



ADDRESSING OPERATIONS AND MAINTENANCE CHALLENGES IN SMALLER MUNICIPALITIES

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ABSTRACT

At present, several smaller municipalities are struggling to operate and maintain their services infrastructure in a cost-effective and sustainable manner. The end result is predictable: rapid deterioration of assets, followed by catastrophic component failure, and regular and prolonged disruptions in service delivery.

The first part of the paper identifies and examines some of the challenges that exist in a typical small rural municipality. A local municipality in the Eastern Cape is used as a case study. It must be emphasised though that there is no intention to discredit this particular municipality or any of its employees. Instead, the findings should be viewed against the background that there are numerous other local authorities across the country that are experiencing similar or even worse difficulties. The solutions offered are specifically aimed at improving the working conditions of municipal staff who are confronted with numerous impediments in their current work environment.

A number of issues, ranging from financial constraints to institutional deficiencies and personnel problems, are highlighted. Current utilisation of grant funding and some municipalities' dependency on funding agencies are also debated.

The main theme of the paper is, however, more focused on finding workable solutions to ensure that best practise is applied in operating and maintaining municipal services infrastructure in a sustainable manner. The second part of the paper explores possible short- and long-term options, including support from consulting engineers and outsourcing of essential services to the private sector.

1. A CASE STUDY OF OPERATIONS AND MAINTENANCE (O&M) CHALLENGES IN A SMALL RURAL MUNICIPALITY

1.1 Crisis in local government

In 2008 the (then) National Department of Provincial and Local Government (DPLG) received a report from the Afrikaanse Handelsinstituut (AHI), alerting the department on service delivery problems in a number of municipalities throughout South Africa.

The report highlighted several problems that these municipalities were experiencing at the time, including:

- Challenges in the general rendering of services to the community;
- Procedures followed when appointing new staff members;
- Irregularities and deficiencies with procurement procedures;
- Leakages and overflowing of sewerage systems; and
- A general lack of consultation and of cooperation between the municipalities and the business community, in particular the AHI-affiliated business chambers of the AHI.

A rural municipality in the Eastern Cape was listed in the AHI report as one of the local authorities where water and sanitation services were on the verge of collapse.

Aurecon was subsequently tasked by the DPLG to report on the state of water and sanitation services in this particular municipality. The initial investigation confirmed that municipal service delivery was totally ineffective and in certain areas non-existent, especially with regard to essential services such as refuse removal, sewerage conveyance and treatment and supply of potable water.

At the time one of the major concerns was the discharge of raw sewerage,

overflowing from non-functional pump stations and wastewater treatment plants, into the river systems and dams that supply water to other local authorities located in the downstream catchment areas.

The conclusion reached was that the poor condition of especially water and sanitation infrastructure was as a result of:

- Insufficient funding allocation for the rehabilitation and/or replacement of components that have reached the end of their design life; and
- Inadequate maintenance budgets, which could be attributed to the municipality's limited income base.

Part of Aurecon's brief by the DPLG was to provide technical assistance to the municipality, especially with regard to O&M. Data on O&M was secured mainly through field observations and by conducting informal interviews with technical staff. Informal discussions were also held with members of local business chambers, to obtain some insight on municipal service delivery from a rate payer/consumer perspective. Some of the findings of this investigation are presented and discussed in this paper.

The principal outcome of the original assignment was the approval of Municipal Infrastructure Grant (MIG) funds to the value of R44 million, to be allocated over three consecutive financial years, for the rehabilitation of existing bulk water and sanitation infrastructure. This project is now nearing completion, but a real concern is the fact that O&M remains a low priority within the municipality's Technical Department.

The stark reality is that repairing dysfunctional infrastructure without addressing the factors that impact negatively on O&M is simply not a sustainable option in the medium to long term. Without basic maintenance, most of the newly refurbished plants could be in a derelict state within five years from now.

The existing culture of deferred maintenance in the municipality will need to be abolished in favour of a strategy that ensures that adequate technical and financial resources are made available for O&M. The primary benefits of changing the status quo will be a drastic reduction in infrastructure life cycle costs, and the ability to deliver a consistent and satisfactory level of service to consumers.

