



Ashford Construction Project case study - Directline Structures

Going the extra sustainability mile in
the design of new office space

**Designer/Developer: Directline Structures, Orbital
House, Moat Way, Ashford**

Project highlights:

- 6 tonnes of plasterboard recycled
- 3 tonnes of stone and soil reused on site
- Demonstration of exemplary environmental practise

Directline Structures received support from the Ashford Construction Project in 2008-09. The Ashford Construction Project, funded by Ashford's Future has been delivered by Remade South East, to provide advice and expertise to companies and help promote sustainable growth in Ashford.

Company background

Directline Structures is a family run company that has been developing commercial and school buildings since 1988. The team is made up of a select group of specialists in the areas of design, civil engineering, heating and electrics.

Project description

Directline Structures designed and constructed an office block at Orbital Business Park in Ashford. The building became their new offices with rental space available for other businesses. The project began in June 2008 and the occupants moved into the building in February 2009.

Remade supported Directline Structures by producing a Site Waste Management Plan for the site. The plan estimated the types and quantities of waste generated and identified areas where materials could be reused or recycled. Meticulous planning ensured that sustainability was considered at an early stage, meaning there was little wastage of materials. The company went beyond legal compliance and introduced exemplary environmental practices.

Unique sustainability attributes

Directline Structures took on the roles of the client, designer and developer. The building was designed to be an example of practical and effective sustainability. The main sustainable elements of the project were:

- **Design:** The building was designed in an L-shape to best fit with the contours of the site, with two wings joining at a central hub. The steel structure was thoroughly analysed before committing to the geometry in order to minimise the weight of steel required and the amount of concrete needed for the foundations. By careful planning the amount of waste generated at the construction phase of the project was greatly reduced.
- **Reuse of material on-site:** Soil dug out for foundations was used to level the site. Reusing this material meant soil was not transported off site reducing the carbon footprint of the project.

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Unique sustainability attributes continued

- **Sustainable Urban Drainage (SUDS):** A sustainable urban drainage system has been used to minimise the amount of water going into the sewerage system. Water is captured from the roof before being dispersed throughout the landscape through the permeable parking area. This allows water to drain to the on-site lagoon at the back of the block. Rainwater is also harvested from the roof and is used to flush the toilet system, increasing water efficiency.
- **Biodiversity:** Natural habitats have been enhanced to ensure that local biodiversity is maintained. The on-site lagoon and landscape planting are designed to attract local plant and animal species. This is an important consideration as the site is situated next to a medieval listed house surrounded by protected landscaped gardens and a moat.
- **Sustainable energy generation:** An air source heat pump has been installed to heat the building. The pump has a co-efficient of 4:1 which means that for every four units of heating required only one unit of electricity is used to power it. Natural light and air changes were a fundamental part of the design and have resulted in reduced use of internal lighting and increased energy efficiency.
- **Sustainable materials:** Sustainable materials have been used throughout the build to minimise material use and to reduce waste. Polystyrene packaging was used to insulate the walls with mineral wall quilt insulation in the perimeter wall junction seals. The grid used in the parking drainage system was made from recycled plastic. The sub-base used on site was made from recycled glass, the staff recreation area is constructed from engineered highly compressed and laminated timber and the roof is made from surplus wall cladding.



Benefits

- **Waste minimisation:** The minimisation of waste and conservation of natural resources has led to savings throughout the build and will continue to lead to savings during the occupation phases (particularly with rainwater harvesting reducing water usage and rates). Minimal waste was generated through the construction phase of the project with 6 tonnes of plasterboard sent for recycling and 3 tonnes of stone and soil reused on site.
- **Recognition:** The sustainable design concepts and energy saving technologies used within the project have been acknowledged with the building awarded an Energy Performance Certificate rating of B, which is the second highest rating that can be achieved. The SUDS system used has also been recognised locally as best practice as there is zero service water discharged off site, exceeding local planning requirements.

Lessons learned

Designing sustainability into a project should be undertaken at the earliest opportunity. Directline Structures took on sustainability issues from the very onset by designing out negative impacts from the project. "It's something we've always done", says Design Manager, Jonathan Morton. "The company has its own design team which means we have the flexibility to apply sustainability principles throughout the lifecycle of a building."

Further Information:

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