












Historic Scotland Energy Efficiency Refurbishment Projects 2010 – 2011 –Initial Results

These projects were managed by the Technical Research Unit at Historic Scotland over the winter of 2010-2011 and were part funded by the Scottish Government Energy Efficiency Action Plan. All site work is now complete and monitoring is under way. Results were encouraging and we were able to demonstrate that economically feasible interventions were possible in traditional buildings (sometimes listed ones) without loss of material and character. Initial indications on U values indicate a significant reduction – in the region of 60%. Once all the results are in we will compile more detailed Refurbishment Case Study Reports for each site and include the findings in the Digital Energy House interactive guide and a technical manual on improving energy efficiency in older properties.

See <http://www.historic-scotland.gov.uk/index/heritage/conservation/conservation-research.htm> for related work on this subject.

Project	Location	Partners	Description	Image
Garden Bothy	Cumnock, Ayrshire	Great Steward of Scotland's Dumfries House Trust HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	Unlisted detached cottage (1880 and later) receiving upgrade to thermal performance. Lime concrete floor laid and floor complete. Timber floor insulated. Walls upgraded with hemp board on the ground floor, blown cellulose and bead on the upper floors, keeping original linings. Clay plaster and paint on ground floor for humidity buffering. 90% modelled reduction in CO2 emissions. Monitoring in progress.	
Milton Hall	Milton of Buchannan, Drymen, Stirlingshire	Stirling Council HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	Open ceiling of village hall insulated, secondary glazing on all windows. Works complete, monitoring in progress.	
Wee Causeway	Culross, Fife	National Trust for Scotland HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	A detached B listed property (C1840). Solid wall insulation on the hard internally, trialling 2 techniques - a calcium silicate board and an aerogel mat plastered over. Secondary glazing to windows and sheeps wool insulation to loft space. Monitoring in progress.	

Mid 19 th C Tenement Refurbishment	2 locations, Dennistoun, Glasgow	Reidvale Housing Association. HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	Traditionally built sandstone tenements (C 1880) of standard pattern and detailing. A range of trials on glazing, wall insulation and internal insulation in a common stair. All applied successfully, monitoring in progress but early indications are that the pend insulation was very effective. Monitoring in progress.	
Early 20 th C Tenement refurbishment	6 Tenements in Sword Street, Glasgow.	Reidvale Housing Association. HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	Monitoring continues on the range of internal insulation types applied in 2008. No issues with moisture or any other perceived risk, U-Values achieved of no more that 0.34 for all 6 properties on the stair.	
Rothesay buildings	Rothesay, isle of Bute	Fyne Homes. HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk	Traditionally built townhouses, now flats (C 1860) now in use as social housing. Door insulation, secondary glazing and solid wall insulation on the common stair have all proved effective. Monitoring in progress for exact results	
Well o' Wearie Cottage	Holyrood Park Edinburgh	Historic Scotland Property HS Contact - Roger Curtis 01316688621 Roger.curtis@scotland.gsi.gov.uk	Detached cottage in semi rural location (1840 and later). 2 types of internal wall insulation applied – blown cellulose behind existing lath and plaster, and aerogel mat behind a plastered mesh. Suspended timber floor insulated with hemp bats gave a significant improvement. Monitoring in progress.	
4 Edinburgh tenements	Pleasance, Edinburgh	Castle Rock Edvinvar Housing Association. Adam Dudley Architects HS Contact - Roger Curtis 01316688621 Roger.curtis@scotland.gsi.gov.uk	A group of 3 listed early 19 th C tenement flats (C1840) now in use as Social Housing. Bespoke secondary glazing to windows on the front elevations. Blown insulation behind lath and plaster, and applied aerogel insulation to rear internal walls. U values of 0.6 achieved. Insulated front and rear doors. Vapour permeable paint finish for humidity buffering in 2 locations. Monitoring ongoing.	

School case study	East Linton Primary School	<p>SG Schools Estates East Lothian Council</p> <p>HS Contact - Carsten Hermann 0131 668 8927 Carsten.Hermann@scotland.gsi.gov.uk</p>	<p>An unlisted rural Victorian school (1880) of medium size has been upgraded with a series of basic measures to improve its energy efficiency and indoor climate. The measures were draught proofing, window repairs, secondary glazing, additional roof insulation, improved day lighting and improved. Monitoring delayed and will start in Autumn 2011. Phase 2 will look at heat recovery options.</p>	
Longmore House	Salisbury Place, Edinburgh	<p>Historic Scotland, Leased Property</p> <p>HS Contact – Joann Russell 0131 668 8927 Joann.Russell@scotland.gsi.gov.uk</p>	<p>An urban institutional Victorian building, category B listed (1850 and later) originally built as a hospital, now in office use. Loft insulated with sheep’s wool. Wider plan of upgrade planned for Autumn 2011, to include reflective blinds, M & E controls and new calorifiers.</p>	
Island Cottage Upgrade	South Uist	<p>Sustainable Uist HS Contact - Moses Jenkins 01316688617 Moses.jenkins@Scotland.gsi.gov.uk</p>	<p>Detached cottage dating from 1935. Mass masonry with combed ceilings. Upgrades consisted of: Floor insulation on concrete floor, calcium silicate board for the walls (on the hard), aerogel in dormers and doors, wood fibre in coombes, new double glazed timber sash and cases windows locally manufactured. Work complete, monitoring to start Oct 2011.</p>	
Window Trials	112 Victoria Street, Stromness, Orkney	<p>Care and Repair Orkney Stromness Townscape Heritage Initiative</p> <p>HS Contact - Roger Curtis 01316688621 Roger.curtis@scotland.gsi.gov.uk</p>	<p>Detached townhouse on Stromness waterfront (C 1780). New timber double glazed sash and case windows fitted to a B Listed building in an exposed location and replacing inappropriate and failing modern pattern windows. New shutters designed and fitted to suit. Testing of various paint options under way (exposure trials). The resident, a pensioner, feels the difference.</p>	