Adaptable Code for Sustainable Homes L4

The housing for over 17,000 athletes during London 2012 will be finalised for compliance with Code for Sustainable Homes (CfSH) Level 4 residential units.

**Business benefits**

- The design approach for adaptability has ensured the Athletes’ Village is flexible enough to provide a lasting legacy and a new London quarter.
- Employment focus in East London and providing training and apprenticeships.
- Lend Lease developed a training programme called "NoWaste" which all site workers had to attend. Cost savings of £135,000 were achieved over a nine month period as a consequence of improved practices. The programme was based on practical and lean construction techniques.

**Project background**

Starting at the end of October 2012, the Athletes’ Village accommodation will be retrofitted into 2,818 new homes. 1,379 will be affordable and 675 of those will be for social rent. Accommodation will start to be available from August 2013 – approximately 30% will be affordable homes.

The ODA and Lend Lease focused on the end legacy requirements of the site Masterplan, which incorporated flexibility as a design consideration. During design workshops the design team identified opportunities to improve the adaptability of the accommodation. The opportunities were logged on an information portal called “in touch”, which was used by Lend Lease throughout the development process.

**Project details**

- Location: Olympic Park, Stratford, London
- Client: Olympic Delivery Authority
- Development and Construction Manager: Lend Lease
- Architects: Multiple design teams

**Designing for deconstruction and flexibility**

A range of approaches were adopted.

- The structural frame is fixed together with the access and service cores.
- The cladding panels are generally full storey height and are mostly interchangeable.
- Games use temporary bathrooms and partitions were designed for reuse after the Games.
- Off site manufacture was adopted for bathrooms; kitchens; facades; and balconies. Wiring was prepared off site and installed on site.
- Built elements such as partitions can be moved to reconfigure space if required.
- All temporary partitions can be reused. British Gypsum will accept back all these panels after the Games. (LOCOG will be responsible for any major damage incurred; ODA will be responsible for general wear and tear.)

If a unit is over two floors, a knock out panel in the floor ensures a lift can be installed at some point in the future – a ‘Life Time Homes’ requirement.
Benchmarking
The masterplan DNA design of the Athletes’ Village meant that design variations were kept to a minimum; in addition every single component was benchmarked for quality and signed off by ODA. The signed off component remained on site and suppliers and contractors had to deliver every component to meet the standard of the benchmark.

Materials quantity
The design teams were responsible for proposing materials which were then controlled through an overarching design board. Materials were selected based on parameters including:

- material life;
- maintenance costs and life expectancy;
- sustainability credentials; and
- minimising on site construction and mitigating buildability and operational safety risk.

Materials wastage
- 95.6% diversion of construction waste sent to landfill was achieved.

Recycled content
- 22% recycled content by value overall.
- Carpet from Interface has 50% recycled content.

Embodied carbon
- 85% of bulk items for concrete were delivered by rail, which saved 40,000 tonnes of embodied carbon compared to delivering by road.
- Logistics centres based around the M25 were used for storing materials offsite, which reduced the number of vehicular movements to the site.

Water use
- The temporary requirement during the Games is based on water demand. Each athlete is predicted to use 105 litres/day.
- Accommodation is provided for four athletes per bathroom during the Olympics, reduced to three athletes per bathroom for the Paralympics as additional space and time is required by each athlete.
- Rainwater harvesting systems have been installed, which contributed to the achievement of the CfSH requirement of <105ltr/p/d.

Life span (e.g. durability)
- Every dwelling in the Village is compliant with the 16 criteria of lifetime homes.
- The accommodation is guaranteed to be structurally sound for 60 years.

End of life potential
- The plasterboard used in temporary partitions is fully recyclable and the contract with British Gypsum allows boards to be sent back to them.
- Desso offers cradle to grave recycling for all aspects of the carpet materials.
- When the building is eventually demolished the concrete frame can be crushed again for reuse.

Resource scarcity & security
- The Village is the largest project to date to achieve Full FSC Project Certification. 18,000m³ of timber was used, 98.2% of which had unbroken chain of custody to the site. (2009: TT-COC-002826).

While we have tried to make sure this case study is accurate, we cannot accept responsibility or be held legally responsible for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading. This material is copyrighted. You can copy it free of charge as long as the material is accurate and not used in a misleading context. You must identify the source of the material and acknowledge our copyright. You must not use material to endorse or suggest we have endorsed a commercial product or service. For more details please see our terms and conditions on our website at www.wrap.org.uk

---

Waste & Resources Action Programme
The Old Academy
21 Horse Fair
Banbury, Oxon
OX16 0AH
Tel: 01295 819 900
Fax: 01295 819 911
E-mail: info@wrap.org.uk
Helpline freephone 0808 100 2040

www.wrap.org.uk/construction