

Greenwich Millennium Village



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



Public space at Greenwich Millennium Village

location: London Borough of Greenwich, London, UK
dates: 1997 regeneration project started, due for completion 2012
type: New development on a previously occupied area (gas works)

use: Residential and mixed use development
size: 72 acres
people: more than 13000 homes
actors: Project Team: Promoter: English Partnerships, Masterplanner: Ralph Erskine. Phase 1 design coordinator: Hunt Thompson Associates. Project Manager: Trench Farrow & Partners. Specialist architects: Baker-Brown & McKay, Cole Thompson M&E engineer. Landscape and ecology: Battle McCarthy. Developer Consortium: Countryside Properties plc, Taylor Woodrow plc, Moat Housing Group and Ujima Housing Association.
goals: Explore and implement sustainable innovations in planning, design, and construction of a mixed-income, mixed-use residential neighborhood on a brownfield sites.

energy use	KWh/m ²	construction	amenities
heating&electricity, goal heating&electricity,achieved heating&electricity,best		Environmentally sustainable materials	primary school, day nursery, health centre and convenience store Greenwich Yacht Club
systems		special projects	site ecology
district heating combined heat & power solar panels solar cells biomass and refuse wind power natural ventilation forced vent.w/heat recovery non-renewable energy individual metering	x		

process and history

Greenwich Peninsula was once the site of the largest gas works in Europe, and now is one of the largest development sites in London and one of the biggest regeneration projects in Europe. With a previous industrial history, accommodating manufacturing industries such as munitions, chemical, steel and soap and finally having gas works it was a challenge to start the regeneration. In 1997 regeneration of the Peninsula was started by English Partnerships, stimulated by the fact that the site has been chosen to house the New Millennium Experience. At the beginning, English Partnerships have launched a competition in order to find a development team which would create a residential and mixed-use neighbourhood and set the standard for future sustainable urban regeneration. The winning consortium comprises Countryside Properties and Taylor Woodrow in conjunction with Moat Housing Association. The first Millennium Village is an exemplar scheme in the creation of sustainable new communities. It is located on the eastern side of Greenwich Peninsula.



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The Ecology Park at Greenwich Millennium Village

description of special project features

Site remediation

As a beginning the site was cleaned from the polyaromatic hydrocarbons and heavy metals up by the English Partners. Also attention was paid to preventing the pollution of the Thames, by installing a slurry wall adjustment to the river, which prevented shallow contaminated water from migrating into the river. In addition a capping layer was installed across the entire site in order to ensure that the future site users are separated from the remaining lower ground level contaminated materials.

Master Plan and design

The vision for the Village was to create a vibrant new community that works for people and where the pedestrian has priority over the car. A part of the Master plan is a series of Engineering and Landscape layers which include topography, climate, energy, geology, remediation, movement/security, landscape/ecology, waste, and surface water. The layers form a sustainable development framework and are integrated together by the design team to improve the sustainable design efficiency of the whole development. The levels of infrastructure include district heating, electrical distribution, foul water drainage, gas routes, and surface water.

Also, noise pollution, good indoor environment, human satisfaction, air quality, thermal control, acoustic control, daylight, and security were early taken into account into the design process.

Another innovation that was brought into the project concerns adaptability of the buildings. Greater levels of adaptability are achieved by using pre-engineered steel framed structures with standardised connections, grid layouts and arrangements that allow for later change; dry building techniques, services distributed so that they can be easily adjusted to the new needs; and cladding systems which can be dislocated to adjust to the new requirements.

Energy

Energy was considered as an important element of the development. The aim is to maintain steady organic flows of energy in and out of the neighbourhood. A new energy supply contract between Greenwich Millennium Village Ltd and Green Energy UK plc, means all the electricity in the communal areas, such as the stairs and hallways of the Village is now 'green'. All homes were equipped with water and energy efficient domestic appliances.

The heat and electricity needed for the Village is being generated on site through local, small scale, gas powered combined heat and power (CHP) plants.

