

Enabling area / community retrofit: Brighton & Hove case study



Mischa Hewitt



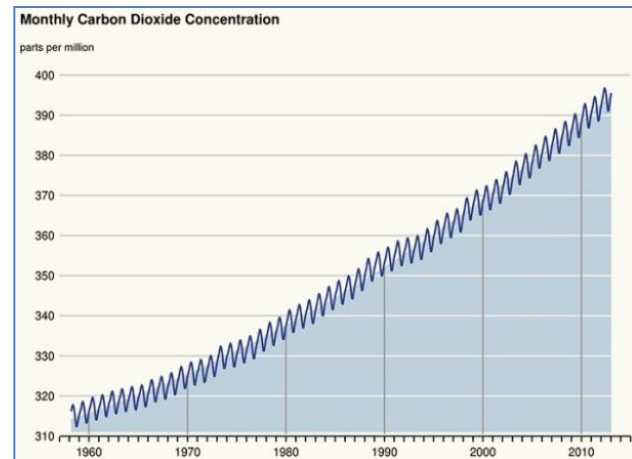
Outline of talk

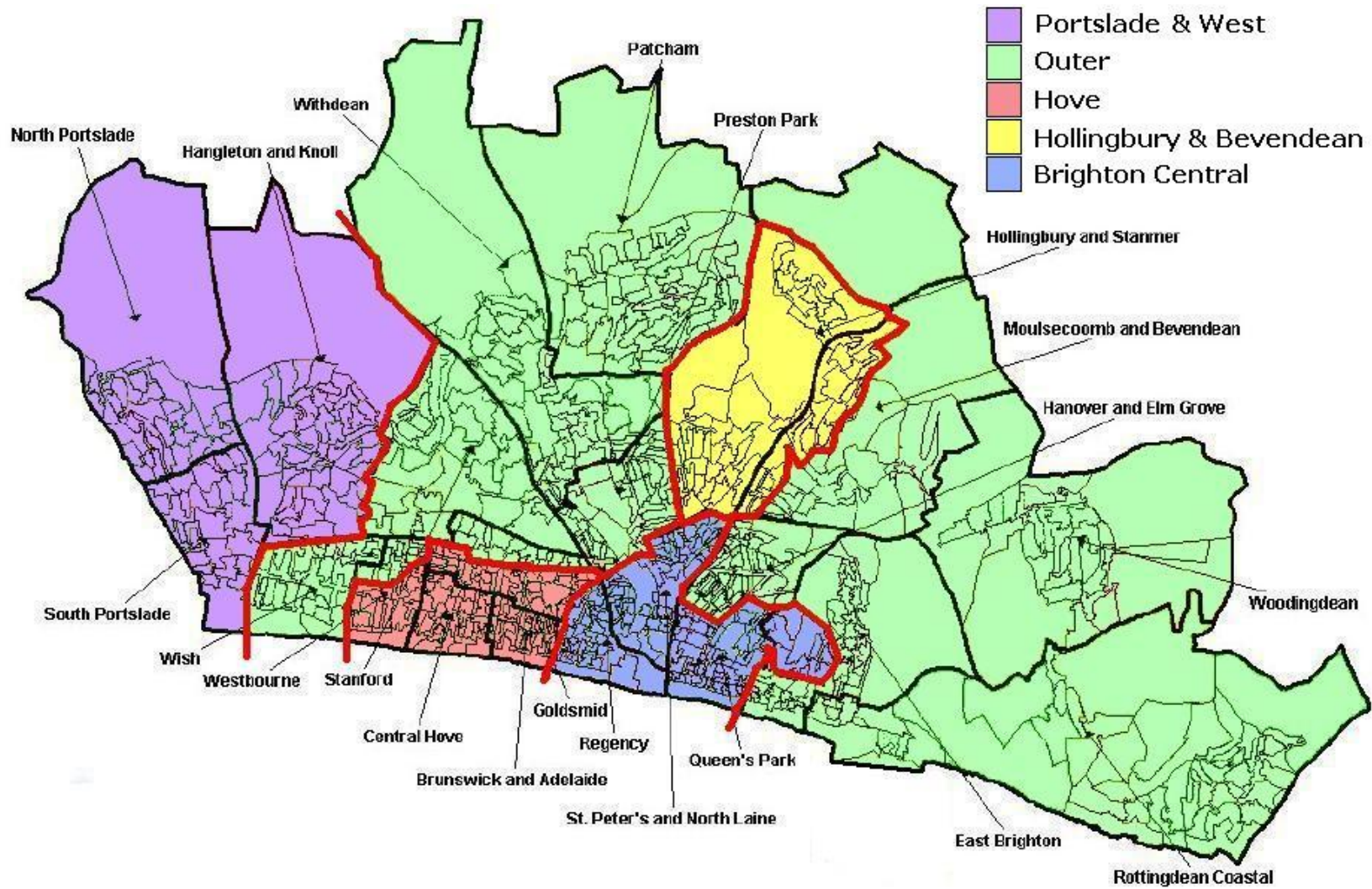
- Context
- 'Mainstream' approach
- SWAP Project
- GDPP Project
- Case study
- Eco Open Houses
- Lessons learned
- Conclusion



