

**Post Occupancy  
Evaluation**

**- Cumbernauld College  
Functional Performance  
Review Condensed Report**

Prepared for: Andrew Chamberlain  
Project Director  
Scottish Funding Council

6 June 2008

Client report number **CC FPR 2**

**Prepared by**

---

Name Leanne McMillan

Position Senior Consultant

Signature

---

**Approved on behalf of BRE**

---

Name Laura Birrell

Position BRE Scotland Associate Director

Date 6 June 2008

Signature

---

BRE Scotland  
Kelvin Road  
East Kilbride  
Glasgow, G75 0RZ  
T + 44 (0) 1355 576200  
F + 44 (0) 1355 576210  
E [eastkilbride@bre.co.uk](mailto:eastkilbride@bre.co.uk)  
[www.bre.co.uk](http://www.bre.co.uk)

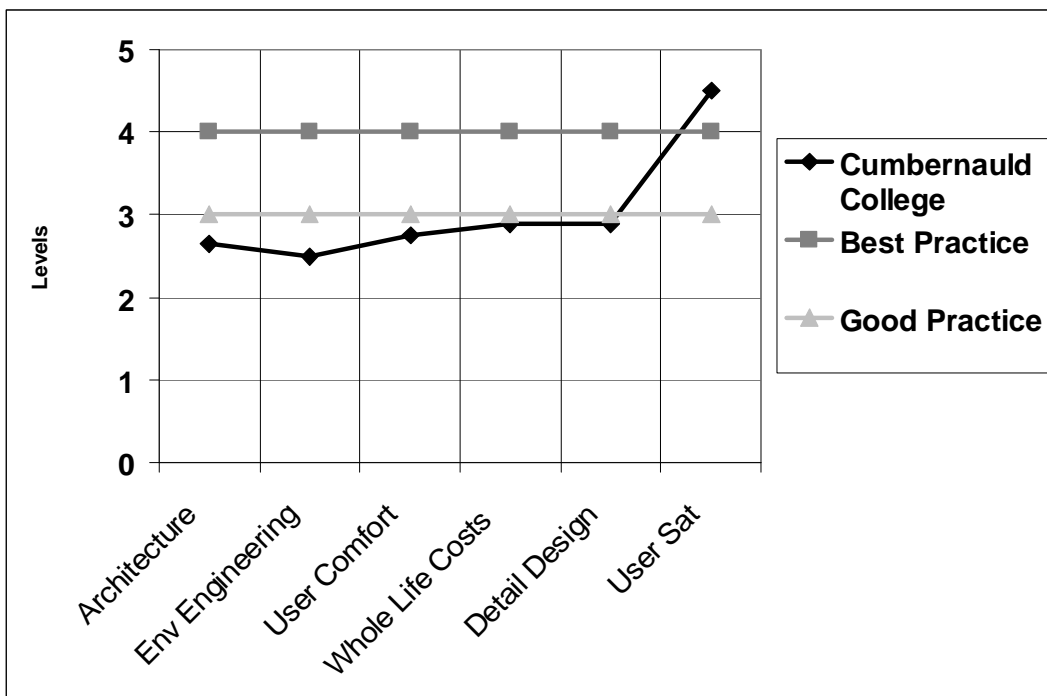


This report is made on behalf of BRE. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

## Executive Summary

The Scottish Funding Council (SFC) commissioned BRE to undertake a Post Occupancy Evaluation (POE) of a sample of new University and Colleges of higher and further education buildings in Scotland. Cumbernauld College is the first of the four establishments to embark on this evaluation process. The redevelopment and extension of Cumbernauld College town centre campus was completed in August 2006. The new three storey extension building, set at right angles to the original listed building, is linked by a ‘temporary’ glazed and covered ‘street’. The additional accommodation provides much needed study and social spaces with direct access to new technology. The new extension building and linking street structure is the subject of this Function Performance Review.

This report focuses on the assessment of functional and technical performance through occupant consultation as well as operational issues such as audits of energy and water usage and is a condensed version of the full functional performance review. In order to provide a deeper, diagnostic review of the building and its environmental systems the Design Quality Method (DQM) has been used and the assessment results have also been captured in this report (this report is an interim version of the DQM part of the functional performance review, which will be reviewed in the light of further information, such as energy data, when it is obtained). The table below summarises the results of the DQM assessment:



DQM Summary of results for Cumbernauld College

Initial, interim findings suggest that that user comfort, environmental engineering, and architecture are below Good Practice in certain aspects– many of which relate to management and operational issues which can be addressed in future. However, the potential lack of environmental sustainability is of some concern, but this area will have to be reviewed in the light of further information and data – and there are

undoubtedly ways of improving sustainability through good and prudent management of the building over its life cycle.

In order to ascertain the opinions of users of the new building a consultation exercise was carried out with staff and students, with the findings being validated through additional focus group discussions and in-depth interviews being held with the original client team. The results from this exercise have also been analysed and documented within this Functional Performance Review. Overall, the building occupants appear to be more than satisfied with the new build and its performance to date, with no great concerns over lighting, temperature or other comfort levels.