1.2 The extent of the crisis from an O&M perspective

A detailed report on O&M deficiencies within the Technical Department of the municipality falls outside the scope of this article. However, to provide some perspective on the severity of the problem, some of the more obvious failings are listed below in no particular order:

- Non-compliance with existing health and safety legislation;
- The current infrastructure life cycle scenario can be described as "run to destruction" because of a total lack of routine and preventative maintenance.

- The unfortunate outcome is premature asset failure;
- Failure to remove screenings at sewer pump stations and at the inlets to wastewater treatment works result in downstream blockages, clogging of pump impellers and eventual mechanical breakdowns;
 - Failure to respond to sewer blockages within a reasonable time leads to the discharge of raw sewage into sensitive natural environments;
 - Failure to respond to water pipe bursts promptly result in considerable water losses and lengthy interruptions in water supply;
 - Because of supply chain bottlenecks, water purification chemicals at remote water treatment plants are often in short supply, resulting in poor drinking water quality;
 - Due to an acute shortage of funds for O&M, repairs to a defective pump unit is often postponed until the second (standby) unit fails. (It is common practise to install pump units in both water and sewer pump stations in a duty/standby configuration, to ensure continuous operation should one unit become defective.) The inevitable outcome is prolonged interruptions in service delivery and consequential inconvenience to local residents, as well as health risks associated with sewage spills; and
 - The municipality's asset register is not up to date, which makes it difficult to (1) trace missing plant and equipment and (2) compile maintenance plans.

Prior to discussing possible solutions to change the status quo, it is necessary to list and examine some of the more critical aspects that impede efficient O&M within this particular municipality.

2. FACTORS THAT IMPACT NEGATIVELY ON O&M

2.1 Human resource issues

Service delivery challenges in small rural municipalities are often exacerbated by human resource issues, ranging from the difficulty to recruit suitably qualified and experienced professionals, to unstructured or weak disciplinary procedures. With this case study the situation is no different. Some of the more pertinent personnel issues that have a direct bearing on the Technical Department's ability to meet its O&M obligations are highlighted below:

- There is no institutional memory within the department due to high staff turnover at management level – the department has had four different directors/acting directors in a period of three years;
- Technical directors are appointed on five-year contracts, a policy that overlooks the importance of long-term infrastructure planning. In this particular municipality, both consultants and government agencies are relied upon to assist senior staff with strategic planning. The inevitable result is the implementation of ad hoc solutions that, due to uncoordinated planning, adds unnecessary burdens on operating staff and maintenance teams;
- The department lacks the capacity to mentor young inexperienced technicians. Without the opportunity to gain worthwhile work experience, the technician's usefulness to the institution remains low and his/her contribution to improving service delivery negligible. Past experience has shown that newly appointed civil engineering technicians soon resign to pursue better career opportunities elsewhere;
- Judging by the poor condition of components at several plants and pump stations, there seems to be a critical deficiency in mechanical and electrical competency in the department. This makes the municipality totally dependant on outside service providers to repair mechanical and electrical equipment;
- Absenteeism, where personnel at certain treatment plants fail to report for duty, is a common occurrence. Yet there seems to be reluctance in the municipality to take disciplinary action against transgressors. This in turn impacts negatively on discipline and on productivity; and
- The department's current post structure makes no provision for the appointment of experienced staff at middle-management level (superintendent or similar). This is a critical shortcoming as some of a superintendent's primary responsibilities are to:
 - Ensure that O&M functions are performed in an efficient manner;
 - Identify potential infrastructure failures in time and take the necessary remedial actions to prevent interruptions in service delivery;
 - Provide technical support and guidance to artisans and plant operators on a daily basis; and
 - Report to line managers on all operational issues with regard to the provision of municipal engineering services.

2.2 Financial challenges

The municipality's income – expenditure statement for the 2010/11 financial year, as provided in its Annual Report for 2010/2011 – is depicted in Table 1 below.