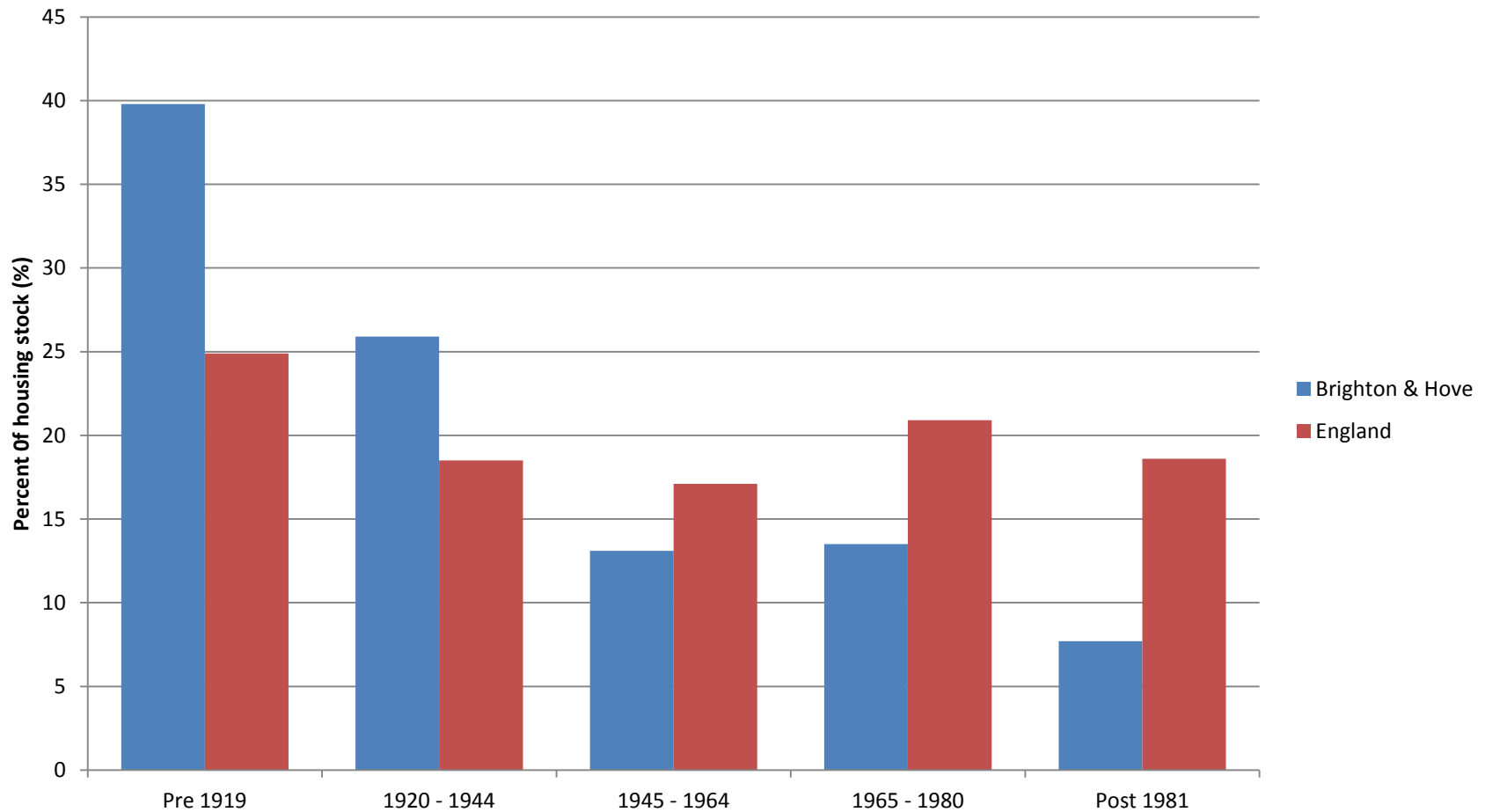
Context: Brighton & Hove

- 122,900 homes
- 42% of city's footprint
- >80% CO₂ cut by 2050
- 85% of today's houses
- Limited space / new build
- Lots of conservation areas
- >3,500 whole house retrofits per yr upto 2050
- >17,500 whole house retrofits by 2020
- **1 every 3 hours!**





Snap shot: age of housing stock



Source: Private Sector Housing Condition Survey 2008

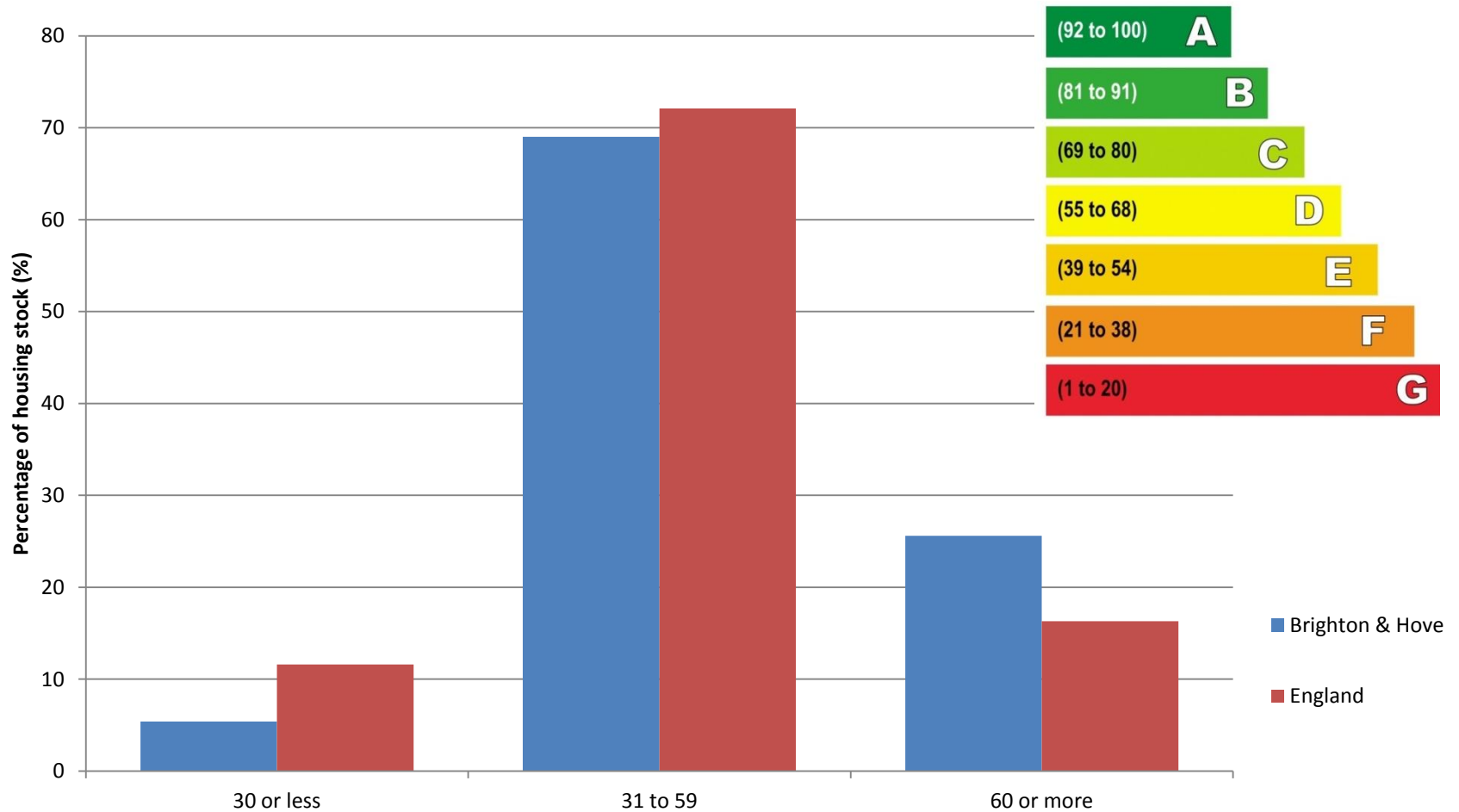


Also from the Victorian era!