The new extension building provides a series of flexible teaching spaces within a steel-framed structure, clad with composite metal spandrel panels and tinted glazing. Space planning is conventionally arranged around a generous, central circulation corridor. The general appearance of the new building is that of a medium-specification office block rather than a specific educational building - a deliberate intention to provide accommodation standards above typical experience for the sector. The building was not designed with environmental sustainability specifically in mind. However, despite the fact that it is fully air conditioned, all occupied teaching rooms have openable windows providing fresh, natural ventilation and adequate natural daylight levels as well as a 'view out' for occupants, low energy lighting has also been installed throughout most of the building, high-efficiency, low NOx, condensing gas boilers are in use and as a result, the new building has been assessed as achieving 'PASS' using an indicative BREEAM Design and Procurement Assessment.

## Contents

1	Preparation and observational walk round	6
1.1	College background	6
1.2	Building form	6
1.3	Observational walk round	6
2	Energy, water usage and sustainability audit	7
2.1	Building Fabric	7
2.2	Ventilation	7
2.3	Heating	8
2.4	Cooling	8
2.5	Lighting	8
2.6	Electrical equipment and white goods	9
2.7	Controls	9
2.8	Additional observations	9
2.9	BREEAM Assessment	10
2.9.1	Introduction to BREEAM	10
2.9.2	Cumbernauld College and the BREEAM Assessment	10
2.9.3	Overall indicative score	10
2.9.4	BREEAM Synopsis	10
3	Design Quality Method	12
3.1	The Design Quality Method (DQM)	12
3.2	Findings	12
3.2.1	Matrix 0 – Summary matrix	12
3.2.2	Matrix 0 – Summary matrix commentary	12
3.2.3	Matrix 1 – Architecture matrix commentary	13
3.2.4	Matrix 2 – Environmental engineering matrix commentary	13
3.2.5	Matrix 3 – User comfort matrix commentary	13
3.2.6	Matrix 4 – Whole life costs matrix commentary	14
3.2.7	Matrix 5 – Detailed design matrix commentary	14
3.2.8	Matrix 6 – User satisfaction matrix commentary	14
4	Occupant questionnaires and focus groups	15
4.1	Methodology	15
4.2	Findings	15
4.2.1	Temperature	15
4.2.2	Lighting	15
4.2.3	Noise	15
4.2.4	Ventilation	15
4.2.5	Control	16
4.2.6	Quality and Image	16
4.2.7	Facilities and amenities	16

4.2.8	Security and building management	16
4.2.9	Energy efficiency	17
4.2.10	Overall	17
5	Conclusions	18
5.1	Recommendations	18
5.2	Future work	19

# **1 Preparation and observational walk round**

## **1.1 College background**

Cumbernauld College is a privately run further education establishment situated in the heart of Cumbernauld Town Centre, within North Lanarkshire. A well established College that currently has over 9,000 enrolments. The original building was opened in 1978 and has recently undergone a major revamp with part of the older building being refurbished and a new extension being added and open for use in August 2006. The College is open six days a week all year round. Normal hours of use are between 9am and 6pm Monday to Friday and 8am to 12pm on a Saturday, with cleaning staff arriving from 6am.

## **1.2 Building form**

Overall, the new 3-storey building at Cumbernauld College, comprising of ground floor, first floor and second floor with the plant room located in the roof space, is fairly generous in terms of space and area within the building. Corridors and walkways are wider than average, measuring over 2.2m and lecture rooms are generally deep, 6.3m in the business suites, with high ceilings, measuring 2.85m. There is a mix of flexible teaching spaces including business suites, conference rooms, IT facilities, careers room and teaching rooms within the new building. The general appearance of the new building is that of a medium-specification office block rather than a specific educational building - a deliberate intention to provide accommodation standards above typical experience for the sector. The main entrance to the new building is via 'The Street', a fully enclosed, high ceiling, under floor heated, glazed corridor, with access at either end, which runs along the side of the new building and links to the older building and refurbished areas. Maximum occupant capacities for the new building are as follows: 126 pupils and staff for the ground floor teaching areas, 165 for the first floor teaching areas and 182 for the second floor teaching areas.

## **1.3 Observational walk round**

Observational walk rounds were carried out to gather initial information on the performance of the new building and to assess the way in which the occupants were interacting and responding to this new building. These observations have been captured and analysed within sections 2, 3 and 4 of this report.

## **2 Energy, water usage and sustainability audit**

### **2.1 Building Fabric**

This section of the report will focus on the energy, water usage and sustainability aspects of Cumbernauld College's new building. Cumbernauld College's main building is a listed building and is located in the heart of the town's shopping centre and at the edge of local housing developments. The design of the new building has been somewhat sympathetic to its surrounding environment ensuring all windows are in-keeping with the original design on the main building and that the external materials on the new building are natural, neutral colours. Some landscaping has also been introduced around the grounds of the College.

The new building is steel frame construction with composite cladding and a metal decking roof. The ground floor external wall is cavity construction consisting of facing blockwork to match the blockwork on the existing main college building. The upper floors have a steel cladding finish. The prevailing orientation of the new build is south-west facing. Solar shading is present on the new building, however the louvers are in a fixed position with no occupant control and although they appear to function well, maintenance staff have already found it difficult to access these to keep them clean.