A cursory examination of the municipality's revenue versus expenditure for the period 1 July 2010 to 30 June 2011 reveals the following:

- Government grants and subsidies formed 71% of total income, an obvious indication that the municipality is dependant on grant funding to remain solvent;
- Revenue from property rates and service charges, which should be the municipality's primary source of income, represented only 23% of total income;
- Proceeds from the remaining revenue items (fines, rental income, etc.)

made up the balance of 6%;

- Personnel costs (excluding remuneration of councillors) comprised 24% of total expenditure, which is not excessive. However, what is of concern is that the income from property rates and service charges is just sufficient to cover personnel costs, leaving no surplus for O&M;
- Repairs and maintenance expenditure was only 1% of total costs, which confirms that O&M is of low priority in this municipality (The accepted benchmark is that an O&M budget should be in the order of 1 to 4% of the total asset value.); and
- The statement below shows a surplus of almost R11 million, which in theory should be more than adequate to cover annual maintenance costs, including breakdowns. Unfortunately, observations made during routine site visits to water and wastewater plants during the period 1 July 2011 to 30 June 2012 revealed that very little, if any, of the surplus funds were used for maintaining vital water and sanitation infrastructure assets.

Table 1: Income – expenditure statement for the 2010/11 financial year

Income - Expenditure Statement for Financial Year 2010/11		
Revenue		
Item	Amount	Percentage of total revenue
Property rates	R 7,943,164.00	8.23%
Service charges	R 14,554,633.00	15.08%
Rental of facilities & equipment	R 157,991.00	0.16%
Income from agency services	R 1,465,002.00	1.52%
Fines	R 287,493.00	0.30%
Government grants & subsidies	R 68,754,069.00	71.25%
Other income	R 1,337,956.00	1.39%
Interest on investment income	R 1,990,845.00	2.06%
Total revenue	R 96,491,153.00	100.00%
Expenditure		
Item	Amount	Percentage of total expenditure
Personnel	R 20,888,317.00	24.42%
Remuneration of councillors	R 2,041,502.00	2.39%
Depreciation & amortisation	R 8,863,221.00	10.36%
Impairment loss	R 13,904,894.00	16.26%
Finance costs	R 153,700.00	0.18%
Collection costs	R -	0.00%
Repairs and maintenance	R 931,978.00	1.09%
Bulk purchases	R 1,743,535.00	2.04%
Contracted services	R 1,538,154.00	1.80%
Grants and subsidies paid	R 26,721,068.00	31.24%
General expenses	R 8,753,328.00	10.23%
Total expenditure	R 85,539,697.00	100.00%
Surplus	R 10,951,456.00	

2.3 Operational deficiencies

Field observations revealed several deficiencies within the Technical Department that impact on O&M. Some of the identified shortcomings are discussed below in no particular order.

Because of budget constraints, maintenance of service vehicles and construction plants is neglected. Vehicle and plant breakdowns are therefore a common occurrence and, together with the non-availability of replacements, hamper the municipality's ability to perform elementary O&M tasks and to respond to infrastructure failures in time.

At most water and wastewater treatment plants, basic equipment such as spanners, screw drivers, brooms, shovels, rakes and wheelbarrows – necessary to perform routine tasks – are missing. Personnel at these plants are often expected to do hazardous work without being issued with the required protective clothing. The most extreme example observed was at a wastewater treatment plant where operators were cleaning inlet screens without wearing rubber gloves.

A number of wastewater treatment plants do not have a potable water

supply, making it impossible for operators to wash screens, scum baffles and overflow weirs, or hose down equipment to prevent sludge accumulation. Needless to add, non compliance with Department of Water Affairs (DWA) standards for treated effluent is the norm.

Poor housekeeping is common at most of the water and wastewater treatment plants, with sites littered with junk, overgrown with weeds and equipment covered in dust. This could be an indication that supervision is lacking and that operators are left to their own devices.

Tedious supply chain management procedures within the municipality add to the frustrations of technical personnel stationed at remote sites. Feedback from supervisory staff revealed that obtaining an order number for fuel or spares, is no simple task due to poor interdepartmental communication and cooperation. This limits the ability of maintenance teams to respond to infrastructure failures without delay.

