



Learning from Loudoun Road

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People.Design

origin HOUSING

Who we are

AECB
National
Conference
2017

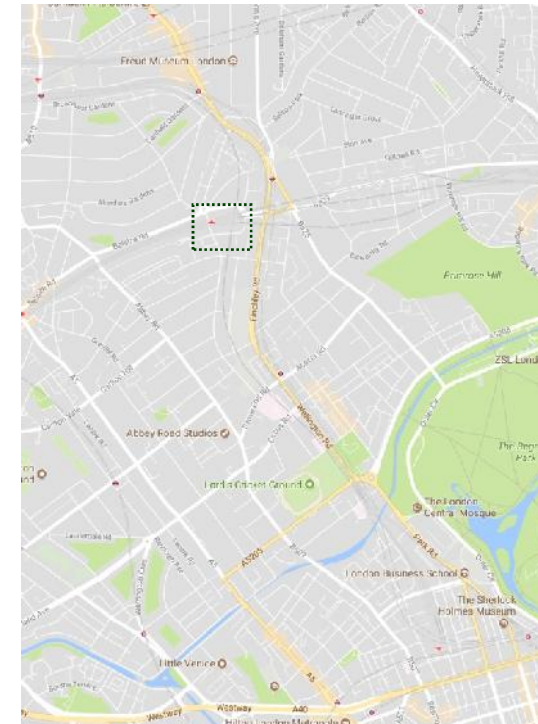


Loudoun Road

- Client: Origin Housing
- London Borough of Camden
- Contractor: Durkan Ltd



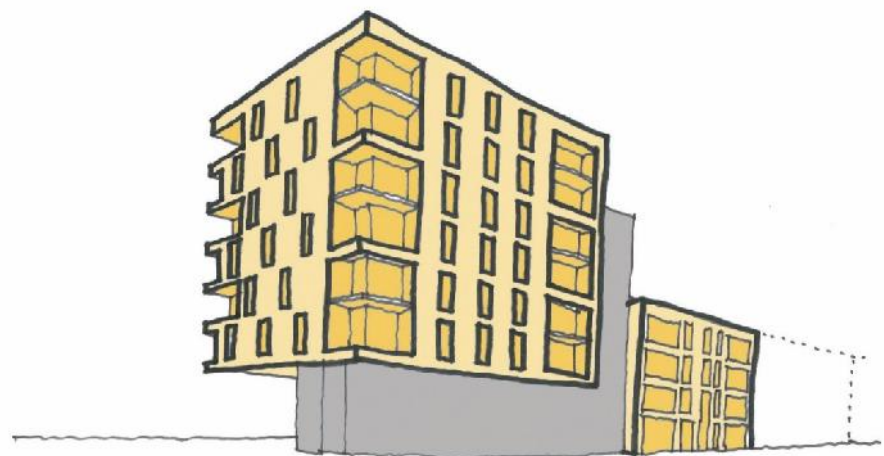
Location – South Hampstead, NW8



Loudoun Road, South Hampstead

Key data

- 42 apartments
- Mix of 1 bed up to 4 bed flats
- Affordable rent, shared ownership and private sale
- 86% affordable homes
- Completed 2013
- High client aspirations for environmental performance



Sustainability targets

- To limit use of 'bolt-on' renewable energy sources
- Fabric first approach
- Passivhaus air tightness and insulation levels
- Code for Sustainable Homes Level 4
- Reduction of energy use over Part L 2010
- Avoidance of overheating



Other targets

- Providing a learning base to inform future projects
- Simple controls and technology – easy to understand
- Avoid legacy issues - future residents also understand how to use the scheme



Issues presented

- We didn't start early enough. Original building designed and Passivhaus retrospectively applied
- Applying Passivhaus to eight storey block of flats.
- Few contractors experienced in building to Passivhaus standards. At best keen to learn more and commit to working on project to be able to acquire expertise.
- Conflict with traditional construction methods/ site staff. Durkan introduced expert from Holland to educate on building detail.– not always on same plan/page.
- Training residents to live in a building with passive heating conditions.



