

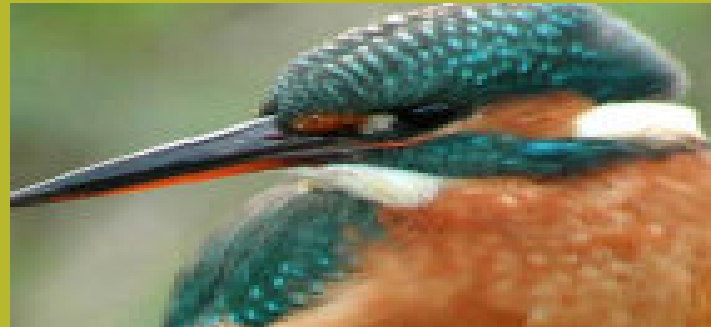


# The Road to Low Carbon Homes

Stamford Brook – Overview of Research

Towards 2016 – Research and Regulation

Joe Isle  
Director of Strategic Developments



*“Three partners one vision”*

# Dunham Massey Estate

- Partnership with National Trust
- Over 3000 acres of parkland
- Dunham Massey Hall
- Home to over 120 families including 18 working farms
- 710 new homes
- The Vision



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STAMFORD BROOK  
INSPIRED LIVING

# Sustainable Performance Targets

- Over 50 KPI's
- River Restoration
- Minimisation of Water
- Waste Minimisation
- Materials Performance Standards
- Biodiversity / Wildlife corridors
- Stewardship/Trust
- Community Woodland
- Partners in Innovation



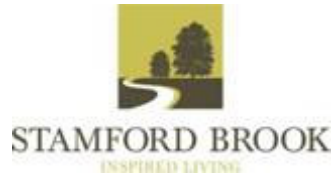
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# Partners in Innovation

- CLG
- Leeds Met
- Developers
- Supply Chain
- Building Control
- Masonry Construction
- Prototype standards for energy and ventilation 2001  
Prof R Lowe and Prof M Bell



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# Energy Efficiency Objectives

- Industry and Academics in partnership
- Step Change in Performance
- Robust Design
- Permanent Measures in building
- Practical Construction
- Transferable
- Influence future standards



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# Key Elements

## Dwelling Performance

- Walls 0.25
- Floors 0.22
- Windows 1.3
- Roofs 0.16

## Thermal Bridging

- Wall Ties
- Junctions
- Lintels

## Airtightness

## Ventilation and Heating

## Solar Orientation /Shading



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# The masterplan



# Planning the layout



- Plan to PPG3
- Minimise over shadowing sun 13.5deg mid winter
- Solar Orientation



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# Design Process

- Innovative and sustainable measures
- Iterative Process
- Factory Test – windows , wall ties
- Site Tests – wall construction, parging
- Re design
- Robust Details
- Build
- Test
- Amend Design if necessary



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# Construction Training




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INDUCTION to SITE TRAINING PROGRAMME

CERTIFICATE OF ATTENDANCE

This is to certify that..... attended the induction to the site training programme

Awarded by:..... Date:.....

**Research project**

- LeedsMet is asking the whole construction industry what they think about building to high environmental standards - designers, construction staff, sales teams, building control and suppliers
- findings will directly inform next revision of building regulations
- LeedsMet want to chat to construction staff and photograph construction details and will record and pass on ideas and opinions
- LeedsMet will offer guidance and feedback on the construction process but does not have a supervisory or checking role

**Documentation referred to**

- construction specification; site training plan; robust construction details

**Thermal bridging**

- wherever possible, the insulation thickness will be maintained where a construction junction occurs

