
USING A PRIVATE OPERATOR TO ESTABLISH A CORPORATIZED PUBLIC WATER UTILITY

THE MANAGEMENT CONTRACT FOR JOHANNESBURG WATER

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EXECUTIVE SUMMARY

Public-Private Partnerships (PPPs) for water and sanitation services in developing countries have been a subject of much debate. Among the various contractual arrangements available for governments, management contracts stand at the lower end of the spectrum in term of transfer of responsibilities to the private sector. They have traditionally been regarded as “low powered” instruments suitable for difficult situations, and were usually implemented as a first step before a lease or concession contract.

In South Africa, a few municipalities contracted private operators during the 1990s under lease or concession contracts, but these arrangements proved to be controversial. The private operators’ emphasis on cost recovery often created conflicts with a population used to evading utility bills. The municipality of Johannesburg was the first to contract a private operator through a management contract, and followed a radically different logic. It made the strategic decision to corporatize its water and sanitation utility and keep it under public management over the long term. But it also recognized the need to contract outside professional help. As such, the aim of the PPP was not to transfer the utility to a private operator over the long term, but rather to leverage the expertise of an experienced operator for a few years in order to establish a viable, corporatized public water utility.

Contrary to several other management contracts that have been implemented for water utilities over the last 15 years in developing countries, stakeholders widely agree that the five-year management contract in Johannesburg, initiated in early 2001, was a success. But can we put objective figures behind the performance of the private operator to support this assessment? What are the reasons for this success? And could the Johannesburg’s experience offer a new paradigm for the use of management contracts in developing countries?

The challenges in Johannesburg

The end of apartheid in South Africa ushered in enormous changes. For cities like Johannesburg, these included a major administrative reorganization combining multiple municipalities into new ones, and fully incorporating the townships. This amalgamation left the new greater metropolitan area of Johannesburg with multiple departments involved in water and sanitation services, all operating with no cohesion.

The fragmentation of responsibility within the municipality had created a culture with little accountability for results. Employee motivation was weak, with poor customer service as the norm. Capital investment projects ran into recurrent delays and cost overruns, and operational problems of the sewerage system had become a growing environmental concern.

Faced with these challenges, the new municipality decided to create a corporatized utility (Johannesburg Water) based on more business-oriented practices—and to enlist the private sector’s help in doing so. Management contracts had previously been used as a second-best option where the situation was too risky for a lease or concession contract, primarily as a first step before delegating broader responsibilities to the private sector. The municipal authorities in Johannesburg had a different idea: use a private operator for a few years to help establish the public utility and pass it over to public management.

The city sought help not only in improving customer service and transforming Johannesburg Water into a financially and operationally sustainable entity, but also in the complete organization of the new utility. This meant integrating six different structures and departments, building capacity throughout the organization, and managing an internal transformation to rapidly empower a new black manage-

ment team. Moreover, the goal was to make the utility financially viable without big tariff increases—a true challenge since the water and sanitation services/p were essentially bankrupt by 2000.

What was achieved under the management contract

The competitive tender launched in 2000 attracted interest from the largest international operators, and was awarded to a consortium led by Suez. How well did the private operator perform? It achieved more than 90 percent compliance with contractual targets every year, bringing clear improvements in customer service, environmental compliance, and cost efficiency. The management contract also achieved a complete financial turnaround, taking the utility from bankruptcy to a small profit with a tariff increase of only 6 percent in real terms—an achievement to be credited to both public and private partners. By the end of the management contract, Johannesburg Water was ranked the best large municipal water and sanitation utility in the country. The overall cost of the management contract was around US\$10 million, more than ten times less than the estimated benefits for the municipality, and representing just about 0.5 percent of the annual turnover of Johannesburg Water.

Beyond improving technical performance, the private operator played an essential role as a change agent, something which is often undervalued or misunderstood. It instilled in Johannesburg Water new corporate values based on efficiency and customer service, transforming the way civil servants think and act. The new culture emphasized the empowerment of line managers, coached them in better operational practices, and held them accountable for results. In this new environment, a dynamic was created in which the utility's staff and the private operator truly worked together to turn the utility around.

This study focuses on the performance of the management contract, and does not review the evolution of Johannesburg Water after the end of the contract and its transfer to public management in 2007. Maintaining the gains achieved by the management contract will largely depend on the utility's ability to keep talented staff, and the city's continued ability to focus on financial viability while refraining from interference in operational management.

Looking forward: Using management contracts to help corporatize public utilities

Public and private management of water utilities have commonly been viewed as two antagonistic approaches: a government had to choose between keeping its water utility under public management or bringing in a private operator from outside to take over control. But the experience in Johannesburg suggests that this is only a perceived dichotomy that is largely unfounded: a private operator was brought for just a few years to help establish a viable, corporatized public utility.