Metal Technology ppc thermally broken Aluminium window systems with 28mm thick double glazed units have been installed throughout the new building. The roof is a Kingspan aluminium composite roofing system with 90mm thick insulation core on proprietary roof purlins.

Internally, a timber floating floor system has been used in all of the classrooms. Floor finishes comprise of a mixture of ceramic tiles in 'The Street' that have so far proven to be hardwearing, carpet tiles in the classrooms also proving to be durable and easy to replace in small sections and non-slip vinyl throughout. A plasterboard suspended ceiling design is in place for atriums and lobbies. In the rest of the building a proprietary suspended ceiling system Ecophon Focus D tiles with a white finish is in place. The internal walls are blockwork/plaster board mix.

During the construction of the new build and refurbishment at Cumbernauld College, some efforts were made to recycle existing materials. For example, the floor in the main reception area of 'The Street' is recycled gym hall flooring and many of the light fittings have been recycled.

### **2.2 Ventilation**

Natural ventilation can be achieved through openable windows in every room in the new building. 'The Street' has both high and low level openable windows encouraging the free flow of natural ventilation throughout this area. Most of the class rooms in the new build have at least one wall consisting primarily of glazing with low level openable windows. There are rooms on the ground floor of the new building, such as the Art Room, where two of the external walls are fully glazed with low level openable windows.

A central air conditioning unit is located in the roof space of the new building, within the plant room, which regulates the air temperature and feeds every occupied room. Localised controls, with a visual thermostat reading, are also present in every occupied room and users have complete control over these.

Having openable, low level windows and localised air conditioning controls in every room that are all easily accessible by users may give cause for concern over the operating efficiency of the air conditioning unit. In order for the system to work efficiently and effectively the windows must remain closed. Many of the meeting rooms and IT suites are less than 7m deep with openable low level windows on at least one wall. BRE would recommend that having low level, openable windows in these rooms would normally provide adequate natural ventilation and that additional, individual air conditioning units are not required.

### **2.3 Heating**

The new building is heated by two high efficiency, gas condensing boilers, also located in the in the plant room of the new building. NO<sub>x</sub> emissions for this boiler type are less relatively low, less than 47mg/kWh. On inspection, all boilers and pipes within the plant room appeared to have adequate insulation, high temperature insulation was visible on required pipes. Flow and return indicators were clearly marked on the pipes feeding to and from the system.

Wall mounted air handling units are present in all classrooms in the new building and operated via local user controls for both heating and cooling. On the day of the visit the room thermostats in two of the IT suites on the first floor were recorded at 22°C and 26°C. BRE's own equipment confirmed these temperatures readings were accurate. Both of these rooms are set above the recommended temperature levels of typically between 18°C and 21°C.

In 'The Street' under floor heating is present, serviced from the original main boiler in the existing building. There is no sub-metering for gas consumption for under floor heating or for any area in the building. 'The Street' has glazed door openings at either end where the wind often channels through and chills this area, resulting in the under floor heating not functioning as efficiently as it could. Measures have been taken to reduce the chill factor and optimise the efficiency of the under floor heating system. Sheet Glazing has been erected at the main entrance to help reduce the wind flow through 'The Street', the automatic opening doors have had to be replaced with revolving doors and internal partitioning has been aligned along the exposed edge of the main reception area.

### **2.4 Cooling**

All classrooms in the new build are controlled by air handling units. The units are wall mounted and local user thermostat controls are present in every room. The main air conditioning unit is also located in the plant room within the new building and it operates using R410a refrigerant, a refrigerant which BRE would consider to have a high Global Warming Potential. These units are linked to the BMS.

### **2.5 Lighting**

Low energy fluorescent lighting is the common type of lighting fitted throughout the new building with reflector down-light shades present. There are a few spot lights located in the communal area outside some of the IT suites on the upper floor; they appear to be serving more of an aesthetical rather than practical purpose. This type of lighting is energy intensive, requires to be replaced much more frequently than the fluorescent strip lighting and is very delicate, often having difficulty withstanding vibration.

Daylight sensors control lighting levels in most of the rooms in the new build, with the local user's option to over ride. Many of the classrooms are south facing. Only one daylight sensor is present on the external east wall of the new building. On the original plans, multiple daylight sensors were located at various locations on the new building; however these are not present on the actual building itself. In order for the daylight sensors to work effectively BRE would recommend that multiple sensors are installed to represent true readings, indicative of the natural day-lighting levels inside the majority of classrooms.

Natural day-lighting has been optimised in 'The Street' with full-height ground to floor glazing present at either end and along one side of this area. There is also good use of natural daylight feeding down through high level windows to the corridors on the second floor outside the business suites and the majority of light fittings in this area are low energy CFLs. On the day of the visit, levels on the second floor were recorded as 300Lux in the corridor and 450Lux in the communal area by the windows. 300Lux would be deemed a good level for reading; these levels are well above what is required for this area and therefore there is not a need to have all of the CFLs and spot lights on at all times.

Good use of natural daylight has been made in each of the classrooms with at least one wall being dedicated primarily to glazing. The use of natural light in the art class has been optimised by again using floor to ceiling glazing on two of the four walls. On the day of the visit lighting levels were as high as 610Lux in some areas of this room. Good natural day light levels in a general IT suite on the first floor were also recorder during this and the lights in all of the unoccupied classrooms inspected were switched off.

