

## **Commonwealth Games Athletes' Village and Energy Centre**

The Commonwealth Games Athletes' Village and wider East End regeneration is in a former industrial area extending along the River Clyde, which houses some of the most deprived communities in Scotland. It is the first large scale carbon neutral project in Scotland and it has two key objectives:

- Regeneration of Glasgow's East End with a new approach to sustainable housing
- Reduction of fuel poverty and creation of affordable heat in one of the poorest parts of the city

The Commonwealth Games Athletes' Village comprises 700 new homes joined to a local district heating system, housed in a purpose built new Energy Centre. The village will, post-Games, become an eco-friendly community with both private and social housing residents in a family and pedestrian-friendly environment, with state-of-the-art ICT providing a model for other developments to follow.



2014 COMMONWEALTH GAMES - ATHLETES' VILLAGE  
RIVERSIDE STEADINGS - AERIAL PERSPECTIVE  
ARCHITECT'S IMPRESSION #02  
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The sections below set out how the initiative fulfils the key European Commission and STEP UP lighthouse criteria.

## **Integration of energy, ICT and transport**

The Commonwealth Games Athletes' Village is an outstanding regeneration project in terms of innovation and integration in the three sectors of energy, ICT and transport.

### **Energy**

**Energy Centre:** the Athletes' Village Energy Centre is a district heating scheme linked to an eco-housing model, with other sustainability features on the site also forming part of the scheme. All homes are supplied with heating and hot water by a network of underground pipes from the purpose built central energy centre, which houses a Combined Heat and Power (CHP) engine and three back-up gas boilers. The energy centre will also serve a Care Home Unit for elderly people.

The scheme has been future-proofed to include capacity for an additional CHP engine, boiler and thermal store in order to accommodate additional connections at a later date beyond the site boundary, including the potential to connect with other district heating schemes across the city.



***Commonwealth Games – Athletes Village – CHP Engine***

**Eco-housing:** in terms of energy efficiency, all the properties in the Athletes' Village have been built to achieve an 'excellent' eco homes rating, including high quality thermal insulation and solar panels to allow properties to supplement their electricity supply. Energy monitors and smart meters will also help ensure homes and appliances are used efficiently (see below).

## **ICT**

**Telecommunications:** as the project is part of the Glasgow 2014 Commonwealth Games, this provides an opportunity to combine telecommunications infrastructure and equipment with state-of-the-art eco-housing and district heating. High speed fibre optic broadband has been made available on the site and at each venue for future business and community use. Every terraced house has been fitted with a satellite dish. Access to, and the availability of, ICT will enable people to work more flexibly in the future, which has the potential to improve their work-life balance.

**Smart meters:** energy monitors and smart meters will help to make homes and appliances more energy efficient, ensuring residents only pay for the energy they use and helping them understand their use better. This will encourage residents to use energy more efficiently and, as a consequence, will see lower bills. A spin-off benefit will be better energy literacy amongst residents.

## **Transport**

**Transport Strategic Plan:** a Transport Strategic Plan has been developed as part of the Commonwealth Games 2014, to enhance opportunities to develop and expand projects to promote public transport use, reduce reliance on cars and improve air quality, both during the Games and after. During the Games, the Athletes' Village area and all Games venues will be designated as a 'low emission zone' (LEZ), with vehicles subject to a permit system to restrict access to venues based on the Euro-5 engine category (designated as the minimum standard for LEZs).

The actions being undertaken include the improvement of cycling, walking and public transport routes. In particular, railway stations close to Games venues, including Dalmarnock Station near the Athletes' Village, are benefiting from a £1 million programme of improvements in passenger facilities, including new customer information screens, waiting shelters, seating and lighting.

## **Other**

Additional measures beyond energy, transport and ICT include: Sustainable Urban Drainage Systems (SUDS); innovative approaches to the decontamination and reclamation of vacant and derelict land in the city; ambitious targets for the diversion of waste from landfill (80% of Games waste will be diverted from landfill, with the ambition to extend this further); sustainable procurement procedures; the use of recycled materials in the construction of the Village; and the provision of extensive recreational space including a new woodland park and other facilities for young people. In addition, there have been many opportunities for local employment in the construction of the Athletes' Village, which has provided economic and social benefits for local communities.

## **Replication and scalability**

Although the development is connected to a large scale, one-off sporting event, the Athletes' Village project has been seen as a good opportunity to trial innovative ideas, enhancing understanding of the potential for what could be achieved elsewhere in the city after the Games. The project is recognised as an exemplar, and elements of it are already being replicated in other areas of Glasgow (e.g. through the Clyde Gateway). City Legacy, the company responsible for delivering the Athletes' Village, has been open about its approach, helping others to learn from the project.

