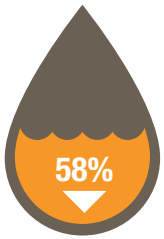
BREEAM Excellent and EPC A rated

£80,000 saved by energy reduction measures

90% of waste diverted from landfill



58% below the construction water usage target

CASE STUDY: NATIONAL CENTRE FOR NETWORK RAIL

The new 72,000m² complex brings together 3,000 staff from across the country in one modern workplace in Milton Keynes. Four buildings are linked by a bright central atrium.

SUSTAINABLE DESIGN

The challenge was to deliver an inspiring working environment with sustainability at its heart. We met all aspirations, achieving a BREEAM Excellent and EPC A rating for the project, delivered on time and on budget.

The final building minimises energy demand through effective cladding, an intelligent building management system and specialised heating technology. Rainwater harvesting will provide savings during occupation, emulating the money saved during the construction of the building through waste and carbon reduction measures.

We initially modelled the building construction in 3D, enabling visualisation from all angles to identify buildability issues and make the construction process more efficient.

For example, in the complex central street atrium, this allowed detailed co-ordination of interfaces between the trusses, concrete frame, steel work and roof fabric.

TACKLING CLIMATE CHANGE

The thermal mass of the building and super insulated cladding system help to regulate internal temperatures. Motorised cladding panels connect to the building management system (BMS) and assist the natural ventilation strategy to minimise energy demand.

Heating and power for the building are generated locally via a large Combined Heat and Power (CHP) plant which delivers low carbon heat and electricity. We built an energy centre to connect the site to the CHP, which contains six heat exchangers that feed the four buildings. The temperature of each building is monitored individually so the management system can identify increases in heating loads and react appropriately.

Early on, we created an energy plan for the site, to map its energy requirements and to identify best practice targets.

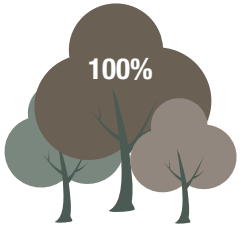
The project was set up with our remote energy monitoring systems allowing the team to track real time energy performance and identify where savings could be made. We used efficient temporary accommodation including high grade insulation, air source heat pumps and extensive controls for heating and lighting.

'BEING ENERGY CONSCIOUS IS A NO-BRAINER. WHAT WE SAVE CAN BE REINVESTED INTO THE PROJECT OR PUT TOWARDS WINNING MORE WORK FOR THE FUTURE.'

Guy Milton, Senior Site Manager

Completed: **June 2012**
Customer: **Network Rail**
Architects: **GMW Architects**
Mechanical & Electrical consultants: **Scott Wilson**
Structural Engineer: **Waterman Transport & Development**
Project Manager: **Mace**
Quantity Surveyor: **Sense Cost Consultancy**

Brown roofs, bird boxes and planting encourage biodiversity



100% legal and sustainable timber

Raised over £11,000 for local charities

101 toolbox talks conducted

Drying rooms were fitted with de-humidifiers and hanging racks, significantly reducing consumption and drying clothes more effectively. All site and crane lighting were fitted with controls and all transformers providing power to the site were put on timers.

This approach resulted in the project meeting the best practice targets, and achieving a saving of around £80,000 and 400 tonnes of CO_2e.

RESOURCE EFFICIENCY

Using unitised cladding reduced the installation time and limited on-site defects as the components were pre-assembled prior to arrival at site. This helped reduced the amount of waste leaving site and minimised lorry movements. Through all the waste reduction measures on site we managed to achieve a waste production figure of 9.3 $1m^3/100m^2$.

WATER MANAGEMENT

We installed a rainwater harvesting system, consisting of four $14m^3$ storage tanks. The system will recycle rain water collected from the building rooftops to provide a water supply for flushing toilets. The total potential saving for each tank is £1,311 per year and they will reduce potable water consumption by 33%.

BIODIVERSITY

To encourage biodiversity the development includes brown roofs, permanent bird boxes, meadow grassland, amenity grassland, shrub planting, hedges and trees.

SOURCING RESPONSIBLY

We used subcontractors and suppliers from the local area where possible to support the local economy, as well as minimising transport carbon emissions. A quarter of the workforce was locally sourced and 30% of the contract value was placed with local contractors.

All of the timber was from verified legal and sustainable sources, with 94% having full chain of custody (FSC or PEFC).

COMMUNITY ENGAGEMENT

We were keen to work with the local Orchard Primary School and invited pupils on site to learn about the construction process. They discussed the new building and the importance of protecting the environment and local wildlife. We provided teaching materials and even arranged for the students to meet some special guests - live birds of prey!

We followed up the visit with a practical session at the school, so the students could learn more about careers in construction. Working in teams, they had to build the tallest Lego tower. The Head of School commented; ‘Thanks so much for coming in. The workshop was excellent. The children gained a lot from participating.’

Innovative initiatives, such as installing an electric car charging point on site for the local police to use, raising over £11,000 for a number of local charities and working with the local scout group to provide them with free materials helped us to leave a positive legacy and achieve high scores on all Considerate Constructors Scheme (CCS) assessments, which culminated in a Silver award at the CCS Awards.

HEALTH AND WELLBEING

We value the safety of our operatives and installed a pedestrian bridge on the busy road between site and welfare / office accommodation. A safety action group was set up which implemented a job swap initiative. This allowed office staff to shadow key trades for a day to understand the complexities and risks associated with their work.

We provided an on-site nurse station, with mini-medical service which helped to immunise 244 staff and healthy eating initiatives provided free fruit and salads for operatives.