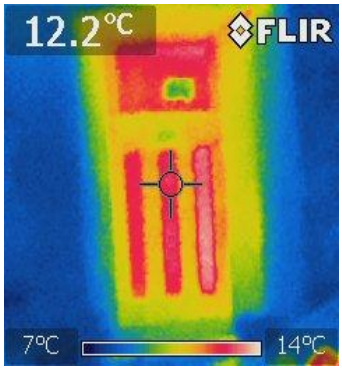
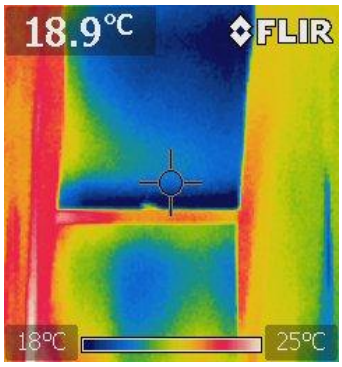
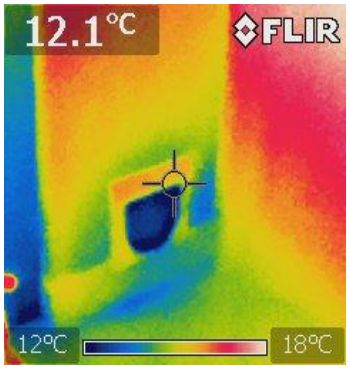
Where does your heat go?

One February evening in 2012 four local households took part in a pilot thermal imaging "party" as part of the ongoing Kingston University Smart Communities project in North Kingston. The houses were very different: a large Edwardian semi; an average-sized Victorian semi (probably the most typical Kingston house in the sample); a 1920s detached; and a small 1990s detached. The weather was cool enough for the experiment, the houses were heated, so the team, led by John Gallop and Sue Williams, set off with a borrowed thermal- imaging camera, and a piece of low-emissivity film to test on various windows.



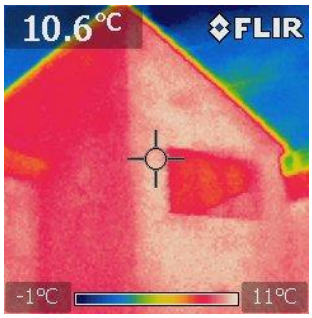
First was an extensively retro-fitted Edwardian house near the University – its solid walls externally insulated with phenolic foam cladding under new rendering, with some secondary double-glazing. These were working well, but the big surprise here was the original panelled Edwardian front door, with the thinner panels showing as markedly warmer than the rest of the house (*see picture, left*), betraying heat leaking out.





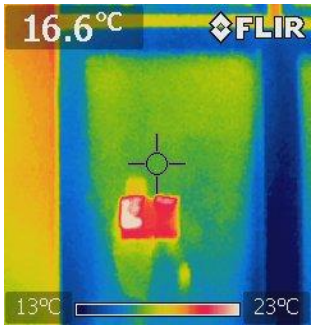
Then on to in North Kingston and the typical Victorian solid-walled semi, though again a house on which some retro-fitting had been undertaken in the form of double-glazed replica sash windows. These suited the style of the house and were much better than the originals, though still had a few of the leaky gaps typical of sash windows (*shown in the darker blue in the picture taken inside, above left*). Drafts around the front door were clearly revealed by the camera, as was a very warm (that is leaky) pet-flap (*see picture above right, taken inside*); and there were faint warmer patches marking where radiators were heating the outside wall as well as the room.

The 1920s house had double-glazed windows that were keeping the heat in better than the solid walls, but a couple of the original single-glazed windows on and next to the front door showed as much warmer from the outside. It also had a warm patch on the roof above the airing cupboard and hot water tank – and a very warm dog-flap.



The 1990s house was the only one with cavity walls compliant with current building standards, and the cavity had been filled about ten years ago with fibre flock insulation. It had well fitting double-glazed windows, all its roofs were well insulated, and foil had been fixed behind radiators and inside the integral garage door. The entire house, even its conservatory, showed a more or less

uniform colour – nothing much to report and nothing much to do. The picture on the right includes an upstairs window with half-open curtains making no difference.



After the fieldwork came the picture show and analysis over drinks and nibbles. Warm spots outside were the parts that needed attention, and participants swapped tips and recommended materials, shops and useful websites.* Draught-proofing materials, different types for different draughty spots, are widely available, easy to fit and worth every penny, as is foil for behind radiators on external walls, which keeps the heat where you want it – in the room rather than outside. On double-glazed windows, curtains and blinds didn't seem to make a noticeable difference. The more expensive retro-fits – double-glazing and external cladding – work well and will save energy and eventually pay back their cost. The low-emissivity film**, another expensive fix but cheaper and less disruptive than double-glazing, did show some improved heat retention on double-glazed windows (*see picture above left, taken from inside*) and would probably make a more noticeable difference on single-glazed windows.

Thank you to:

- John Gallop and Sue Williams of South West London Environment Network (http://www.swlen.org.uk/) for taking and analysing the thermal images.
- Kevin Burchell of Kingston University's Smart Communities project (http://www.smartcommunities.org.uk/) for initiating and funding the event.
- Peter and Marilyn Mason of Transition Town Kingston (http://ttkingston.org/) for organising and hosting the evening.
- Local residents Martin Birley, Clare Francis and David Baker for participating.

Marilyn Mason, Transition Town Kingston

Notes

* Recommendations included:
- Thermal blinds examples: Luxaflex Silhouette (http://www.luxaflex.co.uk/products/indoor/silhouette-shades/) and Relex-Rol (http://www.reflex-rol.co.uk/)
- For sash windows, QLON / FS strip, to avoid draughts at meeting rail (http://www.schlegel.com/building-products.html)
- Tesa Draught Excluder - E Profile (http://www.tesa.co.uk/consumer/energy_saving/window-draught-excluder/door-and-window-draught-excluders) available from various suppliers, e.g. http://www.amazon.co.uk/Tesa-Draught-Excluder-Profile-Brown/dp/B000VD5O3O.
- Weekly Degree Days updates from the Environmental Change Institute, "Oxford University's interdisciplinary institute for research on the complex processes of global environmental change, the exploration of sustainable solutions and the promotion of change for the better through partnership and education" (http://www.eci.ox.ac.uk/research/energy/degreedays-weekly-weekly.php)
**Enerlogic LEP70, from www.sun-x.co.uk or www.nationalwindowfilms.co.uk