**Airtight construction will be achieved by:**

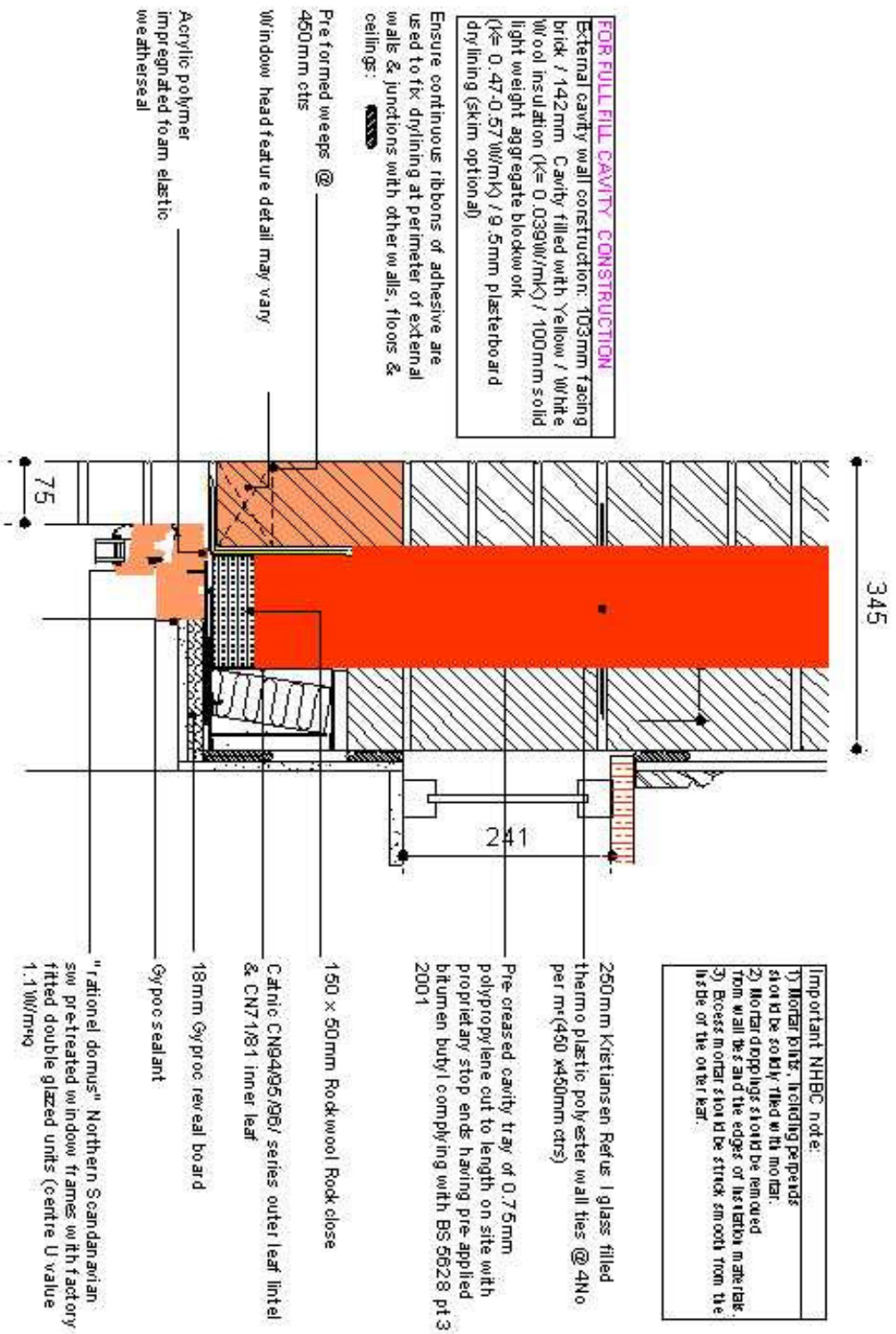
- applying a pargeing layer to act as the primary airtight barrier
- sealing all service penetrations
- taking extra care with known leakage routes
- feeding back into a continually developing site training programme
- additional site supervision
- (note: sealing the plasterboard layer may not improve leakage through the airtight barrier)




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- Construction Specification
- Site induction for all trades -from supervisors to workforce
- Continual assessment and monitoring

