

Bioremediation gets to grips with Adelaide's waste

Flinders Bioremediation is marshalling its microbes to meet the challenges of a new major project in Adelaide.

The university-based company, established in 1999, specialises in providing scientific expertise in the break down and disposal of putrescible organic waste and of soils contaminated by petro-chemicals. A new project with the Patawalonga Catchment Water Management Board demonstrates the commercial application of research in this second aspect of bioremediation.

The company's General Manager, Dr Richard Stewart, said the contract with the Patawalonga Catchment Water Management Board involves exploring ways of processing thousands of cubic metres of stormwater-borne contaminated silt

The Board is responsible for managing a significant amount of silt trap material. Sediment from Patawalonga Creek, Brownhill Creek and the Sturt River is collected at three main basins around the Adelaide Airport, and a large basin at the northern end of the Patawalonga Lake.

The sediment is typical of urban run off and consists mainly of silt, leaves, and vegetative matter. The current sediment stockpile exceeds 30,000 cubic metres, with up to a further 5,000 cubic metres estimated to be accumulating annually.

Dr Stewart said a comprehensive analysis of the sediment material revealed generally low but significant levels of contaminants.

Contamination with hydrocarbons has been identified as a combination of natural gums and oils from plants – most likely associated with the high leaf litter load in the material – and some petroleum products from vehicle operation. Zinc was also present, most likely from galvanised roofing and fencing, along with



Excavating one of the silt traps near Adelaide Airport

pollutants washed off road surfaces by rainwater.

Although the Board can send the material to landfill, the option is unattractive both in terms of costs and environmental impact, and the Board is therefore seeking alternatives.

Dr Stewart said that composting provides a potentially attractive option for treatment of the material – "If composting can be used to reduce the contaminant levels or reduce their availability and potential toxicity to ecosystems, the sediment material could be put to other purposes such as landscaping or capping landfill," he said.

The material could also be composted to produce an organic product for horticultural or agricultural applications, which also would have the benefit of defraying costs.

From a technical viewpoint, the relatively high organic content and the 'twiggy' consistency of a proportion of the material should make it particularly suitable for composting, Dr Stewart said.

"The relatively high temperatures reached during the composting process would be expected to kill the

weed seeds in the material, rendering it more marketable for horticultural applications, while the bugs present in the composting process would help to eat up or degrade the hydrocarbon contaminants," he said.

Flinders Bioremediation is presently conducting a set of pilot scale composting trials, to confirm the economic and technical feasibility of composting the silt trap material.