While several management contracts in developing countries have delivered disappointing results, this has clearly not been the case in Johannesburg. The clear strategic direction embedded in the contract, which reflected some clear public policy choices by the municipal authorities, probably played a major role in ensuring collaboration from most stakeholders. This new approach for management contracts—viewed as instruments to support public sector reforms instead of as a first step of the process of transferring to a private operator the provision of water and sanitation services—runs contrary to some accepted dogmas. As a matter of fact, it does not matter whether the external partner is publicly or privately owned, as long as it is a competent operator and the management contract establishes clear objectives and fosters financial performance and accountability. The Johannesburg experience is worth considering by governments that have made the strategic decision of corporatizing their water utility and keeping it under public management over the long term, but are not necessarily against leveraging outside help from a professional operator for a few years.

1 INTRODUCTION

In the past 15 years many governments in the developing world have looked to public-private partnerships (PPPs) as a way to improve the quality and sustainability of their water supply and sanitation services. This trend was part of a general move toward economic liberalization across many sectors. But in the water sector it also reflected a widespread frustration among governments, donors, and multilateral institutions with the poor performance of publicly managed utilities. Where these had failed to meet access and quality standards, the commonly recommended solution was to transfer the responsibility for providing services to a private operator.

Between 1992 and 2006 developing countries awarded more than 250 PPP projects for urban water utilities.¹ Governments experimented with different contractual schemes for delegating management to a private operator, transferring varying levels of risk and responsibility. Concession contracts transferred the most responsibilities, including investment as well as operational and commercial management. At the other end of the spectrum were management contracts, a lighter approach typically involving a three- to five-year term, no private investment, and payment of the private partner through an annual fee based, in part, on performance.

Experience with these PPP contracts has been mixed and controversial. While several projects brought considerable improvements for the population concerned, there were also contracts which were canceled after bitter conflicts. One issue is that PPPs can be complex and challenging to implement. Governments in developing countries, especially municipal governments, are not always equipped to deal efficiently with a contract involving a large, often foreign, private operator. At the same time, some public water utilities in the developing world have been able to achieve notable turnaround on their own—showing that public-private partnership is not the only option for establishing a viable water utility as long as such key issues as tariff levels, accountability, and governance are properly addressed.

When management contracts were initially tried in developing countries, they were typically viewed as a second-best option, suitable mostly for situations where it was too risky for a private operator to take over a water utility under a lease or concession contract. They were often undertaken for those water utilities in worst shape, and the underlying strategy was to use a management contract to initiate reform, as a first step before delegating broader responsibilities to the private sector under a lease or concession. This approach, however, has proved largely disappointing, with most utilities returning to public management at the end of the management contract.²

The management contract for water supply and sanitation services in Johannesburg, South Africa presents an entirely different perspective. The municipal government implemented the PPP as part of a program specifically designed to improve the efficiency of municipal public services. Its aim was not to transfer management to a private concessionaire for the long run. Instead, the goal was to establish a viable, corporatized public water utility by leveraging the expertise of an experienced private operator for a number of years.

Creating such a utility would not be easy. The reorganization of South African municipalities in 2000 had led to the creation of a new and larger Johannesburg metropolitan area—and a need to com-

¹ Information is from the World Bank and Public-Private Infrastructure Advisory Facility's Private Participation in Infrastructure (PPI) Project Database.

² Among the few exceptions are the cases of Gabon, Mali and the province of La Rioja in Argentina, where the management contract was followed by a concession.

bine several separate municipal water and sanitation departments into a single utility company. This company would be 100 percent owned by the city government, but fully corporatized and operating under private law. Moreover, the goal was not only to establish a corporatized utility but to make it financially viable without big tariff increases that the population would resist. This was a true challenge: the water and sanitation services were essentially bankrupt by 2000, and there was widespread frustration in the population with the poor quality of customer service.

The five-year management contract, initiated in early 2001, was designed around this goal, and when the private operator left at the end of the contract (in June 2006) the water utility's management returned to public hands. A review is timely, to see whether the management contract met its goal—to establish a viable, corporatized public water utility—especially since reliable data on the performance of the private partner is available, thanks to the independent monitoring that was performed as part of the contract implementation. The findings should be useful to other developing countries looking for options to improve their water and sanitation services.

2 BACKGROUND

Johannesburg's government designed and implemented the management contract for its water and sanitation services in a national context of growing pressures in the sector—pressures that had already prompted other South African municipalities to seek public-private partnerships in water and sanitation, albeit not through management contracts.

A brief history of South Africa's urban water sector

The urban water and sanitation sector in South Africa passed through three distinct phases in the past few decades.

In the 1960s and 1970s efforts were made to develop water infrastructure in urban areas. But this was also the era in which apartheid policies were at their most extreme. Residence in urban areas was restricted for black South Africans, who had to live in townships (Soweto being the most widely known). Formal basic services, including piped water and sewerage, were provided in townships but not particularly well managed.

This was also the period when the government generalized the concept of regional water boards. The model was Rand Water, a public company established early in the 20th century to provide potable water in bulk to the large conurbation that was then referred to as the Witwatersrand and included Johannesburg. Most cities (except Cape Town and Port Elizabeth) became dependent on water boards for their supply of bulk water, while their water departments focused on network distribution.

