Why building sustainable developments in York and North Yorkshire makes sense?

26th June 2013

climatechangeskills for planners

PORTISMERE ASSOCIATES ARUP

Welcome and Introductions

Nicole Harrison, Arup

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Laura Mayo, Arup

Derek Latham, Lathams Architects

Charlotte Harrison, mass architecture

Ruth Hardingham, LGYH and CCSF

Helen Heward, City of York Council and CCSF

Introduction to Code for Sustainable Homes and BREEAM

Andy Sheppard, Arup

Benefits of Sustainable Construction

- Pure Marketing
- Why Build Sustainably?

National Planning Policy Framework

To support the move to a low carbon future, local planning authorities should (paragraph 95):

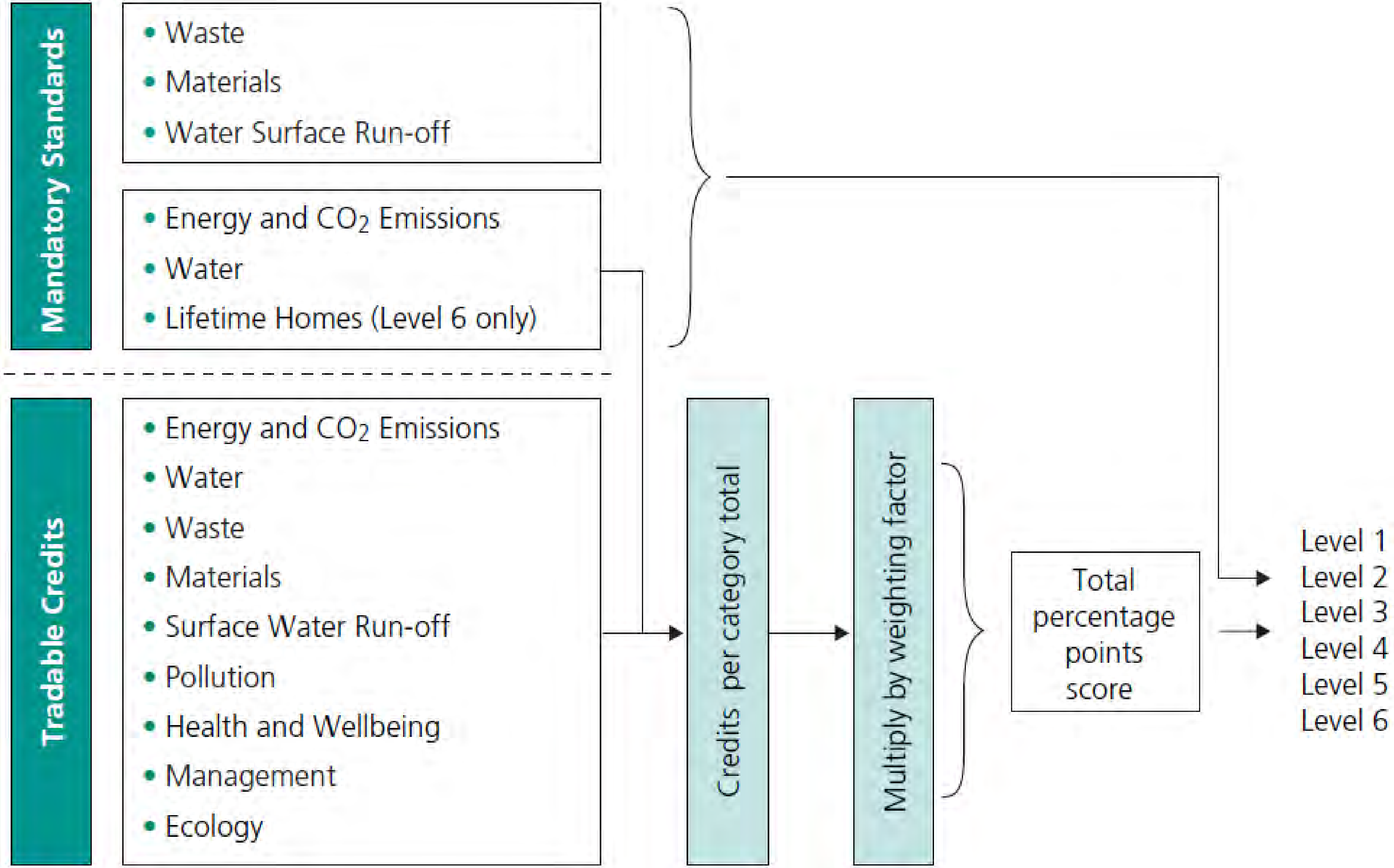
- plan for new development in locations and ways which reduce greenhouse gas emissions;
- actively support energy efficiency improvements to existing buildings; and
- when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards

Policy context

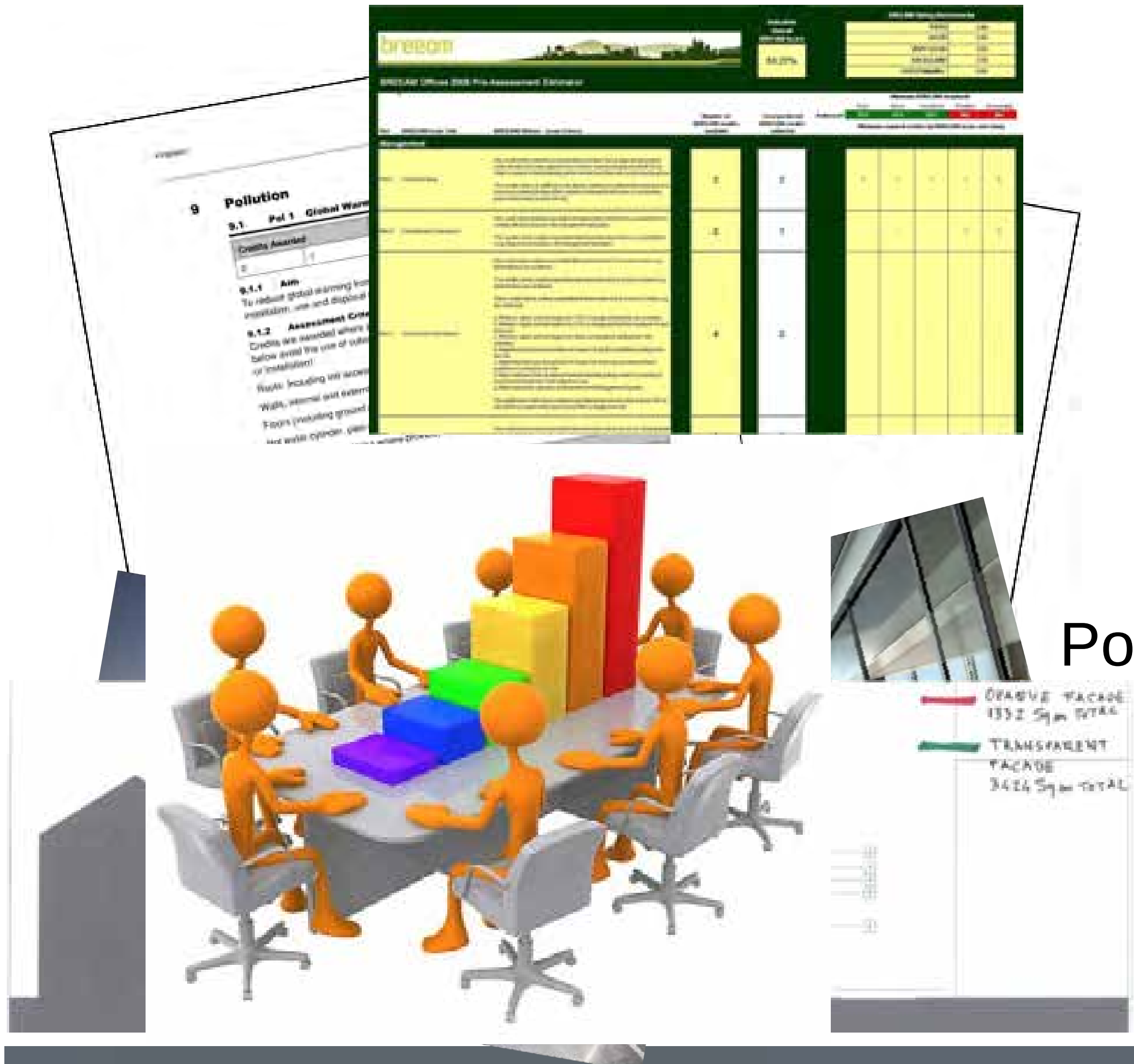
A number of authorities in North Yorkshire have emerging or adopted policies requiring development to meet:

- Residential:
  - New Build: Code Level 4 (Richmondshire, Harrogate, Ryedale and York)
- Non-residential
  - Minor Developments: BREEAM “Very Good”
  - Major Developments: BREEAM “Excellent”

The Code – how does it work?



The Code – process



Pre-Assessment

↓

Design Assessment

↓

Interim Certificate

↓

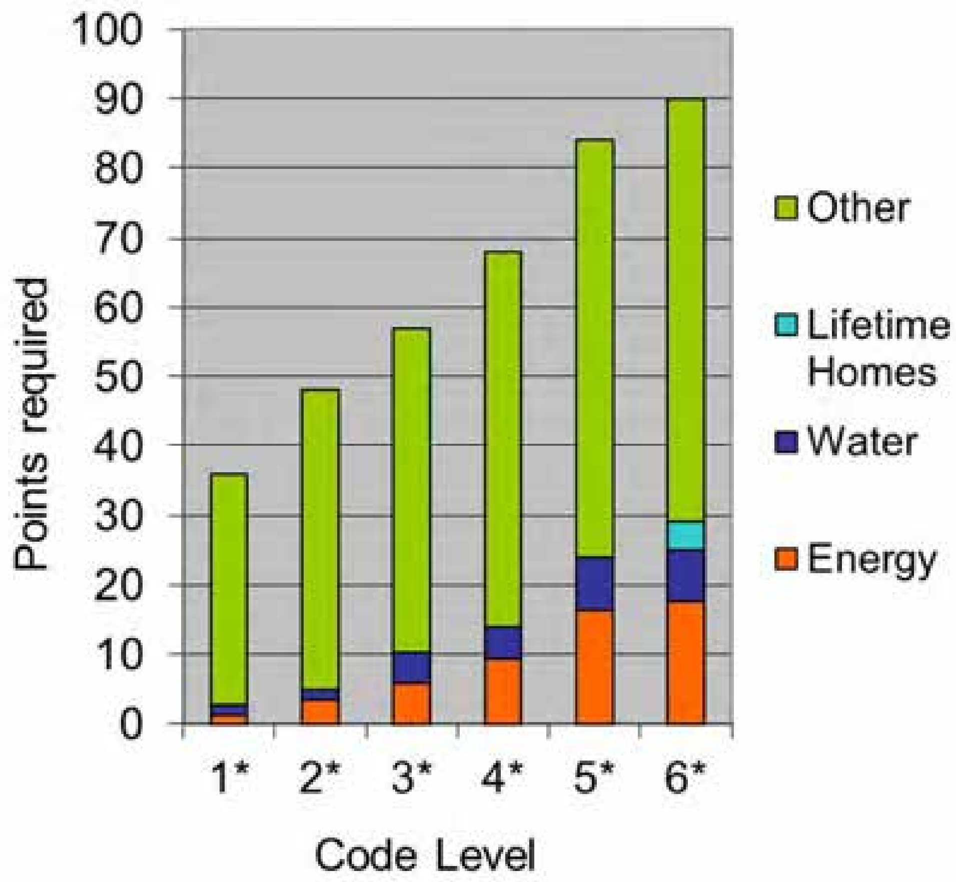
Post Construction Review

↓

Final certificate

The Code – overview of the levels

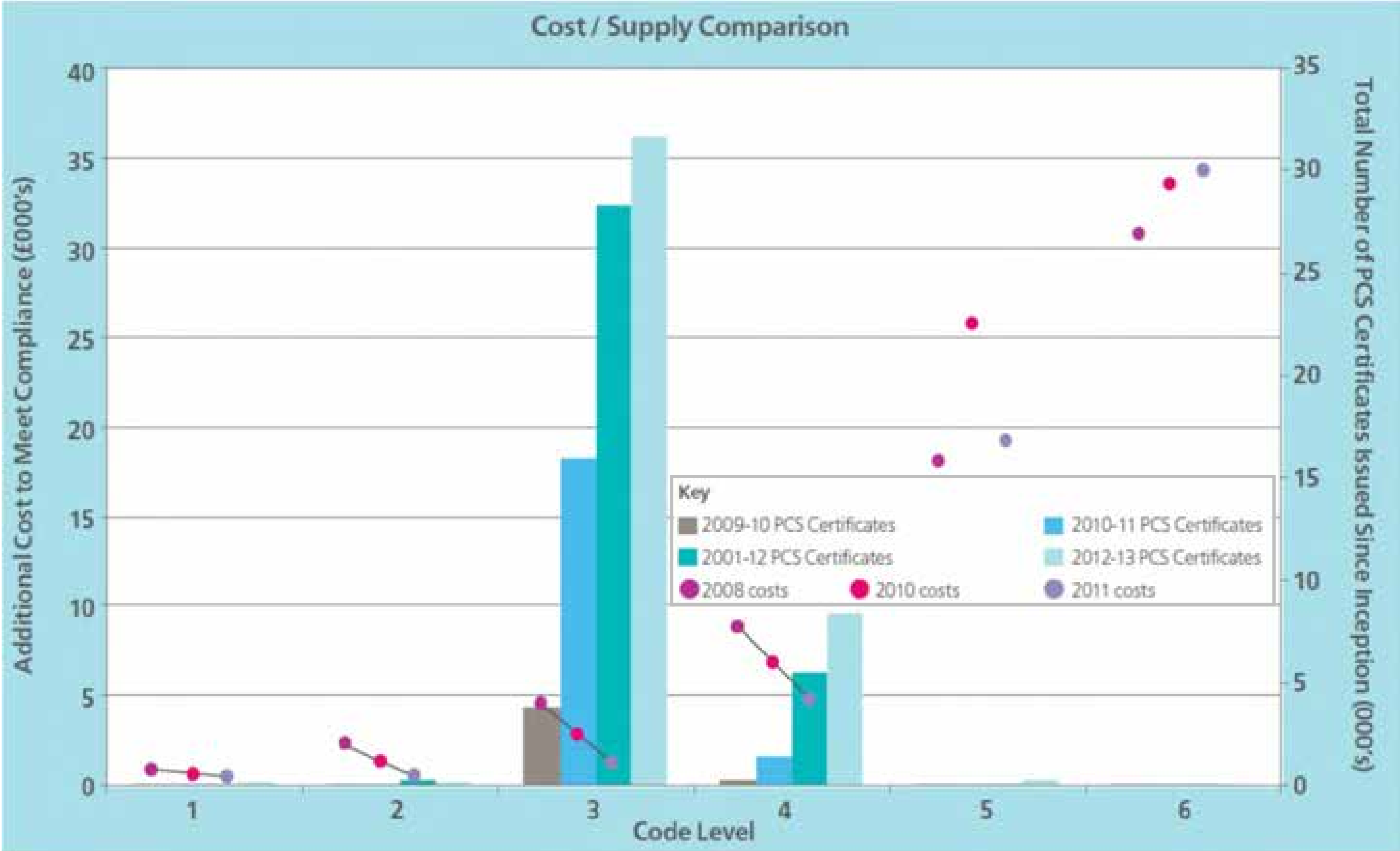
- CSH3 – relatively easy
- CSH4 – achievable
- CSH5 – challenging
  - Energy / emissions
  - Water standards
- CSH6 – expensive
  - Lifetime Homes
  - Renewables-heavy



