



Overflow of litter during a storm event

How to stop pollution and silt control structures from becoming white elephants

SRK HAS BEEN involved in the design and implementation of various pollution control structures throughout South Africa over the past 20 years, including in-line and off-line facilities for both the private and the public sector.

But after all these years there are very few pollution control structures that are still operating effectively; the root cause being that there is seldom an operational maintenance plan or programme in place – and where there is one, it is often not implemented. Indeed, many municipalities simply do not have the capacity to develop and run these maintenance programmes, and are often restricted by budget allocations to maintain these structures on a regular basis.

So, the majority of pollution control structures are only effective for the first few months after implementation, but are soon blocked or damaged and just become dumping grounds for illegal refuse disposal.

The responsibility of stopping pollution from discharging into the natural environment is supposed to be done at the point of source by the property owner, but monitoring of the private sector's pollution control structures is difficult, as the properties where they are located are often inaccessible.

In addition, companies in many industries have installed oil separators, but have never emptied them, leaving them buried or vandalised and forgotten. As a result, the oil flows directly through the structure into the formalised stormwater system during a storm event. Unless the oil is regularly skimmed from these facilities, they might as well not be installed. Their impact may even be worse than nothing at all, as the companies may be under the false impression that they need do no more to deal with the problem.

Municipalities then end up trying to cope with the excessive volumes of litter, debris, oil and silt that have been



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For the past two decades SRK Consulting partner Murray Sim has watched millions of rand being spent on controlling pollution in South African cities and towns. Now, he says, we need to stop wasting money.



Build-up of litter due to lack of maintenance



Damaged grid – litter bypassing catch-pit



Typical silt and litter build-up

deposited into the stormwater system. Where this goes unchecked, the refuse can be washed through the system to end up in the river system or the oceans – fundamentally undermining the basic purpose for which they were designed.

Under certain conditions the structures can collect enough silt and organic matter for plants and trees to sprout and grow – raising the chances of a blockage in the system. Regular cleaning of the structure is vital, and litter needs to be removed often, especially during high rainfall events.

It should also be noted that pollution control systems are designed to achieve a certain result, but need to be carefully monitored to check that the result is in fact being achieved. It may be discovered after the implementation of a structure, for instance, that more than one is required within a certain catchment. Such monitoring is seldom done, making it difficult to confirm that the capital expenditure is warranted.

WHAT IS THE SOLUTION?

If so few of these systems have worked, what is the way forward? How do we en-

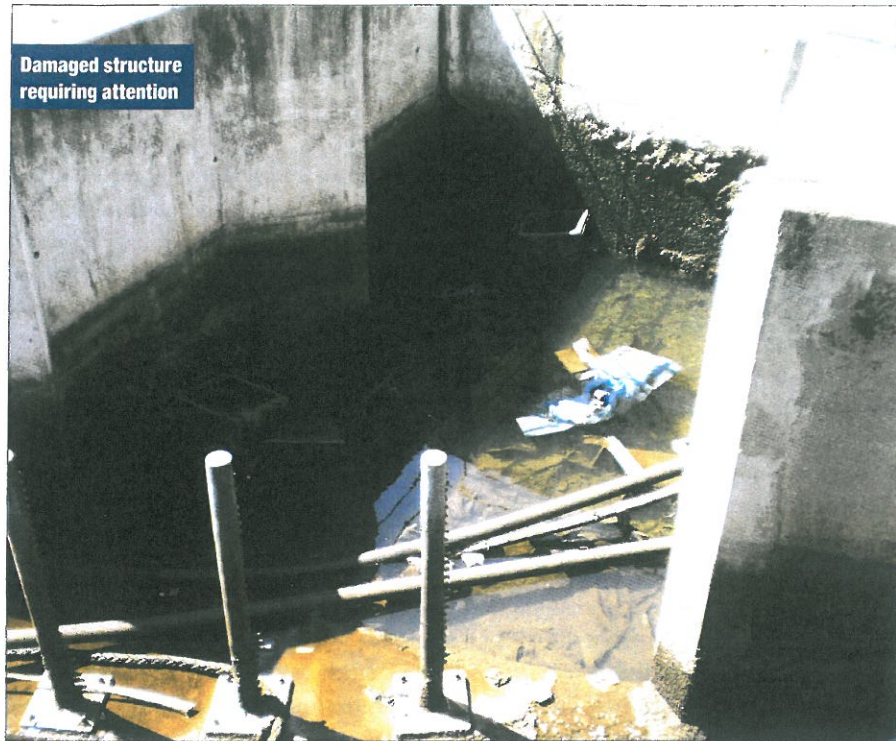
sure that the next pollution control structure does not become another dumping ground for the local community?

I would argue that a new strategy needs to be considered, in which an engineering team is contracted by the local municipality to manage the process. The team would be guided by – and would work closely with – the municipality while working within the municipality's framework.

Potentially, a team could be appointed to manage a pollution control structure on a contractual basis. If any information about the structure is required, then the team would supply it. Basically the engineering team needs to take responsibility for that structure over a specific contract period.

The team's responsibilities would vary depending on the client's requirements, but would usually include:

- Developing an operational maintenance programme, which would be applied over both the short-term and the long-term life of the structure.
- Physically removing litter, debris, silt and oil from the structure to ensure that it optimally performs its intended function.
- Making design modifications that would improve how well the system works; this might include improved access for cleaning purposes, better oil removal facilities or additional pollution control structures for future planning.



- Informing the municipality about what future maintenance may be required, and doing estimates on the capital costs that could be involved; this would allow municipalities to improve their planning and could inform their budgets.
- Implementing and monitoring the operational maintenance programme that they have prepared in consultation with the client.
- Recording data on the performance of the structure (in terms of litter, debris, silt and oil volumes) on a regular basis, to improve the effectiveness of future designs.

- Assess changes in the catchment that may render existing structures inadequate.

This idea could help municipalities with a related issue: there is a major shortage of low-flow gauging stations within municipalities, which are required for the calibration of various hydrological modelling packages. Most pollution control structures are designed for low-flow conditions, so flow measurements can be incorporated into the operational maintenance programme. Depending on the sensitivity of the area, one could also consider adding a water quality sampling

programme for future baseline modelling.

Depending on the success of the programme, this could eventually be expanded to the management of a catchment which would include all the pollution control structures and stormwater infrastructure within that catchment. This would provide much needed employment for maintenance teams – a labour-intensive function that is well suited to the national expanded public works programme. The investment in these jobs would immeasurably improve the value gained – both by society and the environment – from the initial capital expenditure on these pollution control structures.

It would also create awareness of pollution among local residents, especially as more people are becoming interested in environmental issues. It would be an easy way of addressing the public's concerns and at the same time working together with the local municipalities.

The reality is that, without proper maintenance, the building of pollution control structures can easily become a serious waste of taxpayers' money. It is also not sufficient to design and plan operational maintenance programmes that are not going to be well implemented.

Engineering consultants can make a huge difference to what is currently a dire situation, as they have the expertise and the experience of working contractually with government to very exacting standards. The current challenges in this key area of urban pollution control really demand nothing less. ■