

BPE DISSEMINATION EVENT

“BUILDING BETTER BUILDINGS”

8th October 2015

Glasgow School of Art

Session 3: Client, Occupants and Indoor Environment

BPE Project – Dormont Estate

Speaker – Jamie Carruthers



Dormont Park

Why Passivhaus?

- Rural
- High levels of fuel poverty
- Car dependency high
- Reliance of fossil fuels for heating



Improved energy efficiency

Dormont Park

- Completed July 2011
- 8No. Semi-detached timber-framed houses
 - 4No. 3-bedroom (6 person)
 - 4No. 2-bedroom (4 person)
- Affordable rent for 30 years
 - 20 year Short Assured Tenancy (+ 10)
 - Scottish Housing Quality Standard
 - Nominations Agreement with Council over 4 houses
 - Allocations Policy

Dormont Park

Distinguishing features

- DHW entirely from renewables
 - Roof mounted solar thermal
 - Log stoves
- Built to rural vernacular
 - Dormer windows
 - Porches
 - Chimneys
- Landlord neighbour
- Poor mobile phone signal

Dormont Park Why monitor?

DORMONT PARK PASSIVHAUS PROJECT



SCOTLAND'S LOWEST ENERGY AFFORDABLE HOMES

Dormont Park

The client perspective (1)

- Commitment
- Contractor selection
- Teamwork
- Design
 - Satellite TV signal
- Insulate all pipework and ducts
- Keep service installations simple
 - Monitoring equipment
- Go for the best MVHR
- Deliver to Certified PH Standard
- Monitor construction closely

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The client perspective (2)

- Manager training
- Tenant selection
- Monitor post occupancy
 - Building performance
 - Tenant comfort
 - Landlord feedback

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Occupier perspective (1)

- DHW
 - immersion ↔ solar panels ↔ log stove
- Log stoves
 - technical
 - psychological
- MVHR
 - controls
 - dust
 - draughts

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Occupier perspective (2)

- Overheating
- Management
 - Support
 - Action
- Handover
 - Property Guides

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Summary

	Passivhaus standard	BPE measured performance
Space heating demand	no more than 15kWh/m ² /annum	13.15 (average of 4 houses) 5.33 (average of 3 houses)
Building heating load	“ “ 10W/m ²	Not measured
Useful cooling demand	“ “ 15kWh/m ² /annum	Not measured
Primary energy demand	“ “ 120kWh/m ² /annum	129.68 (average of 4 houses) 100.68 (average of 3 houses)
Building air tightness	“ “ 0.6ac/h@50pa	1. 2.31 (standard) 2. 1.58 (co-pressurisation) 3. 1.68 (standard)
Overheating frequency	“ “ 10%	Much more than 10%!
External wall U-value	0.095W/m ² K	0.12 (1 house)
Roof U-value	0.118W/m ² K	0.12 (1 house)
Ground floor U-value	0.111W/m ² K	Not measured
Windows U-value	0.74W/m ² K	Not measured