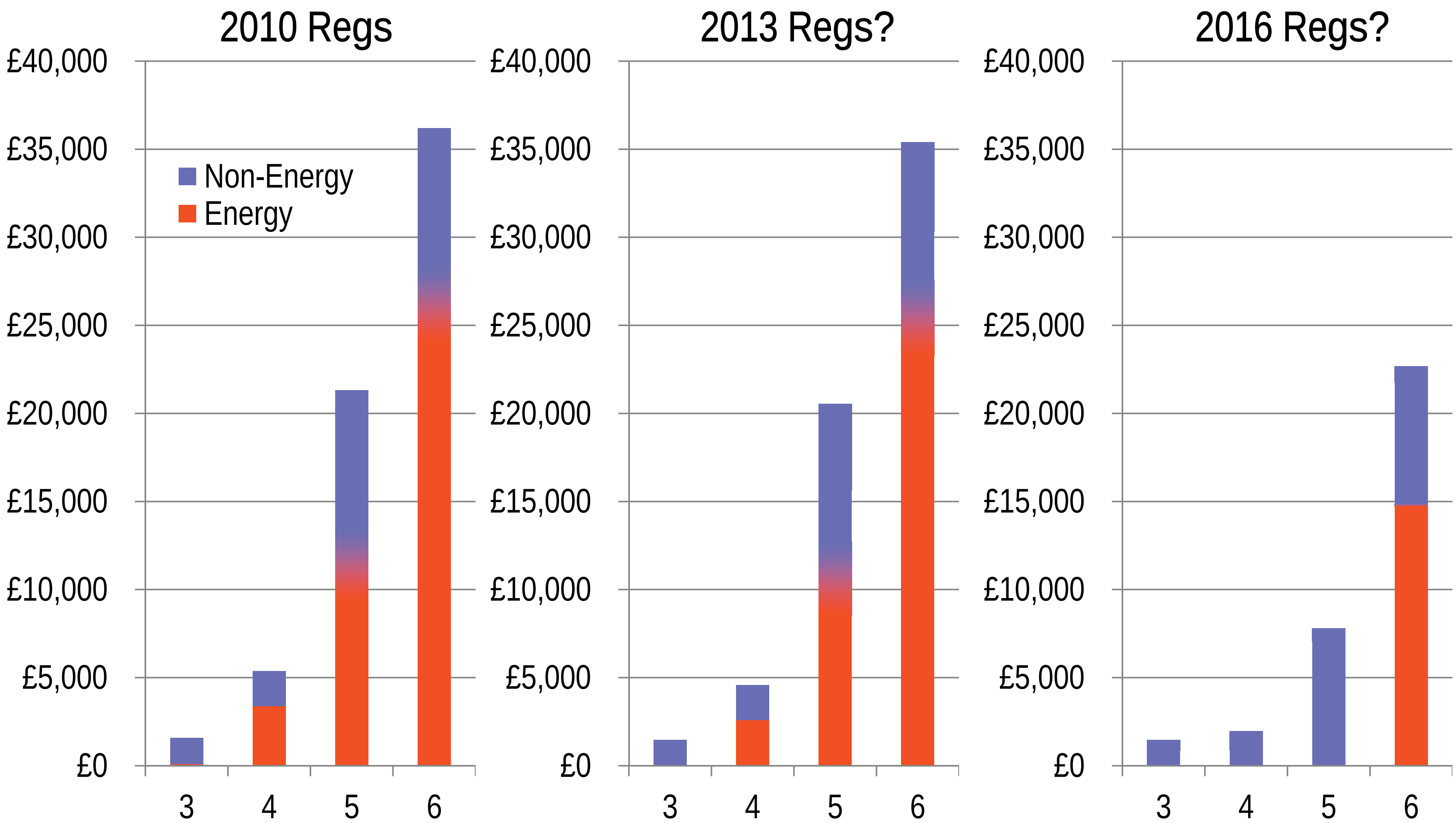
The Code – how to meet the energy requirements

	Four		Five	Six
Heating	Low Carbon	Std. Gas	Std. Gas	Std. Gas
Wall insulation	150mm	150mm	200mm	200mm
Wall thickness	375mm	375mm	425mm	425mm
Glazing	Double	Triple	Triple	Best
Renewables	Up to $4m^2$	$\sim 5m^2$	$\sim 25m^2$	$\sim 45m^2$

The Code – what does it cost now?



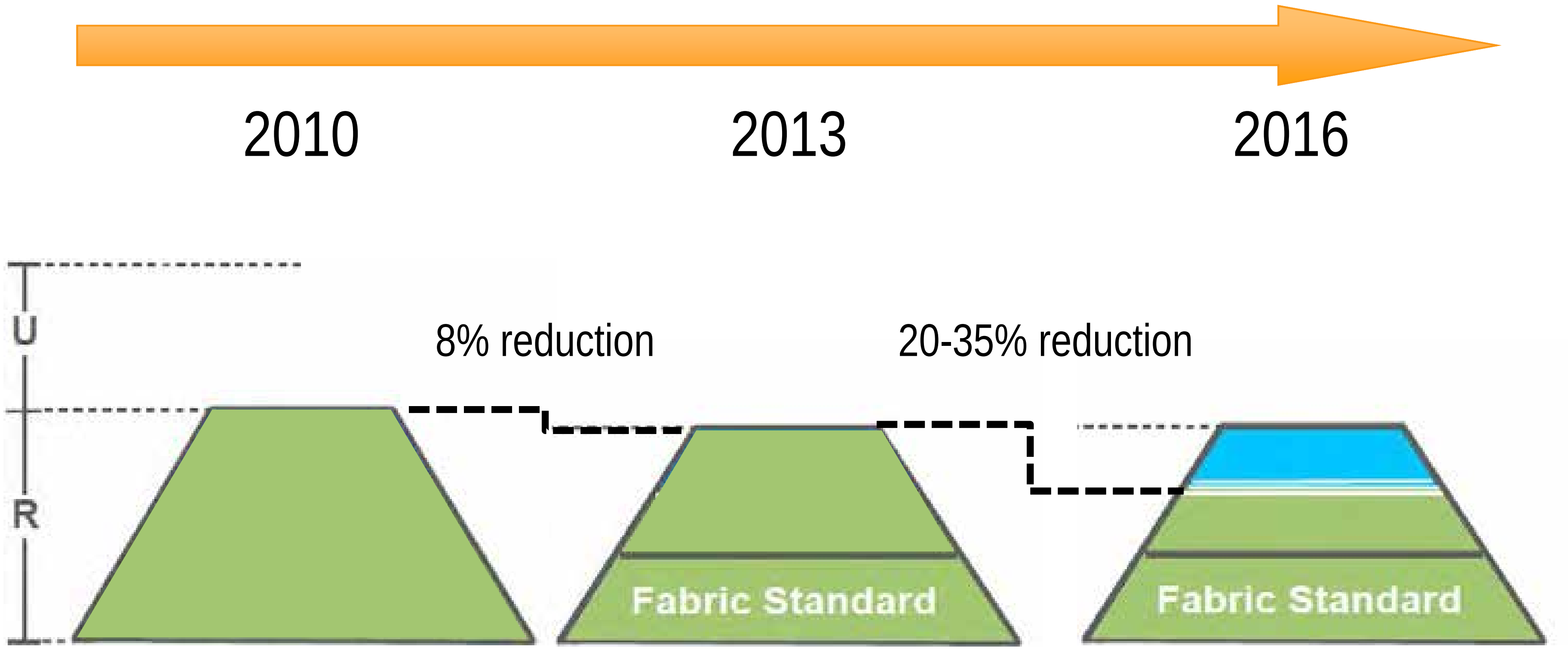
The Code – what will it cost in the future?



The Code – increased sale price

- ?
- Lots of anecdotal evidence
  - "Build costs for the [Code 4/5] homes are about 10% higher… but we are getting sales prices 15-20% higher than our peers"
    Skanska regarding Seven Acres development in Cambridge

The future of building regulations - domestic



10 – 14 $kgCO_2/m^2/year$

39 – 46 $kWh/m^2/year$

39 – 46 $kWh/m^2/year$

Example – Joseph Rowntree, Dewenthorpe

- Code Level 4/5
- Structurally insulated panels + thin joint blockwork
  - Airtightness 3m³/(h.m²)
  - Walls 0.15 – 0.17 W/m²K
  - Windows 1.3 W/m²K
  - Meets FEES 46 kWh/m²/yr

BREEAM

- The Government’s preferred tool for non-domestic buildings.
- NPPF requires that the Government’s tools are used.

BREEAM – types of buildings

BREEAM 2011 New Construction


Healthcare


Retail


Offices


Industrial

?

Bespoke


Transport


Multi-res


Education

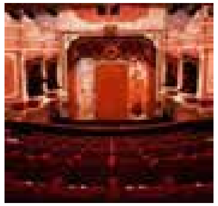

Prisons


Communities


Courts

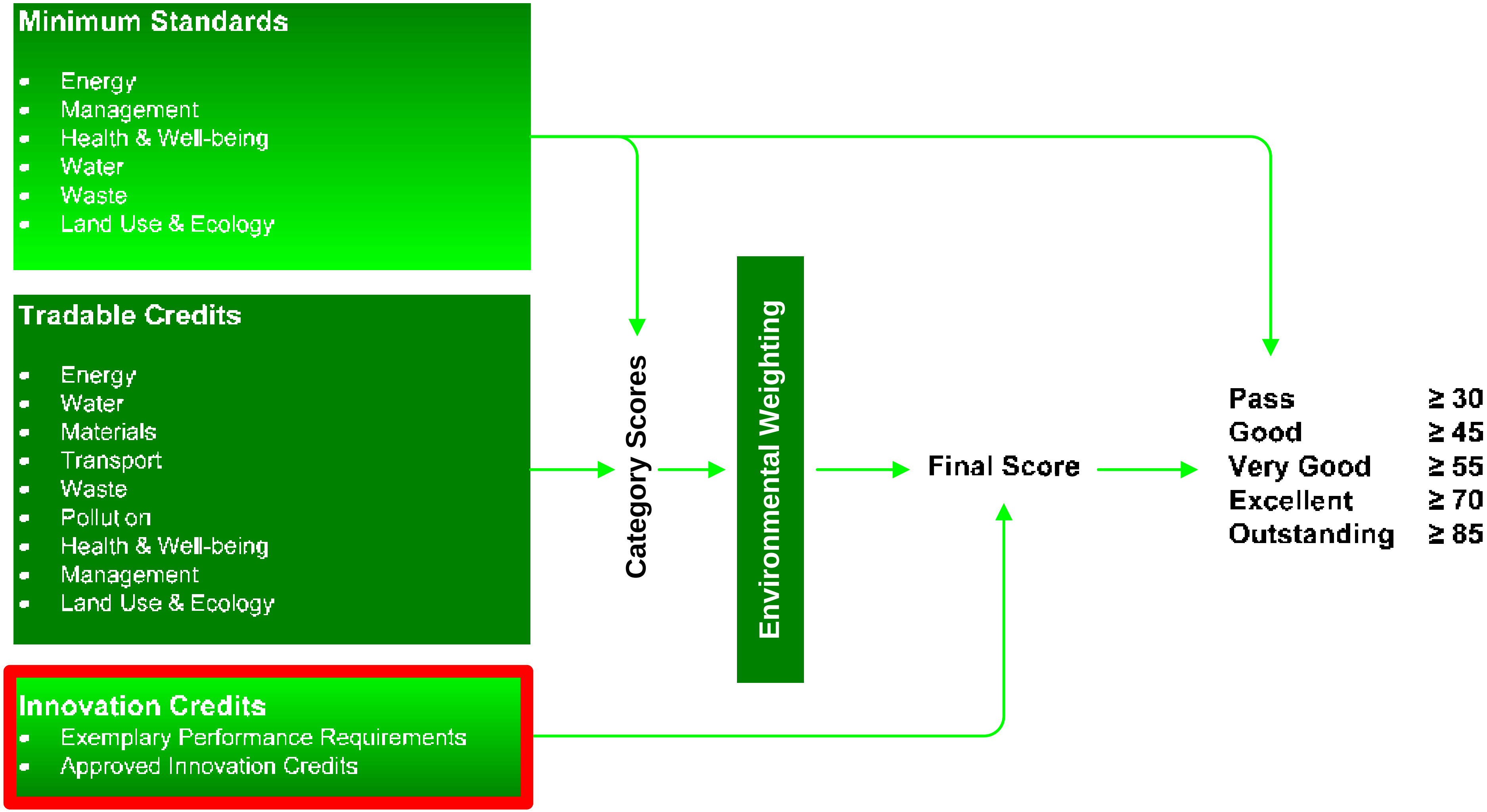

Hotels


Libraries

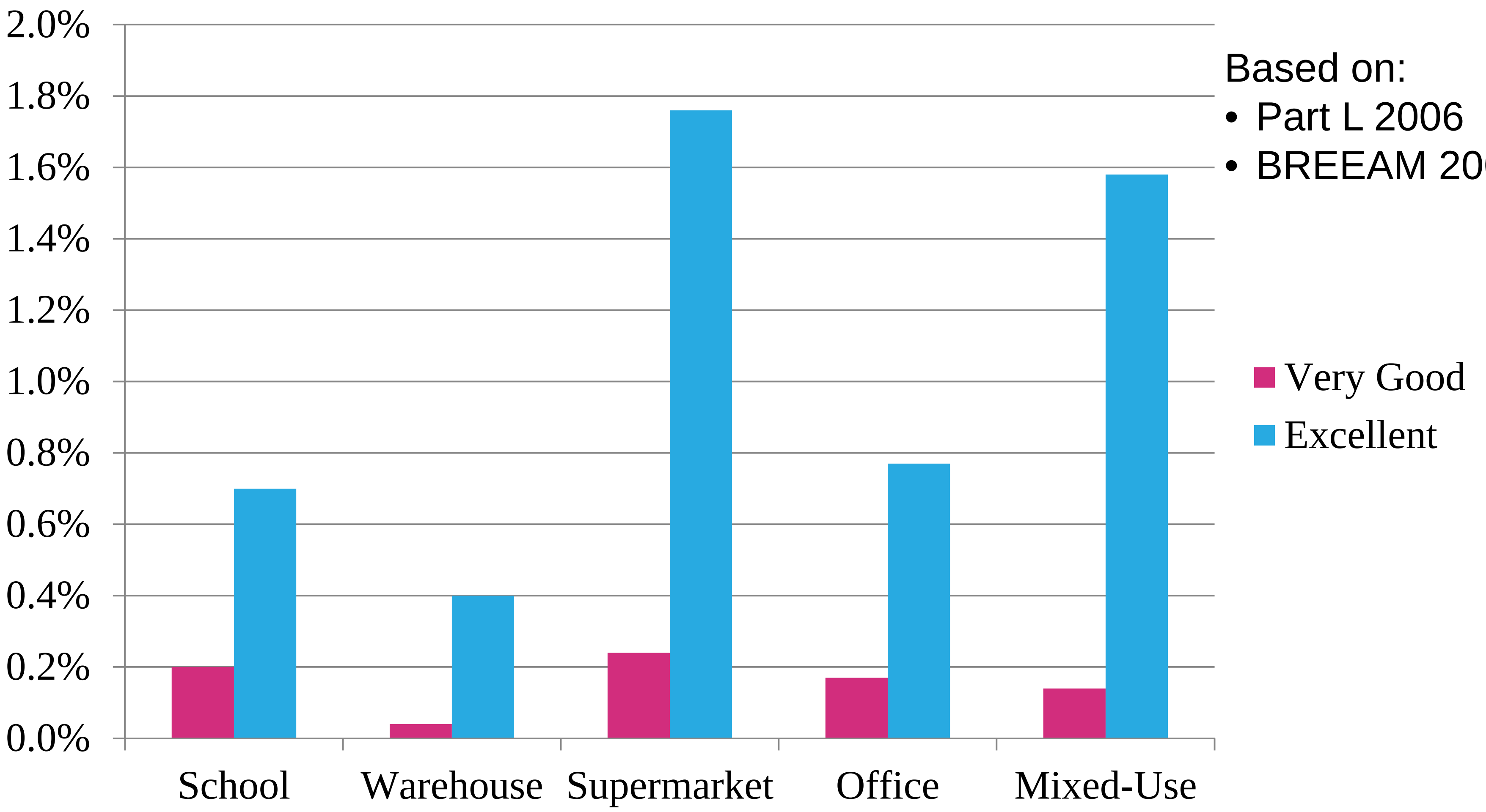

Theatres


Refurbishment

BREEAM – how does it work?