Senior managers are reluctant to delegate authority to supervisory staff, which is probably an internal arrangement to limit unauthorised expenditure. All requests for fuel, spares, water purification chemicals, etc., need to be approved by a senior manager, regardless of the extent of the emergency. The unfortunate consequence is lengthy delays in attending to breakdowns when managers are on leave or out of town.

3. SUPPORT FROM OTHER GOVERNMENT AGENCIES – A BLESSING OR A CURSE?

3.1 Secondment of personnel

There have been several attempts to address the lack of experience and skills in the municipality's Technical Department. This has mainly been in the form of assistance through the deployment of technical personnel from the Development Bank of Southern Africa (DBSA), the district municipality and the provincial department responsible for local government.

It was observed that some of the engineers and technicians who were seconded to this municipality for short periods during the past three years had themselves limited knowledge of municipal engineering and were thus not capable of assisting operating staff with technical matters. It was further noted that they had no clear mandate and were not given measurable performance targets. Their contribution in supporting municipal staff was therefore limited and was probably not worth the expense.

An additional concern with the secondment of personnel from other government agencies is that it could encourage a dependency culture amongst municipal staff, which will further inhibit the local authority's capability to become self-sufficient and sustainable.

The willingness of government agencies to assist struggling municipalities is commendable. Also, the concept of secondment of experienced and competent personnel is sensible and should be supported. However, the ad hoc manner in which it is currently carried out needs to be reviewed.

3.2 Grants and subsidies

As indicated in Table 1, grant funding constituted 71% of the municipality's income in the 2010/11 financial year. The 2010/11 Annual Report provides a breakdown of the respective grants received and this information is reflected in Table 2 below.

Table 2: Grants and subsidies received for the 2010/11 financial year

Government grants and subsidies - 2010/11			
Grant/subsidy	Source/Donor	Amount	Percentage of total
Equitable share	Provincial Government	R 22,754,154.00	33.1%
Financial Management Grant (FMG)	National Government	R 2,542,451.00	3.7%
Department Local Government Grant (DPLG)	Provincial Government	R 487,987.00	0.7%
Municipal Infrastructure Grant (MIG)	National Government	R 33,040,858.00	48.1%
District Municipality Grant	District Municipality	R 240,200.00	0.3%
Integrated Development Plan (IDP)	Provincial Government	R 219,972.00	0.3%
Municipal Systems Improvement Grant (MSIG)	National Government	R 312,808.00	0.5%
Department of Housing Grant	Provincial Government	R 9,155,639.00	13.3%
Total		R 68,754,069.00	100%

A detailed analysis of the data provided in the table above falls outside the scope of this paper. However, the question that needs to be asked is how much of this money was available for O&M.

About 6% of the grants/subsidies were allocated for administrative or financial support and thus unavailable for O&M. Equitable share, municipal infrastructure grants (MIG) and the housing grant made up the remaining 94%.

The equitable share grant is paid by the provincial government to subsidise free basic services to poor households and is a recognised source of revenue for local authorities who need to cover their costs in the provision of such services. By default a portion of this income is committed to O&M through the payment of salaries, the purchase of water purification chemicals, etc.

The Municipal Infrastructure Grant (MIG) was allocated for the provision of new and for the upgrade and/or rehabilitation of existing services infrastructure. Current policy dictates that MIG funds may not be used for O&M.

The housing grant was for the funding of a new housing development and none of it was used for O&M.

Because of its limited income base, this municipality, like many others in rural areas, is unable to fund capital projects from its own revenue. It is therefore totally dependent on MIG funding for the construction of new facilities (community halls, sport fields, etc.) and new services infrastructure (roads, water, sewerage, stormwater, etc.). This is the norm in most rural municipalities and the concept of the MIG programme is not disputed.

However, the question that needs to be asked is whether municipalities are prepared to adjust their operating budgets upwards to allow for the maintenance of new (additional) MIG-funded infrastructure assets. With insufficient funding available for O&M and an increasing asset base, maintenance backlogs will eventually reach a level where assets will need to be replaced long before they have reached the end of their design life.

