

# Cardinal Wiseman Catholic School – Phase 1 (New build) Greenford Road, Greenford, London Borough of Ealing BREEAM Case Study

## 1. A basic description of the project and building

### Project Team Details

Client – Future Ealing

End User – Cardinal Wiseman Catholic School

Architect – JM Architects

Civil Engineer - Cundall

Structural Engineer - Cundall

Building Services Engineer – Cundall

Fire Engineer - Cundall

Project Manager – EC Harris

Principal Contractor – Balfour Beatty

BREEAM/Sustainability – Cundall

### Background of the Project

Future Ealing is a consortium of Balfour Beatty Investments and the London Borough of Ealing, established to deliver the Ealing BSF programme, comprising Cardinal Wiseman Catholic School and Dormers Wells High School.

### Building Details

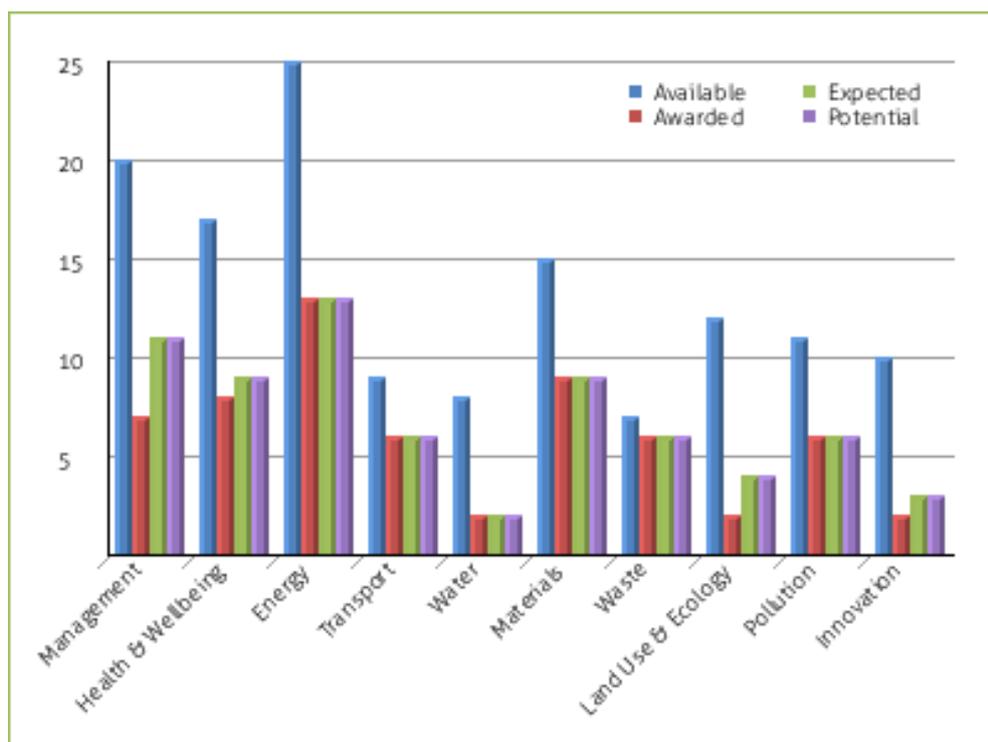
Cardinal Wiseman Catholic School is one of the largest secondary schools in London. The project involved 5 phases, the first of which – The Jerusalem Building or Block A – is new-build, and the subject of this BREEAM, whilst the remaining phases involved the refurbishment and re-modelling of existing buildings. Construction of the Jerusalem Building proceeded following demolition of an existing building on its site and the school remained in occupation throughout the redevelopment.

The Jerusalem Building faces and is immediately adjacent to the busy Greenford Road. It was a requirement of the planning permission that there were no opening windows in the new building, which therefore had to be entirely mechanically ventilated.

## 2. BREEAM Rating and score

Cundall was appointed to produce and submit the BREEAM application for the Cardinal Wiseman Catholic School redevelopment under BREEAM Education 2008.