Source: Passipedia

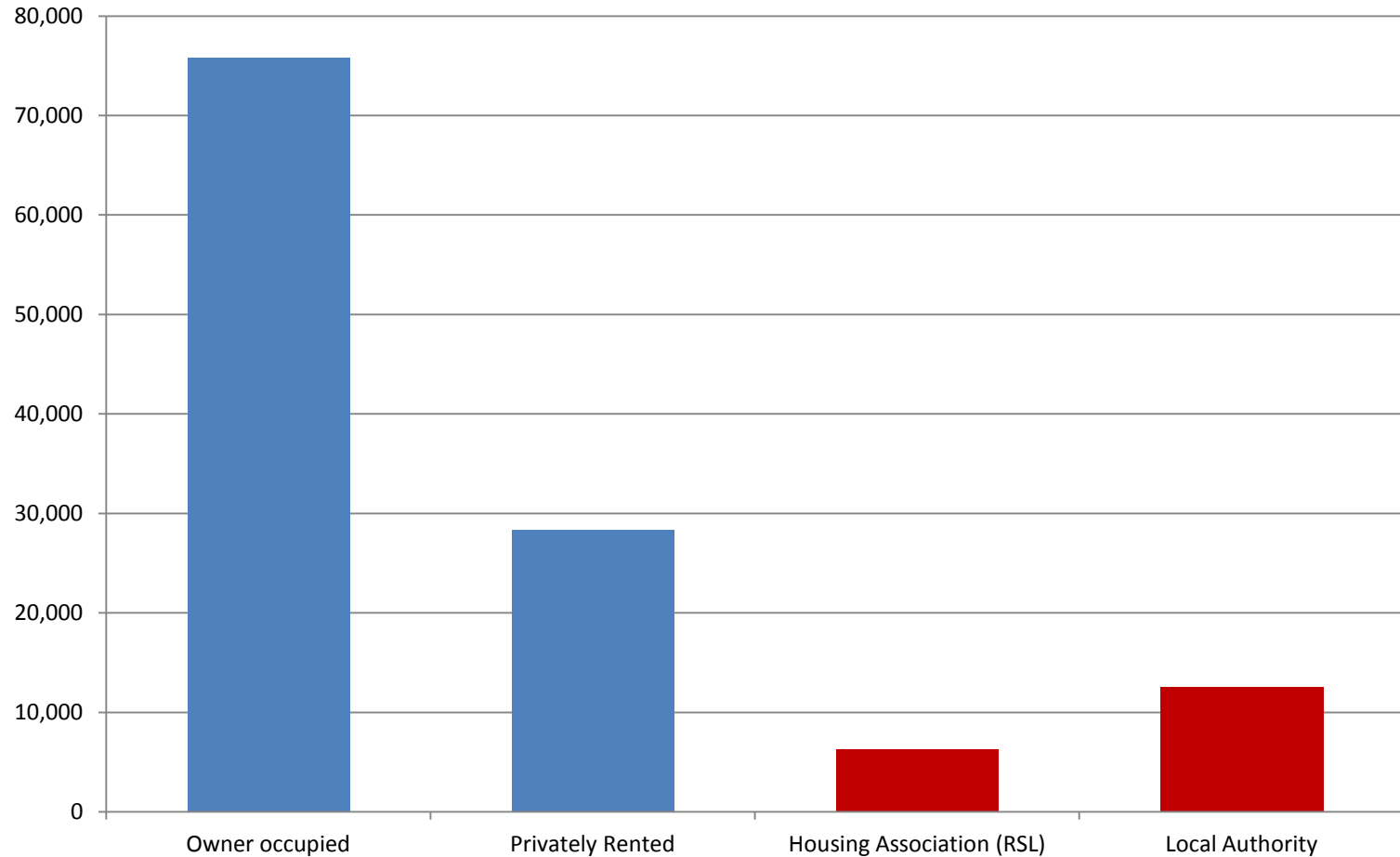
Snap shot: energy rating of housing



Source: Private Sector Housing Condition Survey 2008



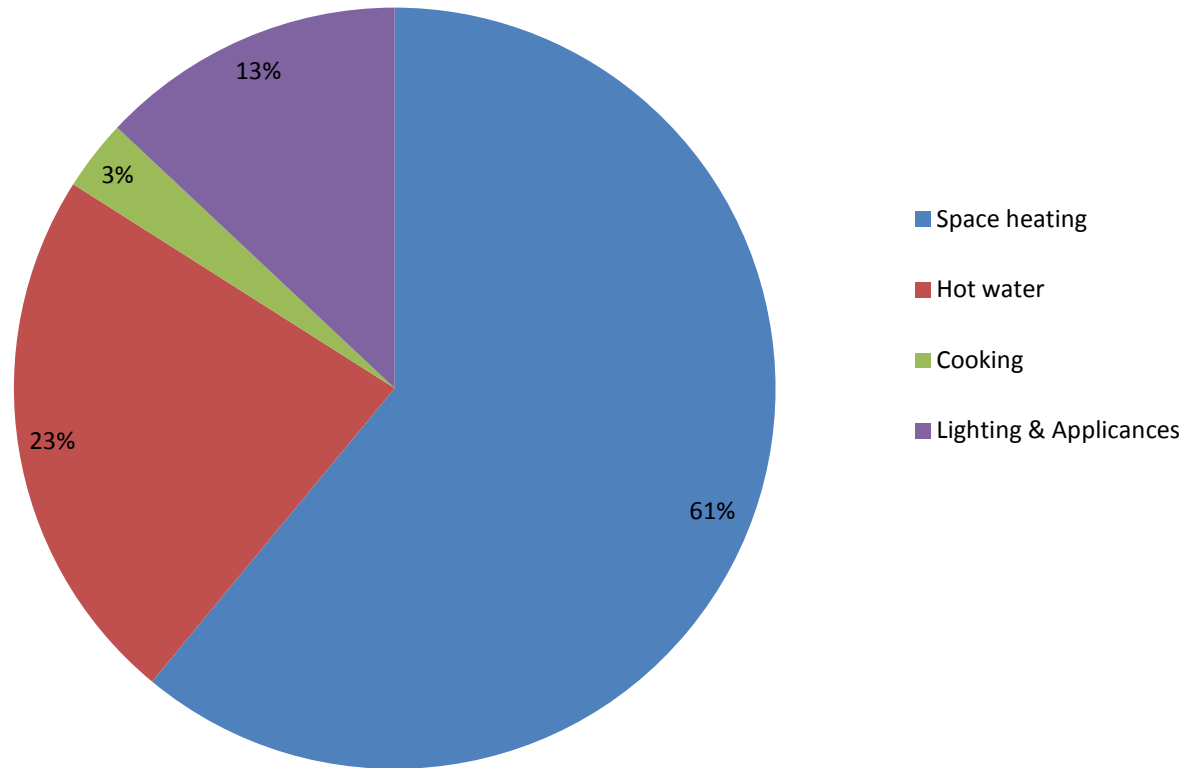
Snapshot: housing tenure



Source: *Private Sector Housing Condition Survey 2008*

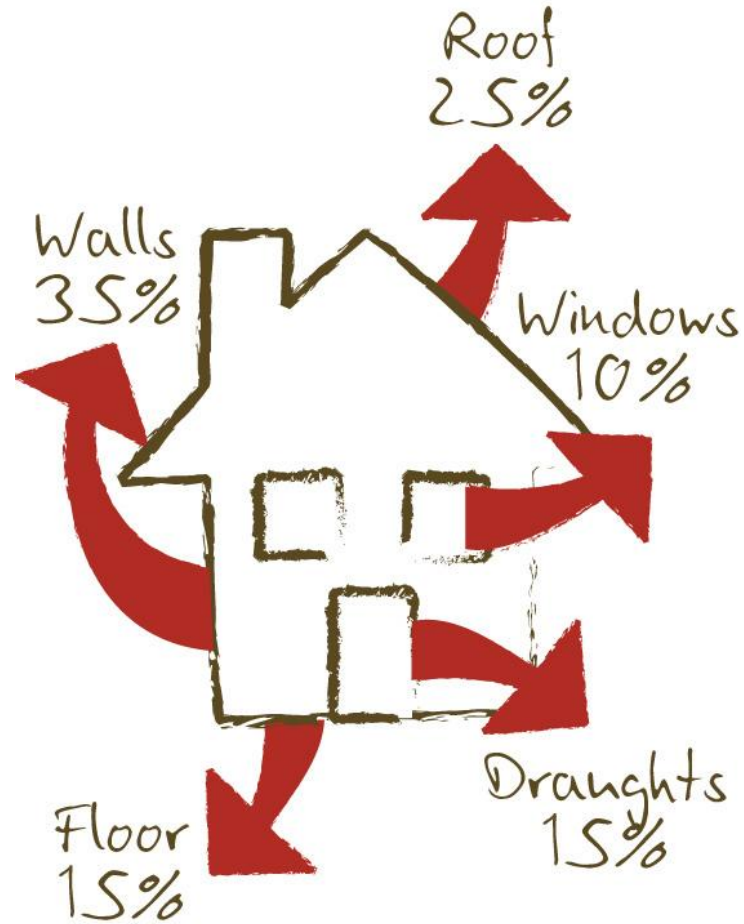


Patterns: where is energy used?



Typical 3 bedroom solid walled house

Patterns: where is heat lost?



Local business opportunity



- Lots of houses
- Lack of capacity
- Lack of expertise
- Lack of market awareness
- Opportunity for added value
- 2018 minimum EPC energy standard
- **Lots of opportunity for local business**
- **... but very uncertain marketplace!**

SWAP Project outline

- DECC 'LEAF' project in 2012
- Solid walled properties
- Desk study
- Explore opportunities
- **Whole house:** modelled range of improvements for all elements
- £15 to 25K budget
- Surveyed 25 homes
- EPC / full SAP surveys



Hierarchy of energy measures

1. Insulate

2. Make airtight

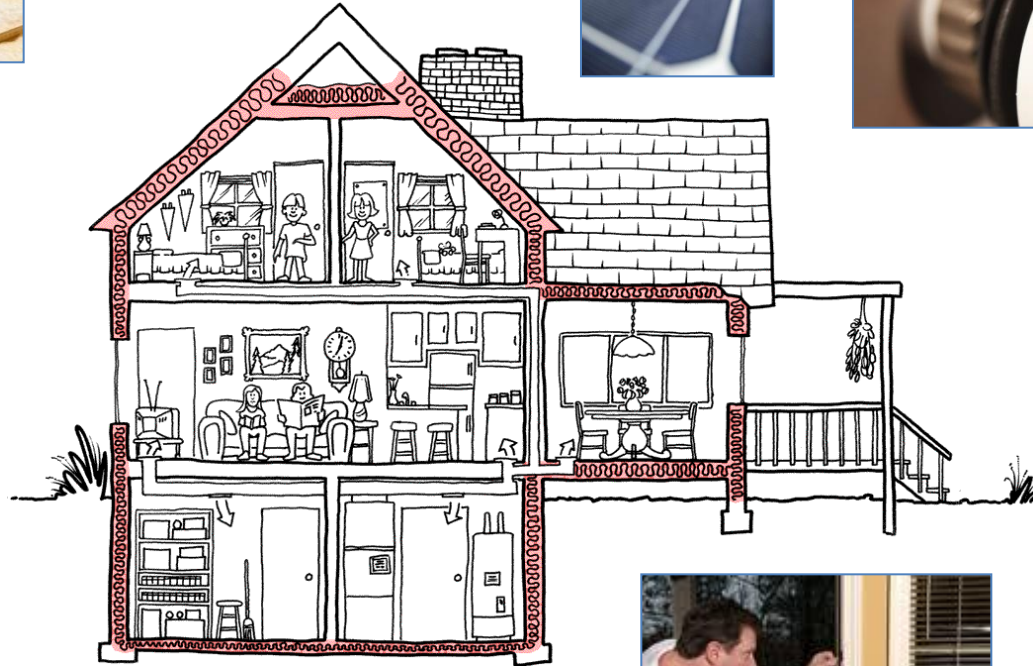