## **2.6 Electrical equipment and white goods**

Although the College has made an effort to replace less efficient electrical equipment and white goods with more efficient, energy rated products in the new build, they do not have a formal policy for staff to follow. BRE would recommend that such a policy is developed and put into practice to ensure that all new goods being purchased by the College are the most energy efficient products, helping to save the College money on energy running costs as well as assisting in the reduction of the College's overall carbon emissions.

## **2.7 Controls**

The College is responsible for the monitoring and payment of their energy consumption. Sub-metering for electric use is available for the new building, however only one meter is used to monitor gas consumption for the whole campus. Similarly, for water consumption there is only one meter for the whole campus.

All occupied rooms in the new building have wall mounted, local user controls to adjust the temperature and light levels, monitored through the BMS. The BMS is programmed to have the building lights switching on for the cleaning staff arriving and to go off after the last of the classes finish. The BMS also controls and monitors the temperature of the under floor heating system in 'The Street'.

Adjustable roller type blinds have only been fitted internally in the classrooms and areas that require them to help minimise glare and user controlled Thermostatic Radiator Valves are present on all radiators.

Service access points are conveniently located behind panelling boards in the corridors of the new building, ensuring that no disturbance to any class needs to be made when works are required.

## **2.8 Additional observations**

All glazing in the new build is double glazing, however not all of the windows can be reached for cleaning purposes. In time this could become an issue and affect the level of natural daylight entering this area.

There was no Users Guide passed to staff for this new building, only an O&M manual which the estates staff had to go through themselves. BRE would recommend that a simple, non-technical Building Users Guide should be provided for staff to ensure that they understand how to operate and manage building controls efficiently and effectively.

Staff are delighted with the overall performance of the building since its opening. There was a manufacturing problem with the air-conditioning system in the first year, however this has now been resolved and the estates team are confident that they are now operating the BMS effectively and efficiently. During the visit a member of staff commented that the air handling units in each of the IT suites worked effectively and responsively heating or cooling the room quickly and as required. Staff are also glad that they have the option to open windows in most areas of the new build, encouraging a fresh flow of natural ventilation into the area.

No renewable technologies are present on-site, however there may be potential for a solar thermal installation in the future. 'The Street' roof is sloped, corrugated, sheet metal and runs the full length of the building reflecting a significant amount of the sun's solar thermal energy into the building. This could potentially be an ideal location for solar thermal panels to pre-heat the water for the College's hot water demand, thus helping to reduce both carbon emissions and energy bills. The investigation into the installation of renewable technologies is something that the College would very much like to investigate and hopefully pursue in the future.

Little attempt has been made to reduce water consumption within the toilets and throughout the new building. Although push taps have been installed in most areas of the building, no dual flush toilets or PIR detection have been specified or installed nor is there any provision for rain water harvesting or grey water recycling.

## **2.9 BREEAM Assessment**

### **2.9.1 Introduction to BREEAM**

BREEAM (BRE's Environmental Assessment Method) is the first available environmental assessment tool for buildings. It can be used to assess the environmental performance of both new and existing buildings. BREEAM is highly regarded by the UK's construction and property sectors as the measure for best practice in environmental design and management. BREEAM's success can be attributed to its ability to cover a wide range of environmental issues within one assessment.

### **2.9.2 Cumbernauld College and the BREEAM Assessment**

No formal BREEAM Assessment was carried out on the Cumbernauld College new build either at Design and Procurement stage or at Post Construction Review stage. From the plans, drawings, material selection and information available from the architects involved in the design of the new Cumbernauld College building, an indicative BREEAM Assessment score was calculated using BREEAM criteria generated for that of a similar education building.

### **2.9.3 Overall indicative score**

The Design and Procurement score, based on evidence received so far is 37.96% which is a Pass rating. If further evidence can be provided from the design team then a maximum rating of Good may be achieved.

### **2.9.4 BREEAM Synopsis**

#### **Management**

Evidence has been provided to prove Commissioning, Consultation and Publication of Building Information has taken place. No evidence was available to prove a Building Users Guide was produced, that whole life costing was undertaken or that contractors signed up to the Considerate Constructors Scheme.

#### **Health & Well-being**

Cumbernauld College scored well in this section achieving the Daylight, View Out, Glare Control, High Frequency Lighting and Lighting Zone credits due to its well designed, efficiently operated teaching areas. Openable windows in every rooms resulted in them also achieving the Potential for Natural Ventilation and Ventilation Rates credits. Having TRVs on all radiators also secured the Thermal Zoning credit. However, as no Thermal Comfort modelling was carried out, this credit has been withheld. Credits relating to the avoidance of legionella have also been achieved. The College did not secure Safer Parking credits as the criteria was not met and they were not awarded the Internal Air Pollution credit as windows on the new build were too close to adjacent roads and car parks.

## **Energy**

No credits were awarded for the reduction of CO<sub>2</sub> emissions as no renewable technologies are present and U-values are in line with 2002 building regulations. No sub-metering has been installed for lighting, ventilation, heating or IT therefore credits were also withheld here. The presence of daylight sensors and the efficacy of external lighting levels are sufficient to award the External Lighting credit.