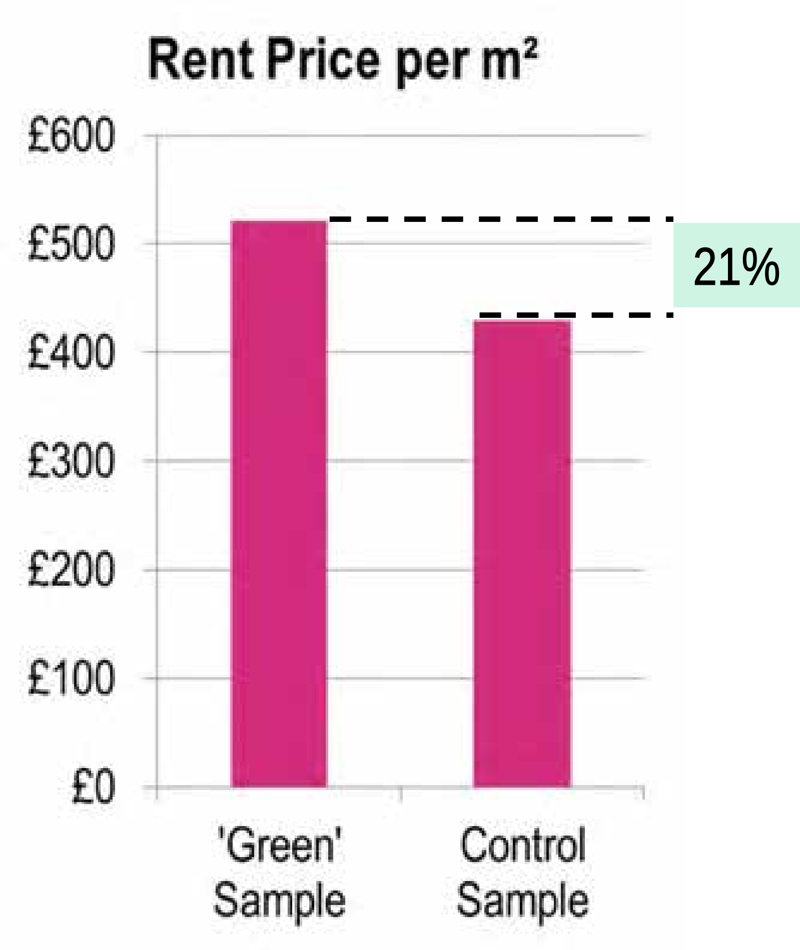


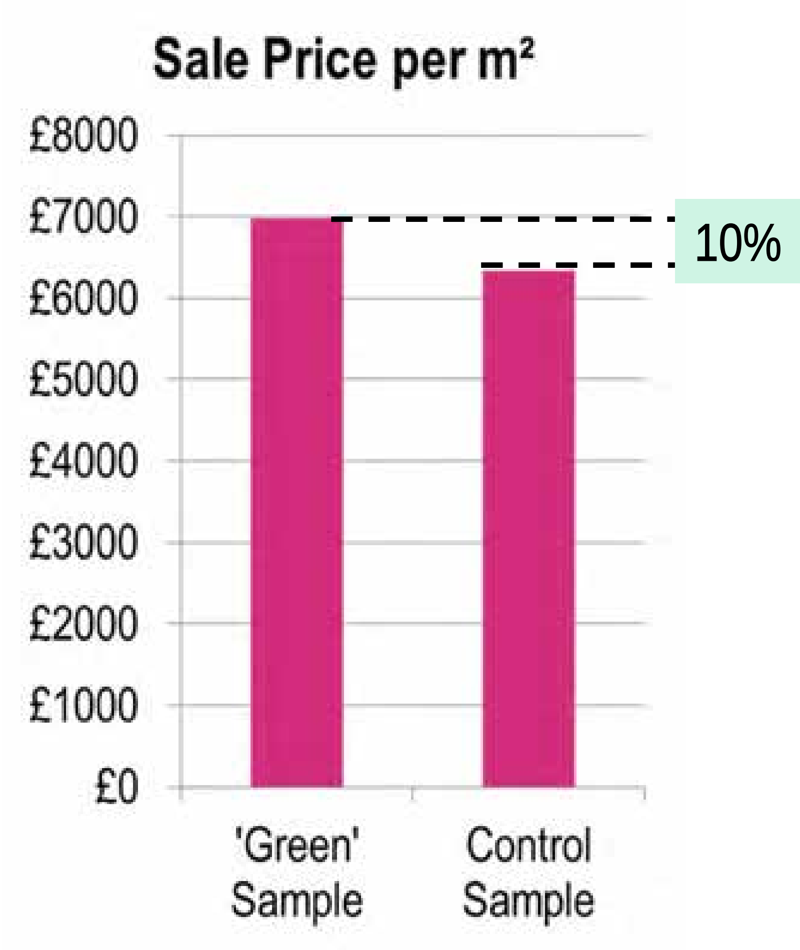
BREEAM – Cost of compliance



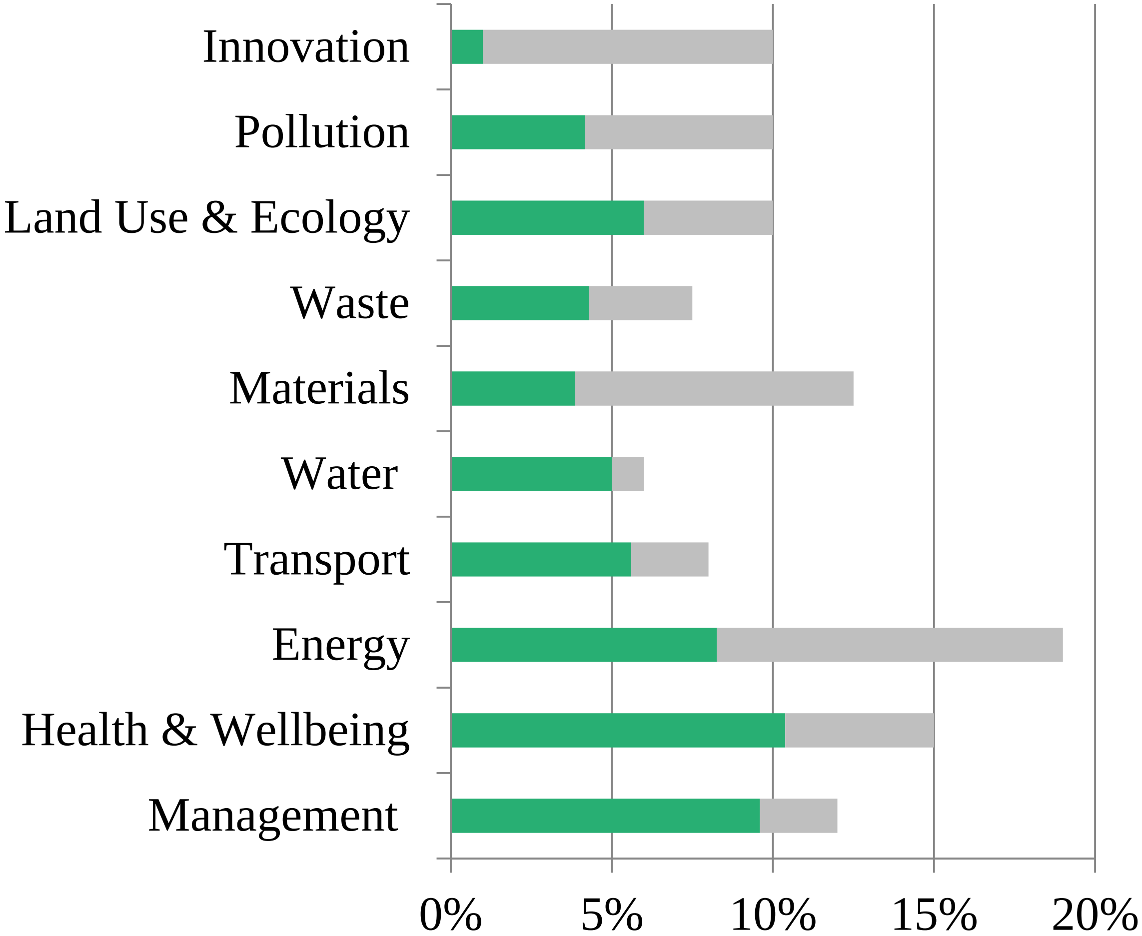
Based on:
- Part L 2006
- BREEAM 2008

BREEAM – Value





BREEAM Example – Catalyst Building



The future of building regulations – non-domestic

- 20% aggregate improvement on Part L 2010 CO_2 targets
  - Offices ~23% improvement
- Improved fabric standards
- Photovoltaic array equalling 1.6% of floor area
- ~1% increase in cost (!)

Sources of information

- www.tzero.org.uk (low carbon domestic refurbishment)
- UK Green Building Council (often non-domestic)
- Zero Carbon Hub (domestic regulations)
- Communities and Local Government (Code for Sustainable Homes)
- Energy Savings Trust

Thank you

andy.sheppard@arup.com

Charlotte Harrison, Mass Architecture

Contents

Why building sustainably makes sense

Jospeh Rowntree Housing Trust in partnership with
David Wilson Homes, Derwenthorpe. York

The business case:

- Sustainability targets are an opportunity for best practice
- Being pro-active and innovative puts you ahead of the game, rather than re-acting or driven by regulatory measures alone
- Sets you apart from competitors
- Reputation built on high quality product
- Good PR opportunities

Issues:

- Can this approach work for everyone?

- Is the market sufficiently developed?

  Zero Carbon Hub research:
  - Further development needed to create stronger market
  - Then stimulate demand
  - Promote sustainable features

  NHBC Foundation research:
  - Positive shift between 2008-2012 in public attitude
  - Public associate very energy efficient homes with contemporary design

Joseph Rowntree Housing Trust in partnership with
David Wilson Homes, Derwenthorpe. York
Richard Partington Architects.

64 low energy homes built to Code 4, (3 x Code 5 Houses)

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Marketing Examples*:* David Wilson Homes

Discover homes with an incredible difference

........Derwenthorpe's vision also envisages a place of wonderful spaces for recreation and play, as well as the benefit of having a reduced impact on the environment.

The Thermos Flask Effect Homes have been designed and constructed to consume less heat to help save costs. Derwenthorpe is extremely self-sufficient and generates heat and hot water on-site from predominantly biomass fuelled boilers, a low carbon, safe and secure fuel source.

Housebuilder of the year 2012
............the standard-setter in our industry

Marketing Examples: Zero bills home

The house that keeps paying back:

Eco-homes on new estate where solar panels will earn owners £1,000 a year.......

£160,000 or £1,135 per m2, compared to £141,000 or £1,000 per m2, for a conventional building. Similar five-bed, 141m2, detached house in same area costs about £960 a year for gas and power.

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Feedback from Local Valuers/Surveyors/Agents

- *Must be able to demonstrate savings on energy bills (JRHT producing figures)*
- *Renewable technology will help sell homes and increase value*
- *People are more interested in low energy homes now than a year ago*
- *Not just about eco credenitals - space, light, aspect*
- *Retrofit 'not much around'*

Bootham Green - "these are homes will save you a lot of money in energy and water bills....the interest levels have been really high."

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Further information:

- *Today’s attitudes to low and zero carbon homes*

  Views of occupiers, house builders and housing associations
  NHBC Foundation Feb 2012

- *Marketing tomorrow’s new homes*

  Raising consumer demand for low and zero carbon living
  Zero Carbon Hub/ Energy Saving Trust Feb 2010

The ethical case:

- Corporate Social Responsibility (CSR) is increasingly used to distinguish a company from others

- Core values often cited in business literature integrity, understanding, excellence, responsibility, trust, value

- Critical part of PQQ process when tendering with local authorities or for framework agreements

Tata Steel - Times 100 company

Businesses are no longer judged solely on their ability to deliver goods and services but also on the manner of delivery and how they impact on society and the environment. **Tata Steel - Times 100 company**

FParkinsons - Local Building Contractor

Our approach is simple, total commitment to a responsible stewardship of the natural environment and achieving quality in all aspects of our work.

...........four core values:

HONESTY OPENNESS TRUST INTEGRITY (H.O.T.I.)

Further information:

- BITC (Business in the Community)
  www.bitc.org.uk

- Corporate Social Responsibility in the Construction Industry
  by Michael Murray, Andrew Dainty, 2009

- Ethics for the Built Environment
  P. Fewings 2008

The environmental case:

- Impact of climate change on York/Yorkshire?

  Wetter winters - flooding
  Dryer summers - droughts
  More extreme, unpredictable weather conditions

- Resource depletion - rising costs and reduced availability of materials
- Energy security - rising costs
- Water security - rising costs

Issues:

Should we be proactive or reactive?