Materials

The buildings are being built from materials that are environmentally sustainable. Recycled and locally produced materials are being used whenever possible. Proposed standard for Greenwich Millennium Village was to have walls areas satisfying $0.35 \text{ W/m}^2\text{K}$ (building standard at the time $0.45 \text{ W/m}^2\text{K}$) while windows $1.8 \text{ W/m}^2\text{K}$ (building standard at the time $2.8 \text{ W/m}^2\text{K}$).

funding

English Partnerships has invested over £200m in acquiring, reclaiming and developing the site.

results

If one goes to the official web-site of the Greenwich Millennium Village http://www.greenwich-village.co.uk/index_main.htm one can read only positive things, with the results being quite impressive. As with many other developments it depends how one defines and interprets the data. However, by simple search on the Internet one can also find articles that critically look at the development and present a different picture.

According to Kyung-Bae Kim, Greenwich Millennium Village Limited (GMVL), "...the team with the winning proposal,

was expected to set and achieve specific sustainability goals that would be subject to review and approval by English Partnerships (EP), the government agency acting as land owner and project overseer of the GMVP, before the project could progress into any of its four phases. Most of the sustainability goals and targets in GMVL's proposal were either dramatically modified or completely omitted after winning the competition (e.g., 10% energy reduction target was not met, zero carbon dioxide emission target was revised to a 35% carbon dioxide reduction, 35% water use reduction was lowered to 15% reduction in the first year and ultimately 30% reduction in five years, waste reduction goals were left out of the legal agreement, standardized off-site construction was changed to brick and concrete on-site construction, integrated private/social housing goals were modified and diluted, community was not involved despite GMVL's claimed commitment to community participation)."

Katrice Helinski wrote that: "...the winning architecture firm, Hunt Thompson and Associates, has resigned from the project "because the original ecological (or sustainable) standards were increasingly being run down by the developers, to such an extent that they could no longer sign-up to the project."

At the official web-site of the Greenwich Millennium Village results are presented as:

Targets and results to date

The technical innovation targets were set to be achieved during the first development phase of the project. They involve:

- **Primary energy – reduce by 80%.** By March 2007 achieved reduction is 65% through improved insulation standards and use of Combined Heat and Power
- **Embodied energy used for building construction – reduce by 50%.** By March 2007 reduction was 25% achieved by selecting materials using BRE Green Guide that require low amounts of energy for their production and make use of recycled product.
- **Water consumption – reduce by 30%.** By March 2007 reduction achieved was 25% by specifying water efficient taps, showers, toilets, and white goods.
- **Construction cost – reduce by 30%.** By March 2007 the real costs were reduced by 20% while maintaining high specification levels through value engineering, partnering with suppliers and standardisation.
- **Construction period – reduce by 25%.** By March 2007 20% of time saving in construction periods was achieved. Standardisation and early weather tightness is the main reason for the results.
- **Work towards achieving zero defects on practical completions.** By March 2007 significant improvement has been achieved through implemented staged quality reviews during the design and construction.
- **Construction waste – reduce by 50%.** By March 2007 target has been reached. Waste that is produced is segregated and when possible recycled, it is measured and continuously reported.

For the period between 2007 and 2014 a new set of targets are set and some of them are:

- CO₂ emissions are not to exceed 20kgCO₂/m² when calculated in accordance with 2005 Standards.
- Embodied energy used to construct buildings to be less than -
 - For high rise apartments - 500KgCO₂/m² total building area including foundations and associated common parts (excluding podium car parking structures).
 - For low rise houses and apartments - 260 KgCO₂/m². No C rated materials from the BRE Green Guide to Housing to be used unless required for performance reasons.
- Water consumption in the home to be less than 40 cu m/bed space/year as calculated by the BRE EcoHomes methodology.
- Provide facilities in and around the home for residents to pre-sort 50% of domestic waste into recyclable components.
- Reduce average construction waste for apartment block construction (excluding ground work) to a maximum of 20m³ per dwelling.



Picture 1 Greenwich Millenium Village, picture by Tor Fossum

contacts:

sources:

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 Kyung-Bae Kim, Ph.D., (2005). Toward Sustainable Neighborhood Design: A Sustainability Evaluation Framework and a Case Study of the Greenwich Millennium Village Project, Journal of Architectural and Planning Research, volume 22, issue 3, pages 181-203
 Katrice L. Helinski, Greenwich Millennium Village: planned sustainability? <http://ocw.mit.edu/NR/rdonlyres/Architecture/4-183Spring2004/B674D26D-5433-412C-880F-F1C20A3DEDCA/0/midhelinski.pdf>
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