A BRE audit identified that 95% of waste from the refurbishment of two university buildings could be recycled or sold – potentially earning more than £26,000.

T-Zero

This case study forms a key outcome of a part Government funded project to make it easier and cheaper to reduce carbon emissions through refurbishment.

The T-Zero website brings together the necessary elements to achieve this objective, from modelling the existing home, to comparing options for improvement and directly contacting suppliers of chosen home improvement measures, plus a lot more.

To find out more about T-Zero and to access other case studies go to www.tzero.org.uk

T - ZERO
REFURBISHING HOMES FOR A LOW CARBON FUTURE

The project

A university in South East England commissioned BRE to carry out an audit of two buildings ear-marked for refurbishment at its main campus. Built in 1908 and used as artists' studios, there had been no work on the low-rise brick buildings after 1947.

Plans to use them as offices for the university's estate's management, required they be refurbished to bring them in line with new building and safety standards.

The building works to be undertaken included removing doors, some of the internal partitions, the heating system and the existing wiring, and re-roofing the buildings.

The audit

The main aim of the pre-refurbishment audit was to provide the university with the information it needed to get the most benefit from reclaiming and recycling (in that order) the materials involved.

Refurbishment projects often generate large quantities of waste. Pre-refurbishment audits help ensure that as much of this as possible is diverted from landfill through reclamation and recycling.

This would allow it to target the key refurbishment products in a way that:

- reduced the cost of disposing of waste materials arising from the refurbishment
- realised the potential financial benefits of recovering materials
- helped develop policies for future regeneration projects.

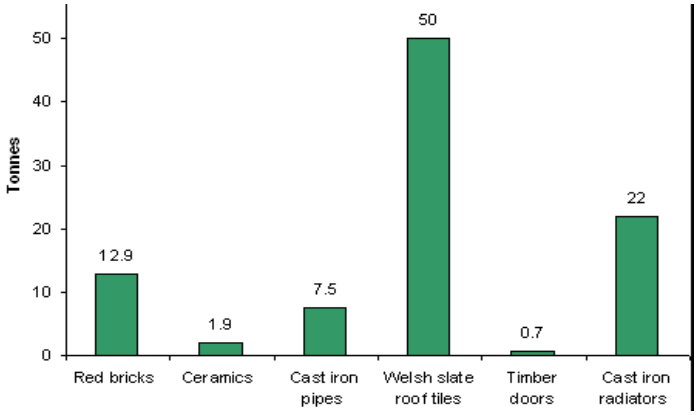
BRE conducted the audit using architectural drawings and data gathered in a site survey, during which non-invasive inspections were made and photographs taken.

Findings

The buildings, which had Victorian-style fittings and construction materials, were inspected by BRE to identify the types of material present, their quantities and economic value, and the practicalities of retrieving them.

Based on these criteria, three products were selected for a reclamation valuation – Welsh slate roof tiles, timber doors and cast iron radiators – and three others were

identified as suitable for recycling – red brick, ceramics and cast iron piping. These materials totalled 95% by weight of the total waste materials generated by the refurbishment.



Quantities of materials removed from the buildings.

Reclamation and recycling

Slate roof tiles

BRE recommended that the tiles, which covered approximately 1,300 m^2, be advertised on www.salvo.co.uk. Advertising on the SALVO website is free of charge. At the time of the audit there were twenty entries on it from businesses and individuals wanting slate roofing tiles.

Cast iron radiators

Radiators can be sold via architectural salvage yards. At the time of the audit the price of a small reconditioned radiator was £270. At a conservative estimate, because the 45 radiators needed reconditioning, the project could realise between £900 and £4,500 for them. Their value depends very much on their condition.

Pine doors

The audit recommended that the doors be removed, intact with their frame and ironmongery, for reclamation via the SALVO Website.

Product	Reclaim (t)	Recycle (t)	Reclamation valuation (£)
Welsh slate roof tiles	50	_	£25,000
Timber doors	0.7	_	-
Cast iron radiators	22	_	£900-£4,500
Red bricks	_	12.9	_
Ceramics	_	1.9	_
Cast iron piping	_	7.5	£262
Total:	**73**	**23**	**£26,162-£29,762**

The recovery options for the surveyed materials.

Red bricks

The bricks had been laid using cement mortar. It is usually too labour intensive to clean up individual bricks for reclamation – they are generally sent for recycling. But as only small quantities of high quality bricks were being removed from the buildings, the auditor concluded that it would be worth spending time cleaning them for sale as reclaimed bricks.

Bathroom, sinks and toilets

These items cannot be sold on, but can be sent for processing into recycled aggregates.

Cast iron pipes

The pipes were suitable for off-site recycling. The rate for mixed steel at the time was £35 a tonne.