Further information:

- Stockholm Environment Institute (University of York)
  www.york.ac.uk/sei

  an independent, international research organisation committed to the implementation of practices supportive of global sustainable development

- Centre for Alternative Technology
  www.cat.org.uk

Case Study: Detached Dwelling, York

PassivHaus: A brief overview

- Developed by the Passivhaus Institute in Germany c.1990

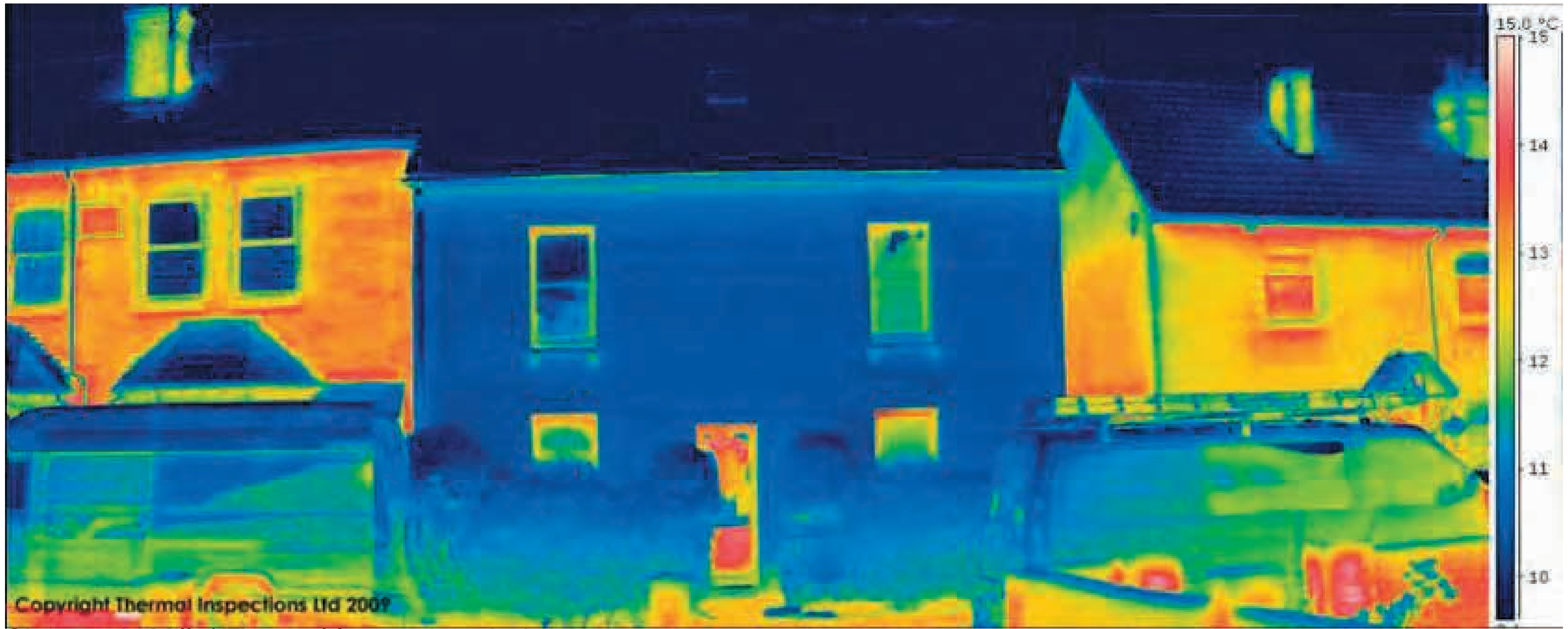
- High level of occupant comfort
- Use very little energy for heating and cooling
- Rigorous design
- Built with meticulous attention to detail

- Can be certified through an exacting quality assurance process

Also:
- The standard does not require a conventional heating system
- Heating demand is met by electrical heat recovery / pre-heating

To achieve the Passivhaus Standard in the UK typically involves:

- Very high levels of insulation
- Passive solar gain
- Triple Glazing with insulated frames
- Airtight building fabric
- 'Thermal bridge free' construction
- Mechanical ventilation system with highly efficient heat recovery



Simmonds Mills/ Thermal Inspections Ltd

PassivHaus: The Standard

	PassivHaus
Space heating	≤15 kWh/m2/yr
Total primary energy use (heating, hot water and electricity)	≤120 kWh/m2/yr
Air leakage m3/m2hr @ 50 Pa	≤ 0.75 (0.6 ACH)
Overheating Frequency	≤ 10% of time over 20ºC

PassivHaus: Pros & Cons

Pros

- Low energy demand
- Homogeneous internal air temperature / Good internal air quality
- With the omission of radiators - more ‘wall space’
- Temperatures slow to change
- High occupier satisfaction recorded in Germany

Cons

- Requires a mechanical ventilation solution
- Requires electrically driven fans and air heater
- Emphasis on primary energy rather than carbon dioxide reduction
- Thicker than conventional walls
- Little practical expertise of required construction techniques
- Embodied energy not considered

PassivHaus and the AECB CarbonLite Programme

• Aims to refine and improve the original Passivhaus standard

• Shifts emphasis from a standard founded on primary energy consumption to that of CO2 thresholds

In dealing with primary energy Passivhaus ignores the variable degrees that different forms of primary energy supply vary in their carbon output

• The Passivhaus standard allows for electrical heating whereas the CarbonLite standards do not

PassivHaus, AECB Carbonlite & FEES (CfSH)

	PassivHaus	**Code for Sustainable Homes Full Fabric Energy Efficiency (FEES)**	**AECB Carbonlite Silver / Gold**
Space heating **kWh/m2/yr**	≤ 15	≤ 39 **(43 - Part L 2013)** mid terrace/ flats ≤ 46 **(52 - Part L 2013)** detached dwelling	≤ 40 Silver ≤ 15 Gold
Total primary energy use (heating, hot water and electricity) **kWh/m2/yr**	≤ 120 ≤ 78 (PH in UK, AECB)	Not part of definition	≤ 120 Silver ≤ 58 Gold
Air leakage **m3/m2hr @ 50 Pa**	≤ 0.75 (0.6 ACH)	≈ 5	≤ 3 MEV / ≤ 1.5 MVHR Silver ≤ 0.75 Gold
Overheating Frequency **% of time over 20ºC**	≤ 10%	No specific standard	No specific standard
CO_2 Emissions **kg/m2yr**	No Limit 15 (PH in UK, AECB)	2016 Carbon Compliance Target: 14 Mid terrace/ flats 10 Detached dwelling	22 Silver 4 Gold

(ENE2) Fabric Energy Efficency (CfSH)

Criteria			
Dwelling Type*[1]		Credits*[2]	Mandatory Levels
Apartment Blocks, Mid-Terrace	End Terrace, Semi-Detached & Detached		
Fabric Energy Efficiency kWh/m²/year			
≤ 48	≤ 60	3	
≤ 45	≤ 55	4	
≤ 43	≤ 52	5*[3]	
≤ 41	≤ 49	6	
≤ **39**	≤ **46**	**7**	**Levels 5 & 6**
≤ 35	≤ 42	8	
≤ 32	≤ 38	9	
Default Cases			
None			

PassivHaus, AECB Carbonlite & FEES (CfSH)

Further information:

- PassivHaus Trust
  www.passivhaustrust.org

- AECB
  www.aecb.net

- Zero Carbon Hub
  www.zerocarbonhub.org

Case Study: Detached House, York

Case Study: Detached House, York

Case Study: Detached House, York

Case Study: Detached House, York

		Passivhaus Certification Criteria and (AECB) CO_2 Target				
		Space Heat Demand	Air permeability	Overheating Time	Primary Energy Consumption	CO2 Emissions
		≤ 15 kWh/m² a	≤ 0.6 ach @ 50 Pa	≤ 10% over 25°C	≤ 120 kWh/m2 a	≤ 16 kg/m² a
Performance	Baseline Model	26	0.6	43%	79	19
	Improved Model	18	0.6	2%	71	17

Case Study: Detached House, York

	PassivHaus PHPP	Code for Sustainable Homes **<u>Without PV</u>**	Code for Sustainable Homes **<u>With PV</u>**
Overall CfSH Rating: Design Stage		Code Level 4	Code Level 5
Space heating **kWh/m2/yr**	18	FEES 42.68	FEES 42.68
Total primary energy use **kWh/m2/yr**	71		
Air leakage **ach @ 50 Pa**	0.6		
Overheating Frequency **% of time over 20°C**	2%		
CO Emissions **kg/m2yr**	17	25	15.5

Case Study: Detached House, York

Predicted Energy Assessment

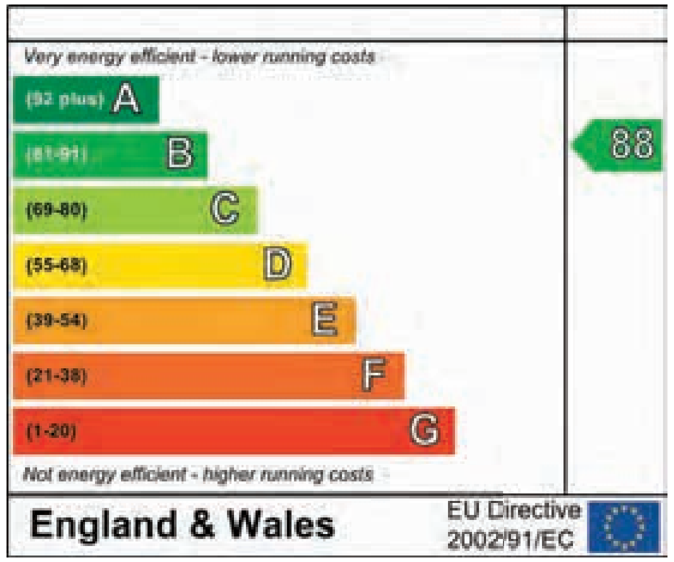
23 The Green
Acomb
York
-

Dwelling type:	Detached House
Date of assessment:	19 June 2013
Produced by:	Mark Heptonstall
Total floor area:	142.86 m²

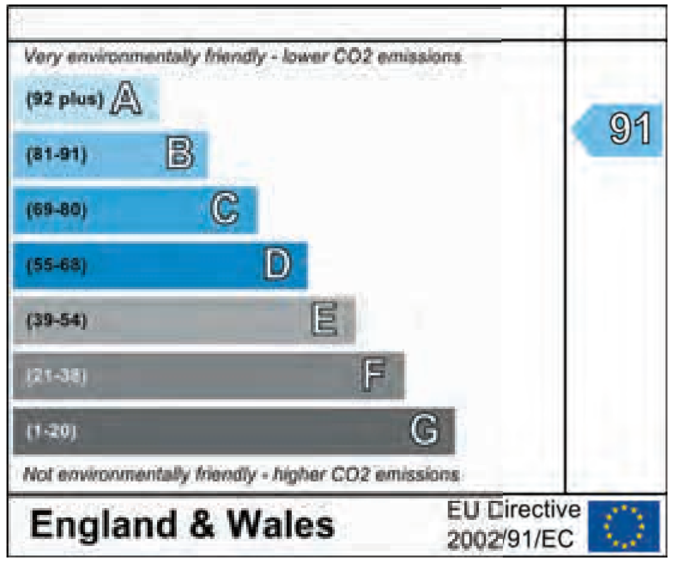
This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2009 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.

Energy Efficiency Rating



Environmental Impact (CO_2) Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbonn dioxide (CO2) emissions. The higher the rating the less impact it has on the environment.

Without Solar Panels (PV's)

Predicted Energy Assessment

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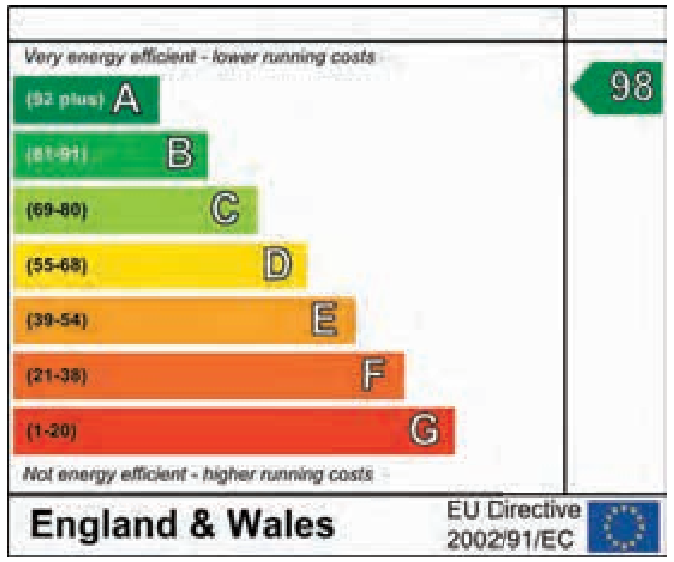

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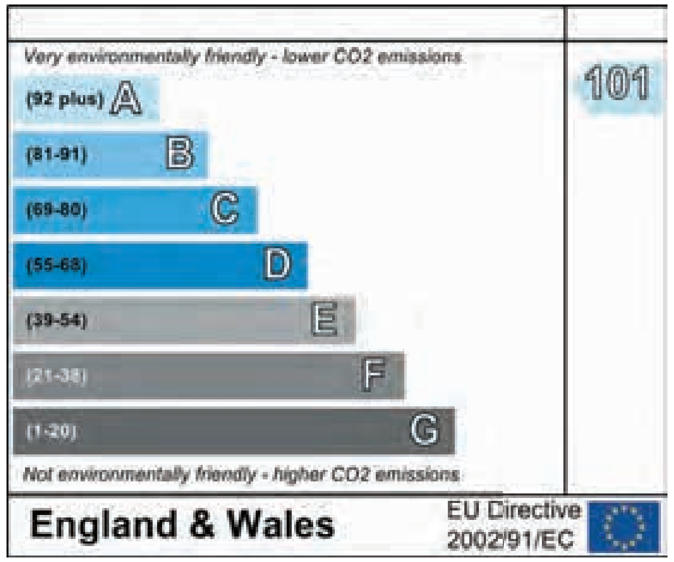

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With Solar Panels (PV's)

Case Study: Detached House, York

Lessons Learned:

- Conservation setting and site constraints prevented footprint from becoming more efficient

- Surface area to volume ratio critical

- Views from north elevation important for well being of occupants

- Traditional cavity wall construction can be used

Case Study: Detached House, York

Costs:

Design Stage (Actual) to RIBA Stage D	Cost £
PHPP Report	approx. £1200
Code Design Stage Assessment (inc SAP calcs)	£800
Construction Costs (Estimated) Exc. VAT	
140m2 Gross Internal Area @ 1400/m2	£196,000

Case Study: Community Hall Retrofit / Extension

Case Study: Community Hall Retrofit / Extension

www.massarchitecture.com, @massarch

mass architecture

Context

- Community building - low maintenance, user friendly
- AONB setting - planning constraints
- Consecrated ground, sloping site, exposed, no mains gas or sewer
- Grant funded, client group - volunteers

Proposed Retrofit Measures: (RIBA Stage E/F)

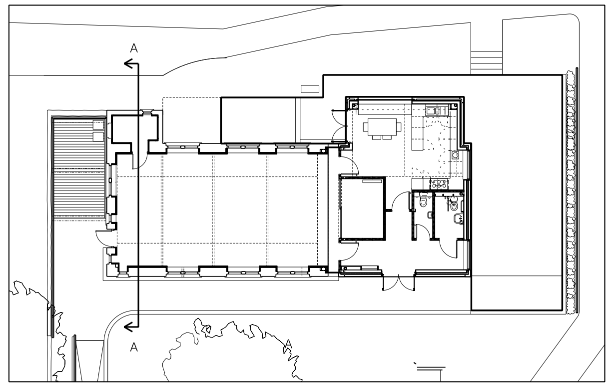
- 90mm Wood fibre fitted between timber studs
- 275mm Loft insulation and 100mm internally lined ceiling
- 100mm Floor Insulation
- Replace Sash windows and box frames with double glazing
- ASHP - 14KW
- Photovoltaic Panels to existing roof - 3.76kwp
- Underfloor heating (wet system b/t joists), radiant panels to ceiling

