



location on map (image from Wikipedia: <http://en.wikipedia.org/wiki/Knightsbridge>)

Glastonbury House

location: Westminster, Pimlico, London ,UK
dates:
type: Refurbishment
use: Residential
size: 20 storey tower block
people: 162 flats for older people
actors: Client: Westminster City Council / CityWest Homes
 Architect: Cole Thompson Anders
 Cost Consultant: Franklin + Andrews
 Intelligent Systems: i&i limited
 M&E Engineer: WSP
 Structural Engineer: WSP
 Landscape Architect: Studio Engelback
 Main Contractor: Wates Construction
 Communications Management: enabling concepts
 Research Management: i&i limited

goals:

- Decent homes improvements
- Installation of equipment to make use of non-renewable energy sources, including a wind turbine to generate residents' power supply, and rainwater harvesting to minimise water use
- Environmental improvements, including new communal gardens

energy use		KWh/m ²	construction	amenities
Space heating before renovation.		9830 kWh/flat per year	▪	
Space heating after renovation		7000 kWh/m2a		
CO2 saved due to renewable energy integration:		2,365 kg/a		
systems			special project features	site ecology
district heating			▪ Environmentally sensitive building materials	
combined heat & power	x		▪ Waste sorting and collection system	
solar panels	x		▪ Water saving measures	
solar cells	x		▪ Rainwater harvesting	
biomass and refuse				
wind power	x			
natural ventilation				
forced vent.w/heat recovery				
non-renewable energy				
individual metering				

process and history

In January 2001, Westminster City Council, a partner in INTEGER (an action research network in the UK), asked INTEGER to investigate options for the intelligent and green refurbishment of housing in general, and specifically residential tower blocks. 50% energy savings and 40% water savings were targeted. A key part of the project was the development of a virtual reality model to ensure that residents were able to have a clear understanding of what the project would achieve and were able to participate fully.



Front elevation

process and history

The strategy for the refurbishment was devised around the requirement for innovation in seven key areas related to social housing: management; social; design; construction; technology; environment; finance. Participation was particularly important, and consultation with residents continued throughout the demonstration phase. Residents remained in their own homes for as long as possible during the refurbishment, as the prospect of moving was a major anxiety for many people; this meant that the programme had to be devised so that as much work as possible could be carried out from the outside, and residents were moved out for as short a period as possible.

This ground-breaking refurbishment project is to set new technical quality standards:

- A showcase for environmentally friendly systems
- Intelligent Home Control (IHC)
- Integrated Reception System (IRS)
- Networked cabling infrastructure for DTV and broadband to every flat
- Potential 'free' telephone system throughout the block for calls between flats
- Resident involvement throughout the development process
- New neighbourhood centre and on-site management office to provide care and support for residents
- Waste segregation
- Target 50% reduction in energy consumption and carbon emissions
- More efficient heating and lighting
- Photovoltaics
- Wind turbine
- Target 40% water savings
- Rainwater harvesting
- Dual-flush toilets and low energy lighting
- Roof top residents' 'Sky Lounge'

Existing service infrastructures such as lifts and building service risers were maintained while replacement infrastructures such as external intelligent lifts and new, modern building services were installed, so that residents suffered as little disruption as possible. Multi-skilled teams were developed and trained to carry out rapid fit-out of flats on a rolling basis, to minimise disruption and to reduce the amount of time for which residents were required to vacate their flats

Control systems for heating, lighting and security systems within the block were upgraded to ensure efficient

use of resources and reduce wastage. At the same time, the systems were set up to provide passive and unobtrusive monitoring of residents to check that regular habits are kept to, and hence pick up any unusual behaviour which might be a sign of distress.

Best value was addressed throughout the project - through use of innovative procurement routes, two stage tendering, partnering, early involvement of suppliers and off-site fabrication to drive unit costs down.

description of special project features

The refurbishment project was broken down into four key stages:

- Feasibility study (completed November 2001) - To identify ways in which Westminster's housing policy objectives can be applied to the refurbishment of a tower block, using Glastonbury House in Pimlico as a vehicle for a study of generic solutions which may be applied throughout Westminster
- Demonstration Project (December 2001 - July 2003) - To propose and demonstrate ways in which possible refurbishment solutions may be trialled in a small scale demonstration project. For this purpose, Westminster City Council allocated two bedsit flats on the 19th floor, along with an exhibition space on the ground floor. The refurbished areas opened in September 2002, and will stay open until July 2003, during which period extensive consultation and ideas development will take place involving the City Council, residents, suppliers and other stakeholders.
- Pilot Project (Commence July 2002) - To consider how the ideas, processes and technologies used in the demonstration phase may be implemented on a major refurbishment of Glastonbury House or another similar tower block, and to begin the pilot refurbishment project in July 2003.
- Policy, procedure and guidelines (ongoing) - INTEGER is an action research network, and effective communication of research outputs is especially important. This occurs through written literature, seminars, workshop sessions and also through the INTEGER Education Programme. This initiative aims to bring the pilot project into the lives of the whole local community, and particularly into the school lives of the local children. To date, INTEGER has helped to develop around forty lessons linking into key areas of the National Curriculum such as physics, chemistry, design and citizenship. INTEGER will work with schools in the Pimlico area to involve them in the pilot project,

funding

Refurbishment costs: €14.48 million financed by Westminster City Council together with its housing managers CityWest Homes

results

- Energy - 50% energy savings and a 50% reduction in carbon emissions through more efficient heating and lighting systems, improved building insulation and use of renewable energies such as solar water heaters, photovoltaics and wind turbines
- Water - 40% water savings by efficiency measures including rainwater harvesting, use of spray taps and grey water recycling
- Waste - reduce waste in construction by closer management and off-site fabrication. Introduce pre-contract specifications for re-cycling. Reduce waste in use by considering waste separation, compaction and other technologies
- The micro-climate around the base of the building was improved through intelligent landscaping and the introduction of wind-deflectors. The balconies of the flats were made more habitable through enclosure.
- Life cycle costs were addressed - investing for the longer term in the housing stock. A 10% saving in year on year costs was targeted (compared to a traditional refurbishment benchmarked against savings of 9% identified in the feasibility study).

contacts:

sources:

- http://www.wates.co.uk/living_space/living_space_projects/glastonbury/
- <http://www.ukswedensustainability.org/projects/glastonburyhouse.jsp>
- http://www.integerproject.co.uk/westminster_team.html
- Reaching new heights in resident participation, Energy Efficiency in High-Rise Refurbishment <http://www.euroace.org/highrise/Case%20Study%20UK.pdf>

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