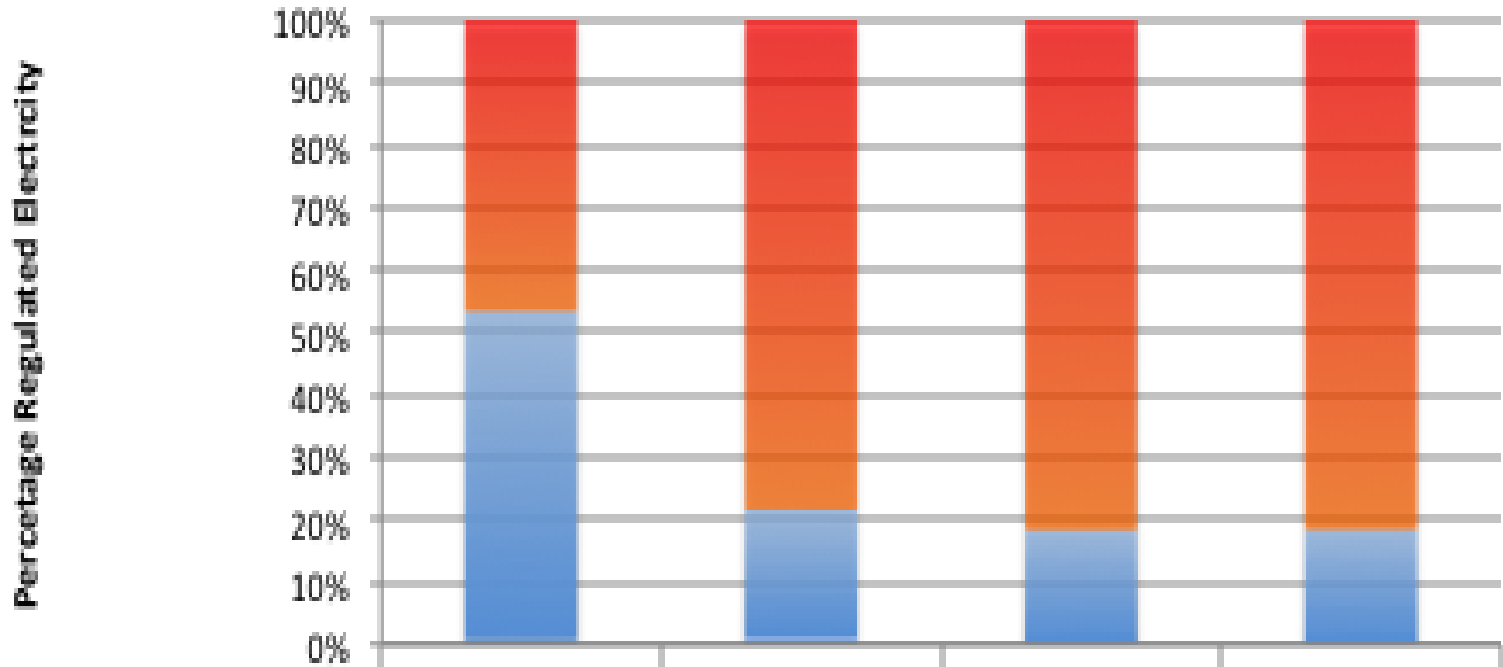
Passivhaus in Practice

“For the first time in my life I have been able to afford to buy a new cooker”

“Because we are spending so much less on fuel bills we can now afford to spend more time together as a family”

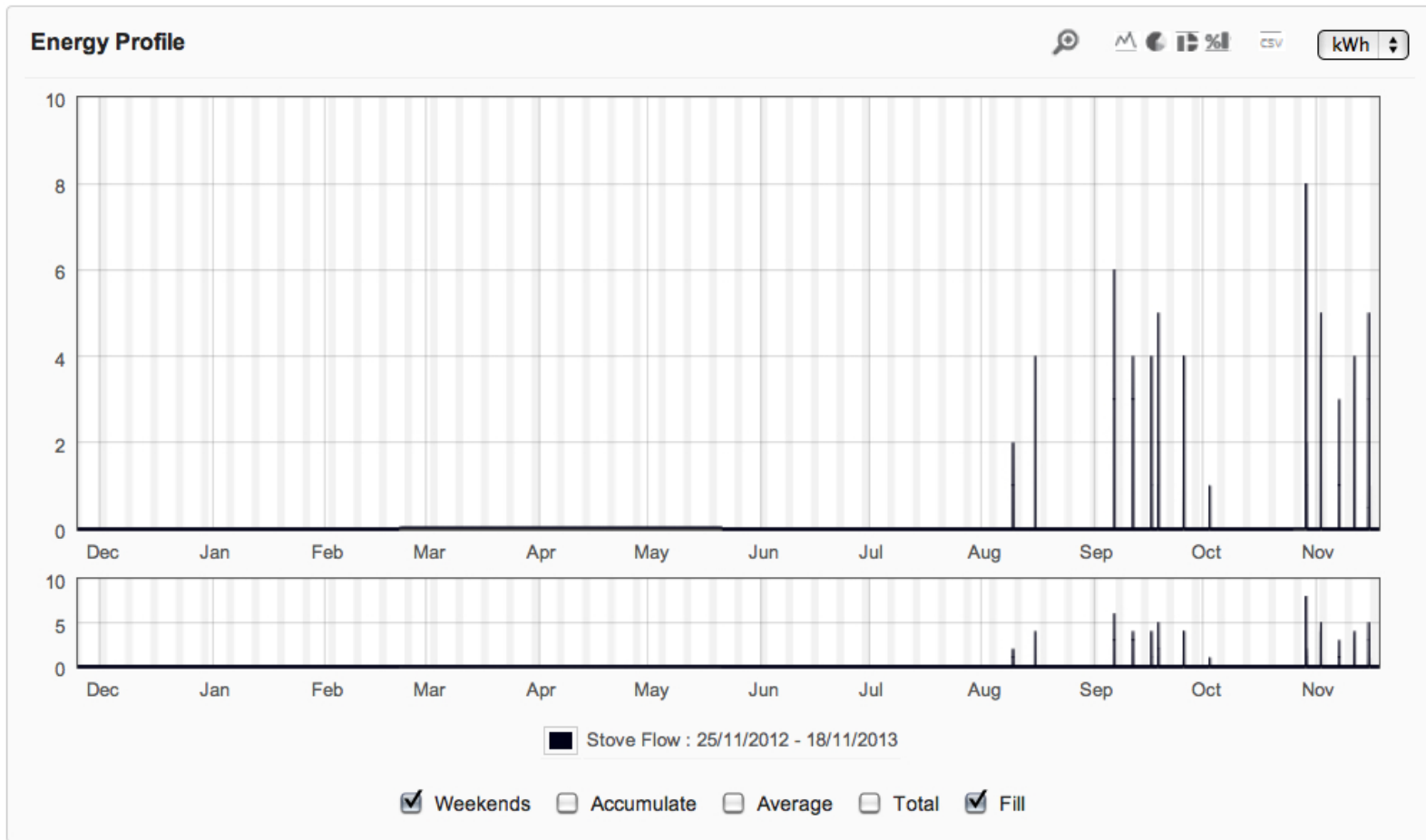
“We hadn’t had a holiday in 20 years until this year”