3. Adequate ventilation

4. Efficient heating & controls

5. Suitable renewable energy systems

Watch for trigger points!

Whole house retrofit – the approach



Considers all aspects of energy use!



Summary of houses / results

- All built 1846 to 1920
- 1 bed flats to 5 bed house
- 13 in conservation areas
- 3 with 'Article 4 Direction'
- Start between 'E' & 'C'
- Improved to 'B'
- **Average potential CO₂ savings of 45% !**



Green Deal Pioneer Places project

- DECC funded in 2013
- Local authority: BHCC
- Community partners
- **Kick start Green Deal!**
- **Demystify retrofit!**
- Generate demand
- Build local supply chain
- Network of show homes
- Eco Open Houses
- **Showcase the benefits!**



What is the Green Deal?

- Launched Feb 2013
- Energy Act 2011
- **Mapped retrofit journey**
 - 1. Assessment
 - 2. Finance
 - 3. Installation
 - 4. Savings / repayment
- **Can be supported by Home Improvement Fund**
- **Uncertain: will change!**



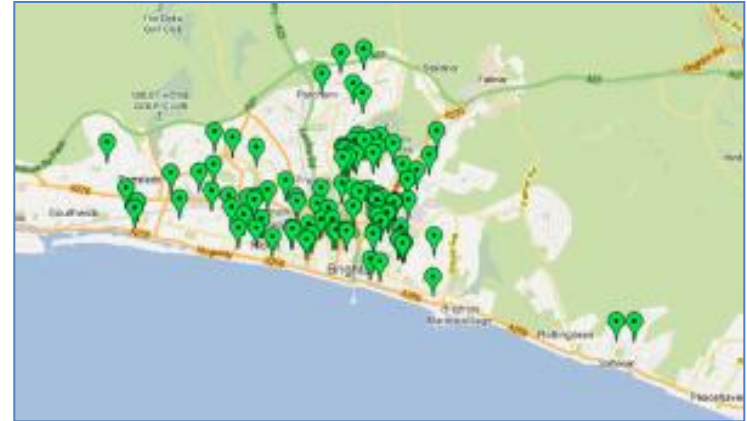
How does it work?