Outcomes

- Hugely popular building in great location - winner of Best Small Development Evening Standard awards 2013
- Met key Passivhaus performance standards
- More expensive to build (10-15% more) without necessarily returning income (5% value enhancement?)
- Contractors continue to perceive risk in meeting Passivhaus standards. Build costs have increased, clients more price sensitive and reduced emphasis on regulation for higher environmental standards.
- Still issues on maintaining legacy of scheme for new residents

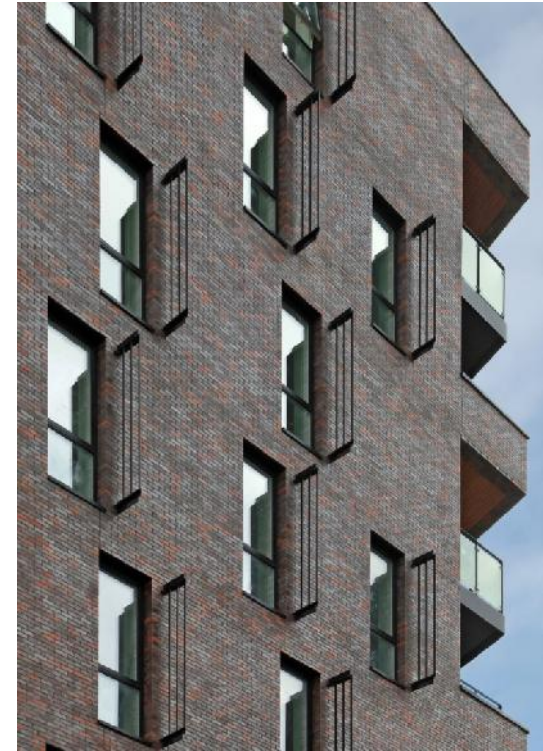


Resident Attitudes

- Tried to identify occupiers who were willing to work with building operating instructions to get best out of building
- Major effort on inductions of new residents – differing levels of interest amongst residents and management staff
- Tenants instructional DVD issued on handover and available to issue to future tenants.
- Very different commitment levels between residents to adapt to passive living