The building is targeted to achieve a score of 56.97%, giving it a rating of 'Very Good'.



## 3. The key innovative and low-impact design features of the building

The building achieved an EPC score of 36 equating to a rating of "B" which surpassed the new build target score of 47. The school has a biomass boiler and photovoltaic cells installed, resulting in a 29.2% CO<sub>2</sub> saving for the scheme compared with a reference building, which has helped towards the EPC score.

A Site Waste Management Plan was produced to control non-hazardous construction waste generated by the building's construction phase and to maximise the proportion of waste diverted from landfill to be re-used on site, on other sites or recycled.

An environmentally friendly Building Management System is in place to monitor and control the boiler, air handling units and internal environmental conditions. This was designed to facilitate use as an educational tool.

Leak detection is in place to prevent wastage of water.

Summary of installed Building Services:

- The building is predominately mechanically ventilated, with active chilled beams providing heating, cooling and lighting to the teaching and office spaces.
- The dining area, server, kitchen and catering areas are mechanically ventilated with tempered fresh air only via roof mounted AHUs
- All studio and activity areas are air conditioned via local fancoil units and a roof mounted AHU with heat recovery units
- The toilet areas, changing areas and cleaners cupboards will be supplied with dedicated extract systems
- The server rooms and ICT hubs will be cooled by local split units.
- The development heating load will be met by two high efficiency Hoval UltraGas AM/720 gas-fired boilers and a base load Hoval BioLyt biomass boiler, which will feed the LTHW radiators, AHU coils and active chilled beams.
- The LTHW system will also feed the indirect fired DHW system via Breeze domestic hot water unit and a 2300l Domestic Copper Lined Buffer Vessel.
- One roof mounted TRANE Model RTAC Liquid Chiller will meet the development's cooling requirements.

#### 4. Construction Building Cost

Budget Costs

Basic Building Cost	£837/m <sup>2</sup>
Services Cost	£396/m <sup>2</sup>
External Works Cost	£101/m <sup>2</sup>

#### 5. Gross floor area

Gross Internal floor area 8032 m<sup>2</sup>

#### 6. Predicted energy consumption and carbon emissions

System:	Consumption kWh/m <sup>2</sup>	CO <sub>2</sub> Emissions kgCO <sub>2</sub> /m <sup>2</sup>
heating	14.57	2.83
Domestic hot water	31.08	6.03
Cooling	1.36	0.57
Auxiliary	4.15	1.75
Lighting	12.61	5.32
Total	63.77	16.50

## 7. Predicted renewable energy generation

Source:	kWh/m <sup>2</sup>
Biomass boilers	2.35
Photovoltaic cells	2.1
total	4.45

## 8. Steps taken during the construction process to reduce environmental impacts, including innovative construction management techniques.

- Site Waste Management Plan (SWMP)
- Off-site manufacturing of prefabricated building services modules, reducing site waste
- A site access programme was created to show the access routes around site whilst the footprint of the working site area changed phase by phase. A covered footbridge was erected to carry site operatives over active school routes across the site where these would otherwise have clashed, in order to keep the two areas entirely separate.

There were a number of visits from the Considerate Contractors Scheme, providing high scores on each visit, resulting in the award of a Performance Beyond Compliance certificate.

## 9. Socially or economically sustainable measures achieved/piloted

The workforce and supply chain were sourced from the local area where possible with shorter deliveries helping with the Site Waste Management Plan.

Balfour Beatty is part of the 5% club where 5% of the workforce is made up of graduates and trainees who developed their skills on site through suitable training and mentoring.

Regular newsletters were issued to the surrounding dwellings to keep neighbours informed as to how our operations could potentially affect them.

The site was located in a busy location – facing a busy road, adjacent to a large Council depot and bus garage, with continuous pedestrian and heavy vehicle movements. Throughout the construction process, the existing school remained in operation on the same site. Through careful planning and responsive management, there were no reported incidents involving any of the members of the public or school staff or pupils and we received consistently positive comments from Considerate Contractor Scheme site visits.