## **Transport**

Cumbernauld College is well situated for public transport links and amenities and as a result has secured most of the credits in this section. No new car parking spaces were added which also secured a credits. Credits which were lost were the cyclist facilities credits (incorrect type and number of cycle racks) and for Pedestrian and Cyclist Safety (there are no dedicated cycle paths on site).

## **Water**

Credits were achieved in this section for having a water meter with a pulsed output installed, however no dual or low flush systems were installed for the toilet areas, there is no Major Leak Detection system or Sanitary Supply Shut Off in place and no water recycling facilities are present. Therefore, a number of credits were lost in this section.

## **Materials**

Material selection for the internal walls, windows and roof helped to secure credits in this section. The majority of materials used for the external walls, floor finishings and upper floor slab were not A-rated and therefore did not achieve credits. No facilities were provided for recyclable waste on site, therefore this credit was withheld. The Designing for Robustness credit was achieved as kickplates, protection rails and hard wearing materials have been specified.

## **Land Use and Ecology**

An ecologist was not consulted in the design of the landscaping so a number of credits were not achieved here. The developed land, however, was a site of low ecological value, thus the overall ecological impact of the building was minimal.

## **Pollution**

As the refrigerant used in the air conditioning system has a GWP of greater than 5 and no leak detection system has been installed, no credits can be awarded for these two areas in this section. Credits for NO<sub>x</sub> emissions, insulation products, external light pollution and noise attenuation have all been achieved.

The credit for the zero emission energy sources was not awarded as there are no renewable energy technologies installed.

### 3 Design Quality Method

#### 3.1 The Design Quality Method (DQM)

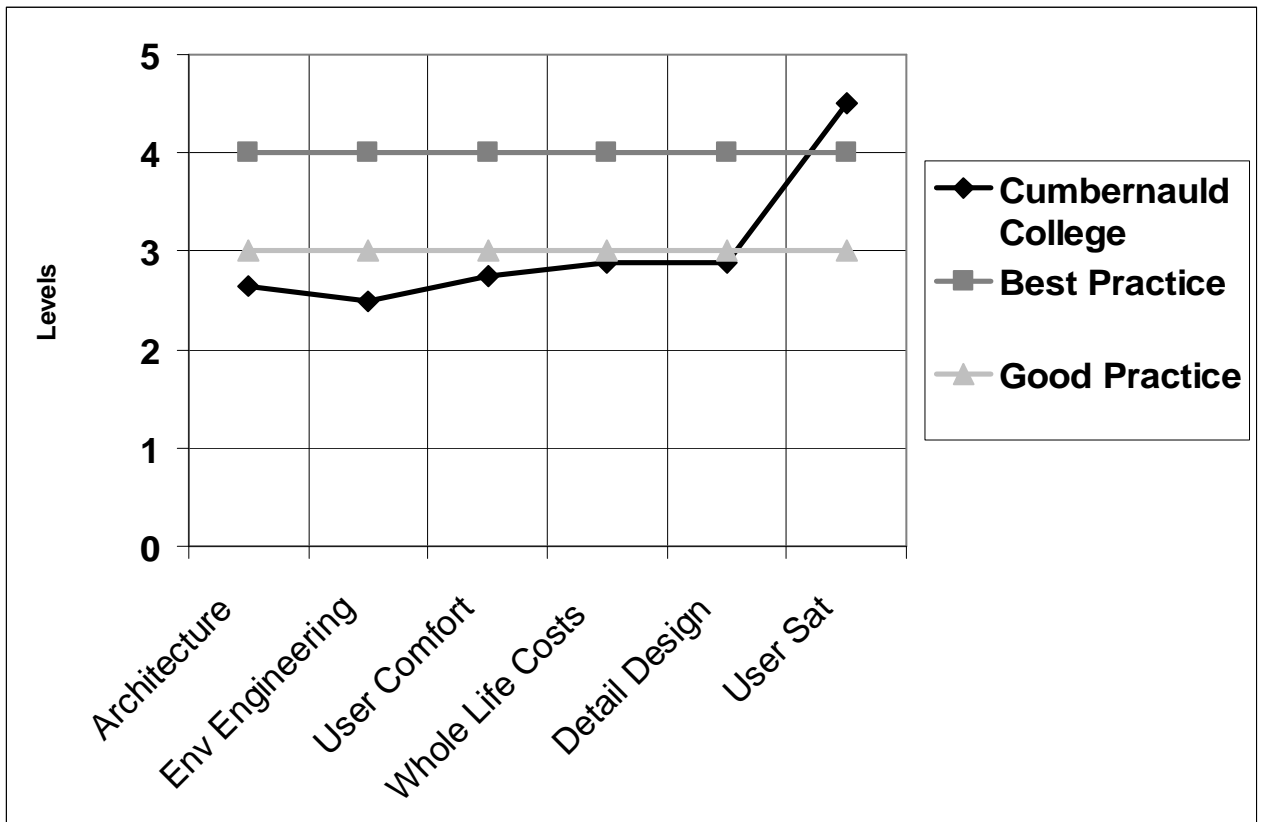
The Design Quality Method (DQM) is a tried and tested methodology for the post occupancy evaluation (POE) of educational buildings and is used by all auditing bodies in the UK. It consists of visual surveys of premises by a small team of expert architects and engineers, preceded by a semi-structured interview with key users and/or facilities managers.