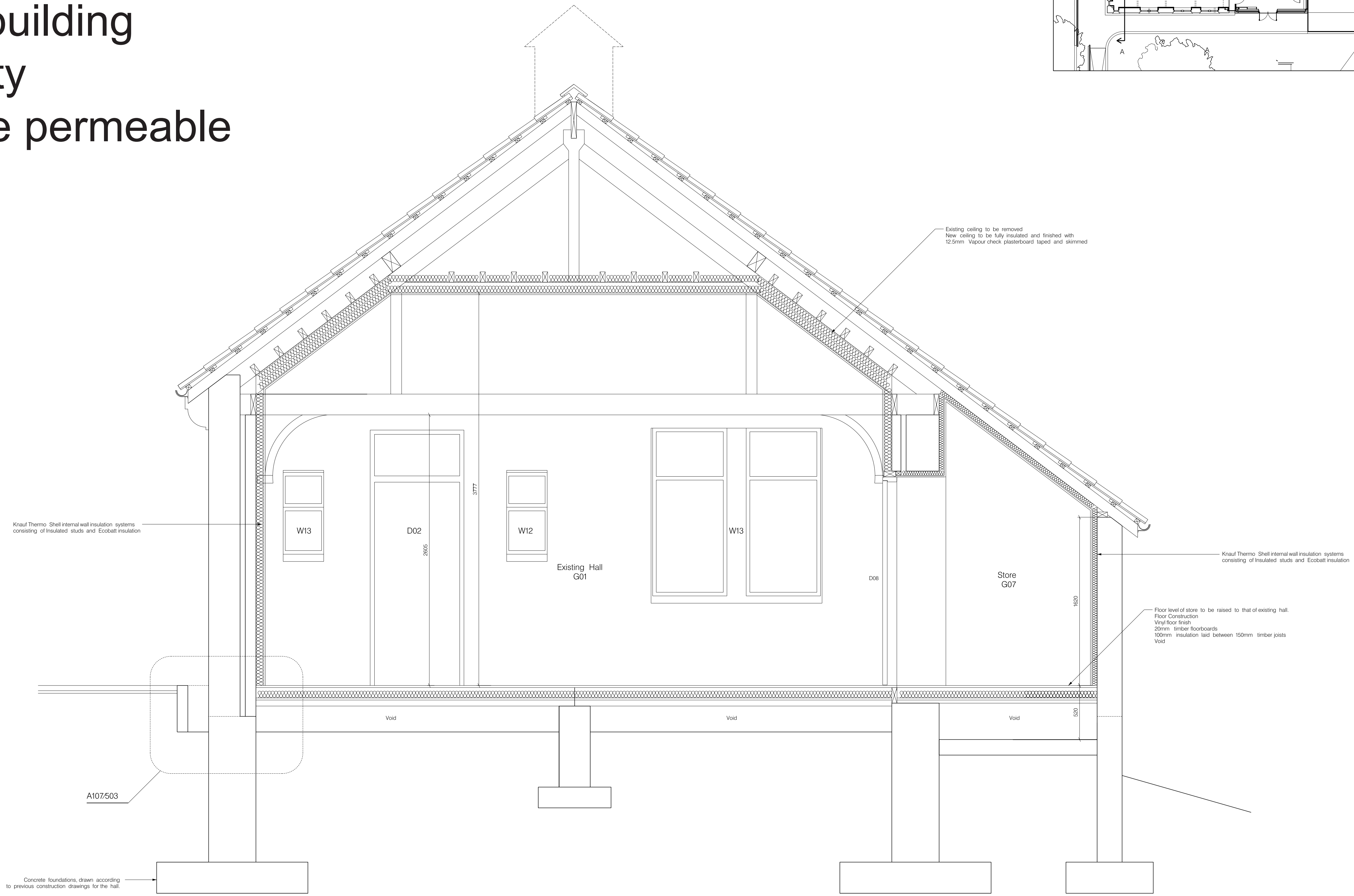
Wider benefits

- Fully accessible
- Reduced rural social isolation
- Bigger hall
- Improved kitchen and IT facilities

Internal Insulation - considerations

- Compatibility with stone
- Use of building
- Durability
- Moisture permeable





Proposed section through existing hall - NTS

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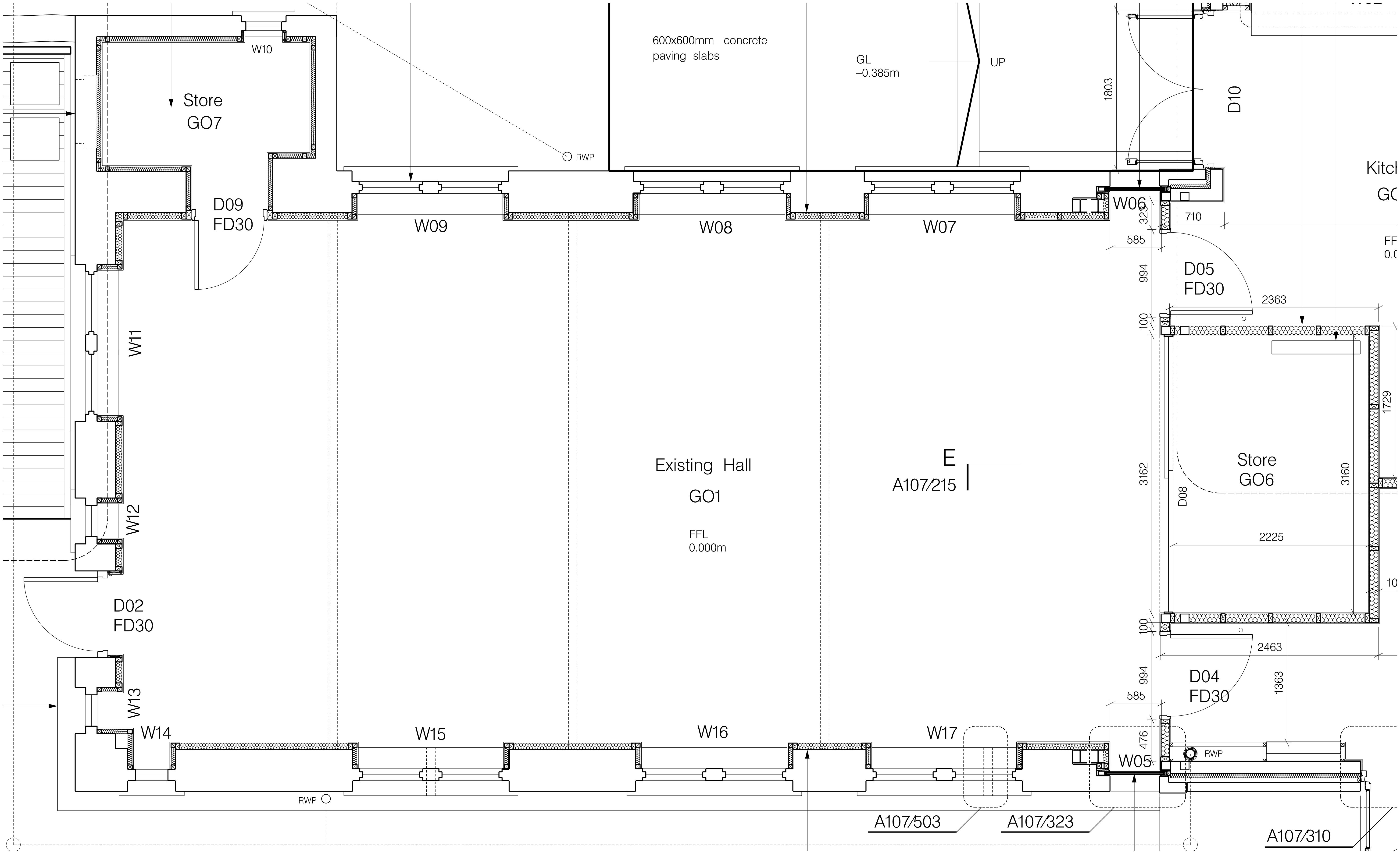

Proposed plan of existing hall - NTS

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Case Study: Community Hall Retrofit / Extension

Proposed Extension: RIBA Stage E/F

- Traditional cavity construction
- Local stone (Eskdale quarry)
- 100mm full-fill cavity, rigid foam insulation
- Velfac double glazed windows
- UFH (wet system in screed)
- Water saving taps, WC’s
- FSC timber finishes
- Local contractors

Further Information:

English Heritage:
www.climatechangeandyourhome.org.uk

Historic Scotland: Information Guide
- Energy Efficiency - Conservation, repair and maintenance
www.historic-scotland.gov.uk

Energy Heritage: A guide to improving energy efficiency
in traditional and historic homes, (Changeworks, 2008)
http://www.changeworks.org.uk

The Green Guide for Historic Buildings
(The Prince's Regeneration Trust, 2010)
www.historic-scotland.gov.uk

Energy Saving Trust
Energy Efficient Refurbishment of Existing Housing (CE83)

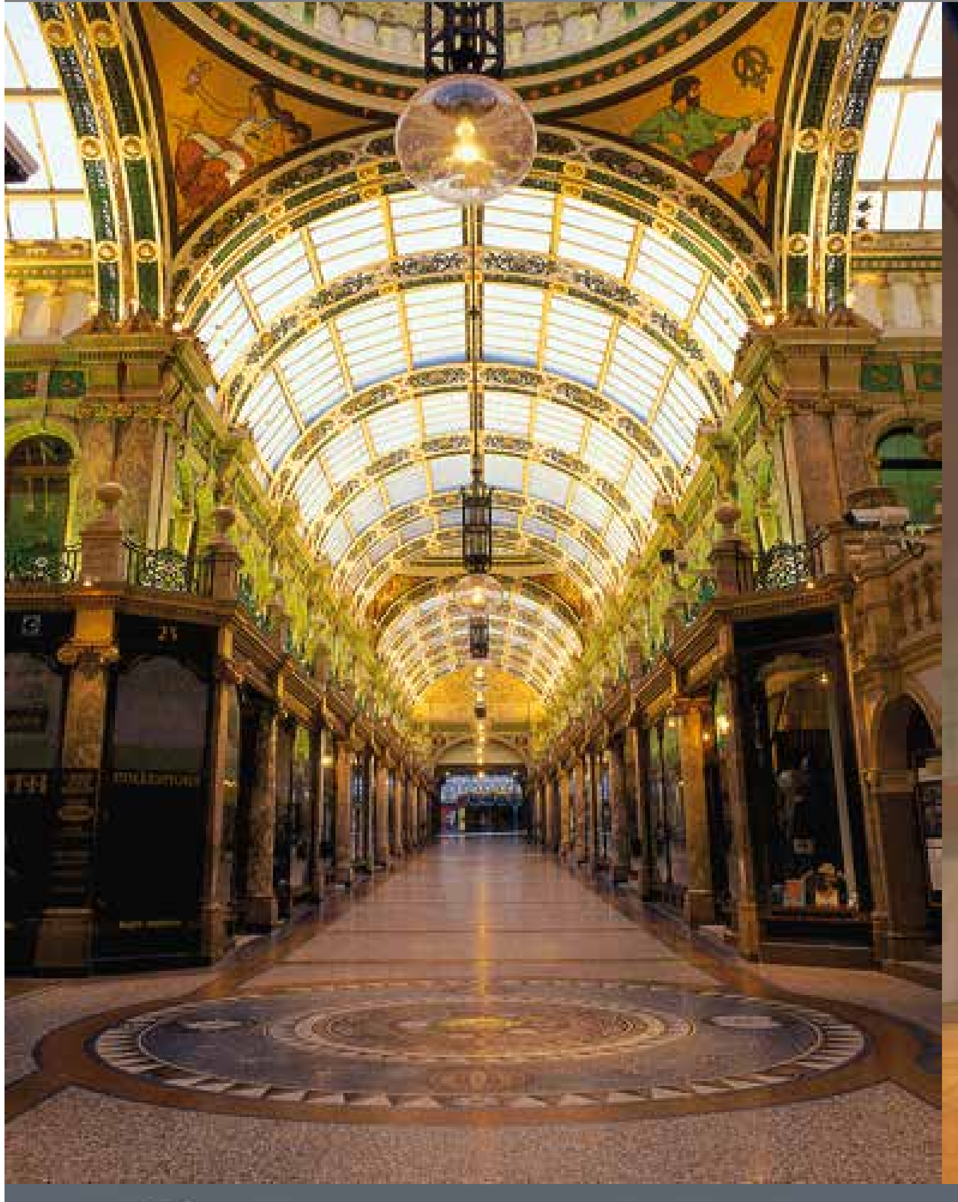
Question and Answer Session

The C-Plan Tool

Importance of retrofit and energy efficiency measures in heritage buildings

Derek Latham, Latham Architects

The Creative Re-use of Buildings (Donhead 2000)



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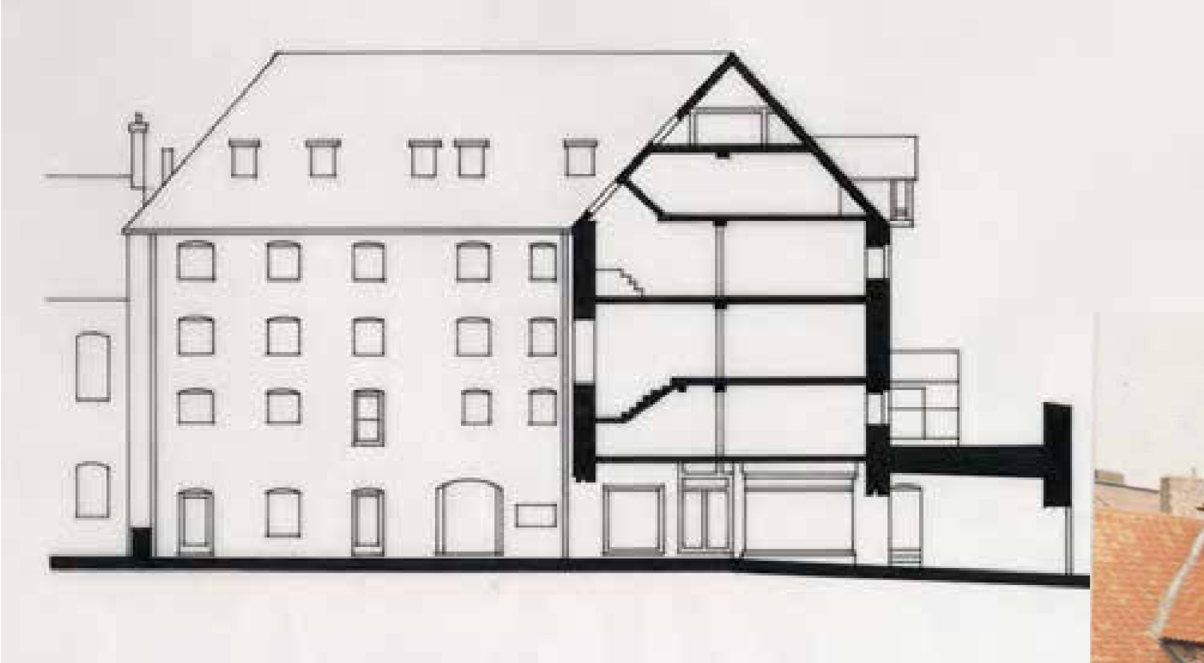
Built Heritage

Product of past climate and human use:

- Geology – for building materials – Seismic and Climate
- Topography – Created by weathering
- Flora – result of geology
- Locational factors – slope, springs, shelter, cultivation, minerals
- Create underlying character of the building –
- Together with human activity, needs, pride, fashion, progress

Opportunities for Re-Use



THE ROUTE TO A SUCCESSFUL PROJECT

“Re-use must work with the building and not against it”