The 700 houses demonstrate innovation in building design and the use of sustainable materials. The homes have been rated under the BREEAM (Building Research Establishment Environmental Assessment Management) Code for Sustainable Homes and voluntary measurement rating for green buildings ('EcoHomes') as 'excellent' (best practice in sustainable building design). The Athletes' Village now sets the standard for best practice in sustainable building design, construction and operation in the city. The city's new Local Development Plan will set out a vision that any new development in Glasgow will meet similar standards, based on the high standards achieved in the Village. There are also plans to extend the district heating network from the Energy Centre in the Athletes' Village to other local housing structures. The transferability of the project is being closely monitored, with approaches adopted in the Village being seen as exemplar in fields such as sustainable building design and the management of waste streams.

The knowledge, publicity and awareness gained through the operation and monitoring of the Low Emissions Zone scheme will help consideration of future formal LEZs across the city,

taking into account the health of Glasgow's citizens, the impact on business and the Council's overall strategic environmental and transport policies.

### **Integrated building blocks**

The Energy Centre and district heating system were created as a commitment of the Games bid submitted by Glasgow, as part of the ambition to deliver a sustainable Games. This was then translated into the Games development brief, with the connection to the development of energy efficient housing established. In turn, this informed a competitive dialogue process leading to the appointment of City Legacy to deliver the Athletes' Village and Energy Centre infrastructure.

The synergy between the Energy Centre, housing development and sports complex has been integrated from an energy, ICT and transport perspective, as part of an overall approach to sustainability and regeneration. The Energy Centre, as well as serving the residential area (Athletes' Village and care home), is connected to the Emirates Arena sports complex, meaning that the benefits of communal heating are shared amongst different users and for different purposes. This strategic approach has helped to reduce energy costs at the sports centre and maximise the efficiency of the whole system.

The location of the Athletes' Village is in a loop area of the river Clyde and as part of the integration and sustainable use of resources, a new bridge is being built across the river. This bridge will link the Athletes' Village with the Cuningar Loop on the southern bank, where a woodland park is due to open after August 2014. Around 10,000 trees are being planted to create a woodland park which will create a breathing space for the community, social recreation and green space as part of the regeneration of the former derelict site.





### **Monitoring and reporting**

The overall success of the project is being closely monitored by City Legacy, as required by the Commonwealth Games contract, under which a report must be provided setting out how everything agreed in the initial bid has been met. A number of key performance indicators for sustainability are also being monitored, as noted in Glasgow City Council's Commonwealth Games legacy framework.<sup>1</sup> In addition, Scottish Government research teams are studying various impacts related to the legacy of the Games, including the sustainability of the Athletes' Village.<sup>2</sup>

The Athletes' Village and district heating network will count towards the reduction of carbon emissions for Glasgow. The carbon savings estimated for this project are 1,013 tCO<sub>2</sub> per annum, due to the introduction of a gas CHP plant. Grid derived electricity consumption is estimated to reduce by 9,462 MWh per annum and gas consumption will increase by 20,165 MWh per annum (to run the CHP). As gas produces lower emissions than electricity, the overall CO<sub>2</sub> emissions result for this project is a net reduction. The energy performance of the site will be monitored by the carbon management team in Glasgow City Council.

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<sup>1</sup> Glasgow 2014 legacy framework: [www.glasgow.gov.uk/CHttpHandler.ashx?id=7770](http://www.glasgow.gov.uk/CHttpHandler.ashx?id=7770)

<sup>2</sup> An Evaluation of the Commonwealth Games 2014 Legacy for Scotland: [www.scotland.gov.uk/Resource/0040/00408160.pdf](http://www.scotland.gov.uk/Resource/0040/00408160.pdf)

## **Key winning elements of success**

### ***Political leadership with a long term approach***

The Athletes' Village, initially created for the Commonwealth Games 2014, is a political priority for the city and will have an important legacy for Glasgow in terms of regeneration and city profile. One of Glasgow's aims for the legacy of the Games is to create a greener Glasgow, and this project (as it is linked to a high profile international event) will be a demonstration project for the city. It will help meet the city's ambitions in terms of becoming one of Europe's most sustainable cities, whilst also making the 2014 Commonwealth Games the 'greenest Games ever'.

The project is a central element of Glasgow's political commitment to a 30% carbon reduction target by 2020 from 2006 levels, as set out in the Sustainable Glasgow report (the city's Sustainable Energy Action Plan, or SEAP) in 2010. Tackling fuel poverty and providing affordable heating is another political priority for Glasgow, where 30% of the population currently live in fuel poverty.

### ***Collaboration and dialogue with all stakeholders***

The Athletes' Village project is built upon, and has demonstrated the need for, an integrated approach between sectors and stakeholders, without which the project would never have been feasible. This project features strong integration between the private and public sectors. By working together, the stakeholders have transformed a brownfield, derelict site into an attractive urban environment.

Glasgow City Council, through the City Legacy consortium, has taken forward the construction and development of the Athletes' Village. Local citizens have had the opportunity to influence the scope of this project, with the local community council using this opportunity to lobby for a new community centre, which was approved by the Council.

