



## Project Description

UCD is an internationally recognised University that attracts the highest level students and researchers, and prides itself in the quality of its teaching and research. The University seeks to provide an educational experience that defines international best practice and to ensure it develops world class facilities to support the vision.

The programmes for teaching and research in Science and Engineering are key to the realisation of this strategy for the University. The redevelopment of the UCD Science Centre unites the scientific disciplines to provide a centre of excellence for postgraduate training and research. This creates a hub of discovery and enterprise which will be a showcase of Ireland's ingenuity and drive for excellence.

The UCD Science Centre re-development is an ambitious project that includes both the construction of new teaching laboratory and classroom facilities as well as refurbishment of existing buildings. The UCD O'Brien Centre for Science development has been a central part of this redevelopment and has seen the building of 10,000sq.m of new floor area (Science East) as well as the complete refurbishment of 8,600sq.m of Science Hub, which was a facility dating back to the 1960s. This new development provides modern, safe, advanced science facilities to enable the highest quality of teaching and training. By encouraging participation in science and engineering disciplines, and supporting independent thinking and discovery, this new physical development facilitates enhanced solution-based learning, the communication and sharing of ideas, collaboration, and multi-disciplinary teamwork.

## BREEAM Rating and score

The O'Brien Centre for Science (also known as Science East & Hub Project) achieved a BREEAM Excellent rating of 73.79%. The project was a BREEAM Bespoke International Project that was adapted to use Irish standards and best practice guidance to set baseline benchmarks. The design team engaged with a BREEAM Assessor early in the design stage and integrated BREEAM standards into the design and construction of the building from the outset.



The building scored very well in the Management and Health & Wellbeing categories and this is reflected in the high quality environment created within the new facility. The majority of the building is naturally ventilated with high levels of natural daylight throughout. Most rooms have a view out to the surrounding campus which is comprised of high amenity green spaces. The campus scores particularly well in the transport section of BREEAM as it is well connected with Dublin city centre and the surrounding areas with and high quality cycle and pedestrian routes in addition to public transport. The building is well connected to the rest of the campus with a network of cycling and pedestrian routes, including a woodland walkway at the perimeter of the campus. Walking and cycling are encouraged with a car parking policy in place which limits car-parking to encourage the uptake of public transport.

This project achieved a 23% saving over current regulations for energy and carbon dioxide emissions. A central part of this low carbon energy source is a high efficiency "trigeneration" CHP providing electricity, heating and cooling to the building. There is also a solar PV (photovoltaic) system installed in on the roof of the Science Hub building which produces electricity from sunlight. The building is also metered extensively and carefully monitored and controlled by UCD Estate Services team. Where natural ventilation is not available, rooms are ventilated by AHUs (Air-handling units) or fan-coil units that supply fresh air that is either heated or cooled to maintain optimum room conditions. These AHUs are controlled by the BMS on time schedules. There are also local user controls via wall mounted thermostats in some of the rooms. There is a variable volume extract system. This system maintains air-changes at the required levels and integrates roof mounted fans with local ventilation to achieve this which greatly improves energy usage by only extracting the correct amount of air.

Water is also monitored closely and leak detection systems have been installed to alert staff to any wastage. Sub-metering and the installation of a pulsed output water meter enables consumption to be monitored on the BMS and allows for monitoring and targeting activities to take place. Low flow fittings have been installed in taps, showers, WCs and urinals. Rainwater harvesting has been installed to cut down on the percentage of potable water used in toilets.



Waste is also minimised by providing high quality compacting and recycling facilities and linking this to the campus wide initiatives to encourage staff and students to recycle paper.

The steps taken during the construction process to reduce environmental impacts

Sisk Group were the main contractor on the project and contributed to the overall BREEAM rating by completing the following: -

- Monitoring energy and water use during construction
- Monitoring CO2 emissions from all transport to and from site
- Demonstrating ISO 14001 certification and compliance with a Sustainable Materials Policy
- Production of a Site Waste Management Plan and diversion of waste from landfill
- Implementation of design stage BREEAM commitments and production of evidence for the post construction review.

### Building Metrics

Gross floor area	28,210m <sup>2</sup>
Laboratory space (m2)	4,079m <sup>2</sup>
Classroom Facilities	3,213m <sup>2</sup>
Assembly and Exhibition Facilities	861m <sup>2</sup>

### Environmental Impact

Electricity consumption (kWh/m2)	160 kWh/m2/annum
Predicted fossil fuel consumption - kWh/m2	120 kWh/m2/annum
Predicted renewable energy generation	10,000kWh/annum
Predicted water use - m3/person/year	4.14 m3/person/year
Predicated quantity of rain water harvesting	300,000 litres per annum
Annual predicted CO2 savings from CHP	514 Tonnes per annum
% predicted water use to be provided by rainwater or greywater	20%