

parity
eco
solutions

Brighton, Green Architecture Day 2008

Eco-Renovation to Minimise
Energy and Water
Consumption

Russell Smith 1st March 2008

parity
eco
solutions

Introduction

- The Motivation
- Our Demonstration Project
 - The Approach
 - Key outcomes
- Providing solutions
 - Appropriate Measures
 - Appropriate Mechanisms

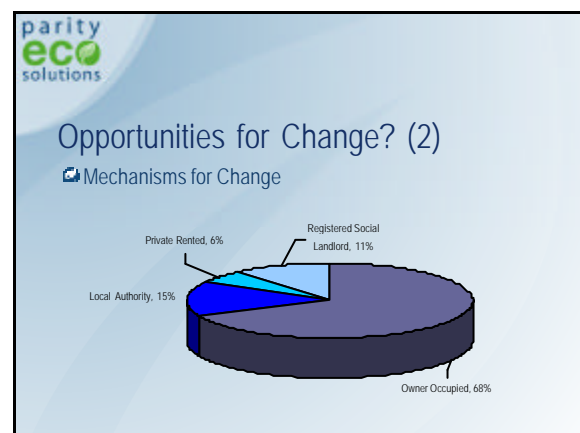
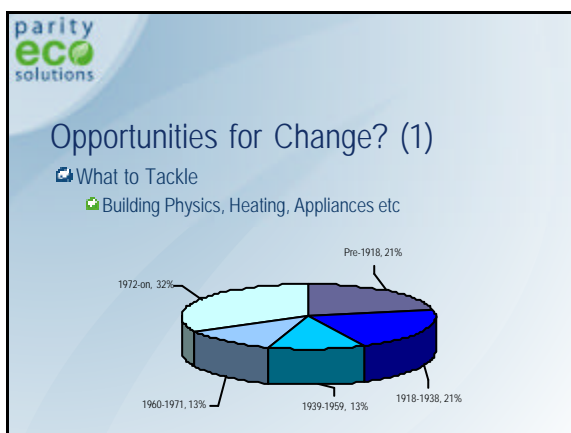
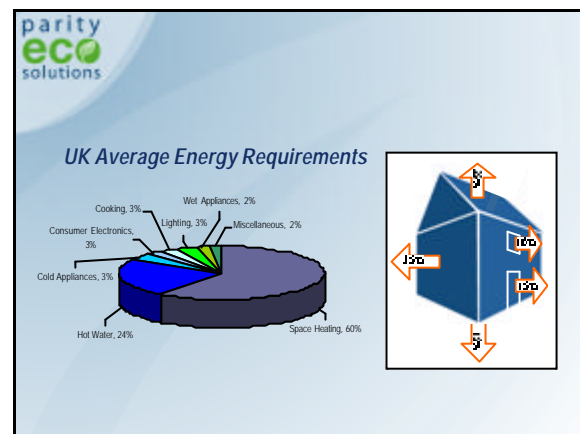
parity
eco
solutions

The Motivation

- Statistics speak volumes
 - Kyoto Targets
(60% Reduction on 1990 levels of CO₂ by 2050)
 - 27% of all UK Energy is Domestic
 - Rate of Change of Renewal
(22m homes – change/add 150,000 per year)

"75% of the houses that we have today will be here in 2050 so we need to remove barriers to their maintenance and upgrade now"

Sustainable Development Commission, "Home Truths", March 2006

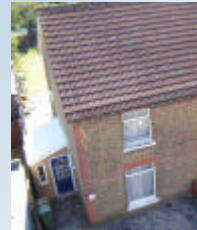


Opportunities for Change? (3)

- ☑ Costs and Benefits for all situations
 - ☑ Range of options
 - ☑ Availability
 - ☑ Performance

Demonstration Project

- ☑ Victorian, Built 1870
- ☑ 'Conventional' Semi-Detached
- ☑ Solid Walled
- ☑ No south facing roofs
- ☑ No insulation
- ☑ 6 different window types
- ☑ High Ground Levels
- ☑ Damp

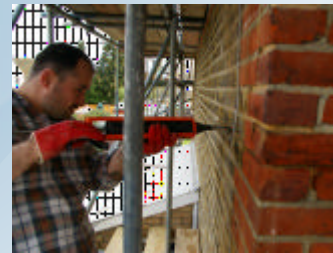


Demonstration Project – The Philosophy

- ☑ Range of measures
- ☑ Data to fill gap in UK knowledge
- ☑ Latest thinking
- ☑ Materials/systems available to anyone
- ☑ 'One room at a time'
- ☑ Use approaches that will be most widely accepted

