Since my last annual report, all homes for my project have been recruited. The houses have been divided into two groups based on the retrofit they will undergo. The 1st group are cavity wall houses that will receive external insulation as part of their retrofit (n= 23). The 2nd group houses are cavity wall houses that will receive pumped wall insulation as part of their retrofit (n= 22). The homes will be monitored pre retrofit, 3 months post retrofit, and 6 months post retrofit.

The pilot study is nearly completed, the retrofit was completed in October 2015, I waited until January 2016 to start the post monitoring so as to allow the occupants to go back to their normal routines. The majority of the results of the pre retrofit were found to be within guidelines; however, this could be due to the lack of air tightness in the homes. The lack of air tightness could be regulating the air quality in the house, so when the house is retrofitted and becomes more air tight, the air quality may worsen. The mean temperature in the living room of the 15 homes monitored was 17.9 ^{o}C ± 1.1 ^{o}C; this is below the recommended temperature of 18^{o}C by the World Health Organisation and the SEAI. The mean bedroom temperature (16.6 ^{o}C ± 0.5 ^{o}C) was above the SEAI recommended temperature (16 ^{o}C) The $PM_{2.5}$ data was in line with the data reported for gas cooking in the IAPAH study (Semple et al., 2008). The CO_2 levels were lower in the bedroom than in the living room, this could be due to the limited amount of time spent in the bedroom and the level of occupancy as compared to the living room (595.2 ppm ± 48.7 ppm and 647 ppm ± 52.9 ppm respectively). The mean 24 hour formaldehyde level was found to be 18.1 ppb ± 8.1 ppb, which is well below the 100 ug/m^3 (30 minute average) WHO guideline. The 24 hour mean carbon monoxide levels in the living room and bedroom were below the WHO guideline values of 7 mg/m^3 (24 hour mean) at 0.1 ppm ± 0.09 ppm and > 1 ppm respectively. The results for radon were found to be less than 110 Bq/m^3 which is less than the national reference level of 200 Bq/m^3 and NO_2 levels were found to be 14.13 ppb which was less that the 40 ppb WHO guideline.

An extended abstract for Indoor Air entitled was accepted “Indoor Air Quality, thermal comfort, and occupant behaviour in retrofitted energy efficient homes”. The extended abstract will be presented in July 2016.