



partnerships for schools
building schools for the future

This case study explores the sustainability credentials of the co-located Highbury Grove and Samuel Rhodes schools in Islington, London.

It will consider how the campus will facilitate carbon, energy and water reduction, waste management and biodiversity, and also how transport issues have been addressed in the bid to support energy reduction.

Key project information

Local authority: London Borough of Islington

BSF wave: Wave 2

Type of school: Comprehensive secondary school co-located with the secondary department of a Special Educational Needs school

Project cost: £30m

Number of students: 1,200, aged 11 to 18

Project leads: London Borough of Islington, Cambridge Education and Transform Schools

Contractor: Balfour Beatty Construction and Balfour Kilpatrick JV

Architect/M&E Designer: BDP

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Project description

In designing a new build co-located secondary and secondary department of a Special Educational Needs (SEN) school as part of its BSF project, the London Borough of Islington has kept sustainability issues – particularly how new schools will facilitate carbon, energy and water reduction, waste management and biodiversity – high on the agenda.

The London Borough of Islington, working with Cambridge Education and Transform Schools, has involved students in sustainability decisions affecting their schools, and has tackled the issue of transport for students and staff in a bid to support energy reduction.

Highbury Grove School is a mainstream secondary school which will be co-located with the secondary department of Samuel Rhodes SEN. The schools will have their own main buildings for lessons but will share dining and sports facilities. The design for the schools employs many carbon saving techniques, as outlined below.

Students are due to move into Samuel Rhodes in September 2009 and Highbury Grove in January 2010. External Works are due to be completed by June 2010.

Carbon and water reduction

The development of Highbury Grove and Samuel Rhodes is one of the first BSF school projects that will deliver 20 per cent renewable energy from on-site sources.

The **Ground Source Heat Pump** is an innovative solution that can provide simultaneous heating and cooling for the school. It increases performance (for example, the ratio of output heat to the energy consumed) and allows the system to meet other requirements without the expense of additional boreholes.

Specific site constraints led to a large proportion of the school being mechanically ventilated which allowed **Earth Tubes** to be integrated into the design. These

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giant underground concrete ducts exchange heat and cool with the ground, helping to reduce the amount of electric and gas heating the school needs and minimising or eliminating the need for mechanical cooling in classrooms.

A small **Combined Heat and Power** (CHP) plant is used to heat the swimming pool. It creates heat and electricity in a single process. CHP plants make extensive use of the heat produced during the electricity generating process, making it a sustainable and extremely efficient process which reduces carbon production. When not required by the swimming pool, the waste heat is fed into the main heating plant to 'top up' space heating and domestic hot water systems.

Rainwater harvesting collects at least 50 per cent of rainfall on the roof as well as hard standing and play areas. This water can be used for toilet flushing and site irrigation.

Reducing and monitoring energy use: the role of technology

The **Building Management System** (BMS) is integral to monitoring, reporting on and reducing energy consumption. The BMS can record the occupancy and energy use of zones of classrooms and large spaces in the school, as well as measuring major items of energy consumption.

Key data, including energy consumption, renewable technology contributions and weather data, will all be available on the school's Managed Learning Environment (intranet), so that the pupils can see how their activities impact upon energy consumption.

The schools' energy consumption will be comparable with others in the Islington BSF scheme, to promote energy or carbon reduction competition between schools.

Waste management

A wide variety of waste will be generated at the school. The core of the strategy deals with mixed recyclables and general waste, which are produced relatively consistently irrespective of specific activities.

Four stages of waste management have been identified for the effective management of the different types of waste. The four stages are:

1. Waste storage at point of production
2. Transfer of waste around the site
3. Central storage of waste on site
4. Waste collection.

An educational programme will be provided at the school to ensure the facilities put in place are used correctly. This will also provide a unique way to help pupils engage with issues of sustainability. The programme will aim to reduce the amount of waste produced at the school and in pupil's personal lives by getting staff and pupils to consider types of recycling and how to reduce waste.

Biodiversity

Green roofs are a visible addition to the landscape and biodiversity, while also adding thermal mass to the building by acting as insulators, and preventing excess rainwater run-off putting pressure on local drainage systems.

The school grounds will also feature new ponds and replanting, which will add to the site's biodiversity and provide suitable screening.

Use of the school grounds

"Learning Tools within the Landscape" is an idea adopted in the initial stages of design to make key sustainable features visible throughout the site.

For example the **Earth Tube vents** were strategically placed within the landscape to draw attention to them and arouse pupils' curiosity.

A **wind turbine** on the school grounds is a key focal point for learning about sustainability, as well as producing approximately 0.61 per cent of the site's energy. Power being generated by the wind turbine can be seen on a digital display which will be used as a learning tool, with students monitoring the energy output over the different seasons.

The new landscape provides **formal** and **informal outdoor areas** for pupils whether at play or as part of a learning environment. The majority of the schools' learning spaces will face towards the "park area", creating a focal point for all students and staff to enjoy.

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Inclusion and participation

Islington Council and its education services provider Cambridge Education developed a complete strategy for engaging students in BSF, including on sustainability issues.

For example, a design festival, held in conjunction with School Works, addressed sustainability issues. At the event pupils identified 10 key sustainability aspects they felt were important to their school. Pupils also named their preferences of sustainable materials, with wood being popular. This feedback directly contributed to a significant inclusion of timber in both external and internal aspects of the school. Students expressed excitement at the potential for their school grounds to have a wind turbine. This contributed to the decision to include a turbine in the school design.

Pupils continue to be consulted on sustainability issues and will be given the opportunity to engage and influence green policies, for example in the area of waste management.

Sustainable travel

The school has been keen to promote walking as a key mode of transport for students, teachers and parents. With that in mind, pedestrian access has been improved – there are now clearly defined and pedestrian friendly entrances for both schools. A conscious decision was made to discourage parents from driving their children to school and as a result there is no “drop off” area in the school designs.

The quality and frequency of cycle spaces and covered cycle storage has been significantly improved, with the number of cycle spaces boosted to one for every 100 people. Covered cycle storage is located at each of the three main entrances to the schools.

The number of car parking spaces has been reduced by half, with spaces provided for essential use only. The new car park will be gated, with controlled access, and the entrance will be situated away from key pedestrian and cycle paths.

Car charging points will be provided for electric cars.

Key contact

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Further information

Highbury Grove School's website: www.highburygrove.islington.sch.uk/

More information about the London Borough of Islington's BSF project: www.islington.gov.uk/education/SchoolYears/SchoolsforFuture/bsf/bsf_islington.asp