June 2009
- Cost £75,000 (excluding ground works)

Build partners

- Funded by DECC
- National Non Food Crops Centre
- Built by Linfords
- Lime/hemp expertise: Limecrete
- Social housing provider: Empyer Homes
- Project management: Benchmark property
- Architect: Archial

Method of construction

3 recognised methods:

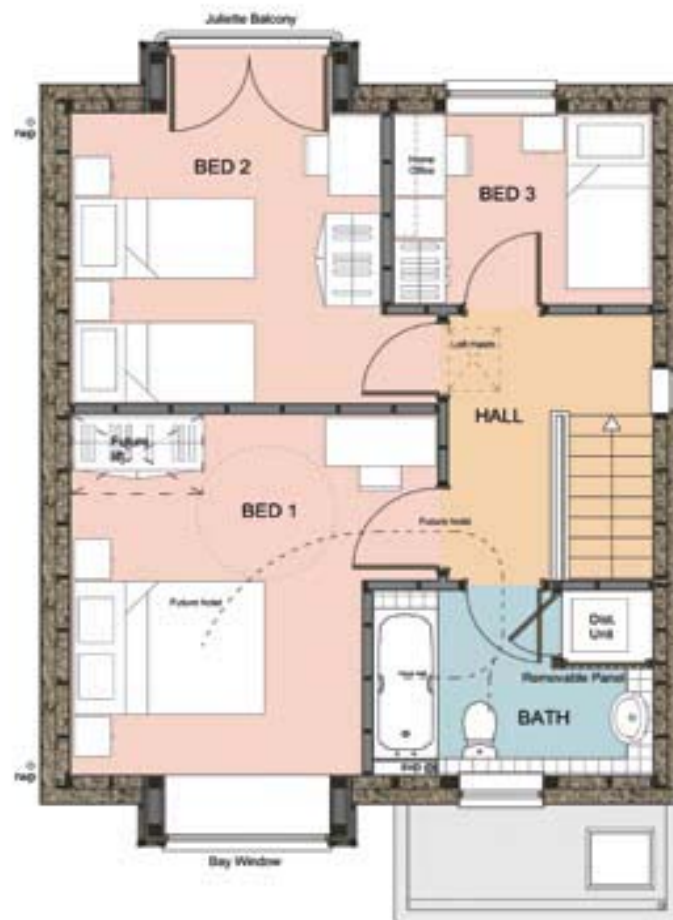
- Prefabricated blocks
- Spraying
- Casting
- Hemp shiv + binder = Hemcrete TM
- Binder (Tradical HB)

The mix

1 part shiv to 2 part binder + 60 L of water

Adaptable configuration









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FOUNDATION
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ROGER
BULLIVANT

ROGER BULLIVANT
ENGINEERS



























The renovation of the BPE Innovation Park

RESTORATION
PLASTERWORK
SPECIALISTS
TRUMPERS

DANGER
No entry
without a permit
01203 254124



Renewable House at BRE



Monitoring: NNFCC

- Hygrothermal monitoring
- External wall temperature profile
- In-situ U-value measurements
- Infrared thermographic survey
- Air permeability testing



Perceived barriers to new applications

- Conservative nature of building industry
- Regulation
- Legal issues
- Performance ?
- Fashion
- Public acceptance ?
- The challenge of existing buildings !!

UK capacity, (NNFCC estimates)

- Total arable area = 6 million h
- On a 4 year rotation ?
- 1.5 m h each year per crop
- Grow hemp as a break crop
- Accounting for fallow gives approx 250,000 h for hemp ?
- 1 h per house ?
- 250,000 houses per year !



BRE Centre for Innovative Materials

University of Bath



Defra LINK project:

“ Developing hemp –lime low-carbon construction for mainstream uptake through innovation and optimisation”

BRE Trust project:

“Development of hemp based composite materials for construction”

Some other related BRE initiatives:

BRE Trust

- CLIMB: Centre for Low Impact Materials in Building
- Low Impact Materials in Shop Fitting

NHBC Foundation

- Cellulose based building materials: utility, performance and risk



Product Testing & Certification

Consultancy

Training

Innovation

Life Cycle Assessment

News

Downloads

Search for ...

CENTRE FOR LOW IMPACT MATERIALS & BUILDINGS

climb is a new initiative to bring together research, innovation, case studies, services and guidance to support the development of low impact materials.

[ENTER](#)



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climb Partners

Visit the BRE website



Trust



UNIVERSITY OF
BATH

Sources of information:

- BRE Innovation Park:
<http://www.bre.co.uk/page.jsp?id=634>
- Renewable House web page: <http://www.renewable-house.co.uk/about/>
- InSite 2009 web page: <http://www.insite09.com/progress-blog-part1.jsp>
- BRE Centre for Innovative Materials University of Bath:
<http://www.bath.ac.uk/bre/>
- Corkern@bre.co.uk

Any Questions ?