### ***Contribution to multiple policy objectives***

#### ***Carbon emissions reduction***

The Athletes' Village will see a reduction in carbon emissions of around 60% compared to what would be expected from similar sized conventionally designed and heated schemes. It is the first development of this size in Scotland to be designed and heated in this way and

will contribute towards Glasgow's 2020 CO<sub>2</sub> emissions reduction target (see section on monitoring and reporting above).

#### *Transformation of brownfield sites*

The area of land used to build the Athletes' Village was previously contaminated land left derelict as a consequence of the decline of many industrial sites over the past century, from power stations to water works, leaving 35 types of contamination on site, including metals, arsenic, lead, hydrocarbons, pesticides and others. Of the 38.5 ha site selected, 33 ha required remediation of soil. Glasgow City Council appointed private consultant Grontmij and contractor VHE to decontaminate the area using soil washing. In total, 140,000 cubic metres of soil were decontaminated and reused for the housing development; if this measure had not been implemented the contaminated soil would have ended up in landfill.

Decontamination of this land was a considerable challenge for project partners, especially given the level of contamination and limited time available (less than a year).

#### *Generation of employment*

The construction of the Athlete's Village and other facilities has created 620 jobs (direct and indirect). City Building, one of the stakeholders involved in the project, employed local school leavers to work on the site under the Commonwealth Apprenticeship Initiative (CAI). In total 84 apprenticeships were created, giving local young people skills in trades and business, whilst also providing practical experience and income.

#### *Tackling fuel poverty and supporting affordable warmth*

Housing in the Athletes' Village will be well insulated, making it easier and cheaper to heat. Energy bills in the Athletes' Village are estimated to be 40% lower than average. Each house will have a heat meter and will pay for the energy they use rather than receiving estimated bills.

The provision of affordable warmth is a priority amongst some European countries, although poorer quality home insulation compared to elsewhere in Europe means this is more of a priority in the UK. The provision of district heating alongside better insulation and energy efficiency is now growing in the UK, and in Scotland in particular, having become commonplace and almost universal in places such as Denmark and Sweden. The Athletes' Village is seen to be a good example of how these schemes could work in Glasgow, where a number of other district heating schemes are in the pipeline.



### *Improving social housing*

Central to this project is the improvement of the quality of inner city social housing, a challenge faced by cities across Europe. In Glasgow, the Athletes' Village project is expected to raise expectations of what can be achieved in new build housing and also what can happen to existing social housing stock elsewhere in the city, much of which is in great need of insulation and better heating.

### ***Business models to attract investment***

Owing to the project being part of the Commonwealth Games, the model used is broadly a partnership between public and private sectors, split into pre-Games, during the Games and post-Games structures. Overall, the financing of the project is split on an 80/20 basis between the Scottish Government and Glasgow City Council. The total project investment is approximately €240 million (£200 million).

### *Pre-Games*

Glasgow City Council, in partnership with the developer City Legacy, is providing housing and general infrastructure (roads and utility services). Leading up to the Games the site was developed by City Legacy, subcontracting out the following works:

- Housing construction: to several private sector consortiums from across Scotland;
- Energy Centre: provided by Vital Energi (a UK wide CHP specialist with expertise from other similar centres constructed in the UK);
- Care home unit: City Building Ltd.

### *During the Games*

During the Games the organising committee, Glasgow 2014 Ltd, is responsible for the site and the operation of all facilities connected to the Games. The handover took place in January 2014 with the remainder of the Games overlay now being installed ahead of the opening of the Athletes' Village on 13 July 2014.

### *Post-Games*

Management of the site post-Games will revert to Glasgow City Council. The completion of the retrofit works on the site will take place by April 2015 and handover to Glasgow City

Council, housing associations and developers will take place at this time. The roads will be adapted and maintained by the Council.

- Around 300 houses will be allocated for private sale, with the remaining 400 houses for social rent through three local housing associations (Glasgow Housing, Thenu Housing and West of Scotland).
- The care home unit will be managed by Glasgow City Council (Social Services).
- The district heating network will be operated by Glasgow City Council and Vital Energy.

### **Promotion of the initiative**

The Commonwealth Games Athletes' Village is actively promoted as one of the sustainability flags for the forthcoming Commonwealth Games in Glasgow ([www.glasgow2014.com/games/venues/athletes-village](http://www.glasgow2014.com/games/venues/athletes-village)). Visits to the site were promoted last year as part of the 'Open Doors Day' in Glasgow, where many buildings are opened to the public ([glasgowdoorsopenday.com/programme/events/athletes-village](http://glasgowdoorsopenday.com/programme/events/athletes-village)).

The project has attracted attention from the media because of its link with the Commonwealth Games and also because of the innovative nature of the project from a building and sustainability perspective.