



Measured performance & occupant feedback lessons learned from Wimbish

by

John Lefever
Regional Head of
Development
Hastoe

Martin Ingham
Strategic Carbon
Management Consultant
Linktreat Ltd



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Hastoe overview

- 50 years old
- 5,000 homes
- Working in more than 200 villages and 70 local authorities
- Subsidiaries:
 - Hastoe Wyvern
 - Sustainable Homes





Recent Awards

September 2014

'Best Rural Development' – Devon Rural Housing awards

July 2014

'Passivhaus Trust Award' – Burnham Overy Staithe

'Green Apple Award' – Gold

June 2014

'LABC Award' - Best Affordable New Housing

May 2014

'Housing Excellence Award' for energy efficiency

April 2014

'Top 50 UK Affordable Housing Developments' - Inside Housing

February 2014

'Most innovative use of renewable technology' - Housing Innovation Awards

November 2013

'Sustainable Developer of the Year' - What House? Awards - Gold

'Housing association of the Year' - What House? Awards – Bronze

September 2013

'Best Rural Innovation' - National Housing Awards



Why Hastoe is committed to Passivhaus

- Low (ish) technology – Contractors risk
- Costs should fall
- European experience
- **Benefits to residents** Comfort, low running costs, easy, better use of internal space
- But: Cost more to Build - values don't reflect this

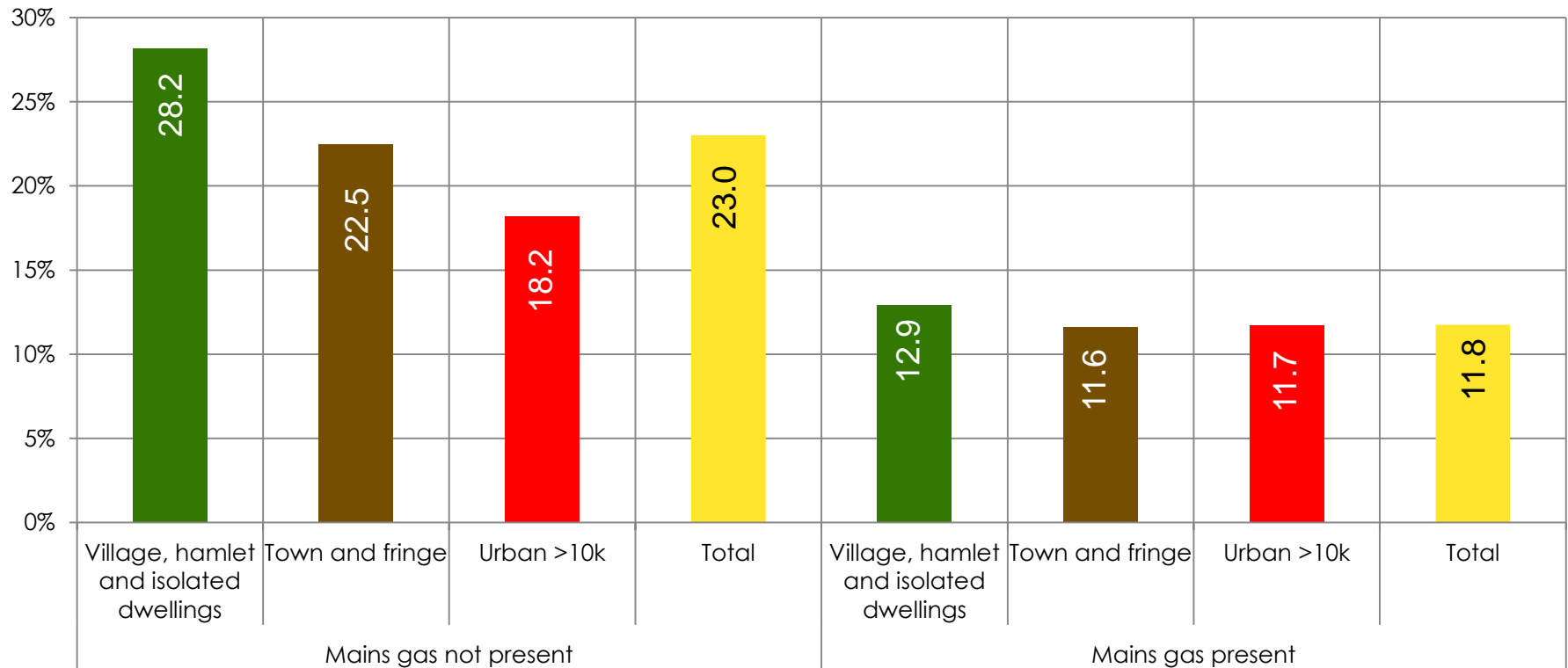


Affordability

- Average 2013 gas bill (DECC) - £729
- Wimbish gas results
 - 3 bed house £120
 - 1 bed flat £52
- Affordable Rents
- Capital costs
- Rent flexibility essential – Ways to cover costs