The DQM was used to evaluate the new building at Cumbernauld College by using a series of exercises and mapping results onto a 'balanced scorecard' that measures the whole performance of building. The Method relies on expert opinion, professional judgement, user opinion, and scientific measurement (eg lighting levels, air quality and acoustics etc). The DQM consists of the following six matrices, over-arched by a summary matrix.

#### 3.2 Findings

The matrices used in the DQM identify levels ranging from 0 to 5. Level 5 is exemplar; Level 4 is Best Practice; Level 3 is Good Practice; Level 2 is Standard; Level 1 is Poor; and Level 0 is Unacceptable.

##### 3.2.1 Matrix 0 – Summary matrix



##### 3.2.2 Matrix 0 – Summary matrix commentary

This is the summary of the six matrices and gives an overview of the results. It shows that user comfort, environmental engineering, and architecture are below Good Practice. User

satisfaction scores are always generally higher as they represent lay opinion and we treat these interviews as anecdotal evidence. The successive matrices show more detail, particularly aspects of the matrices which influence the median scores in the summary matrix. This is an interim rating that will be reviewed in the light of further information, such as energy data and a post-construction BREEAM rating.

### **3.2.3 Matrix 1 – Architecture matrix commentary**

Site planning and specification are at Good Practice levels. Environmental sustainability is below Level 2, an entire level below Good Practice, as the building is currently estimated to achieve only a pass-rating in the BREEAM post-construction assessment. The building is also fully air-conditioned, although there are opening windows to give some user control. In terms of environmental sustainability, it has to be questioned whether air-conditioning was necessary for this building type in this location. Although, there was a desire on the part of the client to provide a building that was a 'cut-above' the general standard for the sector.

Space planning and interior design are considered below Good Practice levels. In general, space planning is adequate and even optimal, but the highly flexible nature of spaces has resulted in homogenous spaces in terms of their interior design. The flexible space approach has also resulted in a south-facing art room on the ground floor which is compromised in terms of its functionality. When the art room was visited on a bright February day, most of the blinds were down and all of the electric lights were turned on (a light level of 600 Lux was recorded in the centre of the room) - the need for privacy during life drawing classes and glare were given as reasons. Space planning issues and the use of particular spaces for appropriate uses are now largely management issues and this situation could be resolved – by relocating the art room to a north-facing top storey room of the building?

### **3.2.4 Matrix 2 – Environmental engineering matrix commentary**

Maintainability and sourcing are just above Good Practice levels, but other aspects are of some concern. Sustainability is at a similar level to the architecture matrix score for this aspect, as the building is currently estimated to achieve only a pass-rating for its BREEAM post-construction assessment. In terms of mechanical and electrical systems, the building is fully air conditioned – and it has to be questioned whether this is necessary for a building of this type, in this location. Inspection of the plant room revealed gas condensing boilers and the spacious plant rooms were doubling up as furniture stores – apparently a deliberate intention. Integration with architecture is typified by the fact that there is only one light sensor for the lighting system, located on the north side of the building. Although the building incorporates features such as brise soleil to the south aspect, the glazing is heavily tinted and the construction is comparatively light in terms of thermal mass.

The 'street' is suffering from draught problems for which a number of ad hoc potential solutions are being tried, and there are also problems reported with the underfloor heating in this area. However, acoustic ceiling tiles and a 'soft' but durable floor finish create a suitable acoustic environment, and the space is successfully used for a wide range of social functions. Possibly, too much is being expected of an ancillary circulation space by many users in terms of comfort conditions?

### **3.2.5 Matrix 3 – User comfort matrix commentary**

Most aspects appear to approach Good Practice levels. The air conditioning should help to ensure that user comfort conditions are acceptable. Summertime overheating should be ameliorated by the tinted glazing and brise soleil, but thermal mass is quite light – the air conditioning system may have to work overtime in this respect, particularly with future temperature rises predicted due to global warming. Visual environment was acceptable when the blinds were fully raised in a south facing typical room, and the artificial lights were

switched off. The louvres of the brise soleil were effective at cutting out the potential glare from a low winter sun angle, and natural light levels of 300 Lux were recorded in the centre of the room. Whether behavioural issues such as leaving electric lights on and blinds down, or partially down, can be addressed is another matter.

Heating comfort and air quality are of some concern, as some high temperatures of 26 degrees Centigrade and low Relative Humidity readings of 30% were recorded in at least one room – which makes for some very stuffy and uncomfortable conditions, even on an unseasonably bright February day. However, temperature thermostats were turned down to lower temperature levels in these rooms and it can only be hoped that the air conditioning system will cope with situations such as these, and that users are educated on the optimum operation of the building. Fortunately, they can always open a window to increase natural ventilation, but the balanced control of such user interventions with the Building Management System remains to be seen.

### **3.2.6 Matrix 4 – Whole life costs matrix commentary**

External materials and internal fabric and finishes generally achieve Good Practice, and flexibility approaches Best Practice. Building Services Capital and maintenance items are below Good Practice which links to the low sustainability scores, and which is also connected to questions over facilities management fitness for purpose. These aspects have to be reviewed when more information and data is available.