- Up to £10,000 (approx)
- Debt on meter - bill payer pays
- Repaid through energy bills
- **Measures meet 'golden rule'**
- Predicted savings must equal or exceed cost of work
- Accredited advisors & installers
- **DECC quick guides**



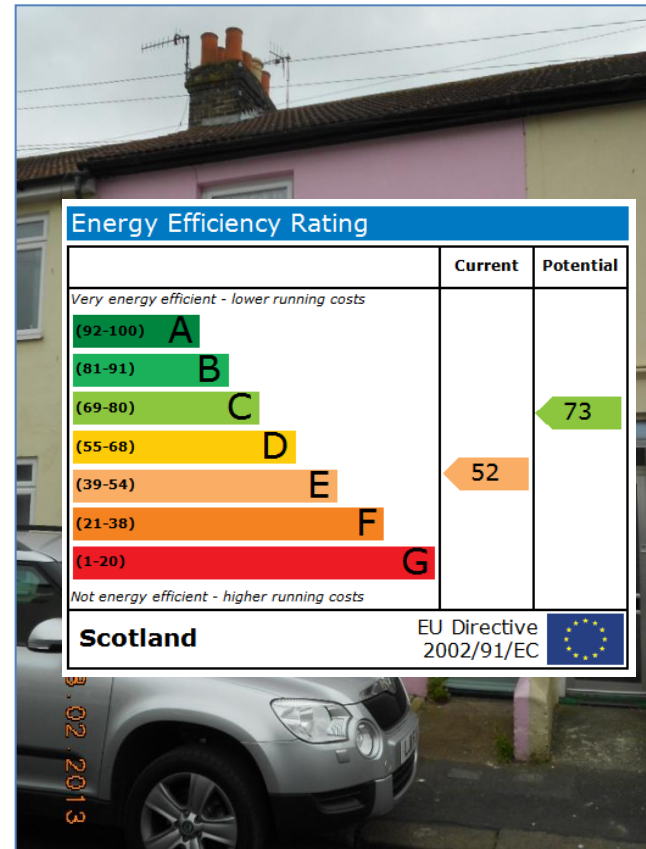
Milestones & deliverables

- Jan: preparation & comms
- Feb: 348 people interested
- Mar: 100 GD assessments
- Apr / May: 10 projects onsite
- Location, house types & age
- 6 'big' projects / 4 'small'
- ECO match / VAT modelling
- Planning advice notes
- **June: Eco Open Houses!**



Case study: 51 Gardener St

- Age: 1870's
- Area: Fishersgate
- Type: Terrace house
- Bedrooms: 2
- Floor area: 75m²
- Walls: solid
- EPC bills: £961 / £428
- Walls, boiler & controls





17.04.2013 11:31

17.04.2013 12:42





17.04.2013 11:31



17.04.2013 11:47



22.04.2013 08:30



23.04.2013 07:30



09.05.2013 10:52



14.05.2013 10:47



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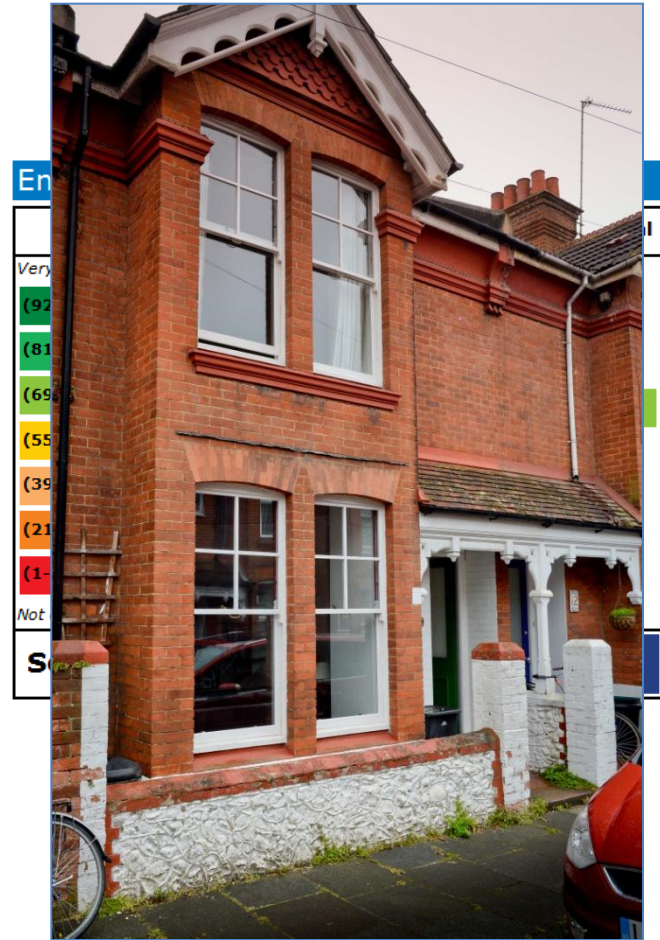
Renovation budget



Green Deal measure	Installation cost	Estimate annual savings	Repayment year 1	Cashback incentive
Solid wall insulation	£8,000	£123	£113	£650
Loft upgrade	£2,000			£100
Draught proofing	£500	£18	£17	£50
Condensing boiler	£1,800	£81	£61	£360
Heating controls	£500	£12	£13	£70
Low energy lighting	£200	£46	£29	
Total	£13,000	£280	£233	£1,230
ECO contribution	£2,000			

Case study: 14 Newport St

- Age: 1890
- Area: Lewes Road
- Type: Terrace house
- Bedrooms: 3
- Floor area: 112m²
- Walls: HTT cavity
- Bills: £1,074 / £600
- Walls, floor insulation





03.05.2013 08:26



08.05.2013 11:21





Renovation budget



Green Deal measure	Installation cost	Estimate annual savings	Repayment year 1	Cashback incentive
Solid wall: internal	£4,281	£68	£137	£650
Solid wall: external	£7,004	£85	£165	
Floor insulation	£1,421	£29	£57	£150
Insulate above bay	£181			
Draught proofing	£481	£7	£13	£50
Low energy lighting	£246	£50	£80	
Total	£13,614	£239	£452	£850
ECO contribution	£2,300			

Eco Open Houses 2013

- Peer to peer learning model
- Meet householders
- Real life stories
- Converts interest to action!
- 15 old & new houses
- June 2013
- 1,000 visits
- **‘Typical’ visitor:** 55 yr white home-owning female in full time employment



The poster features a grid of 12 house-shaped icons, each containing a different eco-friendly home feature or house exterior. The text is arranged in a clear, hierarchical manner, starting with the event name and dates, followed by the website URL, and ending with funding logos and a call to action.

