



# 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

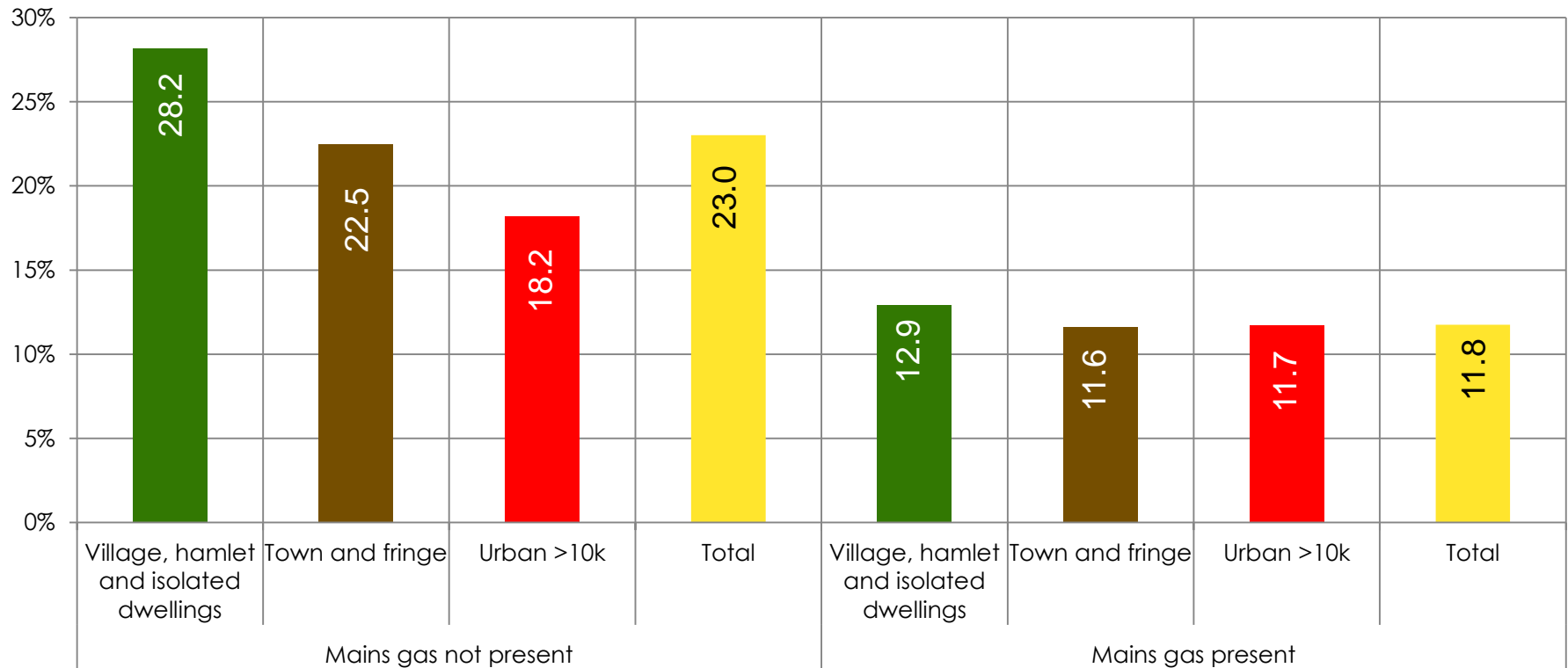


# Affordability

- 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](mailto:martin.ingham@dsl.pipex.com)