Households in fuel poverty





Passivhaus - Wimbish





The following schemes are complete or on site with some Passivhaus in the Hastoe Eastern region

- Ditchingham – 14 homes
- Burnham Overy Staithe – 6 homes
- Horseheath – 3 homes
- Hatfield Heath – 14 homes
- Outwell – 14 homes
- Wimbish – 14 Homes
- 61 out of the 65 homes are Passivhaus more being designed



Way forward

- Must get RICS to recognise Passivhaus homes should be valued higher
- Build more Passivhaus homes both Social & Private



Wimbish Passivhaus Measured Performance & Occupant Feedback

Martin Ingham

martin.ingham@dsl.pipex.com

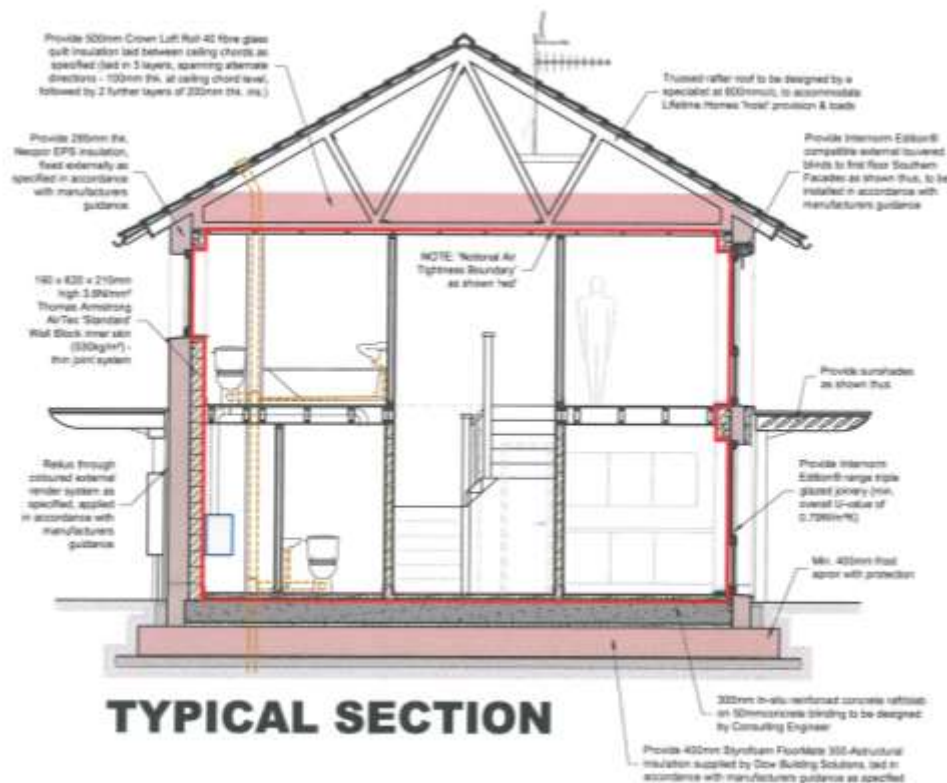
m.ingham@uea.ac.uk



Acknowledgements



Context



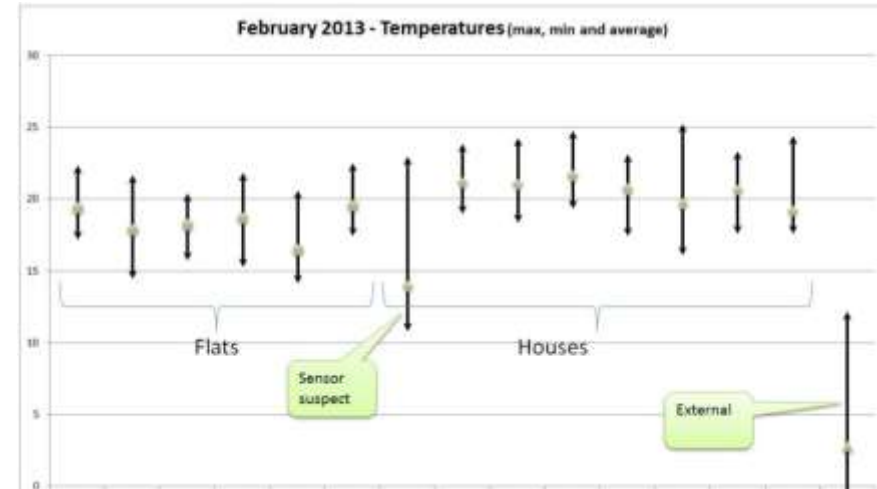
Wimbish Performance

- Quantitative monitoring:
 - Energy, thermal comfort, air quality, water, ventilation, renewables
- Qualitative assessments:
 - Health and wellbeing
 - Satisfaction with design, lighting, controls, space, acoustics, utility costs etc.
- + Hastoe concerns: value for money; ease of maintenance; impact on rent arrears.



Heating Bills and Winter Comfort

- Must have comfort as well as low bills
- Small heat supply via MVHR, room thermostat *slow response needs learning*
- Kept warm in the coldest month
- Tendency to like being warm: but little extra heat needed in a Passivhaus (minimal rebound).



What the residents say:

"never feeling cold"

"no longer use hot water bottles and extra blankets to keep warm in winter"

"(we) hardly ever use heating"

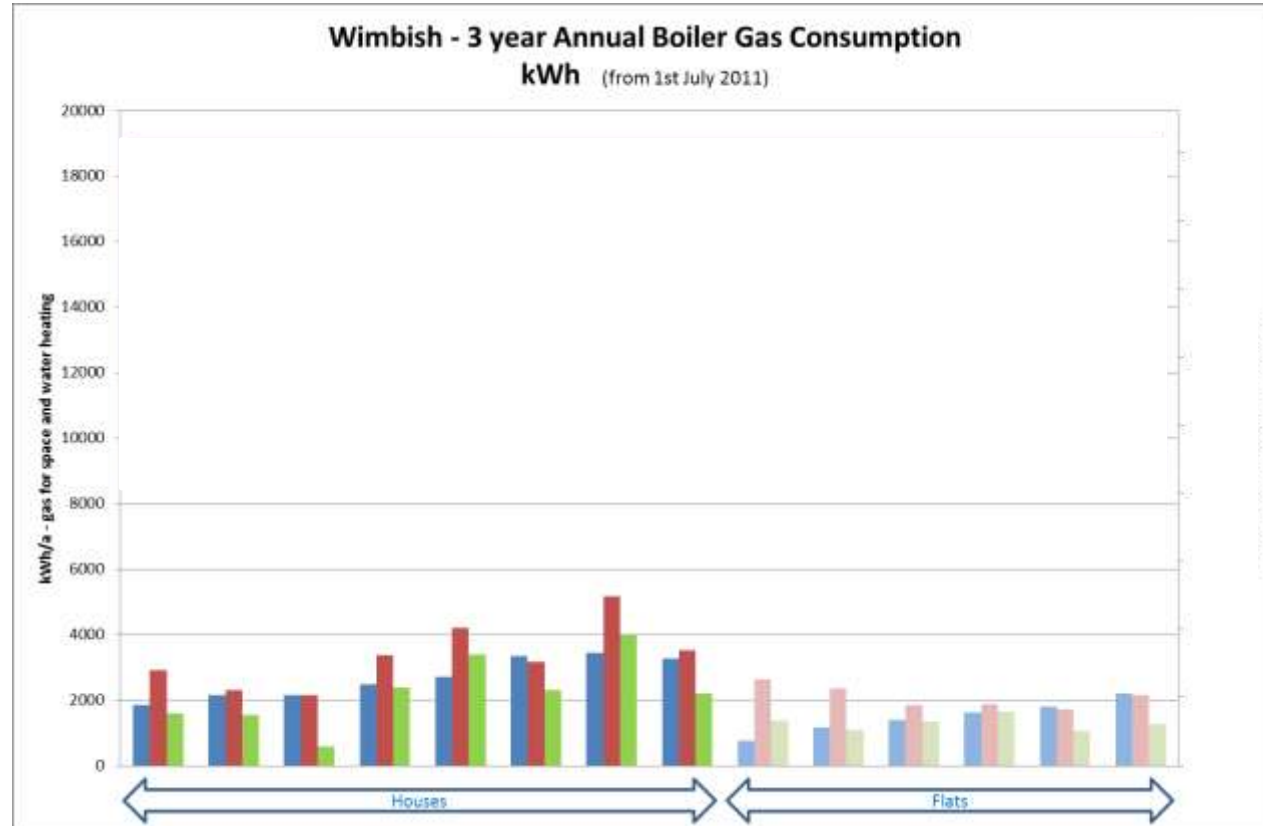
Can place furniture where they like.