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Layout

ground floor plan



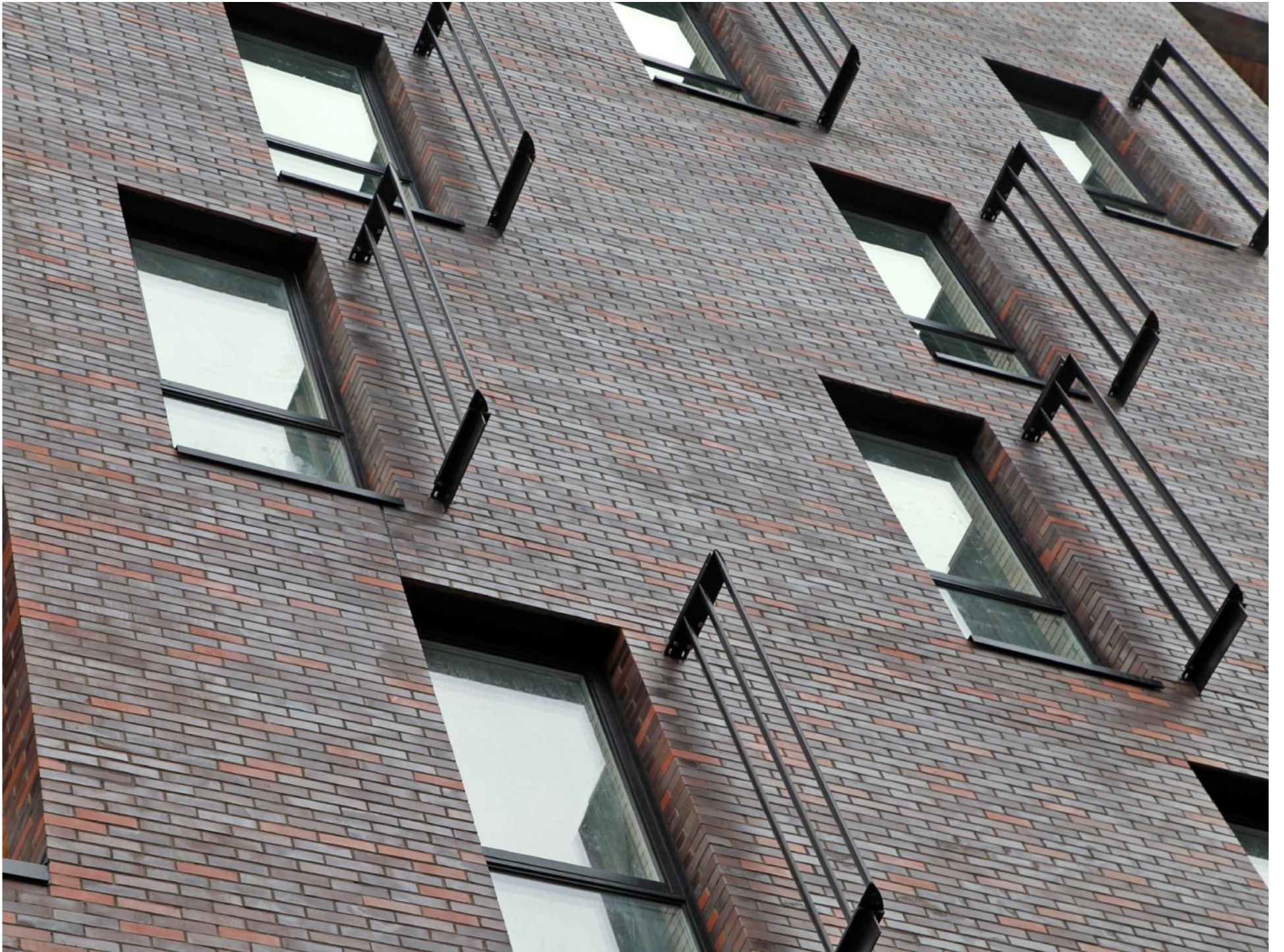
Layout

upper floor plan













Sustainability achievements



Loudoun Road

near Passivhaus

- 1 High fabric efficiency**
 U-values as-built :
 walls - 0.1-0.15 W/m².K
 floor - 0.15 W/m².K
 roof - 0.15 W/m².K
 windows - 0.87 W/m².K
 doors - 0.9 W/m².K
- 2 High air tightness**
 As built:
 air permeability - 0.65-
 1.87 m³/h.m² @50Pa
 air change rate - 0.57-
 0.59 h⁻¹ @50Pa
- 3 Natural ventilation
 and MVHR**
- 4 Solar shading**
 horizontal brise soleil over
 exposed south facing
 windows, vertical shading
 on the west.
- 5 Daylight maximised**
 with average daylight factors
 of ≥2% in kitchens and ≥1.5%
 living, dining and home office
 areas.
- 6 Centralised gas fired
 boilers**
 supplying heating and hot
 water to dwellings.
- 7 Solar thermal array**
 providing centralised
 system with hot water from
 a renewable source.
- 8 Biodiverse roof**
 increasing local ecology
- 9 Acoustic insulation**
 insulating dwellings
 5dB beyond Building
 Regulation requirements.
- 10 Low heating demand**
 69% of dwellings
 measured in use have a
 heating demand of ≤15
 kWh/m².yr

Post occupancy evaluation

What we wanted to find out:

- Environmental performance, energy use
- Ease of use of heating and ventilation
- Level of comfort
- Affordability of energy



To inform future design of new homes for both Levitt Bernstein and Origin.

Post occupancy evaluation

Methodology

- Initial Origin resident satisfaction questionnaire
- Use of metred energy use data
- Winter and summer conditions
- Temperature and humidity monitoring inside and out
- 5 flats monitored including south facing

