Kirkwall Grammar School, Orkney

A description of the project

A 3 storey Secondary School Building with 380 seat theatre. School consists of Administration offices, Arts Theatre Auditorium and store, Circulation areas, Conference room, Dining area, Fitness suite and changing rooms, Games hall and spectator area, ICT facility, Kitchen, Library/ICT Study, Offices and stores, Outdoor pitches, Pupil locker areas, Pupil Social area, Reception area, Reprographics / printing / store, Staffroom and staff bases, Stage, Standard and specialised classrooms, Toilet facilities, Vending areas, Visiting services and medical facility.

The Project included landscaping, roads, mechanical, electrical and plumbing works, furniture and fittings for a fully operational schools and recreational areas.

The key innovative and low impact design features of the building:

- Building is heated by high efficiency heat pumps coupled with underfloor heating resulting in COP in excess of 3.5.
- Natural ventilation predominates, but where mechanical ventilation is required to satisfy high levels of occupancy, such as MPH/ Dance, Gymnasium, Gym and Theatre, variable speed fans ensure that airflow rates are matched to the occupancy.
- Heat recovery is provided between the exhaust and supply air streams of air handling systems to further enhance operational efficiency.
- 44m2 of solar photovoltaic generation is provided to offset an element of buildings base electrical demand.
- Further 75m2 of photovoltaic generation is provided to assist with domestic hot water generation within the school.
- The development delivers EPC ‘A’ and carbon emissions of just 14kg CO2/m2/yr.

- A Building Management System provides coordinated central control of heating and ventilation to minimise energy use.
- Rainwater harvesting system was installed to reduce amount of fresh water used.

Reducing the environmental impact of construction process

A requirement of the BREEAM assessment is to publicise information relating to the aspects of the design and procurement which will reduce the buildings overall environmental impact. Construction has been planned and executed to minimise impact on the environment.

Steps taken

- The site and the main contractor were registered under Considerate Constructors Scheme with regular inspections taking place. The contractor was committed to achieving Performance Beyond Compliance under the scheme with minimum score of 36 points.
- The contractor implemented site specific Site Waste Management Plan to minimise amount of waste directed to landfill and to promote reducing, recusing and recycling practices.
- The contractor was committed to monitoring site energy, water and fuel consumption.
- All construction materials were responsibly sourced with 100% of timber being from sustainable sources.

BREEAM Rating and Score

Kirkwall Grammar School has been assessed under BREEAM Education 2008 Scheme.

BREAAM Education 2008 Scheme can be carried out on new builds and major refurbishment projects.

BREEAM rating benchmarks are as follows: UNCLASSIFIED (<30), PASS (>30), GOOD (>45), VERY GOOD (>55), EXCELLENT (>70%), OUTSTANDING (>85%).

Predicted BREEAM Rating.	**EXCELLENT- 76.33%.**
Basic Building Costs.	**£1244.28/m2.**
Services Costs.	**£653.80/m2.**
External Works Costs.	**£256.47/m2.**
Gross Floor Area.	**16850m2.**
Total area of site.	**8.85ha.**
Function Areas and their size.	**600m2 Social Space.** **250m2 Dining Area.** **400m2 Theatre.**
Area of Circulation.	**3185m2.**
Area of Storage.	**750m2.**
% area of grounds to be used by community.	**All- subject to school management.**
% of buildings to be used by community.	**All- subject to school management.**
Predicted Electricity Use.	**19.3kWh/m2/year.**
Predicted Fossil Fuel Consumption.	**5.4kWh/m2/year.**
Predicter water use.	**6.76m3/person/year including water provided by rainwater.**
Predicted water use to be provided by rainwater or greywater.	**3.76m3/person/year.**
% predicted water use to be provided by rainwater or greywater.	**55%.**