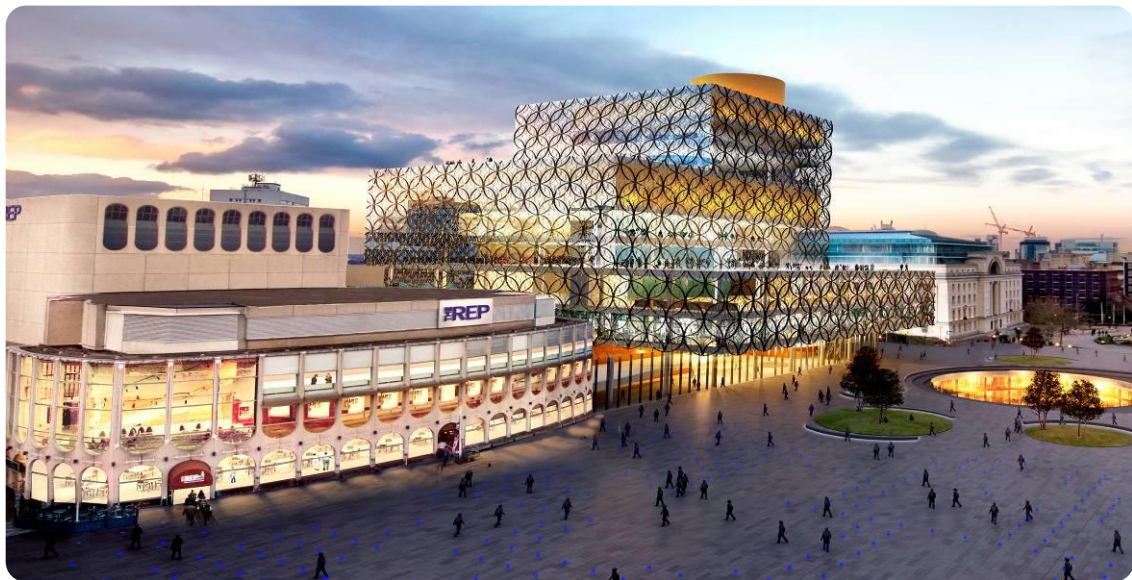


## The Library of Birmingham

### Carillion Construction Services



### **BREEAM Sustainability Case Study**

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## **Table of Contents**

- 1.0 Description of the project and building
  - 1.1 Background to the project
  - 1.2 How it fits into the Big City Plan
  - 1.3 Funding Sources
  - 1.4 Drivers
  - 1.5 Sustainability
- 2.0 BREEAM rating and score
- 3.0 Construction management techniques to reduce environmental impact
- 4.0 Conclusion

## Section 1 – Description of the project and building

### 1.1 Background to the project

The Library of Birmingham is a world-class centre for knowledge, leisure, learning and innovation on a single site that benefits all the people of Birmingham. Library, information, and archive services play a vital role in society, by helping citizens to learn, to develop skills and knowledge for life, and to gain an understanding of our shared heritage.

Designed by international architects Mecanoo, the Library of Birmingham is located in the city's Centenary Square. The building is comprised of a spacious entrance and foyer with mezzanine, lower ground level with indoor terraces, four further public levels and two outdoor garden terraces, a 'golden box' of secure archive storage occupying two levels, provision for staff offices and service plant on a further two levels and at the very top of the building a rotunda feature housing the Shakespeare Memorial Room. In all, the facilities are spread over 10 levels of varying size and usage.

The new library is physically connected to Birmingham Repertory Theatre (The REP) and the two organisations work in partnership, bringing together the written and spoken word through drama, poetry and performance.

The Library of Birmingham provides a showcase for the city's internationally important collections of archives, photography and rare books. New facilities including state-of-the-art gallery space open up public access to the collections for the first time. It is also home to a BFI Mediatheque, providing free access to the National Film Archive. Other facilities include a new flexible studio theatre, an outdoor amphitheatre and other informal performance spaces, a recording studio, and dedicated spaces for children and teenagers. By harnessing new technology, everyone from Birmingham to Beijing, Bangalore and beyond will be able to access the Library of Birmingham's world-class resources. More than three million visitors are expected each year, and millions more online.

Described by its architect Francine Houben as a 'people's palace', the Library of Birmingham is highly accessible and family-friendly. It delivers excellent services through collaboration between the library, The REP, partners and communities. It also provides a dynamic mix of events, activities and performance together with outstanding resources, exhibitions and access to expert help for learning, information and culture. As a centre of excellence for literacy, research, study, skills development, entrepreneurship, creative expression, health information and much more, the Library of Birmingham changes people's lives.

- The landmark edifice maximises natural light through open spaces and glass wrapped in a delicate metal filigree surround, inspired by the city's history of craftsmanship and industry
- It houses a flexible studio theatre, an amphitheatre, exhibition galleries, cafes, open air garden terraces, social areas, a recording studio and a BFI Mediatheque (with free access to the National Film Archive and scores of movies, documentaries and archive films) - all developed with maximum accessibility in mind.
- Digitisation will enable the creation of a living memory bank, bringing together the city's collective memory and heritage. Collections will be presented to the world through a state-of-the-art online showcase, stimulating knowledge sharing and global interaction.
- The digital library goes far beyond the physical library to meet the wider needs of the digital native. It includes interactivity with collections through digital technology in exciting and innovative ways, accessible online from a wide range of mobile devices.