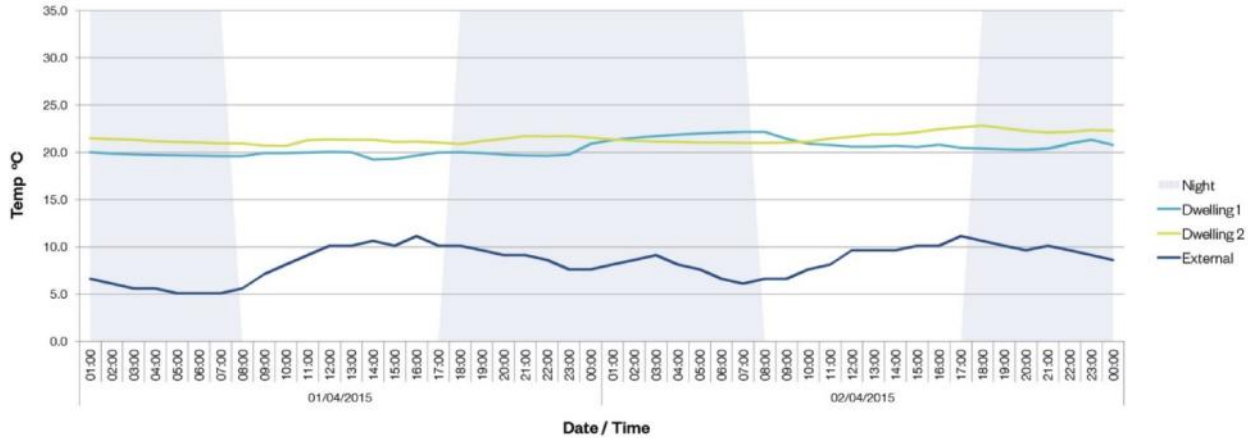


Approximate location of dwellings participating in the study

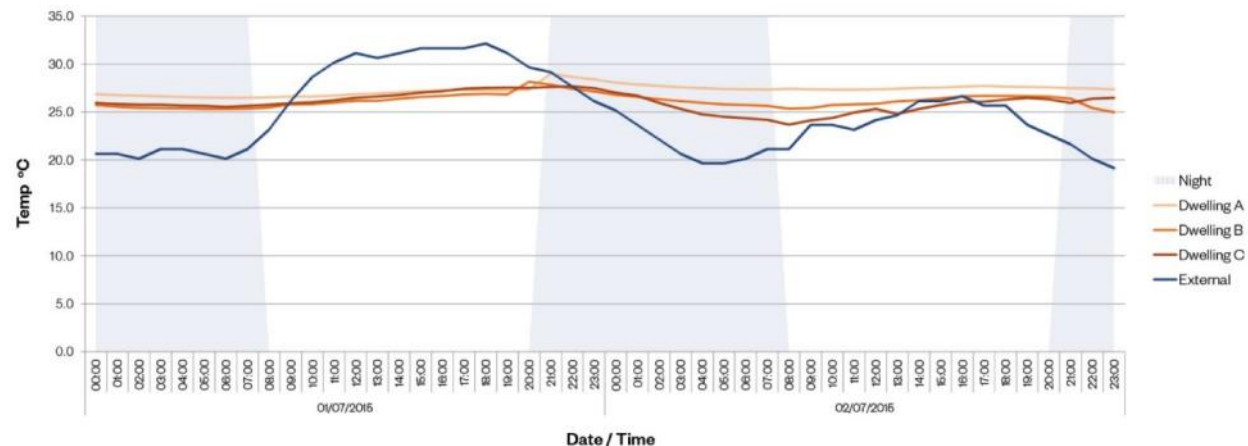
Results

Thermal comfort

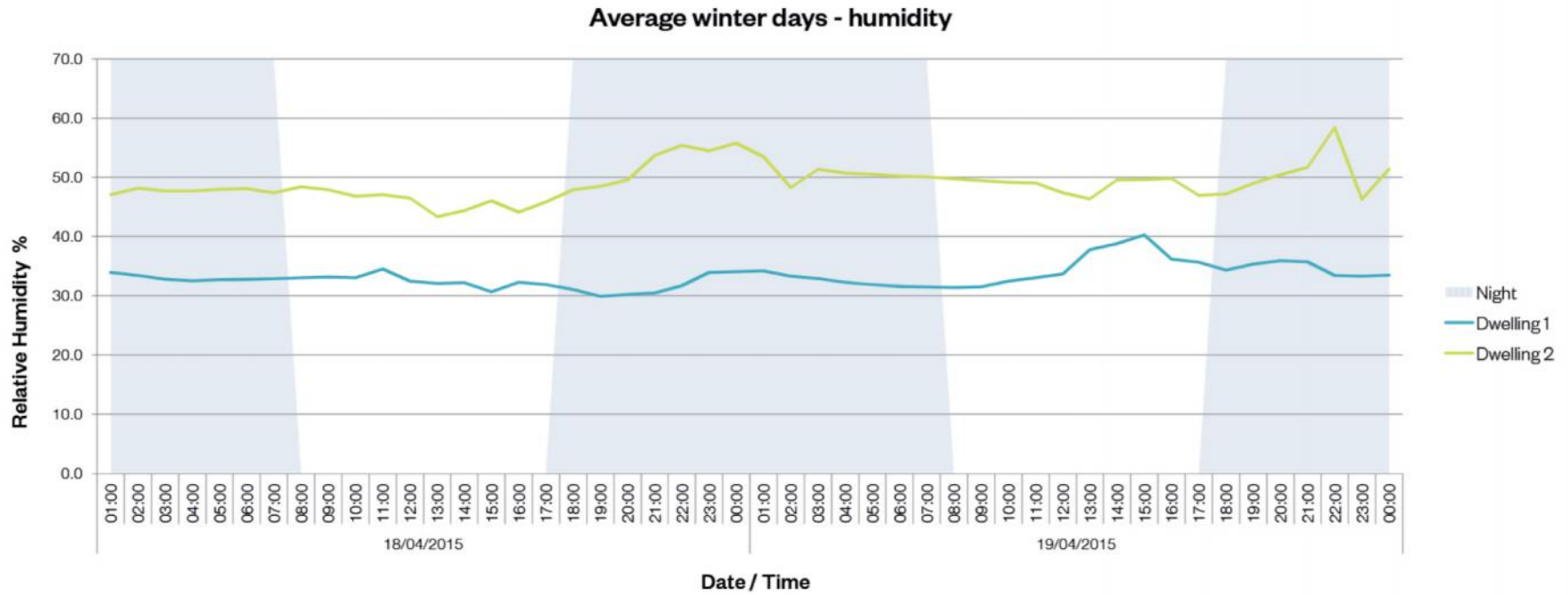
Coollest
winter days -
temperature



Warmest
summer days -
temperature



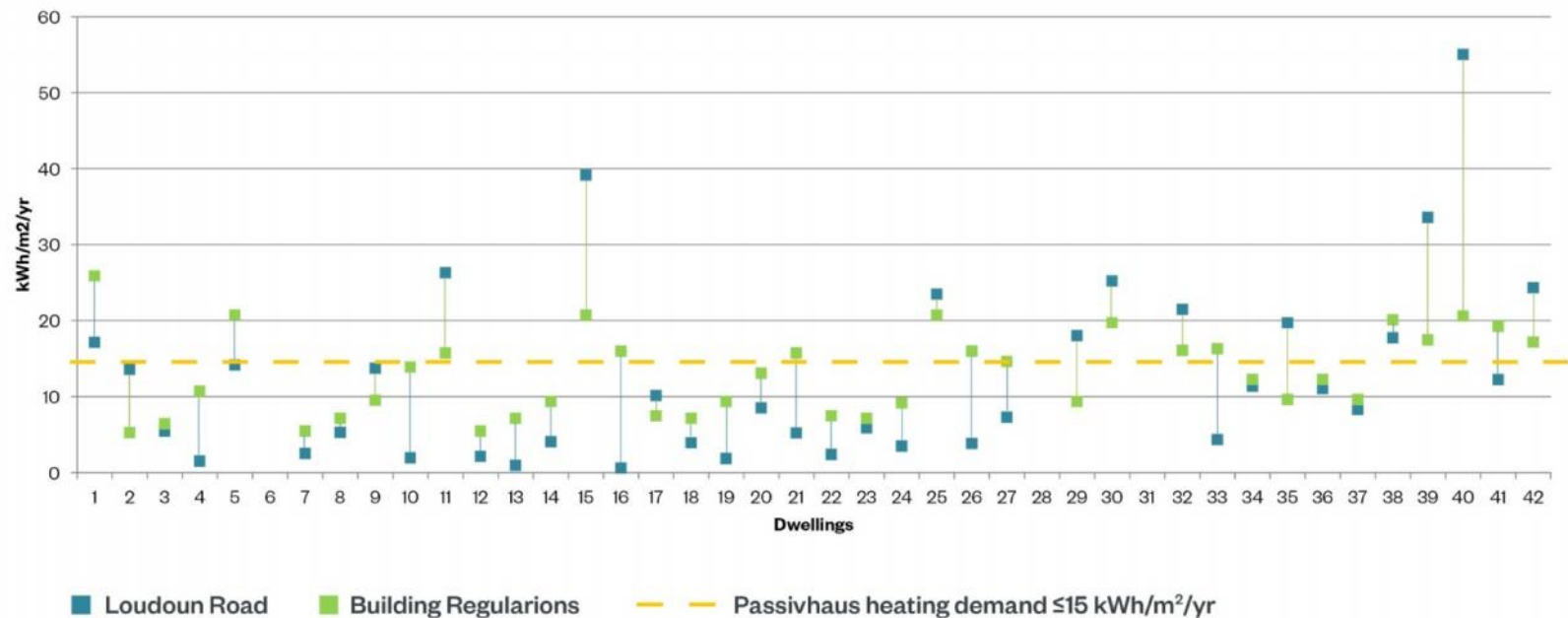
Humidity



Heating demand

SAP calculation v's actual building