### **3.2.7 Matrix 5 – Detailed design matrix commentary**

External, internal and junction details are generally rated below Good Practice due to concerns over access for window cleaning and cleaning the louvres of the brise soleil. There are also some other areas of windows, adjacent to the roof of the 'street' where access difficulties are recorded. Access for regular cleaning and maintenance to the high-level roof light in the top storey corridor is also in some doubt – although, it has to be recorded that the roof was not inspected during the visit on 18 February. These aspects need to be reviewed in the light of further maintenance experience.

The other three aspects of this matrix are rated above Good Practice. Furniture and furnishings are of a good level of specification, and fittings such as the integrated 'teacher wall' storage spaces are certainly Good Practice. There was no experience of safety and security issues, and although the new building is linked to the 'street' it has a separately controlled entrance.

### **3.2.8 Matrix 6 – User satisfaction matrix commentary**

Generally, we regard this matrix as anecdotal, but the lower score for 'Does the building work?' is somewhat at odds with the user opinions expressed in all other aspects of this matrix. These scores represent the medians of the ratings responses from the director and facilities manager of the college, who generally seem very satisfied with the building – apart from some commissioning issues, particularly in respect of the air conditioning system. The detailed occupant satisfaction investigation should provide more in-depth feedback as to how the users feel about their new building.

## **4 Occupant questionnaires and focus groups**

### **4.1 Methodology**

An electronic questionnaire was sent out by e-mail to all the occupants at Cumbernauld's main campus. In total 420 occupants completed the questionnaire. Respondents included full time and part time students, teaching staff and non teaching staff including; cleaning staff, canteen staff, training, marketing, and administration staff. A series of focus groups were then conducted with occupants from the college buildings to verify, and obtain more detail on, the findings of the questionnaire. In total 5 focus groups were conducted, one focus group was made up of non teaching staff, two were made up of teaching staff, and two were made up of students. Each group was made up of occupants who studied or worked in each of the three blocks.

### **4.2 Findings**

#### **4.2.1 Temperature**

Occupants felt the temperature in the New Block was generally very comfortable all year round. Only 6% of questionnaire respondents described the summer temperature in this building as 'Uncomfortably hot'. Occupants felt the brise soleil worked well to keep the solar gain down and that the air-conditioning was very good. However, some occupants were unhappy with the temperature in 'The Street'. Non-teaching staff who worked in this area and students described 'The Street' as cold and draughty particularly in winter months. The students felt that the cold and the gusts of wind often made it too uncomfortable to sit and chat or eat in this area. Staff described it as like a wind tunnel with cold air being sucked through as different entrances and exits are opened.

#### **4.2.2 Lighting**

The vast majority of questionnaire respondents described the amount of daylight and electric light as neither too much nor too little. Very few respondents felt there was an issue with reflective glare and the majority felt the shading provided was effective or very effective. Overall, only 3% of respondents said they were unhappy with the light in the New Block. Most focus group participants were very happy with the light in the New Block.

#### **4.2.3 Noise**

Occupants experience very little noise transference when in the main block. Only 2% of respondents said they could hear 'A great deal' of noise from surrounding classrooms and corridors and only 3% said they could hear 'A great deal' of noise from outside the building. Overall, 65% of respondents were either happy or very happy with the noise level in this building and only 7% were unhappy or very unhappy. The noise level in the New Block only received positive comments in the focus groups being described by teaching staff as having a 'nice quiet atmosphere'.

#### **4.2.4 Ventilation**

The air in the New Block was described by the majority of questionnaire respondents as 'Fresh', 'Odourless', 'Neither dry nor humid', and 'Neither still nor draughty'. Overall less than 10% of respondents were unhappy with the ventilation and air quality in the New Block. Focus group participants liked the opening windows in this building allowing fresh air in to all the rooms.

#### **4.2.5 Control**

Over 80% of questionnaire respondents felt there was an adequate to good amount of control over the environmental conditions in the New Block. The majority of participants from all focus groups were very positive about the heating and cooling system. The temperature control system was described in the focus groups by teaching staff and students as very responsive and allowing good control over the temperature. One or two participants were a little unclear how the system worked however most found the controls fairly intuitive.

#### **4.2.6 Quality and Image**

The quality and image of the new block was very highly rated by occupants. 78% of questionnaire respondents rated the level of cleanliness in this building as good or very good and 94% of respondents rated the toilets as satisfactory – very good. The décor in the New Block was also rated very highly, 75% of respondents described it either good or very good and only 1% described it as poor. 73% rated the quality of the furniture as good or very good and 77% of respondents described the storage space provided as satisfactory – very good. The storage in the walls and behind the whiteboards in the New Block was liked by both students and staff. Finally, 96% of respondents from the New Block rated the layout as satisfactory – very good.