eco open houses Two weekends in 2013
15-16 & 22-23 June

Eco Open Houses Brighton & Hove

www.ecoopenhouses.org

Visit new and renovated houses that demonstrate how to reduce your energy and water bills

With funding from

Department of Energy & Climate Change

Interreg

European Regional Development Fund
The European Union, investing in your future

Building Research Establishment
LEADER Development Initiative
Local Enterprise North East and West

Eco Open Houses Feedback

- **360** feedback forms (36%)
- **97%** *'learned something'*
- **99 %** Explained *'very well'* / *'well'*
- **93%** *'might'* / *'would'* influence to reduce energy in their home
- **Finance options considered:**
 - 47% savings
 - 36% Green Deal (28%) or ECO (8%)
 - 14% mortgage or loan
- **Barriers to action:**
 - 48% Finance
 - 25% lack of knowledge
 - 13% ownership issues



The poster for Eco Open Houses Brighton & Hove features a grid of 12 house-shaped icons, each containing a different eco-friendly home feature such as solar panels, a boiler, a conservatory, and a water tank. The text on the poster includes the event dates (Two weekends in 2013: 15-16 & 22-23 June), the website www.ecoopenhouses.org, and logos for the Department of Energy & Climate Change, Interreg, and the European Union.

eco open houses Two weekends in 2013
15-16 & 22-23 June

**Eco Open Houses
Brighton & Hove**

www.ecoopenhouses.org

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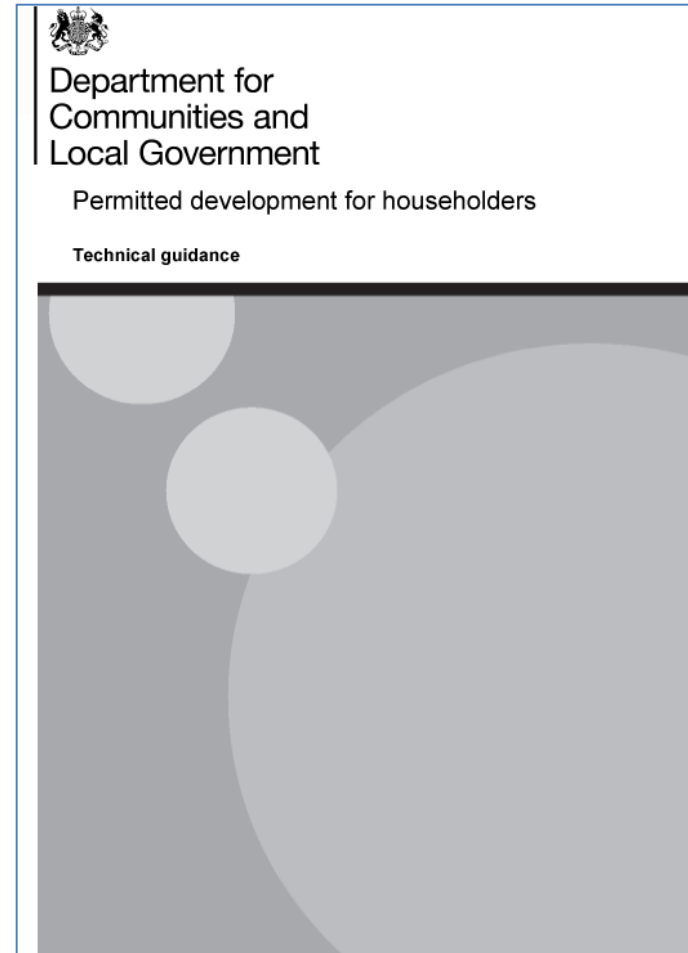
Department of Energy & Climate Change

Interreg

European Union

Streamlining & solutions

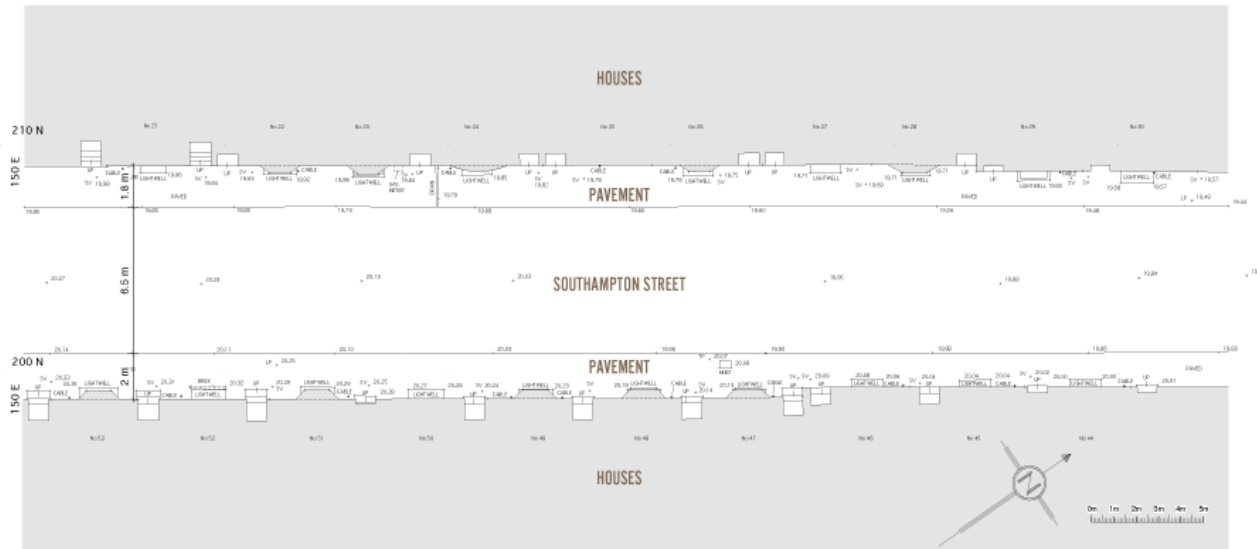
- EWI planning permission
 - Adoption of DCLG guidance as ‘improvement’
 - **Permitted development!**
- Oversail licence
 - Building / contractor insurances
 - New standard licence
 - £107 one off fee
 - **Less paperwork!**



INSULATING A STREET: BRIGHTON CASE STUDY

THE BUILDINGS

THE MEASURED SURVEY : PLANS



THE MEASURED SURVEY

Detailed measured survey in plan of Southampton Street describing outline of No.s 21 - 30 and 44 - 53, including bay windows, case-ment & sash windows, basement light wells, steps into covered entrance porches, as well as all features such as gulleys, access traps etc. found on the pavement.