Considering the importance of O&M, it is recommended that the current policy of allocating grant funding for capital projects only, is reviewed as a matter of urgency.

4. SUGGESTED SHORT-TERM INTERVENTIONS TO ADDRESS O&M CHALLENGES

4.1 Assistance from the private sector

Municipalities need to acknowledge that the private sector has the necessary expertise and resources available to support them in performing their O&M obligations.

A large number of ex-municipal engineers are currently in the employment of private consulting firms and their wealth of knowledge could be invaluable to struggling municipalities. The possible deployment of such experienced professionals from the private sector to advise and assist municipalities with O&M needs to be considered.

The primary aim during a deployment period would be to ensure that skills transfer, especially with regard to O&M functions, takes place. Additional support could include, but should not be limited to:

- The establishment of an institutional memory through the collection of accurate as-built data;
- Providing guidance with regard to the updating of asset registers;
- Assisting with the recruitment and appointment of technical staff;
- Assisting with the mentoring of newly appointed personnel;
- Compiling of maintenance plans and schedules;
- Assisting with budgeting for O&M;
- Advising on the purchasing of suitable plant and equipment;
- Assisting technical managers with strategic infrastructure planning; and
- Providing management support.

The issue with such a proposal is obviously the availability of funds to pay for services rendered. Should a municipality be unable to foot the bill, the

possibility of securing external funds, including grant funding, should be considered.

4.2 Securing sufficient funds for O&M

Lack of financial resources is probably the primary reason why maintenance is often neglected or deferred in municipalities. The first step in the establishment of a maintenance culture is therefore to ensure that sufficient funds are made available to support O&M. In small municipalities with a limited income base this could present quite a challenge. However, there is an alternative that could easily be implemented if the commitment to improve O&M exists.

Municipalities are entitled to reclaim the value added tax (VAT) on MIG-funded projects. At this stage there is no legislation in place which stipulates how the reclaimed VAT money should be spent. It is suspected that more often than not these funds are used to pay the salary bill and other general expenses, instead of using it for infrastructure improvement. The possibility of rather ring-fencing this money for O&M is worth considering.

The case study is used to illustrate the potential impact of this option. Total MIG funding in the 2010/11 financial year amounted to R33 million (refer Table 2). The VAT reclaimable on this amount is approximately R4 million. It is obvious that, should such an amount be ring-fenced and used specifically for repairs and maintenance – an item where actual expenditure was less than R1 million in 2010/11 – the municipality's ability to provide a satisfactory service to consumers will improve significantly.

5. PROPOSED LONG-TERM SOLUTIONS TO ENSURE SUSTAINABLE O&M PRACTISES

5.1 Repair and Maintenance Programmes (RAMP) in the Department of Public Works – a success story

Aurecon has been extensively involved with the development and implementation of Repair and Maintenance Programmes (RAMP) within the Department of Public Works (DPW). These projects have been implemented over a period of about 10 years with a total value of more than R1 billion. Typical projects included:

- Water and sewerage treatment plants;
- Water and sewerage reticulation networks;
- Mechanical and electrical equipment (pumps, boilers, air-conditioning units, etc.);
- Buildings and other structural elements; and
- Forensic laboratories for the South African Police Service (SAPS).

A typical RAMP project consists of an initial repair phase – during which the installations are repaired to a functional state – followed by a three-year operations and maintenance period. A contractor is thus appointed after an open tendering process to repair and/or refurbish existing infrastructure at one or more sites, and thereafter to operate and maintain it for a fixed (three-year) period.

During the maintenance period, the contractor is paid monthly for operating and maintaining the repaired infrastructure. The payment amount is based on the contractor's performance during the preceding month and is determined after an inspection by an Aurecon Engineer.

The engineer, in consultation with the contractor, draws up a 10-point scorecard of each installation. Scoring is done in the presence of the contractor and the client (DPW), and the contractor is then paid accordingly.

With regards to maintenance, the contractor is expected to do the following:

- Routine preventative maintenance (cleaning and servicing of equipment);
- Corrective maintenance (rectify faults); and
- Breakdown maintenance (repair after a failure has occurred).