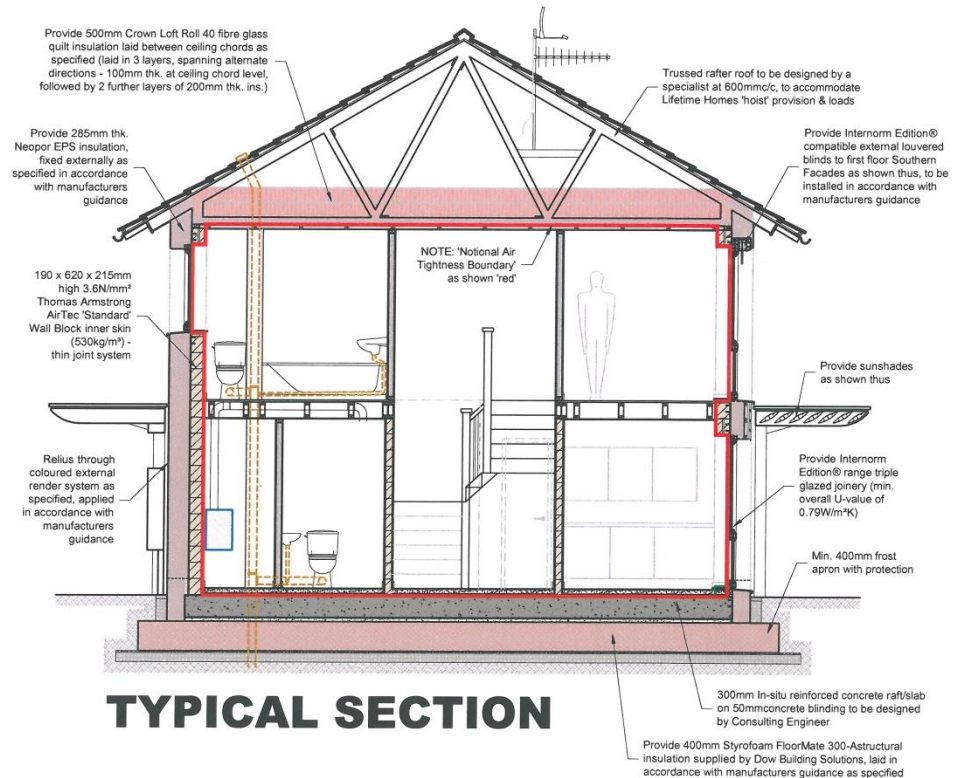
[m.ingham@uea.ac.uk](mailto:m.ingham@uea.ac.uk)



# Acknowledgements



# Context



# Wimbish Performance

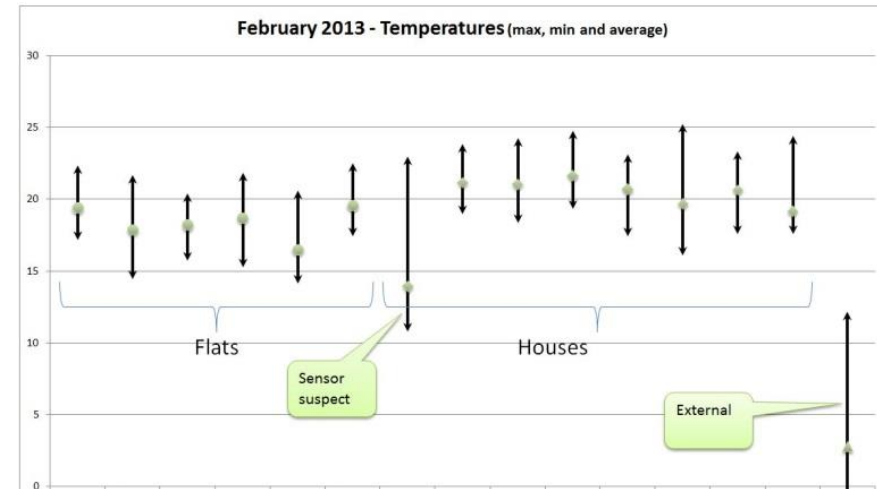
- Quantitative monitoring:
  - Energy, thermal comfort, air quality, water, ventilation, renewables
- Qualitative assessments:
  - Health and wellbeing
  - Satisfaction with design, lighting, controls, space, acoustics, utility costs etc.
- + Hastoe concerns: value for money; ease of maintenance; impact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