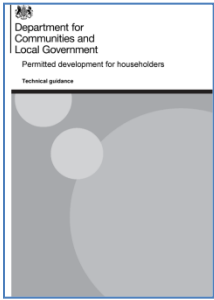
BBM
SUSTAINABLE
DESIGN

for more information:
web: www.bbm-architects.co.uk
email: info@bbm-architects.co.uk
tel: 01273 481633

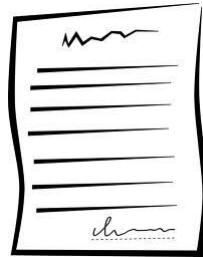
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Finance is final barrier!

Low Fat VAT @ 5%



- VAT Notice 708/6
- Reduced rate for energy saving materials & labour
- Housing / charity buildings
- On invoices / bills
- Split invoices!
- Cannot be reclaimed by individuals: charge less
- Boilers , glazing & prof fees at standard rate (20%)



Current retrofit VAT situation

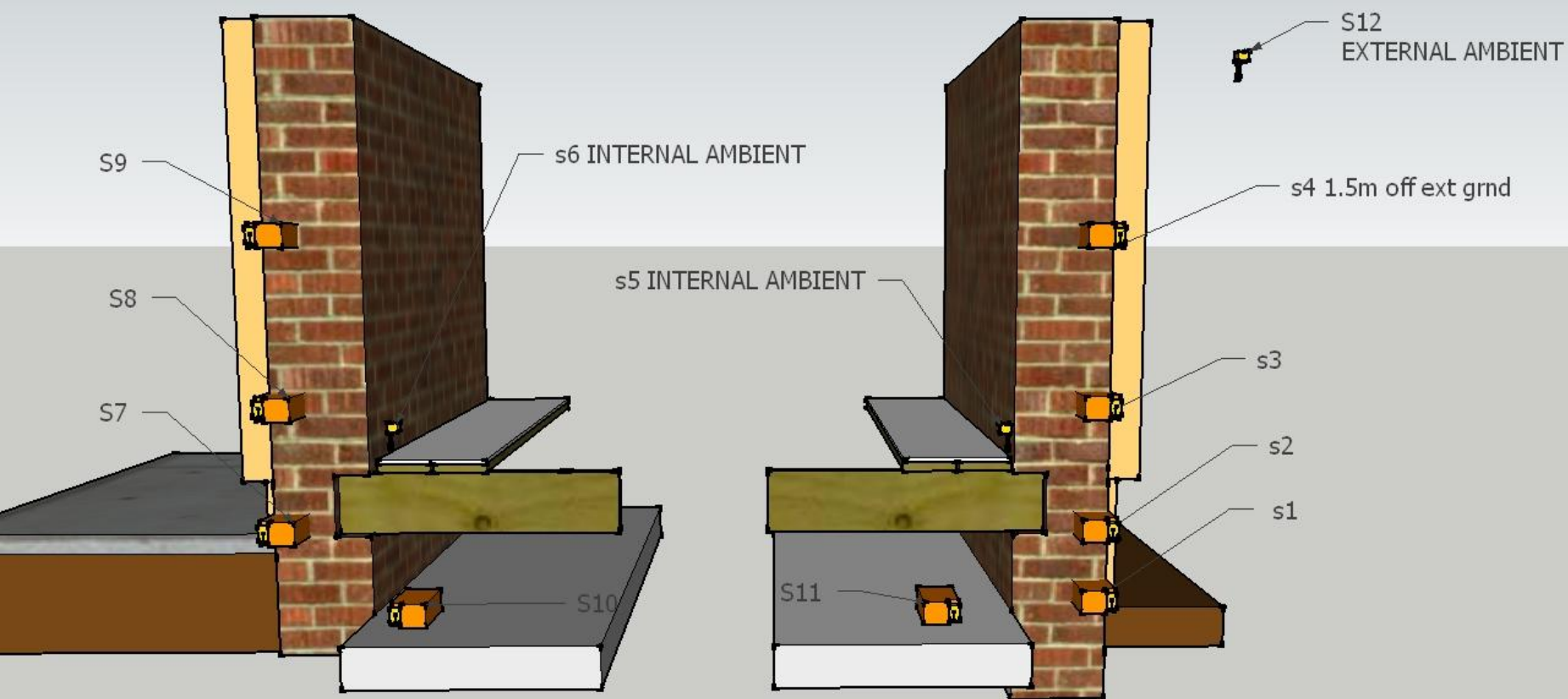


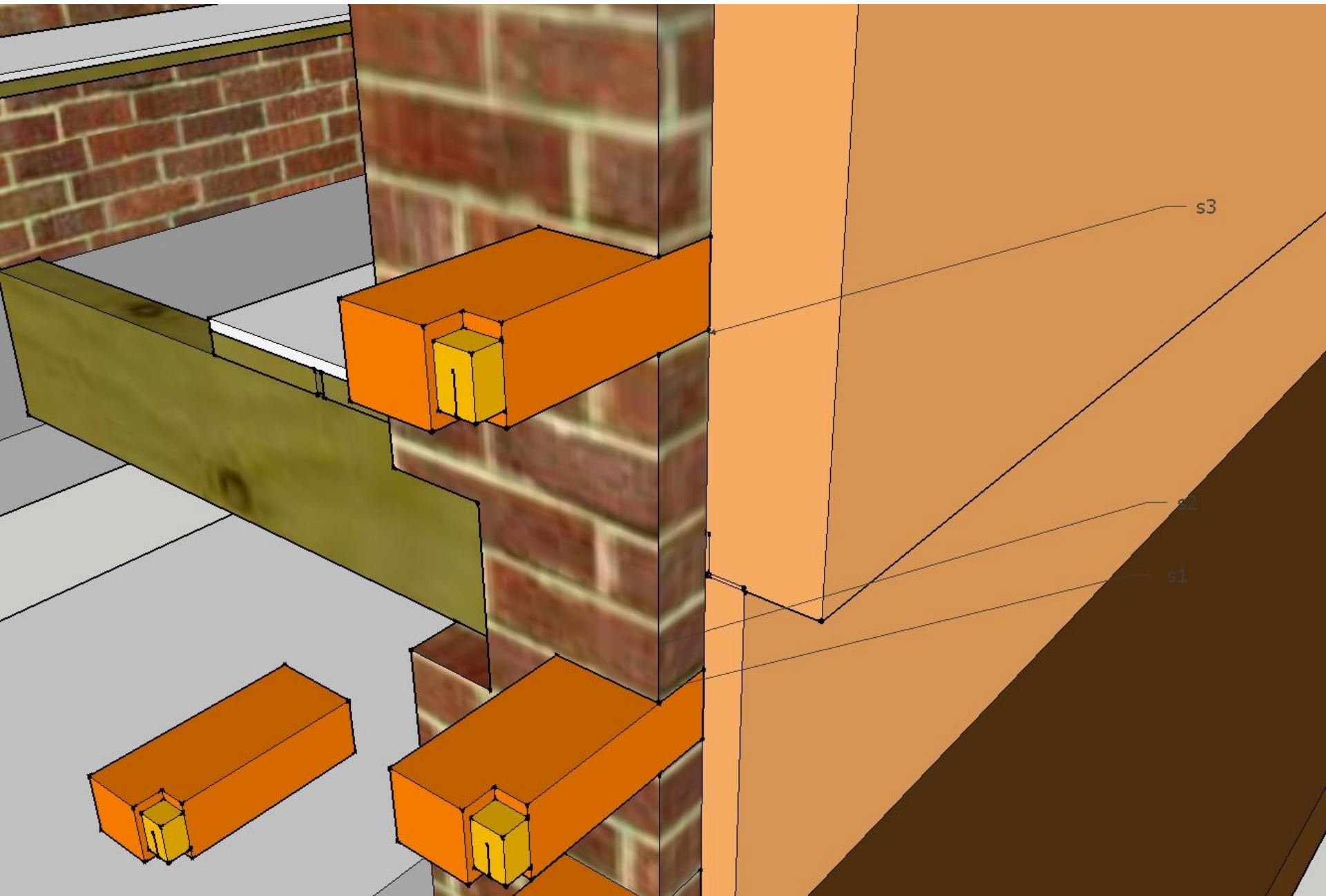
- Change for charities in July 2014
- Case C-161/14 Commission v United Kingdom
- EU court ruling:
 - UK failed to comply with VAT Directive Annex III
 - 1. ‘Provision, construction, renovation and alteration of housing, as part of a social policy’
 - 2. ‘Renovation and repairing of private dwellings’
 - **Installation of ‘energy saving materials’ don’t fall in either category – it’s illegal!**
 - **UK government position now uncertain**