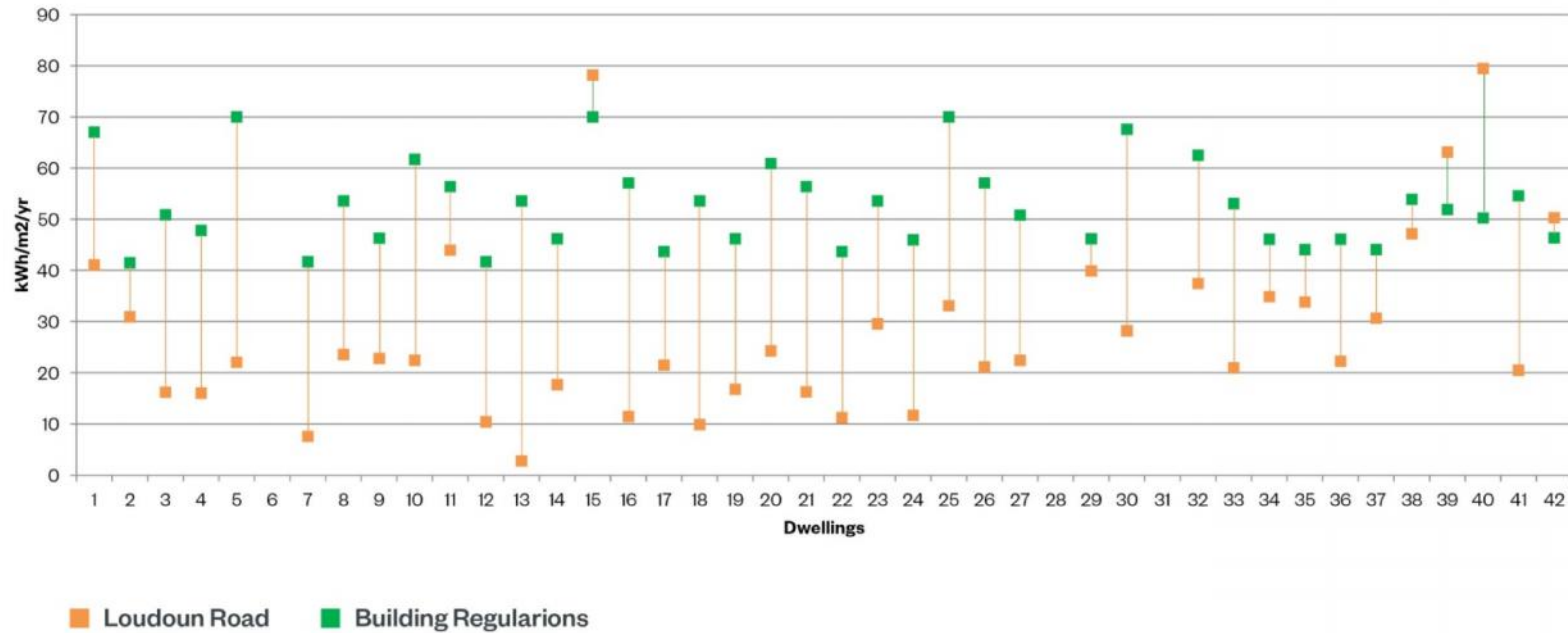
- On average SAP overestimated the heating demand by 0.5 kWh/m²/yr
- 69% of homes' heating demand was ≤15 kWh/m²/yr in use



Heating and hot water demand

SAP calculation v's actual building

- On average SAP overestimated the heating and hot water demand by 25 kWh/m²/yr



Lessons learned

Environmental design

- Passivhaus targets proved a useful benchmark
- Successful comfort conditions
- Consistency of temperature internally
- Cost of energy, high service charge with communal heating

Lessons learned

Measuring/design tools

- SAP modelling – shouldn't be used as design tool
- Zero carbon - are we chasing the right target, considering the Loudoun Rd carbon reductions achieved on a near Passivhaus scheme?