# Robust Details



WINDOW HEAD DETAIL

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# Airtightness Targets

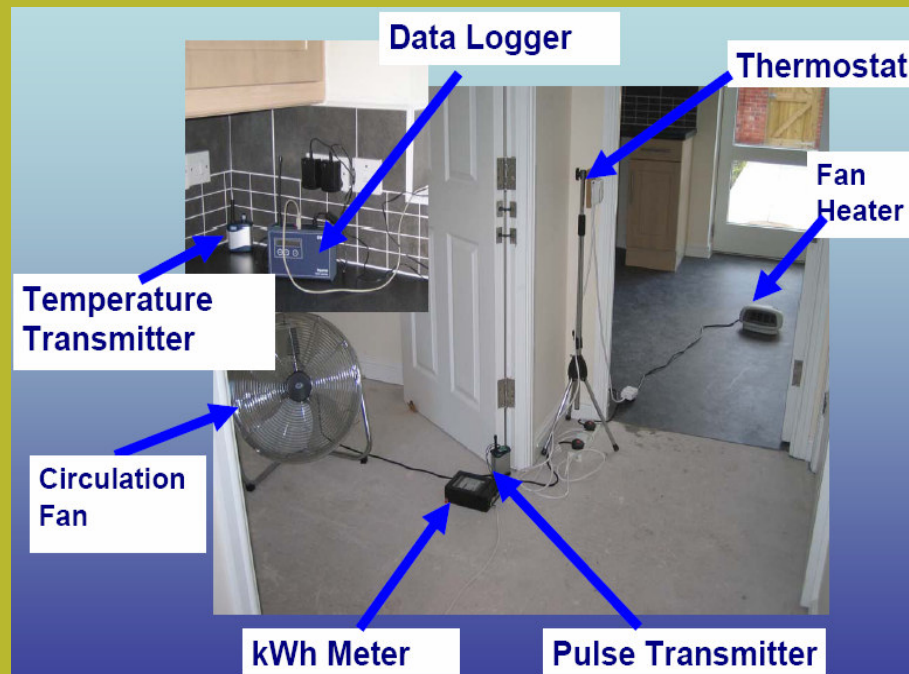
- National Average 9.5 m<sup>3</sup>/h/m<sup>2</sup>
- Target 5 m<sup>3</sup>/h/m<sup>2</sup>
- Wet plaster preference
- 3mm parging coat
- Improved spec
- Results mean 4.5 m<sup>3</sup>/h/m<sup>2</sup>



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# Monitoring

- Wireless Technology
- Heat Loss
- Temperature
- Humidity
- Energy Use
- Air Leakage
- Air Flow
- Customer Perception



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# Examples of Unique Features

- Polyester /Glass Wall ties removing Cold Bridge
- Walls 345mm
- Double Lintels removing Cold Bridge
- Optimum Window Position for Energy Efficiency
- Parging Coat for Air Tightness
- Air Leakage Best Practice
- Workmanship/Trade Specs
- Limiting Solar Shading
- Partnering with Academics



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# Results and Issues...



- Research for Building Regulations 2010 and 2016

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# Towards 2016 – Research and Regulation

- Drivers for change
- Energy White Paper
- EU Directive on the Energy Performance of Buildings
- Stern Report
- Code for Sustainable Buildings
- Merton Rule on Renewables





# Towards 2016 – Research and Regulation

- Who sets the standards?



# Towards 2016 – Research and Regulation

- level 4 passive house
- above that site wide technology
- including 10% - 20% Renewables



# Towards 2016 – Research and Regulation

- Above Level 4
- Majority Contemporary Design?
- Is traditional build and design left behind?
- Small builder



# Towards 2016 – Research and Regulation

- what renewable technologies are proven?
- who knows the actual coefficient of performance in situ?
- what are customer care problems?
- what does the homeowner think?
- Will the homeowner maintain and replace in 12- 15 yrs?



# Towards 2016 – Research and Regulation

- Renewables – should building regulations regulate?



# Towards 2016 – Research and Regulation

- Will there be industry wide research?



# Towards 2016 – Research and Regulation

- Are we building in problems?
- Are off site solutions more robust?
- Who is running the show – technicians or politicians?



# Towards 2016 – Research and Regulation

...we need more quality and sustainable homes...

Yvette Cooper October 2007