A brief explanation of the contractor's maintenance liabilities in a typical RAMP project is provided below.

Routine preventative maintenance is aimed at the minimisation of

breakdowns and entails the rendering of services and servicing of equipment according to a predetermined maintenance control plan. The contractor's responsibilities are to:

- Replace and service components of equipment, units or parts thereof for each installation at prescheduled moments regardless of condition;
- Readjust, reset, clean, corrosion protect all components of equipment, units or parts thereof for each installation, and
- Perform all implied actions to maintain installations in a functional condition.

Corrective maintenance requires regular observation of the equipment, identifying pending breakdowns, mal-adjustment or anomalies of equipment, units or parts of installations, and subsequent action to restore installations to the original functional condition as specified.

Breakdown maintenance entails repair and/or replacement of defective equipment, units or parts of installations following a breakdown that leaves the installation inoperable or unsafe, and subsequent action to restore installations to a functional condition as specified, within the maximum down-time allowed.

The contractor is expected to perform breakdown maintenance within a specified minimum period as determined by the engineer. Breakdowns are classified as Fatal, Emergency and Ordinary, and the maximum allowed downtime for each are as follows:

- Fatal – requires an immediate response (e.g. standby water pump breakdown);
- Emergency – to be attended to within 48 hours (e.g. a sewer blockage); and
- Ordinary – to be attended to within 7 days (e.g. a leaking tap).

Breakdowns are reported to a call centre where the entire repair process is monitored. Repairs completed are verified by the engineer before closing a particular case. Penalties are applied if the permissible downtime is exceeded. The call centre is operated 24 hours a day, seven days a week.

In addition to his maintenance liabilities, the appointed contractor takes full responsibility for the day-to-day operating of services infrastructure as prescribed in his contract. Typical examples are water treatment plants, wastewater treatment works and pump stations. At a water treatment plant for instance, the contractor will purchase the required treatment chemicals and apply them in correct dosages to ensure full compliance with the national standard for drinking water quality. Penalty clauses in the contract will come into effect whenever there is deterioration in water quality which results in non-compliance with the required standard. Performance monitoring is thus a crucial component of the contract.

5.2 Outsourcing of critical operations and maintenance functions in municipalities

It is suggested that the RAMP concept be adopted and implemented to overcome current service delivery challenges in small municipalities.

Municipalities need to take cognisance of the following:

- The required technical and management capabilities to operate and maintain municipal infrastructure in a sustainable and affordable manner are available in the private sector;
- The RAMP model is particularly suitable for water and wastewater treatment plants where a contractor's performance can be measured directly against the Blue Drop and Green Drop scores achieved;
- RAMP Projects can be implemented in a local authority within a short timeframe, given that outsourcing of services is not a novel concept in municipal procurement systems;
- With the roll out of RAMP projects, there should be no need to retrench municipal staff. Employees, such as water and wastewater plant operators, could be trained by the contractor to assist with daily operations, including routine maintenance. This will ensure that proper skills transfer takes place on site, which will benefit the municipality in the long term.

Also, utilising available municipal staff in a productive manner could result in a significant cost saving to the municipality; and
The establishment of a call centre in the municipal environment is a relatively simple task, as resources could be shared with existing municipal emergency services.

5.3 Benefits of outsourcing

The rollout of RAMP projects in the DPW resulted in a significant improvement in service delivery at government facilities such as prisons and police stations. With the outsourcing of services in line with the RAMP concept, a client municipality and its ratepayers will benefit as follows:

- Scheduled preventative maintenance will increase the lifespan of costly municipal assets such as water pumps, sewage pumps, electrical switchgear and dosing systems at water treatment plants;
- Preventative maintenance will reduce the risk of fatal breakdowns and the resultant interruptions in essential services such as water supply and sanitation;
- Best practise is applied in the operating of services infrastructure to ensure full compliance with current occupational health and safety (OHS) and environmental legislation;
- With outsourcing, the contractor's monthly performance is strictly monitored and measured against a predetermined specification. This is to ensure that a high standard of service delivery is maintained throughout the maintenance period;
- Improved service delivery will increase customer satisfaction, boost investor confidence and be a strong countermeasure against potential civil protests and/or campaigns that endorse the non-payment of municipal rates and taxes;
- Outsourcing will reduce the workload of municipal employees. This could have a significant positive impact on smaller municipalities in rural areas which struggle to recruit and retain competent and experienced personnel;
- Outsourcing provides an ideal opportunity to transfer much-needed skills from the private to the public sector. An inherent advantage of the scheme is that municipal personnel can be trained by the contractor's operating staff on site, until the necessary competency levels are achieved; and
- A maintenance culture will be established.