Carbon reductions



Average CO₂ reduction
over Part L 2010

Lessons learned

Construction

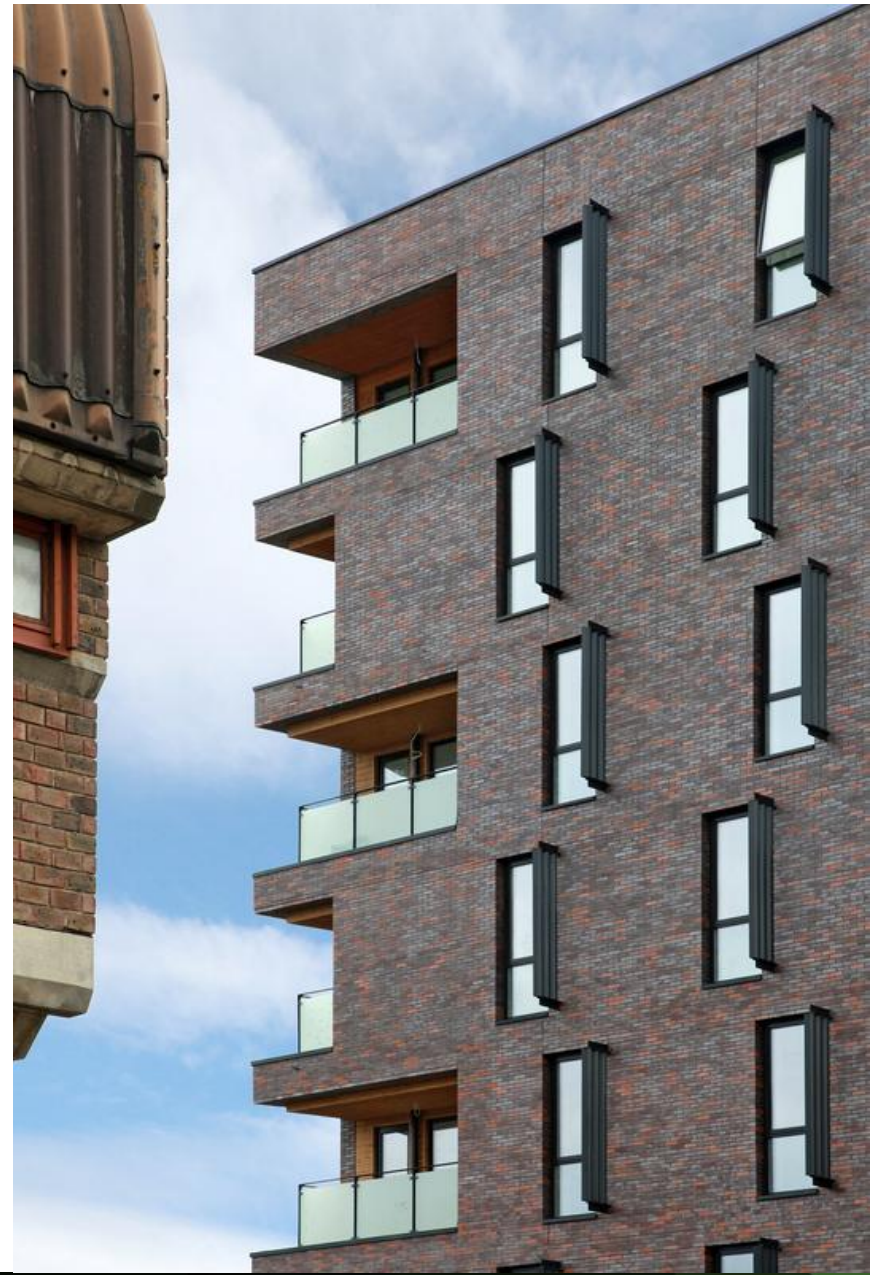
- D & B procurement
- Steep learning curve
- Use of expert on site was essential
- Brickwork cladding and Passivhaus



Lessons learned

Construction

- Brickwork cladding and Passivhaus?



Lessons learned

Residents

- General satisfaction with the quality of the homes
- 57% found heating controls easy to adjust
- Some residents warm enough without heating
- Low heating demand but some complaint about high bill charges for energy
- But majority of residents did not understand the heating and ventilation system!

