

### **FP7- SUSREF Brief summary**

Motive: 60-70% of dwellings in Gwynedd have solid walls 600mm thick. SAP and all EST-recommended upgrades are developed on mid England 10" brick walled buildings. Real performance of our walls in our weather is unresearched, unmodelled, we risk spending a lot of money on upgrades that may not work/do not exploit true characteristics of our walls in our weather.

Method: Install monitoring equipment on outer face, middle thickness and inner face at low, mid height and high level on north, south, east and west faces of external walls of five inhabited houses built of solid stone, in typical exposed locations in North Wales. Set up weather station to record temperature, wind speed and direction, rainfall and RH. Record temperature, humidity and electrical polarity of the wall and weather conditions for 12 months. Concurrently, assess existing static (eg SAP-type) and dynamic energy modelling programmes for best match to monitored results as they emerge, and revise best programme to model the real walls in the real weather. Assess upgrade techniques using published data and test these with the revised energy modelling programme. Select suitable upgrades for each house, using the revised modelling programme. Detail and specify.

CURRENT FUNDING GAP: the owners will have to pay for the upgrades because demonstration is not an eligible costs of this FP7 project. However, emerging Welsh Assembly Strategic regeneration funding may allow these capital costs and associated fees to be paid for households on low income & housing association tenants.

Following upgrades: Monitor the results - ideally through a full year but FP7 timetable unlikely to permit more than 3 months. Analyse results; publish bilingual report with recommendations.

The intention is to identify 5 different houses with typical regional characteristics and restrictions, so 2 are to be Listed or of historic interest so not allowed to be changed externally:

House 1: "Green" internal wall insulation ie sheeps wool or warmcel or hemp, lime/earth etc

House 2: "Fossil Fuel" internal wall insulation ie PE or phenolic, foilfaced gypsum plasterboard etc

House 3: "Green" external wall insulation ie sheeps wool or hemp lime etc with timber or slate or corrugated or lath/render rainscreen etc

House 4: "Fossil fuel" external wall insulation ie PU + acrylic render etc

House 5: Alternative strategy "Shelter" externally ie unheated glazed on sunside, (preheat ventilation air, grow tomatoes,) insulated rooflit draught lobby (bike/fuel/recyclables store) on the other.

### **Progress:**

Matchfunding for research secured.

European partnership agreement issued in draft

3 possible candidate properties identified, discussions with housing association underway

27 months research programme due to start autumn 2009, actual monitoring Jan 2010