Loving their dry homes – no condensation.

Delighted that some are able to report annual gas bills as low as £120.

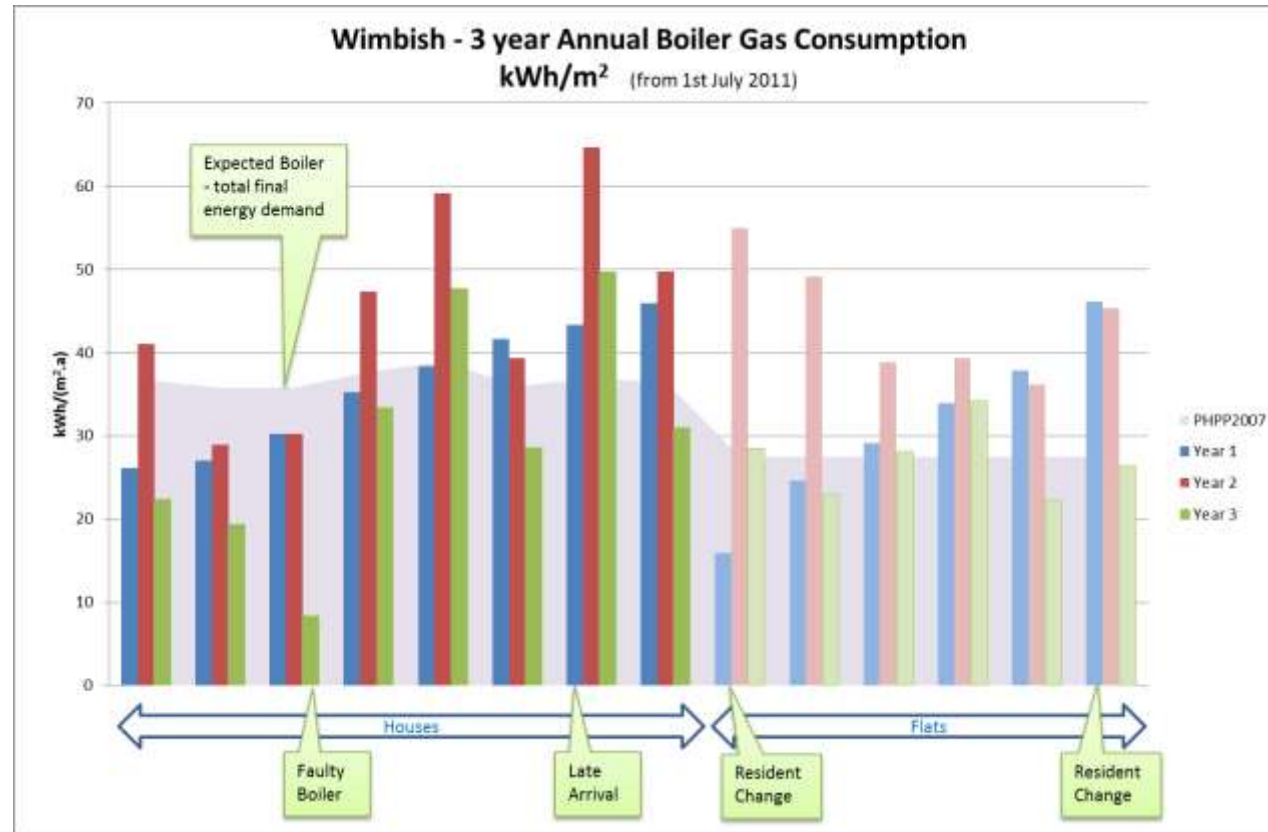
Heating Bills and Winter Comfort

- Gas only used by boiler, supplemented by solar thermal
- Huge saving from Ofgem's typical values
- Tariffs penalise low consumers, Equigas one of the best.



