

***Siltbuster* Meets Environmental Targets for Scottish Road Project**

Phase 1 of a £35.6m road project serving the Forth Road Bridge in Scotland is meeting stringent environmental targets for wastewater discharged from site, despite a high level of suspended solids, thanks to the 24-hour operation of two *Siltbuster* HB50 mobile silt traps.

Designated the 'M9 Spur Extension/A90 Upgrade', the scheme will ease southbound congestion on the Forth Road Bridge and surrounding area.



The City of Edinburgh Council is project-managing the scheme which is underwritten by the Scottish Executive, with the Forth Estuary Transport Authority (FETA) providing funding. Scott Wilson is the consulting engineer.

The new road will divert 90 per cent of traffic from the existing overburdened A8000 which will revert to a local road between Kirkliston and South Queensferry. The new road will link the M8/M9 with a newly-designed toll plaza for the Forth Road Bridge. It is 4.5km long and will be of motorway standard for most of its length, with 1.5km of dual carriageway.

Phase 1, which started in June 2005, involves the consolidation of old oil shale mine workings along the route. Ground specialist, Forkers Ltd, is undertaking the nine month, £6m contract which will see the ground stabilised to a depth of between 10 and 60m over a treated area of 350m x 200m. This involves drilling approximately 2500 boreholes then injecting PFA (pulverised fuel ash) and cement-based grout.



To satisfy environmental requirements, Forkers had to provide a water treatment system to deal with all displaced minewater, plus rainfall onto site and excess slurry from the grouting operations.

The choice of the *Siltbuster* units was included in Forkers' initial tender because the innovative treatment process overcame a number of problems facing traditional alternatives.

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Forkers suggested using *Siltbuster's* as an alternative to settlement lagoons. "We were already familiar with what the *Siltbuster* units were capable of," said Site Agent, Stephen Rule, "so we saw them as an ideal solution to the problems faced on site." These included congestion and the topography which made siting lagoons of sufficient size difficult. It would also have been extremely difficult to ensure gravity discharge due to various immovable obstacles.



Forkers was also concerned about the heavy sediment load in the waste water and how quickly this would put the lagoons out of action as they silted-up. "We were also aware that there might be issues regarding increased numbers of waterfowl attracted to the lagoons creating an enhanced risk for aircraft using the local airport 2km away," said Rule.

The two *Siltbuster* units delivered to site are HB50, hopper-bottomed units - connected in parallel - which have been supplied with a flocculant dosing system. According to Forkers they are in place of two settlement lagoons of 900 m², although they take up only a fraction of the space.



Because of their integrated hopper bottoms they are ideal for heavy loading as they provide additional storage for batch

removal of settled material, or can be configured for continual sludge draw-off. "We would have struggled to keep the settlement lagoons online during the works," said Rule. "If we had to put one out of action to de-sludge, it would have had a significant effect on our other operations on site. The two *Siltbuster* units are certainly earning their keep. You just set them up and with a minimal run."

Maximum flow into the *Siltbusters* is 60m³/hr, with suspended sediment up to 500mg/l. Most of the suspended material is subsoil disturbed by the works, with some displaced minewater and a small amount of cement grout spillage.

Treated wastewater is discharged to a local watercourse which flows into the nearby Forth Estuary. Scottish Environment Protection Agency (SEPA) consent limits allow suspended solids up to 30mg/l, a pH of 5-10 and a dissolved iron limit of less than 2mg/l.

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