-Emotional Value

-The Building’s Story

-Consider part re-use

-Step back from the building

-Allow for future change

- Long life loose fit

UNDERSTANDING THE USERS REQUIREMENTS

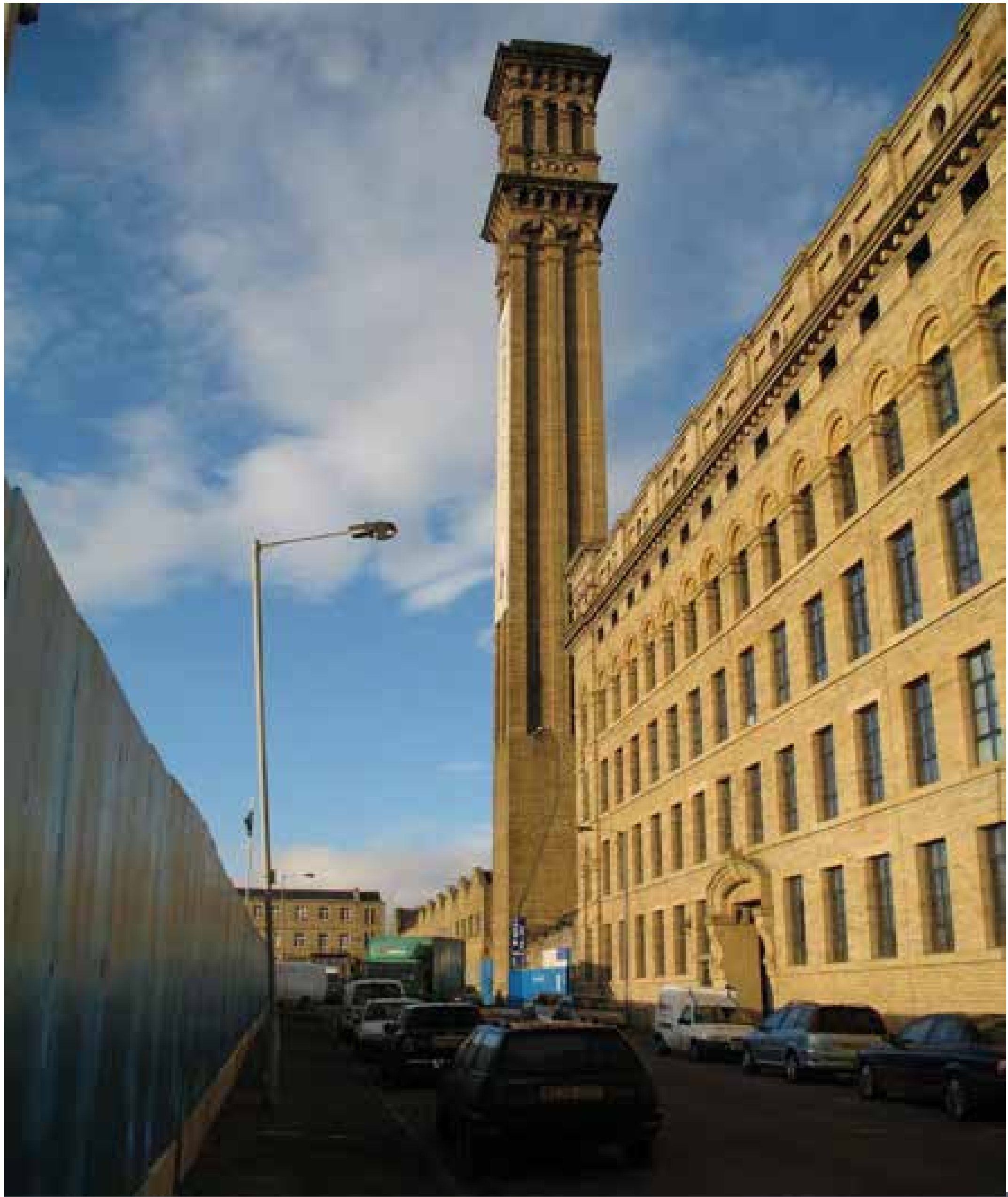
“Think laterally about the uses to which the building is to be put”

- keep an open mind

- consider options

- SWOT analysis

- re-consider



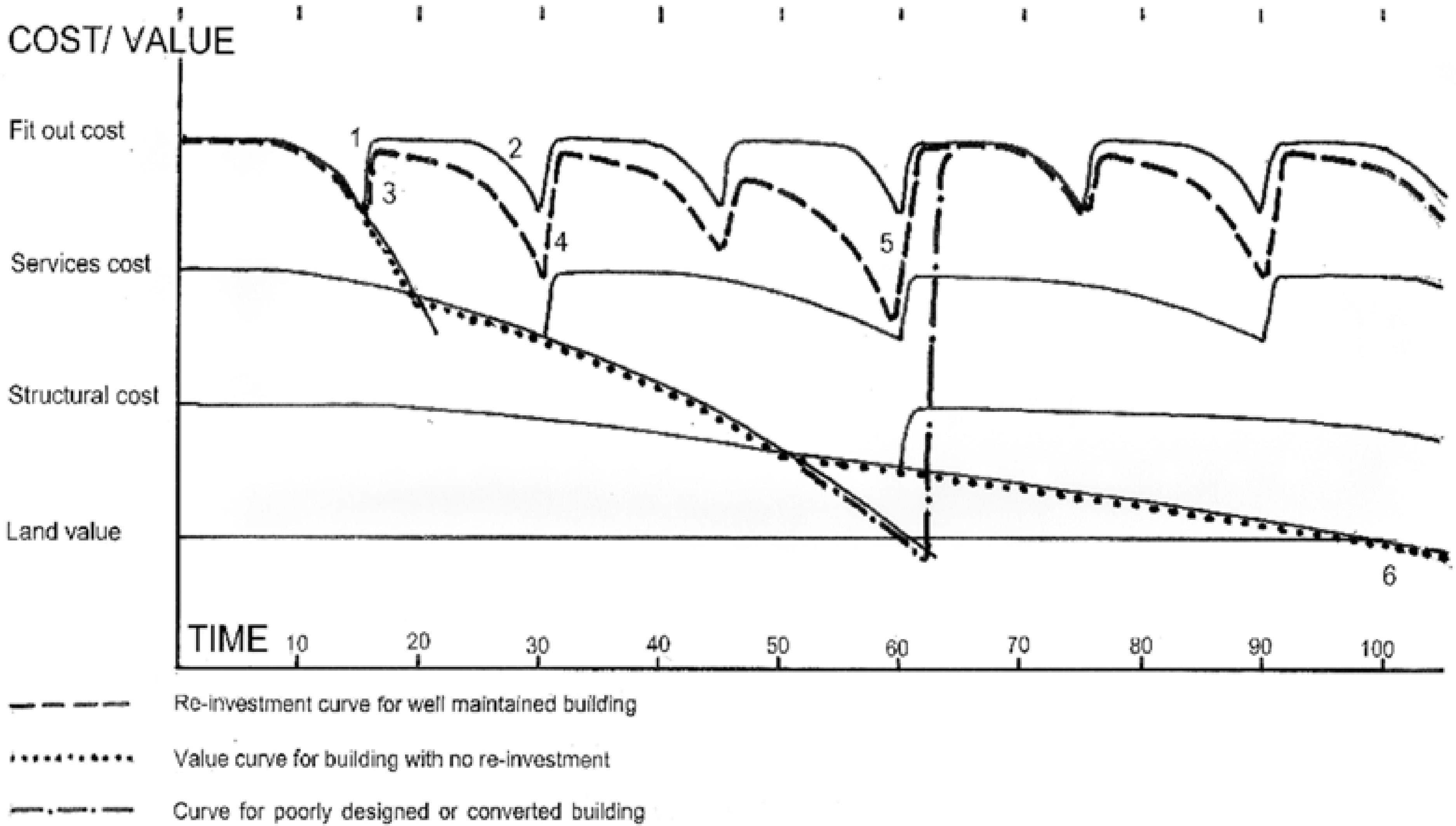
-Long life

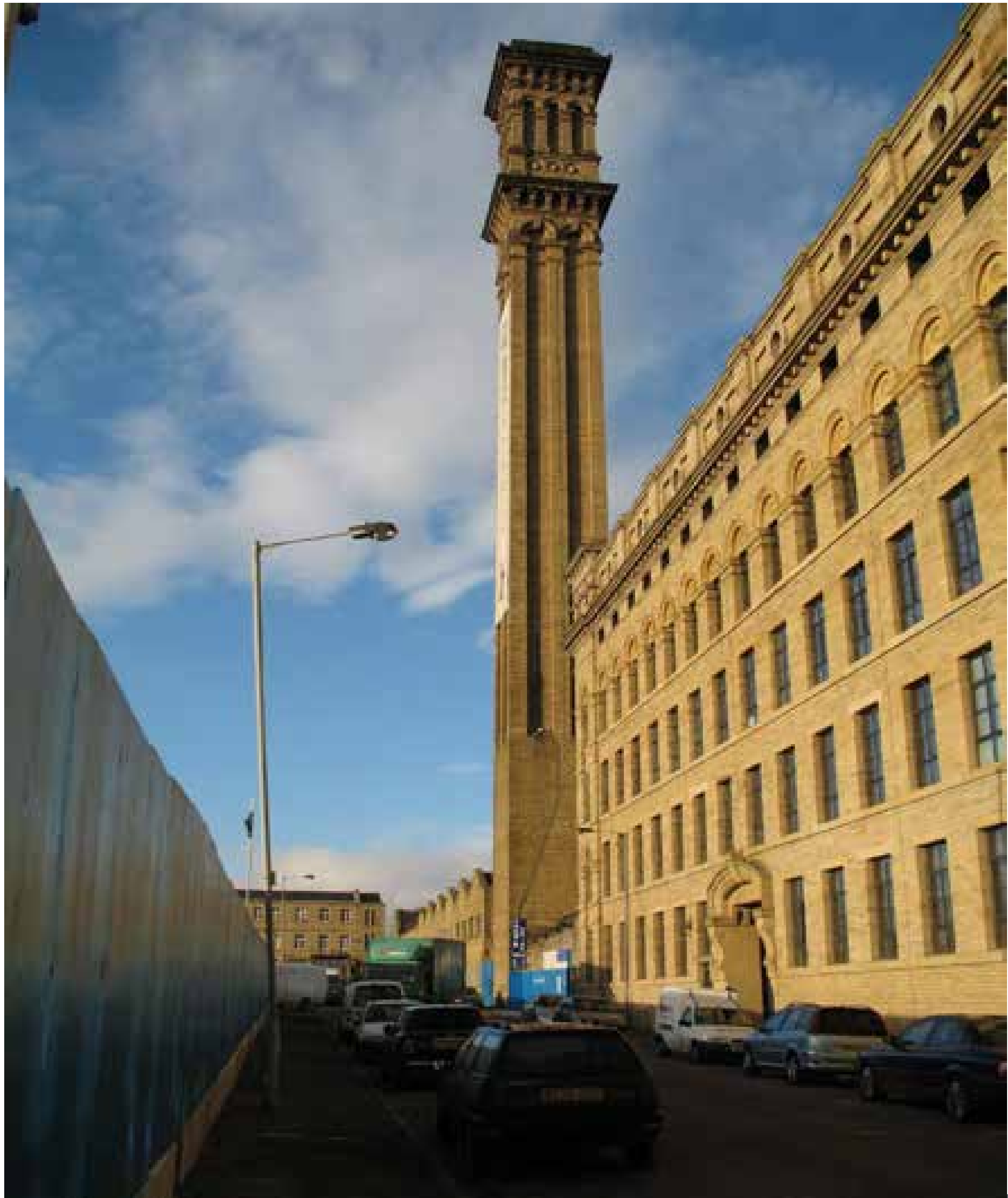
-Limited life

-Continuing repair

- Monitoring

Enhancing the value





-Long life

-Limited life

-Continuing repair

- Monitoring

Healthy materials

1. Clean, no pollutant or toxins, no biologically harmful vapours, dust, particles or odours, resistant to bacteria, viruses, moulds, and other harmful micro-organisms.
2. Should produce no noise either in production or in use, good sound reduction.
3. Non-radioactive, non electromagnetic or emit harmful, electric fields

Ecological and sustainable materials

1. Renewable and abundant, from natural sources, production low impact on the environment.
2. Energy efficient, low energy in production, transport and use, locally produced, high insulation values.
3. Durable, long lived and easy to maintain and repair.
4. Produced by socially fair means.
5. Low waste, capable of being reused and recycled.

THE CONCEPT OF THE BREATHING WALL VERSUS SEALED INSULATION

A rule of thumb is that the resistance to vapour diffusion on the inside must be five to ten times higher than the windproofing layer on the outside to give the vapour direction.

Speed of hygroscopic take-up of water vapour

- Concrete: slow
- Cement render: slow/medium
- Hydraulic lime render: slow/medium
- Unfired clay bricks: medium
- Fired clay bricks: medium
- Mineral wood insulation: medium
- Softwood, transverse: slow
- Softwood, end grain: fast
- Wood fibre board insulation: fast
- Cellulose insulation: fast
- Flax/hemp/sheep's *wool/hemp* insulation: fastest

(Mau 2005)

Manufactured chemical-based materials

- Polyurethane foam and other isocyanurate foams X

-Rock wool, slag wool, and glass wool X

-Polystyrene foam X

-Phenolic foam X

- Urea-formaldehyde foam X

Natural alternatives

- Wool
- Sheep's wool batts
-Hemp batts
- Cellulose
- Corkboard
- Foamed glass
- Softboard
- Woodwool
- Compressed strawboard/flaxboard
- Wood fibreboards
- Calsitherm climate board
- Reed boards / mats
- Clay board