6. CONCLUSION

The current tendency in some municipalities to defer maintenance is not advisable from both a technical and financial perspective as, without maintenance, assets will require replacement long before they have reached the end of their design life. Instead, municipalities need to allocate more resources for O&M to sustain a satisfactory level of service delivery.

Provincial governments and national government are keen to commit funds for capital projects through MIG funding, but reluctant to support municipalities to meet their O&M obligations. The status quo needs to be challenged as there is a direct link between O&M and asset life cycle costs. To continuously commit capital to replace failed assets is not the answer.

The private sector has the necessary expertise and resources available to support municipalities in performing their O&M obligations in a sustainable manner. The possible deployment of ex-municipal engineers who are currently in the employment of private consulting firms to municipalities to advise and assist with O&M should be considered.

Municipalities, especially those that are struggling to keep their services infrastructure operational, need to consider the option of outsourcing essential services such as water and wastewater treatment to the private sector. As briefly discussed in this paper, there are options that can be considered to overcome financial constraints.

It is recommended that the basic principles of the DPW's RAMP model

is adopted for municipal contracts, where a competent private contractor is awarded a tender to perform certain operations and maintenance functions, with quality monitoring being done by an appointed consulting engineer.

In the case of a water treatment plant for instance, stringent penalties should apply if the private contractor is unable to achieve and/or maintain Blue Drop status. The end result will be a drastic improvement in service delivery to consumers.

Johan van der Mescht

Johan van der Mescht graduated from the University of Stellenbosch in December 1985 with a degree in Civil Engineering.

After a two-year stint in the Army, he started his career at the City Engineer's Department at the Port Elizabeth Municipality in January 1988. He initially worked in the design division, where he was involved with the design of roads and stormwater infrastructure. In 1990, he was deployed to the construction division to gain site experience. From January 1991 to January 1995 he worked in the sewerage division. After obtaining professional status in June 1992, he was appointed to manage the division's operations and maintenance functions. He resigned from the municipality in January 1995 to start a new career in the academic environment as a lecturer in civil engineering at the then Port Elizabeth Technikon. From 1986 to 2000 he was also contracted by SRK Consulting Engineers on a part-time basis where he was mainly involved with the design of water and sanitation infrastructure. In June 2006 Johan joined Aurecon, his current employer. As a senior engineer he is involved with the implementation of municipal projects, ranging from infrastructure rehabilitation to planning of bulk services.



Marius van Jaarsveld

Marius van Jaarsveld is employed as a technical director at Aurecon where his primary responsibility is the coordination and implementation of a diverse range of developmental projects in the civil, transportation and structural engineering fields. He has been involved with numerous multi-disciplinary developments, including an industrial park, a golf resort, hospitals, prisons, water reservoirs, sewage pump stations, wastewater treatment works and pipe lines, township developments, strategic studies and road rehabilitation projects.

His experience in municipal engineering covers the full spectrum of a typical engineering project from conceptual design to final commissioning. He was also appointed as project manager for a Department of Public Works project aimed at implementing a R1 billion repair and maintenance programme for prisons. This comprises of an initial repair phase followed by a maintenance phase structured on an outsourced basis for various services, including water and sewerage reticulation, water and wastewater treatment, plumbing, general building, mechanical and electrical.

Prior to joining Aurecon, he worked for the City Engineer's Department of the Municipality of Port Elizabeth's Water Division (Planning and Design). From 1983 to 1989 he was employed as an engineering assistant with the (then) South African Transport Services.