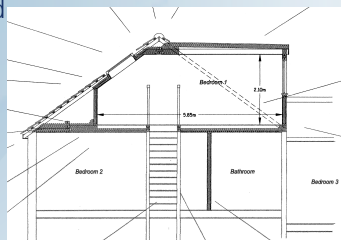
Renovation Required

- ☑ Structural repairs
- ☑ Re-wiring
- ☑ Windows
- ☑ Damp-proofing
- ☑ Extension



Renovation Required

- ☑ Structural repairs
- ☑ Re-wiring
- ☑ Windows
- ☑ Damp-proofing
- ☑ Extension



Renovation Required

- ☑ Structural repairs
- ☑ Re-wiring
- ☑ Windows
- ☑ Damp-proofing
- ☑ Extension



parity eco solutions

Renovation Required

- ☑ Structural repairs
- ☑ Re-wiring
- ☑ Windows
- ☑ Damp-proofing
- ☑ Extension



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

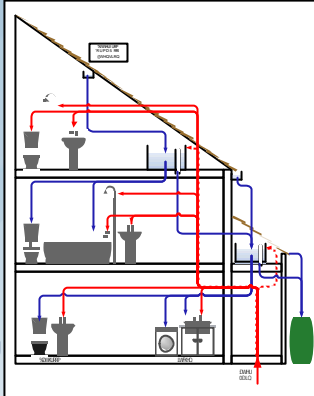
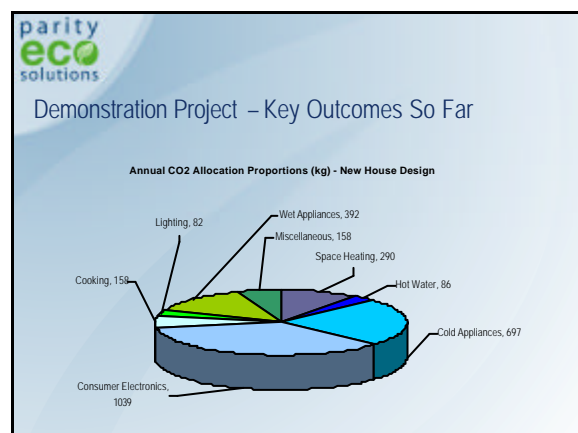
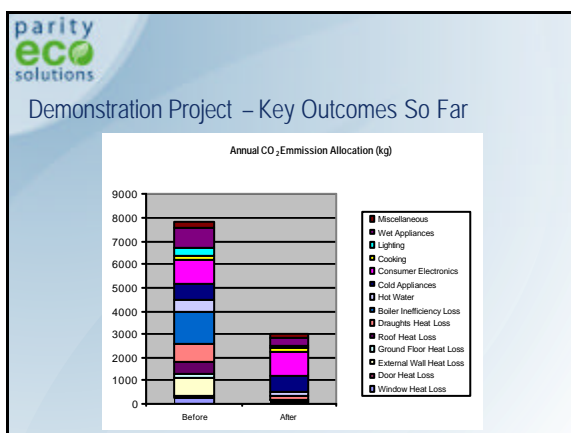
- ☑ Energy
 - ☑ Heating
 - Insulation – x8
 - Underfloor Heating
 - Biomass / Condensing
 - Solar Thermal
 - ☑ Electrical
 - Appliances
 - Bulbs
- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances



parity eco solutions

Measures – 'Eco'

- ☑ Water
 - ☑ Rainwater Harvesting
 - ☑ Appliances

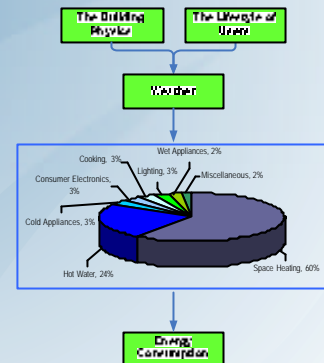


Demonstration Project – Key Outcomes So Far

- ❑ Eco measures are 15% of total refurbishment cost
- ❑ Approx 5% of floor area has been lost
- ❑ Economic pay-back is 7-8 years on average.
- ❑ Design shows CO₂ reduction of +75%
- ❑ 55% reduction in CO₂ from draughtproofing and insulation
- ❑ Costs heavily associated with logistics and ease of install



Appropriate Measures (1)



Appropriate Measures (2)

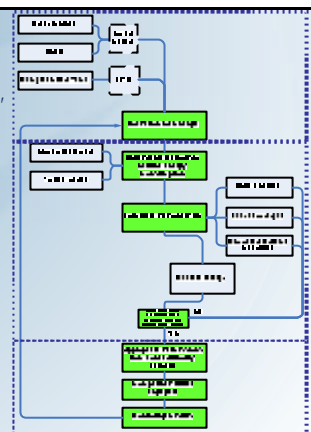
- ❑ Options appraisal for each home
 - ❑ Software as a guide
 - ❑ Experience is crucial for 'appropriateness'
 - ❑ Directly compare measures – Payback: CO₂ delivery



- ❑ Timing of measures
- ❑ Lifestyle of Householder



Appropriate 'Mechanisms'



Our Services

- ❑ Designing the most appropriate options
 - ❑ Individual dwellings
 - ❑ Stocks of dwellings
 - ❑ Include innovation in construction processes
- ❑ Training the supply chain
- ❑ Carrying out research
- ❑ Implementing demonstration projects
- ❑ Project Management
- ❑ Site Management
- ❑ Monitoring of Buildings



Summary

- ❑ Engineering is the easiest part
- ❑ Strategy is the key – single/stock level
- ❑ Capacity building Parity Eco Solutions
- ❑ Delivery Parity Projects

info@parityecosolutions.com

0208 296 0863

(www.parityprojects.com)