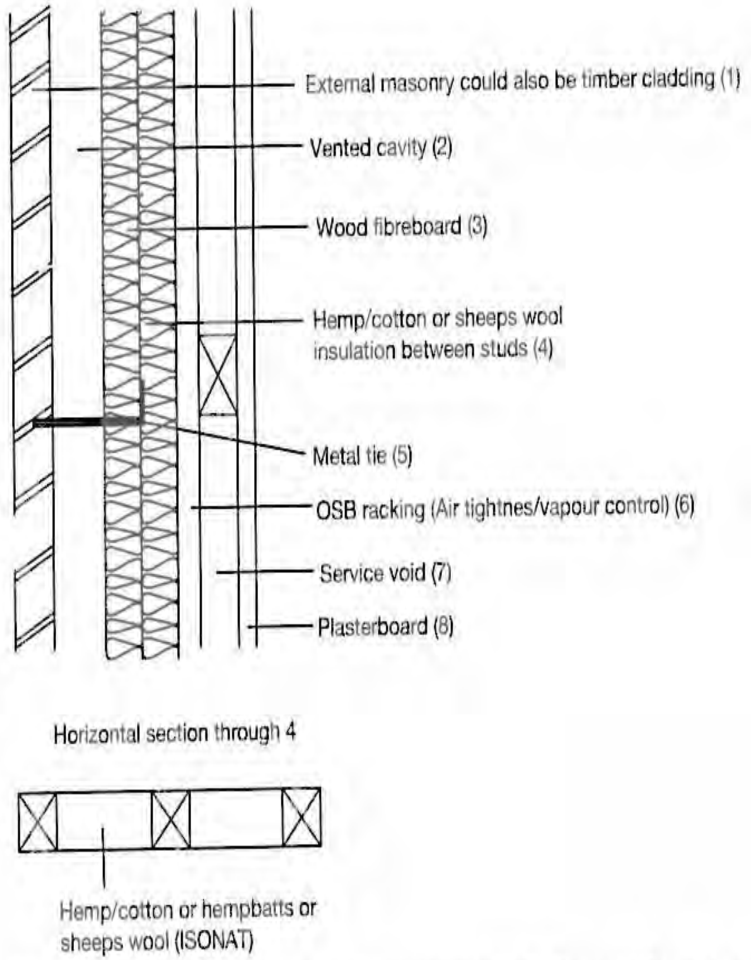
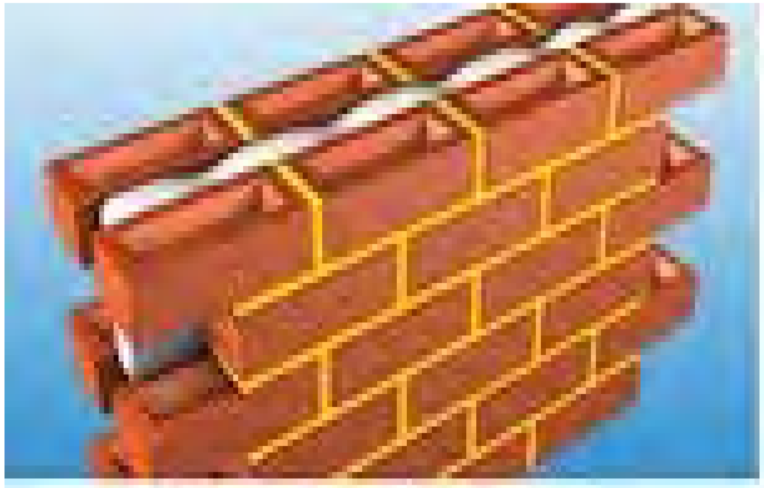
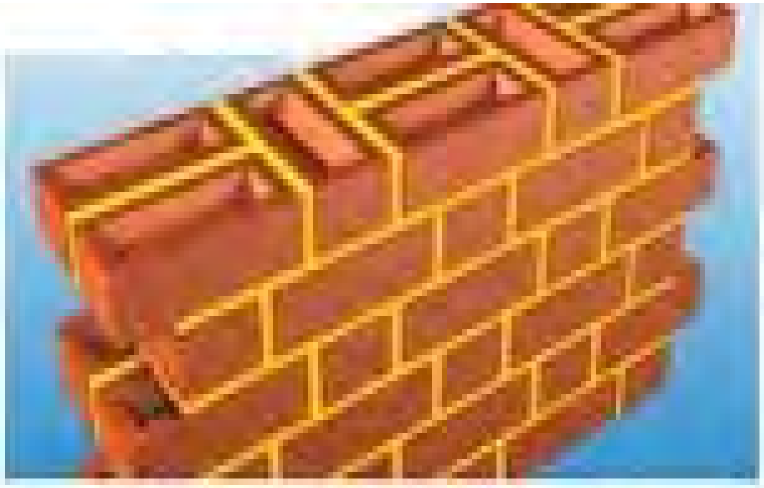


Diagram 4.8 Wood fibre board used as an alternative to closed-cell materials for modern ti
(after Natural Building Technologies, 2010)

Cavity walls v Solid walls



Typical cavity wall



Typical solid brick wall

Earth

Preferred option :
solid walls
natural fibre - hygroscopic insulation

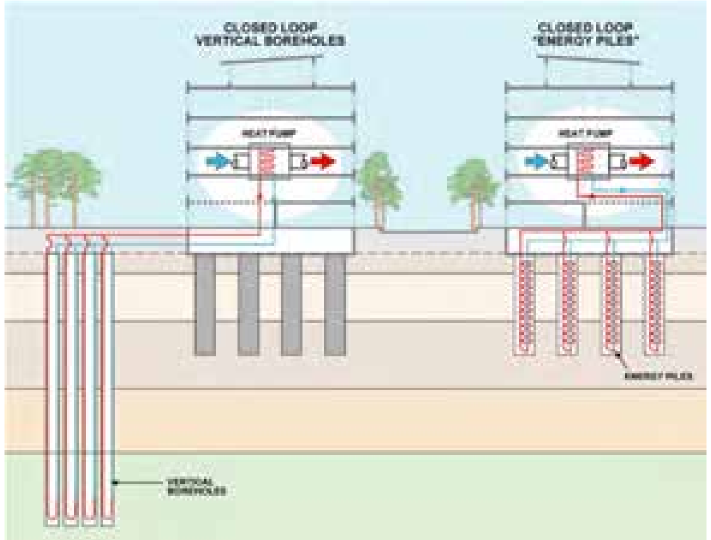
Using Solar Heat - in floors

Solar radiation –passive heat

- Insulate ground floors
- Short wave radiation heats floors
- Prevent solar gain escaping
- Use externally warmed air
- or Solar collector rooms
- Increased light value reduces need for energy for artificial light
- plan uses to take advantage of southern aspect

Low and zero carbon technologies - Solar Thermal / PV

Ground Source Heat Pumps



Taitlands
Historic House
near Settle

The pathology of traditional buildings

Repair strategies for fungal decay

Fruiting body

Mycelium

Building fabric improvements

Consider the impact upon the heritage value
Graded :

-high,
-medium or
-low historical significance

Avoid areas of high significance
and concentrate on areas of low significance

If possible enable improvements to be
Reversible

Air tightness

- Repairing windows
- Draught strips
- Gap sealing
- Pointing and painting
- Draught lobbies
- Secondary glazing
- Closed appliances
- Porous material
- Natural stack ventilation

- Imperative the consequences are addressed

Air pressurisation testing

Consider whether this is a suitable test for the building - the older the building the less suitable.

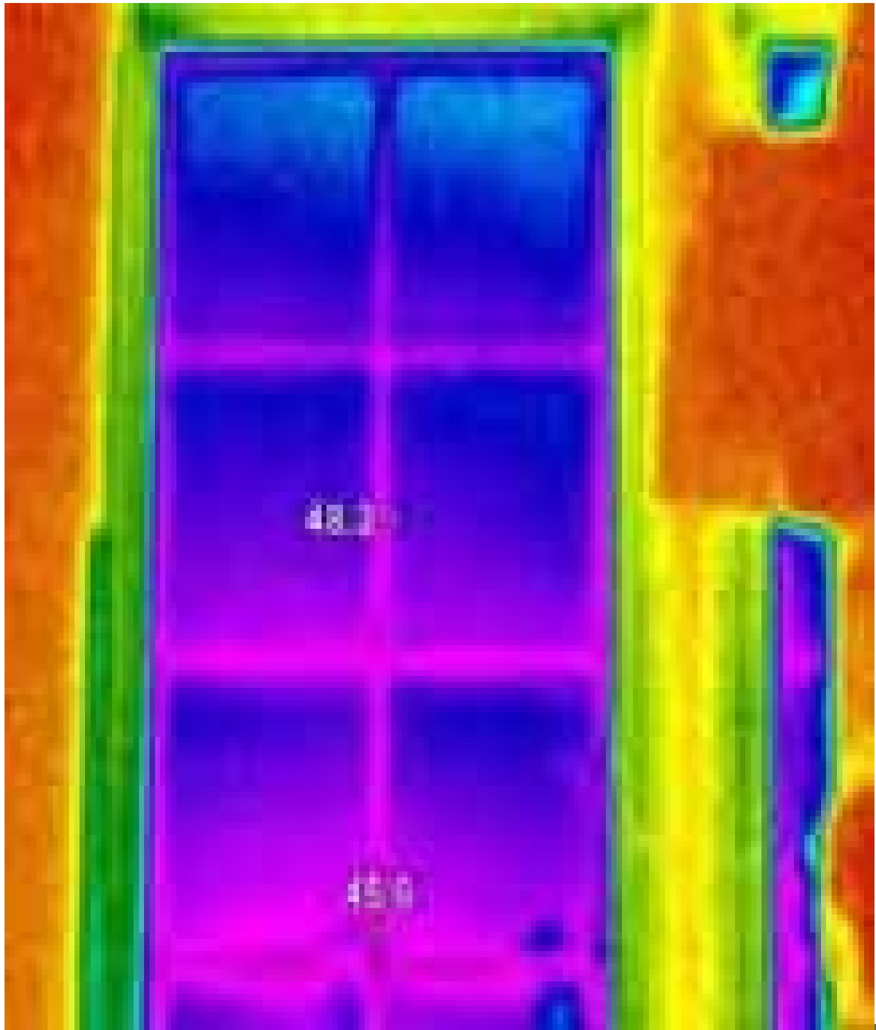
Improvements to airtightness and insulation measures that seal the building could very significantly reduce the ability to achieve natural ventilation. Measures to promote low energy ventilation and breathability should form part of the overall design strategy.

- Repairing windows
- Draught strips
- Gap sealing
- Pointing and painting
- Draught lobbies
- Secondary glazing
- Closed appliances
- Porous material
- Natural stack ventilation

- Imperative the consequences are addressed

Supplementary techniques

Use thermal imaging



Heat loss

Viewing this single glazing from the inside, the purple areas show that most heat loss is through the metal frames, not the glass!

Windows

Only a restricted impact on energy consumption

Replace inappropriate modern windows

But not historically significant window frames and glazing - retain slender glazing bars

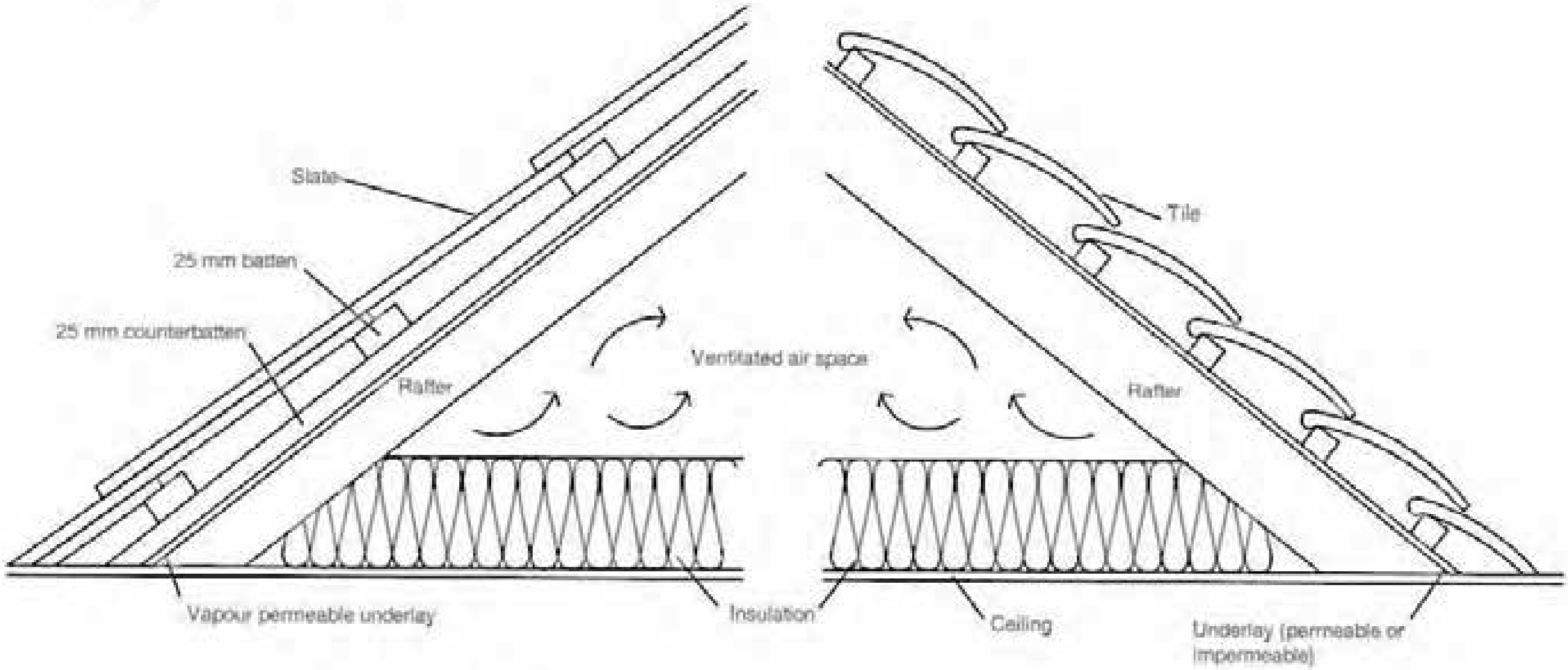
- Window frames suffer from cold bridges, so consider secondary glazing

- If retained - repair, decorate, draught strip

ROOFS - Torching

Insulating materials - Roofs

In a 'cold roof', the most common form of roof construction, the insulation is laid at ceiling joist level, leaving the roof space relatively colder than the accommodation below



Cold pitched roof with vapour permeable underlay, ventilated void above insulation and a tight-fitting roof covering of fibre cement slates

Cold pitched roof, ventilated void above insulation and a well-sealed ceiling

Diagram 6.3 'Cold roof' options for ventilation (adapted from Marley Eternit Ltd, 2008)

In a 'warm roof', the insulation can be laid above, between, or below rafter level, or in a combination of all these positions. This form of construction is generally chosen when the roof space is to be used for habitation

