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demonstration project



Barts site March 2008

## Contractor Offers Financial Incentives for Waste Minimization

<b>Contractor:</b>	Skanska
<b>Client:</b>	Barts and The London NHS Trust
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St Bartholomew's in Smithfield and The Royal London in Whitechapel are two of the oldest and best known hospitals in the UK. The work being undertaken at both sites is Britain's largest new hospital's programme, with a total value of £1 billion. Once complete, Barts will become a Cancer and Cardiac Centre of Excellence with the majority of care provided in a new eight-storey, state-of-the-art facility.

Most of the services currently provided at The London Chest Hospital in Bethnal Green will also move to Barts. Clinical services at The Royal London, including London's leading trauma centre, the capital's second biggest children's hospital and one of Europe's largest renal units, will be brought together in a new landmark 17-storey building. The new hospital project is integral to wider plans for modernising health services across London, supported by state of the art technology and facilities.

### Working with Suppliers to Reduce Waste

The cost of sending waste to landfill has increased and responsible disposal of waste has become a financial, as well as moral imperative. Opportunities for the biggest cost savings can be made at the design stage. Careful planning and designing standard product sizes can lead to fewer off-cuts and a reduction of waste. Over ordering is common practice in the wider industry which results in virgin material being sent to landfill. To reduce the need for over ordering Skanska used an innovative 3D modelling system to identify the exact quantities of each material needed. The use of 3D modelling also allowed the team to check for safe access during operation and maintenance. In addition, detailed modelling was used to confirm opportunities

for installation of large pieces of medical equipment as well as more detailed monitoring of the plan and construction process. Using the 3D modelling system Skanska were able to estimate the amount of waste that would be produced both in terms of packaging and excess materials. Once these quantities had been established contractors were invited to tender and detail exactly how they intended to minimize waste. For example one plasterboard supplier stated that they intended to use reusable stillages, bearers and pallets where possible and order larger unit sizes where possible to minimize bagged waste. As well as this, contractors were required to identify their anticipated waste streams and list both their predicted tonnages of materials and predicted tonnages of waste. Skanska then worked with the tenderers to negotiate the level of waste down to a level which was both achievable and acceptable to client and contractor. For example one contractor submitted an estimated 1371 tonnes of plasterboard waste, Skanska were able to work with them to revise this figure down to 624 tonnes. Once an anticipated level of waste had been established the contract was awarded.

Skanska were also keen to reduce the amount of hazardous waste on site. They worked collaboratively with contractors to identify hazardous waste streams and opportunities for



Flat-pack storage

alternatives. This resulted in a number of contractors turning to water based, non-hazardous products.

Once the contract was in place and work had begun contractors were committed to reducing their waste. For every tonne of waste they produced over and above the amount agreed at the tender stage the contractor was charged, and for every tonne that was eliminated from the amount agreed, those contractors working on the Barts site received a financial reward.

Skanska worked with contractors to identify and develop innovative methods to reduce the amount of packaging waste. Some of these have led to real financial benefits. For instance, mechanical and electrical products were packaged in reusable, flat packed containers. Once emptied the containers were returned to the consolidation centre. This approach saved the contractors at least £10,000.

Even suppliers of fragile products were encouraged to reduce packaging where possible. The main cladding contractors, Sheldebouw, were challenged to reduce their packaging waste. Every cladding panel was delivered on a reusable, metal cradle and wooden supports were used to protect the glass. Both the supports and the cradle were then returned to the suppliers for reuse.

Skanska also used prefabrication, where appropriate, to reduce waste. All major pipe-work at the London site was prefabricated in one block for installation in the hospital corridors. The blocks comprised of nine services in total including duct work, oxygen, nitrogen, water, fire suppressions and electrical supplies.

The main benefits of this approach were:

- Quality - assembly took place in a controlled environment which allowed tight quality control
- Time saving - logistical problems involved in employing a variety of different trades to work onsite could be avoided as assembly took place offsite.
- Waste - Assembly in a factory environment meant less packaging and weatherproofing were needed and excellent recycling facilities were provided.

As a result of the minimal amount of waste generated despite the large scale of the project, Skanska has only employed four logistics personnel.

### Recycling

Skanska routinely used colour coded bins to collect different waste streams for recycling or disposal. At least six streams of waste are separated out and collected: hardcore, timber, metals, plasterboard, plastic, cardboard, hazardous waste and general waste. The picture on the facing page illustrates the difference in cost for disposal or recycling of different waste streams. This picture illustrates the clear financial imperative to segregate and recycle waste.

Every bin is bar coded and issued specifically to an individual trade contractor. When the bins are returned they are scanned, instantly identifying who the bin was issued to, and then the waste type and weight recorded. Using this system Skanska have an instant, rolling picture of how each trade contractor is performing against their allotted waste allowance. The real-time data allows Skanska and trade contractors alike to target poorly performing areas. Looking forward the data will also provide invaluable input into future Site Waste Management Plans on other contracts.

Local recycling facilities were chosen to process the waste from the two sites. The recycling plant was located just two miles from the development and was the most cost effective. Further benefits of a local plant included fewer vehicle movements and therefore fewer carbon emissions. Using local facilities also supported local employment in the area.

Skanska were anxious to ensure that COSHH (Control of Substances Hazardous to Health) waste was effectively and responsibly disposed of. To make disposal easy and convenient COSHH bins were placed at exits. This meant that site operatives always knew where to find the bin and were able to dispose of the waste quickly, easily and safely.

## Environmental Training

Skanska recognised that it was essential that site supervisors were brought into the new approaches and could answer queries on site. To ensure that all supervisors were aware of environmental and health and safety procedures they undertook two hours of environmental, health and safety training. This is in addition to the standard site induction. The supervisors were also encouraged to make suggestions to improve the site. One such suggestion resulted in the provision of a can crusher near the catering facilities to allow for all drinks cans to be recycled.

Skanska also worked to ensure that all site staff recognised the importance of a tidy site and introduced a system of "tidy Fridays". Every Friday each trade contractor supplied one person for two hours to tidy the site up. All those that took part were then rewarded with a lunch voucher. Small scale initiatives like these have helped the site team to take responsibility for the tidiness of the site and feel more engaged in the project.

## Communications

Due to the scale of the development many stakeholders were engaged and informed of the progress of the project. Many tiers of stakeholders were communicated with from the NHS Trust, Local Authority and Government to the media and trade organisations. To ensure that messages were consistent and all stakeholders remained on board Skanska implemented a detailed and structured communications plan which included a matrix

outlining who to talk to, how and the person responsible for this communication.

## Key Achievements:

Winner of Quality in Construction Award for Corporate Social Responsibility March 2008.

## Measurable benefits

Skanska have now put together an environmental strategy containing challenging targets and measurements to be rolled out to all sites.

It is too early to assess the full financial and environmental benefits, however Skanska will be monitoring them closely ready to report in the future.

## Lessons Learnt:

- Early consideration of waste and collaborative involvement of contractors at an early stage can lead to a reduction in waste and financial benefits.
- Environmental training is essential to ensure all site staff are aware and engaged with environmental initiatives.
- Communication with a large amount of stakeholders requires a clear and consistent strategy.



Cost implications of different waste streams



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