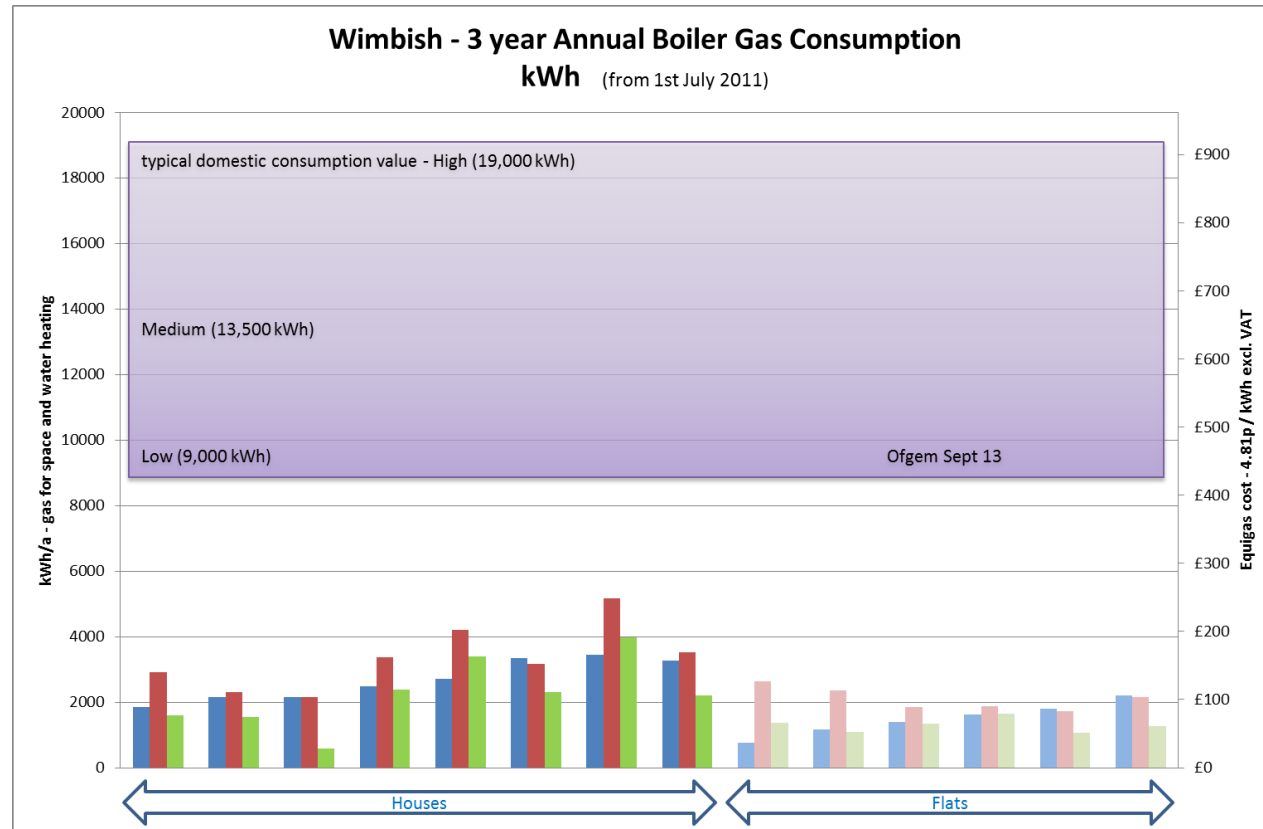
Can place furniture where they like.

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

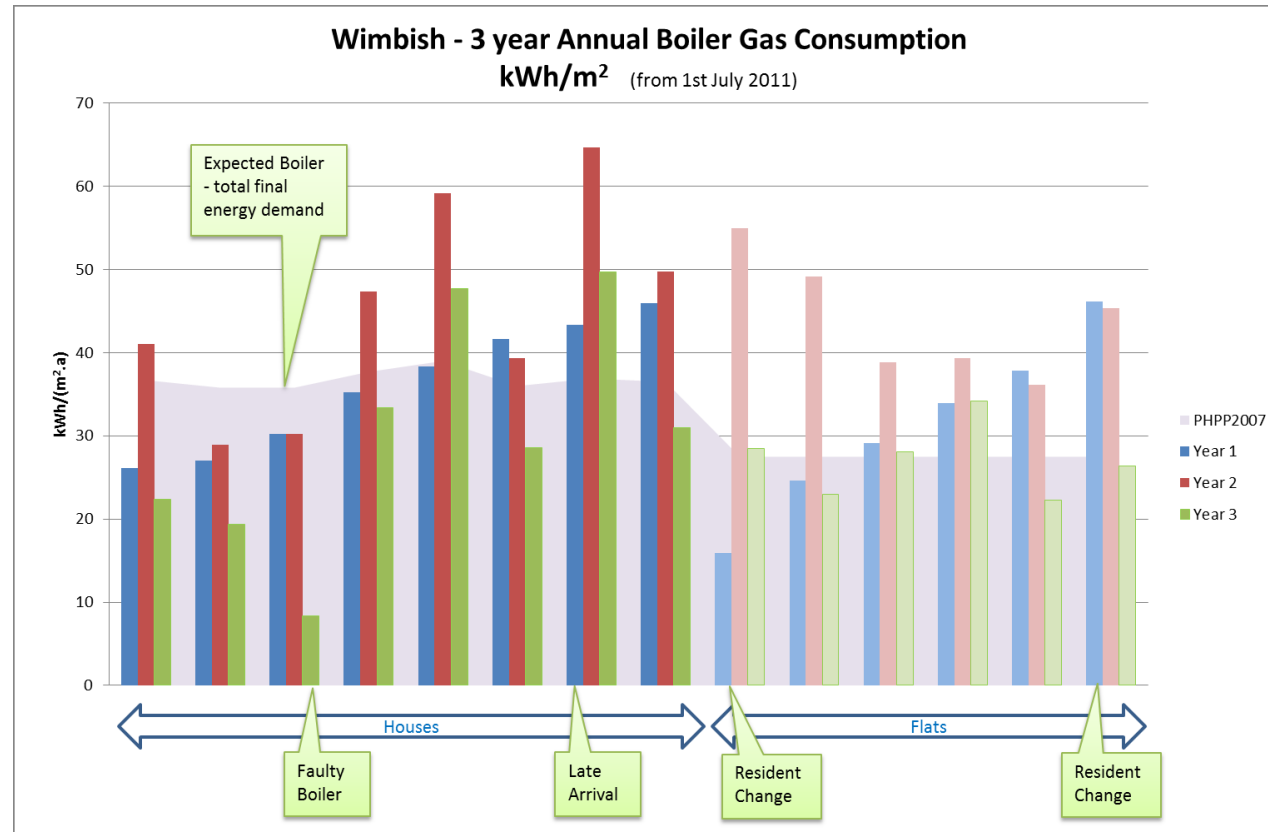
- Gas only used by boiler, supplemented by solar thermal
- Huge saving from Ofgem's typical values
- Tariffs penalise low consumers, Equigas one of the best.