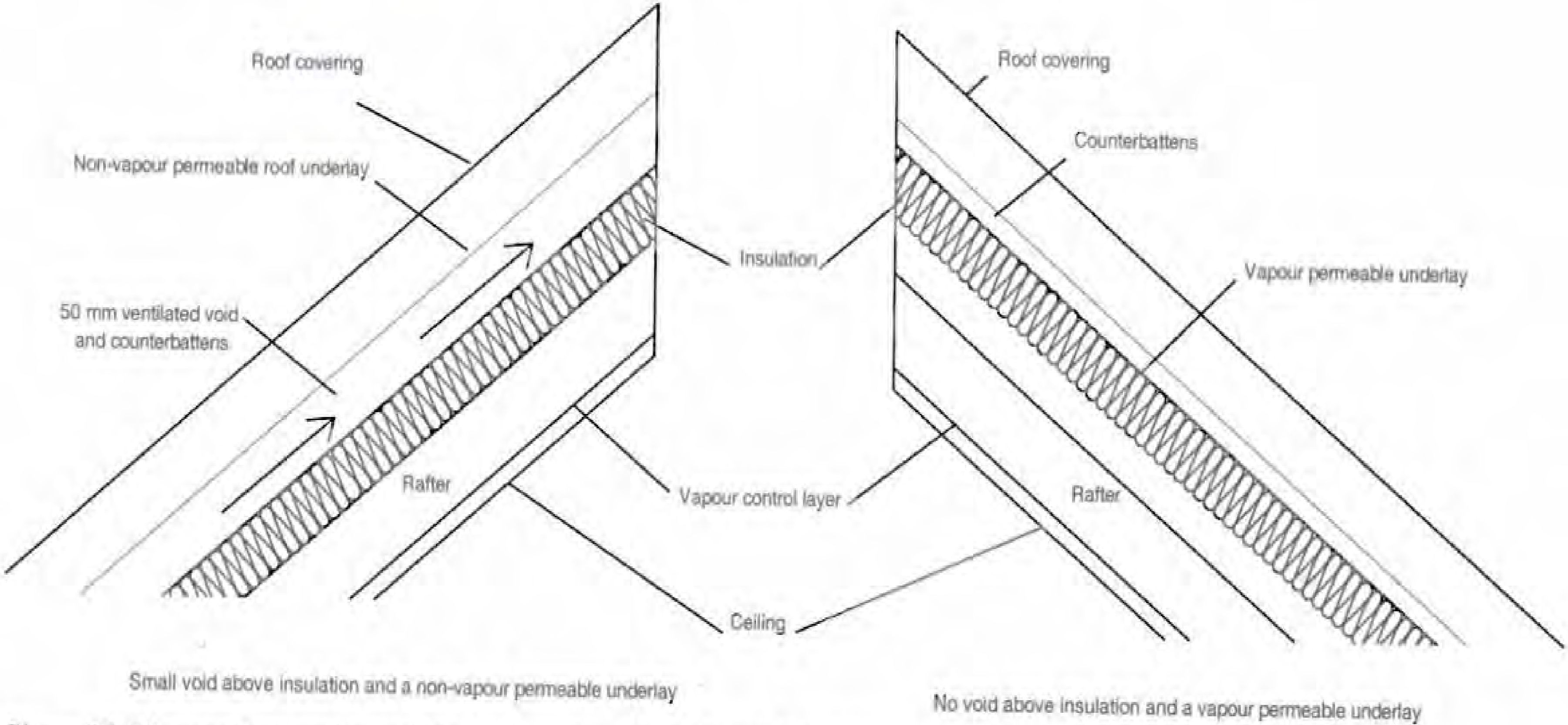
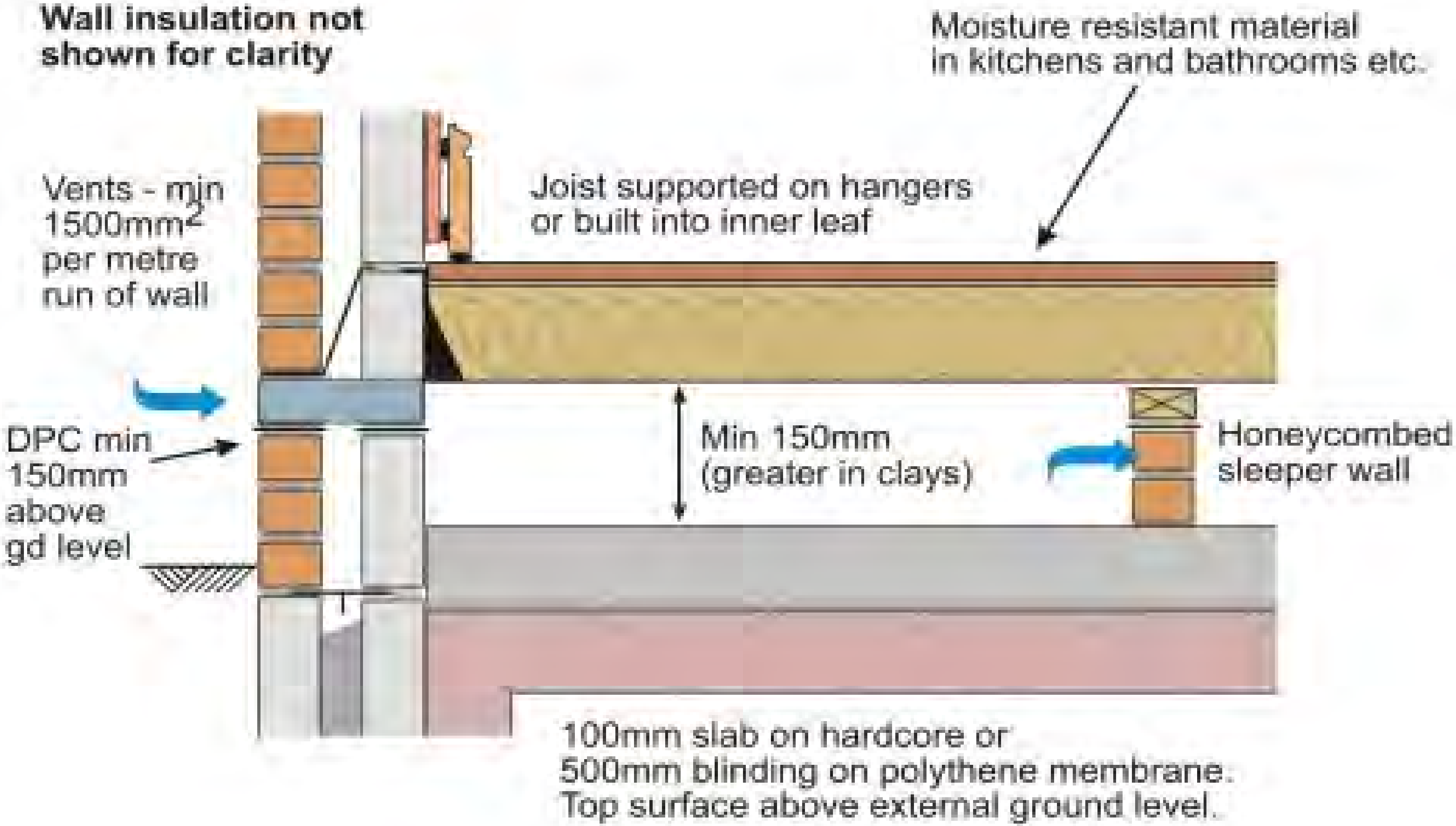


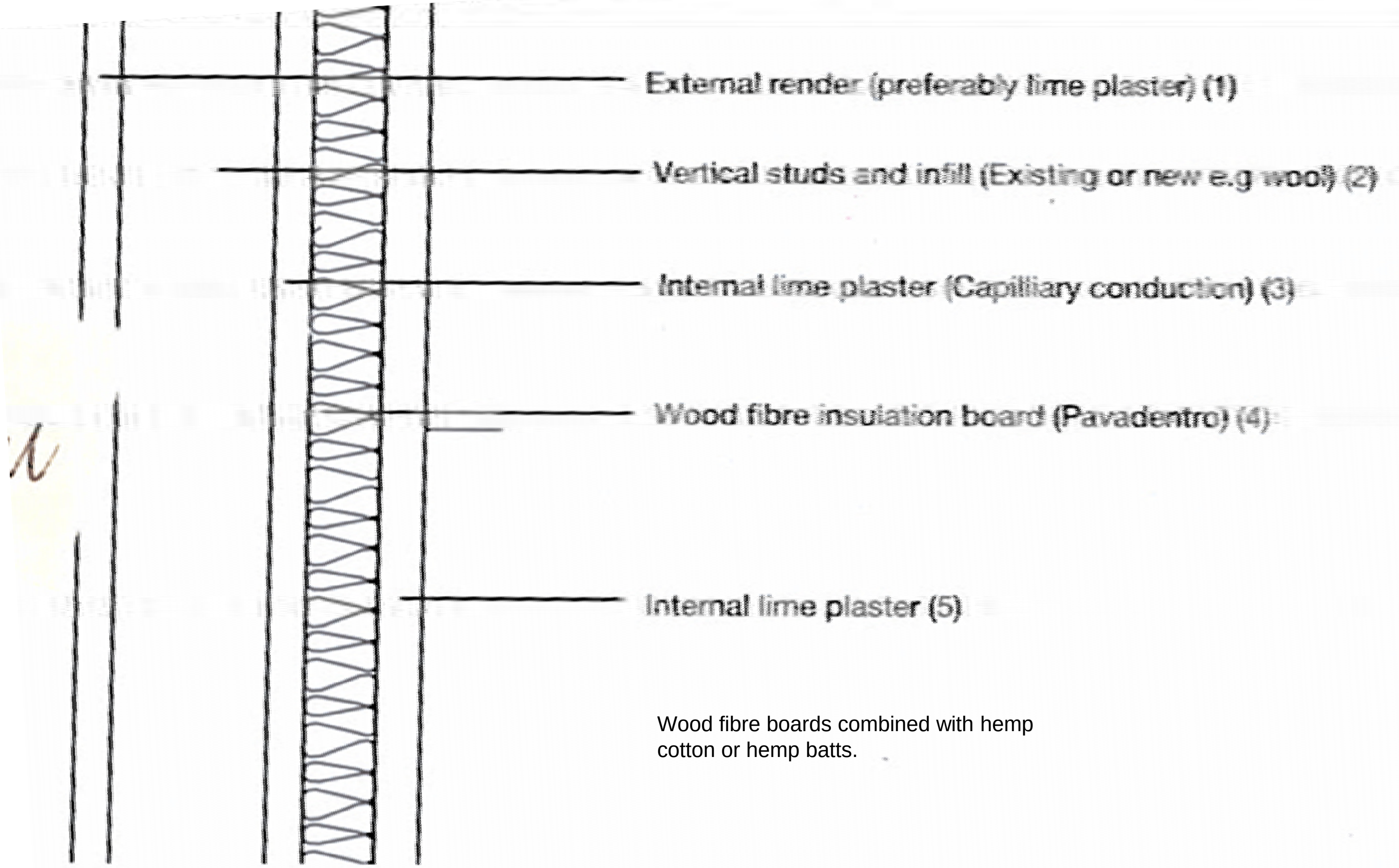
Diagram 6.2 'Warm roof' options for ventilation (adapted from Marley Eternit Ltd, 2008)

Insulation of suspended floors



The problem of insulating frames

Retrofit insulation of timber frames

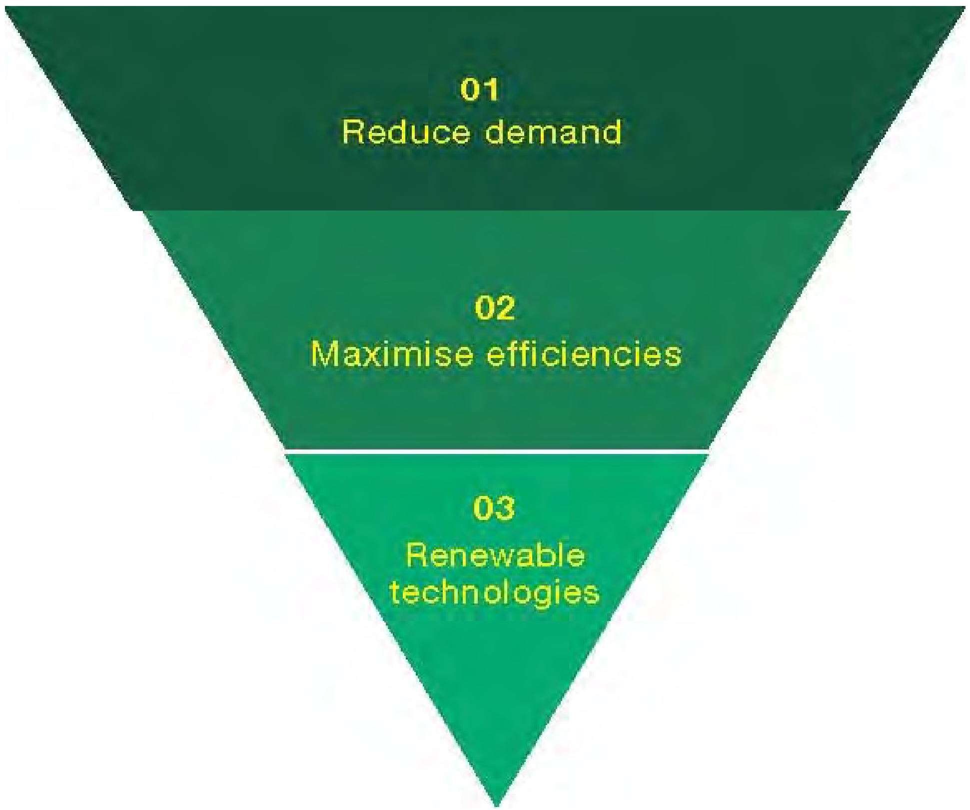


Wood fibre boards combined with hemp cotton or hemp batts.

Diagram 4.2 Using wood fibre board for insulation of traditional timber framed buildings (after Natur
Building Technologies, 2010)

The need to think of the whole building

A holistic approach to building intervention is essential, with care being taken to examine the effects of changes on all building systems and their users.



Positive occupant behaviour can reduce energy consumption by up to 20%

Reducing energy demand through behaviour change can involve a cultural change, as well as individual effort to reduce carbon emissions.

Question and Answer Session

Wrap Up to the National Policy Context and Local Policy Context in North Yorkshire and York, including consequential improvements

Laura Mayo, Arup

North Yorkshire Policy Summary

- York - emerging policy on carbon savings, sustainability and sustainable energy statements, CSH Level 4, BREEAM Eco Homes and for Non residential
- Selby – awaiting inspectors report, sustainable development and climate change – includes energy efficiency, flood risk, habitats, tree planting, landscape requirements among others
- Hambleton – adopted, sustainable construction principles, sustainable energy and BREEAM.
- Richmondshire – emerging, consequential improvements, CSH 4 and BREEAM, energy statements
- Scarborough, Harrogate, Ryedale, Craven,N York Moors NPA.

Key Messages

- Direction of travel for government policy is towards greater energy efficiency
- Green construction is a growth sector – Green for Growth
- Review construction methods an techniques to ensure fit for purpose
- Marketing is important – businesses and households want accommodation that is cheap to run.

Local Approach's in York and North Yorkshire to Consequential Improvements

Ruth Hardingham

Local Government Yorkshire and Humber

What are Consequential Improvements

Consequential Improvements are essentially whereby homeowners that are granted planning permission for home extensions have to put in cost-effective energy-saving measures in their existing properties.

What can Consequential Improvements Include?

- Upgrading heating, cooling or air handling systems.
- Improving heating controls.
- Upgrading lighting systems.
- Installing energy metering.
- Upgrading thermal elements.
- Loft and cavity wall insulation.
- Draught – proofing.
- Replacement boilers.
- Replacing windows.
- On-site energy generation.

Uttlesford District Council

- Introduced Consequential Improvements through the Supplementary Planning Document on Home Extensions (adopted November 2005), and all planning approvals for home extensions arising from applications submitted after April 1, 2006 carry the 'Energy Efficiency Condition (C8.28)', which states:

“Within four weeks of the date of the commencement of the development hereby permitted or other such period as agreed by the local planning authority details of Cost Effective Energy Efficiency Measures to be carried out to the extended dwelling shall be submitted to and approved in writing by the local planning authority. These measures shall be implemented during the construction of the development, unless otherwise previously agreed in writing by the local planning authority.”

Local Approaches in York and North Yorkshire

York City Council: Local Plan Preferred Options

Policy CC2: Sustainable Design and Construction

B Consequential Improvements to Existing Dwellings

- When applications are made to extend dwellings the Council will seek to secure reasonable and proportionate improvements to the energy performance of the dwelling. This will be in addition to the requirements under Part L of the Building Regulations for the changes for which planning permission is sought.

Richmondshire District Council

Core Strategy Proposed Submission Core Policy CP1: Responding to Climate Change

2a . Existing Development – Consequential Improvements

- When applications are made to extend dwellings the Council will seek to secure reasonable improvements to the energy performance of the dwelling. This will be in addition to the requirements under Part L of the Building Regulations for the changes for which planning permission is sought.

Other Examples

Kirklees Council: Core Strategy Proposed Submission

Policy SCS6 Energy Efficiency

Where an application for planning permission is required for extensions to residential properties smaller than 1,000 square metres proposals must incorporate measures to increase energy efficiency of the host building by at least 30% unless this can be demonstrated to be unfeasible, inappropriate or to render the proposal unviable.

Question and Answer Session

Close of Session