- Working in partnership with The REP Theatre and with schools, colleges, universities, business, voluntary and community organisations it creates an exceptional hub for learning, information exchange and culture.
- A shift of focus away from traditional transactional services based on access to products (books and information) towards a knowledge-based service making connections between content and people.

## 1.2 How it fits into the Big City Plan

The Library of Birmingham is one of the most significant developments and cultural projects to have been undertaken in the UK in the past decade. A key cornerstone of Birmingham City Council's Big City Plan to regenerate the city centre, the new library is a hub for the region and an engine for knowledge and economic development; it rewrites the book for 21<sup>st</sup> century libraries.

## 1.3 Project Cost

The total budgeted total cost of the Library of Birmingham project is £188.8m, a reduction of £4.2m on the original forecasted figure of £193m. This investment covers the 35,000 sq m of the Library of Birmingham and the building of new up-dated back of house facilities for The REP.

## 1.4 Drivers

### *Regeneration*

The Library of Birmingham is a major transformational project that will support social and economic regeneration in the city for generations to come. It symbolises the city's mission of creating a city that is vital to developing Birmingham's knowledge-based economy and global success as a Science City.

### *Sustainability*

Key to this regeneration is capturing the focus on the increasingly important issue of sustainability in such a way that it provides a positive legacy for every one of all ages and whilst achieving a BREEAM 'Excellent' Rating and to minimise the impact of the project on the environment using measures such as:

- Minimising carbon emissions.
- Utilising energy efficient systems and technologies.
- Maximising use of daylight. Maximising natural ventilation.
- Minimising mechanical heating and cooling, whilst maintaining acceptable comfort levels.
- Utilising water efficient technologies, including rainwater harvesting and use of grey water.
- Designing to minimise embedded energy within the construction process and in building materials.
- Designing to minimise waste and encourage recycling during construction.
- Designing to prevent pollution including during construction.
- Promoting sustainable forms of transport in conjunction with the Birmingham Council Travel Plan.

## Section 2 – BREEAM rating and score

BREEAM stands for the Building Research Establishment Environmental Assessment Method and it is the leading tool for the assessment of buildings from an environmental viewpoint. Its purpose is to carry out a review of a building or a design of a building and to identify its environmental strengths and weaknesses.

BREEAM uses recognised design codes, national and international standards, planning policy, environmental strategies and legislative requirements to determine the measures by which credits can be awarded.

The assessment is broken down into 9 categories, each of which comprises of a number of credits to be assessed:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

Additional credits worth up to 10% may also be available for achieving exemplary performance standards for some credits and for including innovative features, systems or processes. In order to achieve a BREEAM Excellent Rating a minimum score of 70% is required.

At Design Stage the building achieved a BREEAM 2008 'Excellent' rating with a score of 74.98%. The project is aspiring to meet and potentially gain a higher score at post construction stage.

### 2.1 Design features and sustainability

Distinctive design innovation technologies and design features have been selected implemented during the construction phase to reduce environmental impacts included:

- The low carbon energy centre technology to provide heating, electrical and cooling energy for the development; utilising
  - Combined Heat and Power (CHP) and
  - Ground Source Heat Pump (open loop),
- Greywater harvesting and rainwater attenuation,
- Soft landscaping on the terraces on Levels 3 and 7, incorporating species intended to attract local wildlife and generally improve the biodiversity of the site.
- The 'brown roof' on Level 10 to encourage Black Red Starts,
- The mixed mode ventilation, high-performing thermal envelope and efficient lighting systems and controls;
- Waste recycling centre
- Local Enterprise Centre;

### 2.2 Costs

Element	Net Cost £/m <sup>2</sup>
Building	£2945
Services	£885
External works (incl. Drainage)	£86

### 2.3 Functions and areas

Element	Area m <sup>2</sup>
Area of Circulation	16839
Area of Storage	6394
Foyer and Theatre Foyer	2408
Meeting Rooms and Team Work Areas	910
Study, Arts and Business Zones	470
Archive	5644
Library and Reader Services	9558
Digital Lab and Cataloguing Areas	300
Auditoria / Performance Spaces	1594

### 2.4 Energy and water usage

Element	Predicted - kWh/m <sup>2</sup>
Electricity Consumption	TBC pending EPC Rating
Fossil Fuel Consumption	TBC pending EPC Rating
Predicted Renewable Energy Generation	TBC pending EPC Rating

Element	Predicted - m <sup>3</sup> /person/year
Estimated Water Consumption	0.006

Element	Predicted - %
% Water Consumption to be Provided by Rainwater and/or Grey-water	65

## Section 3 – Construction management techniques to reduce environmental impact

- Responsible Sourcing of Materials including FSC/PEFC Timber.
- Procuring materials with recycled content including concrete, insulation & plasterboard.
- Minimise waste to landfill through segregation of waste.

- Monitoring carbon emissions from fuel, energy and water usage.



## Section 4 – Conclusion

The Library of Birmingham is on course to achieve a BREEAM rating of 'Excellent' when the final assessment is conducted in summer 2013.