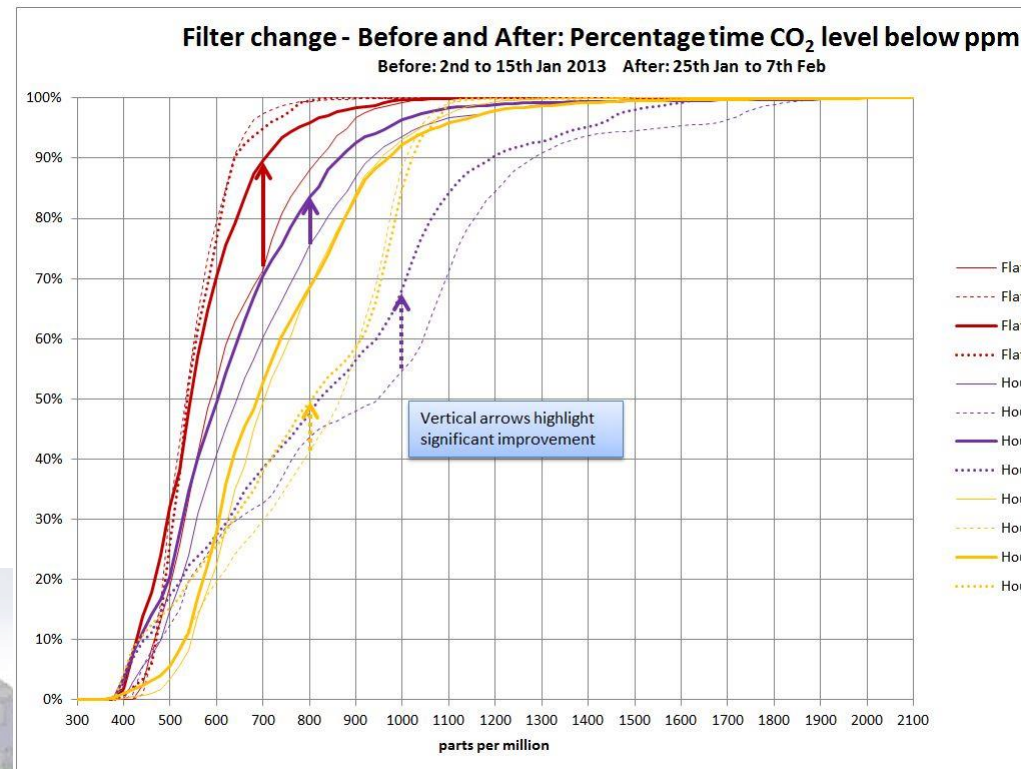
# Heating Bills and Winter Comfort

- 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

- CO<sub>2</sub> 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!

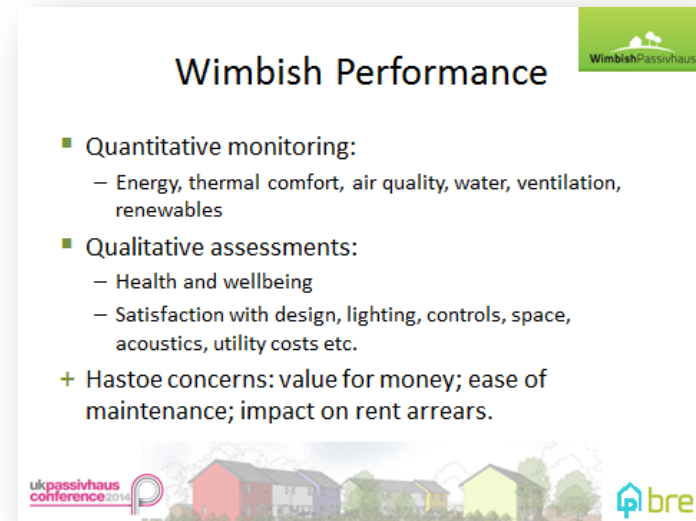
## ■ Handover

- 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.



Wimbish Performance

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