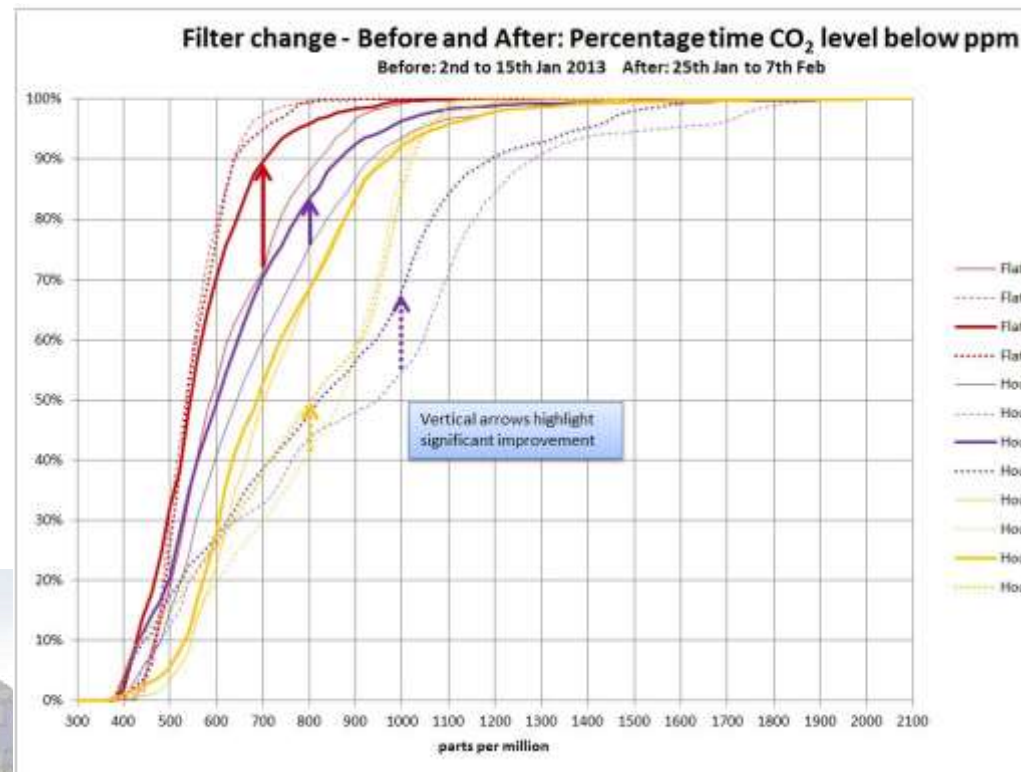
Heating Bills and Winter Comfort

- Comparison with PHPP gas demand
- Houses – on Passivhaus target
Flats – good, but not quite to expectation
- Year 2 – cold winter
- Sensitive to number of occupants and to electricity use – Test in PHPP.



Air quality

- CO₂ monitored in 2 locations in 3 properties
- **Flat** 2-bed house 3-bed house
Solid = lounge; dashed = bedroom
- Except one bedroom, <10% above 1000 ppm
- Air quality was suffering before filter change
Before/**After** filter change
- Important to get the ventilation right, and to monitor.



Occupant Feedback

- Major Hastoe support commitment
- Numerous interactions/interventions by the study team: UEA PhD research, interviews, visits, resident evenings and Building Use Studies (BUS) surveys
- Valuable feedback on what was working well, and what wasn't – lessons for design and for education
- Delighted with low bills, uniform comfort, usable space
- Health and wellbeing good.



Occupant Feedback

- Some warmer than they would like in hot weather
 - But those complaining most were not the hottest
 - Those complaining most were those who felt least in control
 - Blinds – use more for privacy than solar control
 - Reluctance to have windows wide for night-cooling security risk? Lets insects in?
- Unanimous that they would not trade for an 'ordinary' house.



Resident Education and Feedback

■ Considering residents

- Living in a Passivhaus should not be a burden
- Some knowledge is required to maximise benefits
- Designers must consider residents from the outset
- Assertion of 'poor resident behaviour' implies poor design!

■ Handover

- Formal process over time
- Variety of media may be used
- Face-to-face to ensure understanding
- Educate support services too.



In Conclusion

- Passivhaus – everyone should have one
- ‘Building Performance Evaluation’ essential to prove:
 - Performance not just good in theory
 - Excellent in practice, over time and all aspects
 - Diagnose any ‘gaps’ and confirm remedies
 - Learn lessons and apply
 - Budget for BPE on a sample of any development alongside Soft Landings.



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