The Library of Birmingham – Carillion

CASE STUDY:

Carillion

Skanska House is Skanska Finland’s head office in Helsinki that was designed to achieve LEED (Leadership in Energy and Environmental design) Core & Shell Platinum certification, as well as EU GreenBuilding certification.

SECTOR TYPE:
Building

LOCATION:
Birmingham

CLIENT:
Birmingham City Council

PRINCIPAL DESIGNER:
Mecanoo

PRINCIPAL ENGINEER:
Buro Happold

PRINCIPAL CONTRACTOR:
Carillion

CONTRACT VALUE:
£188.8m

CONTRACT DURATION:
52 months

The Project

The £188m Library of Birmingham construction project combines a unique state-of-the-art library with the adjacent Repertory Theatre to create a new cultural destination opening in 2013. Carillion is Birmingham City Council’s (BCC) construction partner for the four-year project.

At contract start in 2008, Carillion set out an aspiration to deliver a construction project like no other. Carillion worked with BCC to provide a best practice and sustainability legacy that will continue to grow long after construction is complete.

It included construction of a 35,000 square metre new library, achieving BREEAM Excellent rating, and integration with The REP theatre adjacent. This included a comprehensive refurbishment and some new build facilities. The building included low carbon technology and other environmental design features.

The project team’s commitments included delivering local employment opportunities, and enhancing skills to impact groups of people that really need support. The mantra has been to engage with the community, allowing the construction phase to have a tangible positive impact to the local area and transform people’s lives.

These commitments cascade throughout the project’s supply chain to ensure success and encourage a ‘whole project’ cultural approach.
The Benefits

Low Carbon Economies:

A thorough feasibility study was conducted reviewing the suitability of low and zero carbon technologies, and assessing their payback period and carbon savings. This ensured that capital expenditure was invested in a scheme that would achieve its target of reducing carbon emissions, but also add value to the client and ultimately the public, through reducing running and maintenance costs; Thus ensuring a return on investment over the design life of the building.

The chosen design comprised:

- ground source heat pump (GSHP) to provide cooling in summer
- combined heat and power plant in the new build (including provision of new links into existing systems, providing greater flexibility and efficiencies for other public and private buildings in the vicinity)
- mixed mode and natural ventilation to reduce unnecessary use of energy for mechanical ventilation, and efficient cooling

Combined they provided a 20% reduction of CO₂ emissions, saving an estimated 0.75 tonnes of CO₂ per year. Hence reducing annual energy consumptions (GSHP alone reducing energy consumption by 1.8m kWh per year) and therefore cost to the client, with a payback period of approximately 11 years.

Environment protecting/resource use:

- Design incorporated post tensioned frame, reducing volume of concrete required, maximising floor space through reduced columns and increasing future flexibility of the building.
- 95% waste diverted from landfill and recycled or reused on site.
- thus reducing number of transport deliveries into a city centre environment.
- "Brown" & "Green" Roofs both supporting biodiversity.
- Grey water harvesting with 2000 litre capacity for use in flushing of toilets, meaning 100% of water used in wash hand basins and showers will be reused before being discharged to sewer.

The project also excelled in its engagement with the local community. The model developed by the project to increase the opportunities for local employment and upskilling/training on site, has been used across the local area and beyond.

The project also developed a Life Cycle Cost model which provided future budget & workload planning for the 60 year design life of the building. This was a real driver for our client! Through designing to cost the project team also ensured that the budget was spent wisely! Maximising value for money.

End User Feedback

- "I have been employed in the construction industry for over 35 years and in my opinion (reinforced by other industry professionals) the Library of Birmingham site is the safest, cleanest and most well organised that I have ever had the pleasure of working on."
  Terry Perkins, Project Director Birmingham City Council
- "The Library of Birmingham: Catalyst to changing lives… more Companies should follow… building a legacy for future generations"
  David Cameron, Prime Minister

The Process

The ethos of the Library of Birmingham project has been about openness and collaboration between partners and stakeholders, working to a common goal of creating a truly successful project that leaves a lasting legacy for the city and its people.

The collaborative approach has seen barriers broken down and partners working together to achieve that sustainable outcome. An outcome which has had impacts across all aspects of sustainability, including reducing carbon, protecting the environment, providing better prospects for the people, and supporting local communities. Thus maximising the positive impact the project has, and transforming peoples lives.

Key Learning Points

- Don’t promise what you can’t deliver, deliver what you promise!
- Maintain an open and collaborative approach that engenders trust and that can be used as a platform to raise early warnings, but ultimately discuss solutions.

Learn more

www.birmingham.gov.uk/rewritingthebook

For more information on The Green Construction Board

visit www.greenconstructionboard.org
or email green.board@bis.gsi.gov.uk