Energy & fabric monitoring

- What was proposed:
 - Energy: MeasureMyEnergy
 - Fabric: Omnisense
- What we did:
 - EWI project
 - IWI project
- Timing & resourcing
- No baseline
- **Thanks to Andy Simmonds & Tim Martel**









24.04.2013 12:21

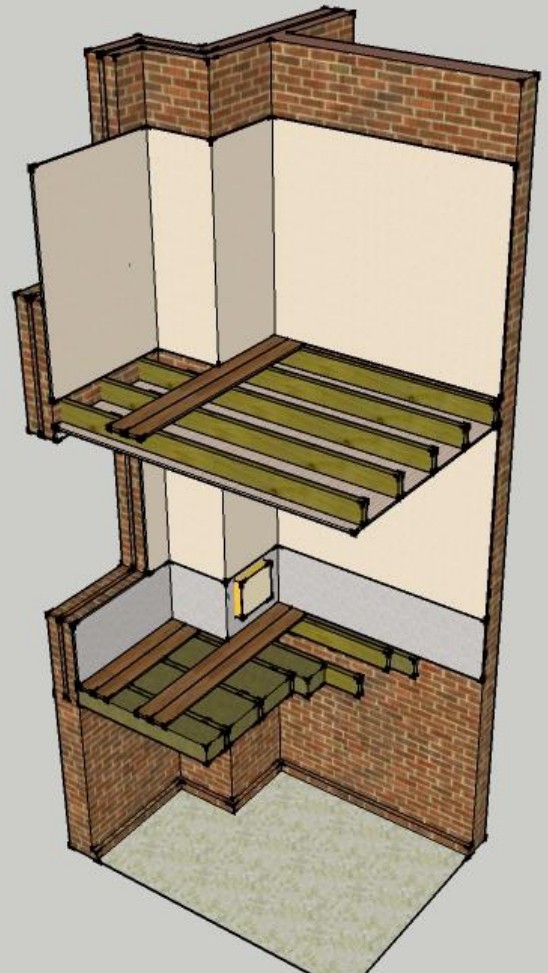
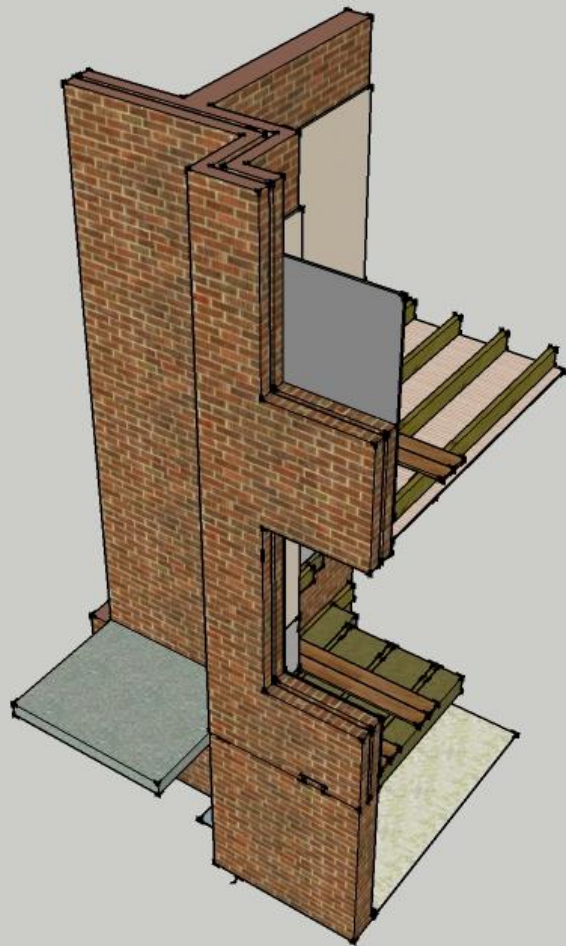


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EWI project results

- **High mould risk:** seems to be from existing moisture trapped in the wall
- **Very slow drying:** drying outwards usually most effective path, but the vapour resistance of the material effectively blocks this route, it can only dry inwards
- **Garden wall:** appears to be feeding moisture into the masonry of the main house, keeping it damp





DownSense ID: 195503F8
Barcode

DownSense ID: 195503F8
Barcode

DownSense ID: 195503F8
Barcode

10.05.2013 09:00

IWI project results

- **Drying path:** almost all inwards
- **Capillary bridging** of the cavity by perpendicular course of bricks
- **Summer** dries out a little / **winter** moisture
- **Glaser** indicates there could be condensation on the outer leaf
- **Performance:** not as good as expected

Lessons learned



- Steep learning curve!
- DECC timeframe: on time & on budget!
- Timing of events!
- Flexible bureaucracy!
- Contractors & quality, e.g. thermal bridges
- Communication: tenant's in situ
- Improved monitoring & resources
- Benefits of scale
- **Thanks to Ben East & Maria Hawton-Mead**

Summary & conclusion

- Every house is a potential retrofit!
- Raise consumer awareness
- Removal of barriers
- Identify areas of opportunity
- Benefits of scale
- Partnership working
- Heritage detail – Sytex
- **Finance / PAYS is the key?**

Thanks for listening

- www.lowcarbon.co.uk
- www.earthwiseconstruction.co.uk
- mischa@lowcarbon.co.uk
- 01273 766 631 or 07974 122 770