

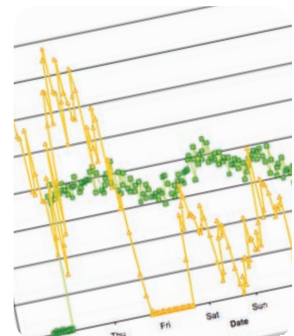
# COHEATING TESTING

Coheating testing is a means to determine a **real life** whole-house heat loss rate: this rate is linked to thermal losses through the fabric, plus losses from air-leakage, again through the fabric.

It is a means to compare the thermal performance of:

- A newly-built dwelling's fabric in comparison to calculated predictions (in SAP for example)
- An existing building's fabric before and after improvement works are undertaken

This enables meaningful conclusions to be drawn regarding the effectiveness of fabric improvements.



## Stroma Coheating Testing

Coheating testing is also a vital component of many Post-Occupancy Evaluations: these studies are increasingly being undertaken to understand whether a property, in its constructed rather than theoretical state, is performing to expectation.



## Why Stroma?

Stroma was one of the first commercial testing organisations to undertake coheating tests in the UK, the first of which was completed in February 2009.

Subsequently we have been involved in tests on private residences, Technology Strategy Board-funded retrofit projects, and social housing retrofits for commercial clients to evaluate the effect of the improvements undertaken.

## The Procedure

This procedure - pioneered in the UK by, among others, Leeds Metropolitan University (Centre for the Built Environment) - is a measurement of heat loss through the fabric of the property. Therefore, all intended points of ventilation are temporarily sealed prior to commencement of the testing.

The equipment deployed within the tested building includes electric heaters connected via power meters to a thermostat, axial fans to agitate the air, and thermocouples, which are all spaced evenly throughout the property; all of which are connected to a modem enabled data logger. Where required, heat flux sensors for party walls are also installed. To monitor the weather conditions, an external thermocouple, anemometer, and pyranometer are installed externally.

With equipment installed and operating, the thermostats are all set to a temperature (nominally 25°C). The equipment continually records all the readings for temperature (internal/external), energy use, solar irradiance, and wind speeds. The recommended minimum period of monitoring is 7 days, which requires an initial 3 days of set up.

The data collected is used to calculate the thermal coefficient of the building, which encompasses all envelope elements including roof construction, wall construction (incorporating doors and windows), floor construction, etc. The results can be used to prove actual fabric performance and used as a basis to compare dwellings.

Stroma can undertake coheating testing of dwellings and small buildings throughout the UK, providing they have sufficient mains power supplied and will remain unoccupied for the duration of the testing.



# MONITORING



## Carbon Challenge - South Bank, Peterborough

The Carbon Challenge (CC) programme aims to accelerate the housebuilding industry's response to climate change by fast-tracking the creation of a number of zero carbon communities.

The key objective is to raise the environmental performance of new communities while still delivering quality and high standards of design.

The Challenge aims to equip the development industry with the skills and technology needed to meet the 10-year environmental goals being set by the Government for new housing development. In particular, it will act as a testing ground for the Code for Sustainable Homes (CSH) and the new Planning Policy Statement on climate change. It is anticipated that a total of five major public and private sector sites will be identified, each of which can support around 200 homes.

## Monitoring and Evaluation Protocols

### Post-construction stage (pre-handover)

1. Install and test all monitoring equipment
2. Complete co-heating test to test fabric heat loss and carry out additional diagnostic testing where necessary
3. Air-tightness test before and after coheating test

### Occupancy stage

1. Measure all energy, heat and water consumption in homes and establish whether homes are performing as expected
2. Assess the performance of homes from the user perspective
3. Carry out more detailed tests on home technologies (MVHR, wind, PV, solar thermal, heat pump) on proportion of new homes
4. Compare performance of different house types
5. Monitor the strategy in order to refine and improve the approach



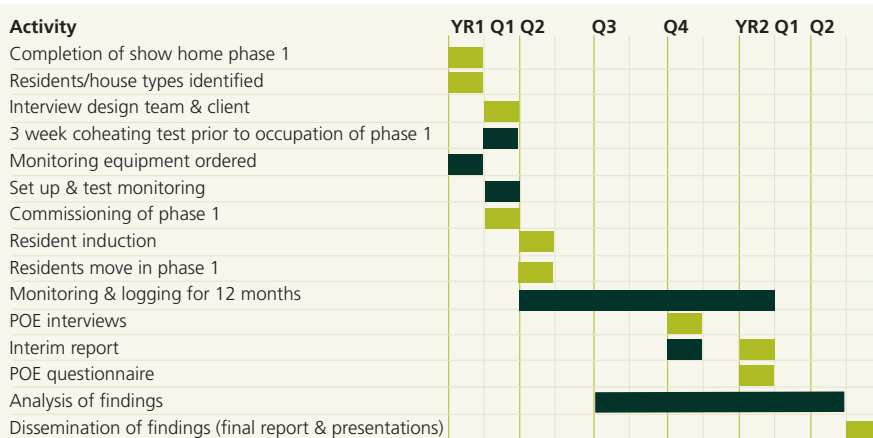
## Post Construction Stage

- Fabric Performance
- 3 week Coheating Test including 10 day Recording Period
- Commissioning Process Evaluation
- Occupancy Evaluation of Show Home

## Occupancy Stage

- Occupancy Levels and Use Patterns
- Weather Data
- Thermal Environment
- External Openings
- Indoor Air Quality and Ventilation
- Energy Use/Carbon Dioxide Emissions
- Energy Audit (DomEARM)
- Water Consumption

Typical GANNT chart for a Post Occupancy Evaluation (POE) study



■ Key Services Stroma Technology Offer

*Building Sustainability & Compliance*

## CONTACT DETAILS

For further information about coheating testing and its benefits, please contact Technical Manager, Marc Cowlin at [m.cowlin@stroma.com](mailto:m.cowlin@stroma.com)

For monitoring and evaluation please contact Rob Molyneux at [r.molyneux@stroma.com](mailto:r.molyneux@stroma.com)

Alternatively call Stroma on **0845 621 11 11** or visit our website [www.stroma.com](http://www.stroma.com).