Passivhaus in Practice

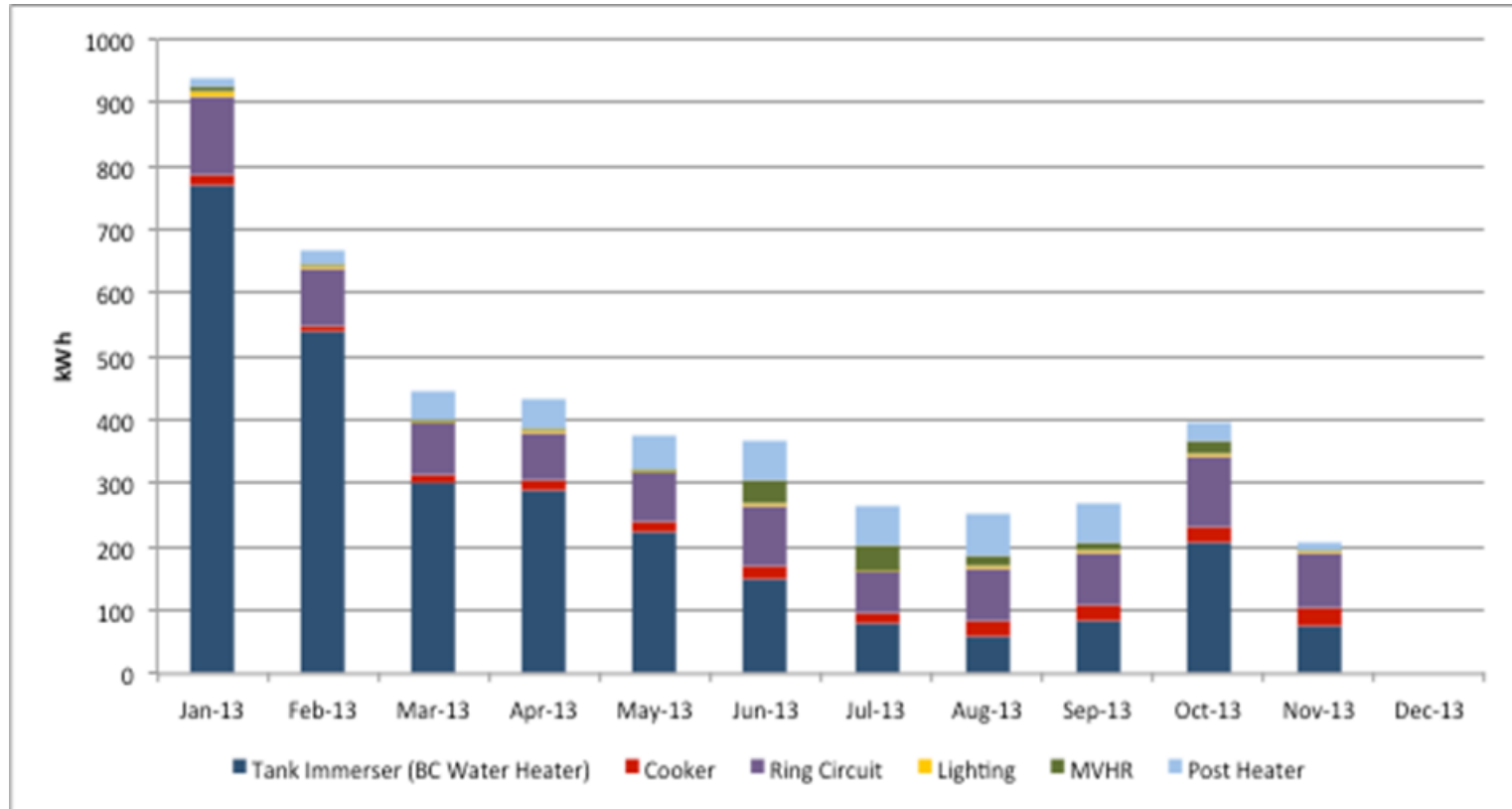


	DA1	DA2	DB1	DB2
Total Electricity (Kwh/a)	3025.6	1456.51	3037.81	3212.55
Regulated Electricity	3430.04	380.54	661.79	705.25
Percentage Regulated	53.13 %	20.71 %	17.89 %	18.00 %

Passivhaus in Practice



Passivhaus in Practice



Passivhaus and Health

“I always had chilblains until I moved here”

“I used to sit in front of the fire all day just to keep warm. Now I can do things outdoors that I couldn't do before” (Crohn's disease sufferer)

“I suffer from asthma but I haven't had an attack in nearly 4 years”

“It's a pleasure to come home at night after a long 12-hour shift to a warm cosy house”

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DORMONT PARK PASSIVHAUS PROJECT



SCOTLAND'S LOWEST ENERGY AFFORDABLE HOMES



Thank you

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