This case study explains how Interlink M74 JV is successfully implementing a Site Waste Management Plan during the construction of the scheme, achieving significant reductions in waste and cost.

Background

Interlink M74 Joint Venture (JV) is a consortium of major civil engineering contractors Morrison Construction, Balfour Beatty, Morgan Est and Sir Robert McAlpine, formed to construct the final section of the M74 on the south side of Glasgow to link with the M8. The £440 million project is funded by Transport Scotland, Glasgow City Council, South Lanarkshire Council and East Renfrewshire Council. The JV has a formal environmental policy and strong commitment to environmental excellence. Although a SWMP is not currently a legal requirement in Scotland, the JV decided to develop one voluntarily from the start of 2010. This case study explains how Interlink M74 JV is successfully implementing a SWMP during the construction of the scheme, achieving significant reductions in waste and cost.

The existing M74 stops at Fullarton in the east end of Glasgow. The scheme consists of an 8.5 km section of new motorway to link up with the M8 on the south west of the city, completing a ring of motorway around the city centre and relieving congestion on the existing M8. The JV has a dedicated environment team which developed a bespoke SWMP to give monthly figures for total waste arisings, waste to landfill, waste recycled and cost of waste management. The WRAP SWMP Template is now being used to consolidate and analyse the data.

The road corridor runs entirely through old industrial areas with a legacy of various forms of contamination. The specimen design put most of the route on embankment, avoiding the need for remediation of the contaminated land. However, 43,000 cubic metres of highly toxic chromium residues were to be excavated during various phases of construction. The specimen design showed these being disposed of to landfill, but the JV identified that they could instead use a stabilisation solution with PFA and lime to enable the materials to be kept on site for use as structural fill. This was agreed with SEPA and involved extensive leaching testing and modelling. The excavation and treatment of the waste was recorded in the SWMP.

Key Facts

- New build £440 million project, constructing 8km of motorway with 13 bridges and 4 junctions to join the M74 to the M8.
- The WRAP SWMP Template was used to record waste actions, destinations and costs.
- 43,000 m3 of chromium residues were stabilised on site, saving significant landfill costs.
- Imported 500,000 tonnes of locally sourced recycled aggregates to assist fill requirements.
Economic benefits and costs
Interlink M74 JV has achieved significant cost savings by implementing the actions identified in the SWMP. Recycling has saved about some 50% of the total waste management costs to date. The stabilisation of the chromium residues saved significant cost by avoiding disposal of this hazardous waste to landfill.

Environmental benefits
The embankment design required the import of large amounts of fill; 500,000 tonnes of which were sourced locally from recycled and secondary aggregates including burnt and unburnt colliery spoil, demolition material and highway arisings. All materials were subjected to rigorous geotechnical and chemical testing to ensure they were fit for purpose. The WRAP Quality Protocol was used very successfully to ensure the quality of recycled aggregates on the project.

Interlink M74 JV was able to save 4,000 tonnes of concrete by reviewing the requirements for retaining walls reducing the size and length of some and eliminating others altogether - Designing out Waste.

By March 2010, with the project 60% complete, some 3,000 tonnes of waste had been produced with an overall recycling rate of 75%. Waste to landfill was highest in the site clearance phase, and the recycling rate is currently running at 81%. Segregated skips for different waste streams are used throughout the site.

The environment team put in a lot of effort to gain acceptance by the workforce of the need for recycling and segregation of waste. This included delivery of toolbox talks. Once the cost benefits were understood, the culture changed rapidly. This was aided by an appreciation of the dangers associated with contaminated land and the need to follow safe working procedures. Environmental inspections are carried out regularly with a 25 point plan and the compliance rate is over 93%.
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Other Benefits:
Interlink M74 JV has achieved significant cost savings by implementing the actions identified in the SWMP. Recycling has saved about some 50% of the total waste management costs to date. The stabilisation of the chromium residues saved significant cost by avoiding disposal of this hazardous waste to landfill.

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.

Equally important is acceptance by the workforce, and this was achieved by a programme of toolbox talks and environmental inspections. Monitoring the SWMP data on a monthly basis has enabled the waste management to be tightly controlled and the recycling of waste maximised, leading to significant cost savings.

Lessons learnt for application of SWMPs in future projects include:

• the SWMP should be started at the beginning of the project so that design decisions which significantly reduce waste can be recorded and maximum benefit gained from the process, particularly for Designing out Waste;

• the WRAP SWMP template confirmed that Interlink’s planning for waste was good and that the job was well controlled;

• on large projects such as the M74 completion it is economically worthwhile to appoint a single person to be responsible for waste;

• it is crucial to communicate the importance of waste management to the workforce to ensure buy-in;

• the SWMP should be used to track the quantities and costs of waste monthly during the project so that these can be proactively managed; and

• waste management contractors should be required to submit data in a format compatible with the SWMP template.

Other Benefits:
Interlink M74 JV has achieved significant cost savings by implementing the actions identified in the SWMP. Recycling has saved about some 50% of the total waste management costs to date. The stabilisation of the chromium residues saved significant cost by avoiding disposal of this hazardous waste to landfill.