Laing O’Rourke, a large privately owned UK construction firm has been using SWMP since 2007. In 2008 they integrated them into their online Environmental Management System. They use SWMPs to improve environmental management, economic administration and logistics. SWMPs also help them to meet their commitment to 'halve waste to landfill', after signing up to the voluntary WRAP scheme in 2008.

This case study explains how Laing O’Rourke successfully prepared and implemented a SWMP during the construction of a community campus in Scotland, achieving significant reductions in waste and cost.

**Loch Leven Community Campus**

Laing O’Rourke was the Principal Contractor for this £20 million PFI. The project involved the construction of a new school (Kinross High School), small library and community campus including sports and arts facilities. The project was carried out for Axiom on behalf of Perth and Kinross Council. Work commenced on 1 October 2007 and the campus is due to be handed over to the Council in October 2009.

A SWMP was prepared by Laing O’Rourke during pre-construction. This allowed changes in the design specifications to reuse excavated materials on site, via a ‘cut and fill solution’. The SWMP forecast waste streams including mixed construction and demolition waste, plasterboard, polythene, metals, cardboard, paper and plastics. Actions to reduce and recover these waste streams were identified through consultation with the site management team and architects and listed in the SWMP. The actions include; chipping down wooden pallets for on site re-use, using a plastic bailer to bulk packaging waste for recycling and on site waste segregation. The site offered sufficient space to set up an on site waste station, which could store multiple 40 cubic yard skips for the segregation of waste streams. The preparation of the SWMP enabled the station location to be planned in advance of work commencing on site.
Economic benefits and costs
Laing O’Rourke has achieved significant cost savings by implementing the actions identified in the SWMP. They estimate that segregating waste has saved them £5,000 to £10,000. The use of wood chipping technology to turn wooden pallets into chipping for paths saved them a further £1,500 in material and disposal costs. The hire of the bailer was offset by the savings gained in waste transportation. Applying cut and fill also saved them around £225,600, as it would have cost around £60 a load to remove the soil from site.

The cost of implementing the SWMP was minimal as training and administration were integrated into their existing systems. For example, all employees have to attend an environmental awareness training day, which includes SWMPs. They estimate that it took two to three hours to fill in the company SWMP template and an hour to carry out reviews throughout the build. Reviews were performed when there was a significant change in operations, e.g. when the frame was finished and the internal fit-out packages started, to ensure the SWMP was on track and being delivered.

Environmental benefits
Preparing a SWMP at the pre-construction phase allowed design specifications to be changed to reduce waste by retaining soils to be reused on site via a cut and fill engineering solution. The segregation of waste into as many streams as possible and the use of material with a high aggregate recycled content helped to generate further waste savings. Around 75 to 80% of waste is expected to be recycled.

Other benefits
The SWMP also helped Laing O’Rourke with planning and managing logistics, e.g. by organising the waste and collection area at the planning stage. They found that by integrating the SWMP into existing systems it can aid in managing economic and commercial administration as well as housekeeping and waste management throughout the project. They believe that a good SWMP demonstrates to the client their commitment to waste management.

Lessons learnt
Key lessons learnt from this project include the importance of management buy-in. Without the commitment by management, the SWMP could become a paper exercise, but with it real cost savings and environmental benefits can be achieved. Buy-in has to continue throughout the supply chain; Laing O’Rourke sent the SWMP to all subcontractors and incorporated the SWMP as an agenda point in the monthly H&S and Environment meetings which were held on site. Subcontractors had to complete a waste questionnaire so waste minimisation actions can be discussed at the pre-start meeting. The SWMP goals are then included in ongoing on site HS&E meetings.

Lessons learnt for application of SWMPs in future projects include:
- Using the SWMP to consider waste at the planning stage means design decisions can be made which significantly reduce waste.
- SWMP can stimulate innovative use of technology, (e.g. waste wood grinding and chipping) to achieve real cost savings.
- Include the issue of communication of the SWMP to the subcontractors into the ISO14001 audit proforma.
- Include the SWMP in the subcontractor HS&E agenda to assist subcontractor buy-in.
- Record waste data monthly to allow quantities to be tracked by the SWMP and reviewed throughout the project.

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