All participants from the focus groups agreed that the college buildings are kept exceptionally clean. The non teaching staff talked of the pride that the building users and cleaners have in the new building and how this helps to keep the buildings in such a good state. There is no problem with graffiti and littering within the buildings is very low. The students described the buildings as “spotless”. All agree that the day cleaner is vital to keep the buildings as clean as they are. Focus group participants also felt the standard of the toilets was generally very good. The day cleaner was once again often mentioned as a strong contributory factor. Teaching staff said ‘We do not have to use separate staff toilets as the student ones are so nice’ and students said ‘we feel if it is nice we want to look after it’, ‘if we splash the tops we give it a clean’. Non teaching staff who work in the business centre of the new building also said they have very good feedback on the toilets from visitors.

#### **4.2.7 Facilities and amenities**

The teaching spaces at the college were generally very highly rated in terms of their size and adaptability. 87% of questionnaire respondents felt the teaching spaces were “the right size”, only 13% felt they were “too small”. In addition 91% of respondents described the teaching spaces as adaptable – very adaptable. Staff felt the rooms in the new building were nice and spacious. They also felt most teaching spaces at the college were flexible.

The Street was generally highly rated by staff and students. However, some felt that the efforts made to reduce the draught in the street (i.e. the revolving doors and large glass screens) have meant the main entrance can be difficult to manoeuvre through especially if in a wheelchair or if pushing a hairdressing trolley.

#### **4.2.8 Security and building management**

When asked “How safe do you feel when in the college buildings” only 2% of respondents said they felt unsafe or very unsafe. When asked “How safe do you feel when in the vicinity of the college buildings” only 3% of respondents said they felt unsafe.

The non teaching staff who participated in the focus group felt that the wide age range of students and the friendly feel of the college helped students to feel safe. They felt the occasional visible police presence particularly around induction week and the CCTV installed was also good. Teaching staff said they generally felt safe in and around the building even in the evenings. Although one member of staff felt there should be more phones in the New Block in case of an emergency in the evening.

In terms of the development of the college, and in particular the New Block, both staff and students were happy with the consultation process that happened. Non teaching staff felt it was good that everyone was consulted and had chance to have their say.

#### **4.2.9 Energy efficiency**

62% of questionnaire respondents said it was either important or very important to them that their college buildings were energy and water efficient and 64% said it was important or very important that their college buildings were built in an environmentally friendly way. 45% of respondents rated the new building as either efficient or very efficient and only 13% rating it as inefficient or very inefficient.

Occupants felt the efficiency of the building could be improved in some areas for example many felt the additional heating devices brought in to heat The Street were wasteful and they would prefer to see more efficient, long term solutions, to the heating of this space. They also commented on the number of lights and computers left on when not used e.g. at night. Some felt that large amounts of water was being wasted by taps that run for a set amount of time rather than taps you can turn off.

#### **4.2.10 Overall**

Overall, the New Block and Street area at Cumbernauld were very highly rated by the occupants. Students and staff were very positive about the new buildings and felt the addition of The Street and the New Block gave the college a modern feel and a professional image. Students and staff generally felt the college was a great place to study and work and there was a great deal of pride in the college from the cleaners, students, staff, through to the senior management team.

## 5 Conclusions

Cumbernauld College set out to provide a level of comfort and standard of accommodation that was 'a-cut-above' the typical standard for this sector and as this report demonstrates, they have been successful in achieving this with User Satisfaction levels exceeding 'best practice' standards and both Detail Design and User Comfort achieving 'good practice' standards. The new building was not designed with environmental sustainability specifically in mind, however the quality of workmanship and materials along with the well designed, spacious interior that optimises use of natural light and ventilation has resulted in a building that has the potential to operate quite efficiently and indicative results are suggesting that this building could have potentially achieved at minimum a 'PASS' and possibly a 'GOOD' BREEAM D&P rating.

### 5.1 Recommendations

Future recommendations, to ensure the new Cumbernauld College building is being managed and is operating in the most efficient and effective way, include:

- Develop a Building Users Guide for staff
  - A non-technical guide that allows maintenance and estate staff quickly and easily identify what systems are in place within the new building and how to operate them efficiently.
- Distribute information to building occupants to ensure they are aware of how to correctly operate different building controls effectively
  - Include information on radiator TRVs, ensure occupants know how to operate air handling units effectively and to do not e.g. simultaneously open windows, highlight the installation of day light sensors and ensure blinds are fully up in occupied areas to maximise natural day light levels etc.
- Develop a College policy for replacing white and electric goods with 'A-rated' and Energy Star products
  - This is good practice and will help to reduce running costs and improve the College's carbon footprint.
- Implement a Travel Plan
  - To help reduce the number of single occupancy car journeys made to and from the College every day, through the promotion of public transport information, car share schemes etc.
- Provide designated areas for recycling
  - Recycling waste is something that the students are keen to take part in and could help to significantly reduce the amount of waste leaving the College and heading to landfill.
- Record and Monitor Energy Consumption

- The Building Energy Management System allows for the monitoring of gas, energy and water consumption, with sub-metering for electric use in the new build. It would be useful for the College to record and monitor these levels.
- Make efficient use of teaching space and storage
  - Encourage efficient use of storage facilities such as the 'teacher wall' storage space.

## **5.2 Future work**

Cumbernauld College is due to under go a Strategic Review, commencing September 2009. A final Strategic Review Report is scheduled to be published by the end of November 2009 and aims to show how far the building has met the original business needs, whether these have changed, its performance in the longer term and whether change needs to be implemented.