In the 1980s and early 1990s the apartheid government could no longer constrain the movement of people from rural to urban areas, and informal settlements started to spread in the periphery of cities. The government established townships as administratively separate entities managed by "black local authorities," distinct from the "white local authorities" in charge of the core urban areas.

During this era the water and sanitation services in townships deteriorated. The local administrations lacked technical skills, and problems with water losses and sewer blockages grew. Infrastructure expanded too slowly to meet demand. In addition, a large share of the township population refused to pay public utility bills as an act of civil resistance against apartheid. Meanwhile, informal settlements lacking such basic services as water and sanitation continued to expand.

In the mid-1990s South Africa underwent enormous change. The apartheid system was dismantled. The democratic election of a new national government also meant new local authorities. Previously separated city centers and townships were put under single local governments, and the same happened for water and sanitation systems.

In the largest cities, such as Johannesburg, this reorganization included the establishment of metropolitan municipalities. The change was made gradually, starting with a two-tier structure with a metropolitan council above several separate councils, each responsible for a different geographic area. For municipal utility services this structure led to a diffusion of responsibility among different departments. The transition also involved major changes in the staffing and organizational structure of local administrations. Some municipalities coped less well than others. Johannesburg was among these: its financial situation declined markedly in the late 1990s, together with the quality of the services provided to the population as a whole.

Nationally, more than 10 million people (out of a current population of 49 million) have gained access to basic water and sanitation services since 1994. The share of the population with access to water service increased from 60 percent in 1994 to 92 percent in 2005, and the share with access to sanitation

from 49 percent to 67 percent. Even so, as a result of the intensive rural migration (and immigration from other African countries), the backlog in water and sanitation coverage in metropolitan areas has kept growing. As a result, even though the situation in South Africa does not compare with the rest of sub-Saharan Africa, its urban water and sanitation sector still faces significant challenges.

South African experience with public-private partnerships in water

In part in response to the many difficulties in meeting growing demand for public services in the midst of major institutional change, a few South African municipalities experimented with public-private partnerships for urban water services in the 1990s (Table 1). The main rationale was to limit the growing financial burden of financing water and sanitation services out of the city treasury by harnessing the efficiency and expertise of private operators. There was support for introducing public-private partnerships from segments of industry and civil society, but also strong opposition from unions and several political groups.

The city of Queenstown was the first to create a public-private partnership in water, awarding a lease contract to Water and Sanitation Services South Africa (WSSA) in 1992. The contract was initially limited to the urban core, but in 1995 was expanded to include the townships. Other lease contracts, also signed with WSSA, followed in Stutterheim (1993) and Fort Beaufort (1995). Both of these contracts are no longer operational.³ A second wave took place in 1999 with the award of two concession contracts to international operators, the first in Dolphin Coast, won by SAUR, and the second in Nelspruit, won by Biwater.

As the tendering processes for the concessions were launched, labor and left-leaning advisory bodies increasingly mobilized against the general concept of public-private partnership. The central government also took a position that was less than neutral. Through the Municipal Services Act (MSA) issued in 2000, it set up considerable administrative hurdles to partnering with a private operator. In an attempt to ensure that all options were duly considered, the MSA stipulated, for example, that a PPP option could be used only if it could be "demonstrated" that it was a superior option compared to a municipally managed service (section 78). This was obviously subject to varying interpretations and potential challenges, and this criterion effectively acted as a deterrent against pursuing PPP in the face of vocal opponents.

Following the same biased logic, municipalities were allowed under the MSA to contract with outside public operators (such as the water boards) to manage their water systems through direct negotiation, without using a competitive tender process as was (justifiably) required when contracting private operators. Again, this made the contracting process much easier for mayors and councillors if they chose a public rather than a private operator, despite issues of lack of transparency and governance risks involved.

The management contract in Johannesburg was signed just one month before the MSA took effect in March 2001. The promulgation of the Act, combined with ongoing pressure from vocal anti-PPP groups, put an effective stop to the development of PPP contracts in the country's water utilities sector for several years.

Since then only the newly formed local municipality of Maluti a Phofung has been prepared to pursue a public-private partnership for its water services. Created after the 2000 demarcation process, Maluti a Phofung inherited a population of 400,000 divided between an urban center (Harrismith) and

³ That the first three public-private partnerships managed by WSSA were lease contracts that excluded revenue management is noteworthy. These were not orthodox lease contracts, which typically assign the full commercial responsibility and risk to the private operator.

Table 1. Public-private partnerships in the urban water supply and sanitation sector in South Africa, awarded in the last 15 years

Municipality	Type of contract	Population served	Start of contract	Contract period	Private operator	Responsibility for bills collection
Queenstown (Lukhanji Municipality)	Lease	170,000 ^a	June 1992	25 years	WSSA ^b	Municipality
Stutterheim (Amahlati Municipality)	Lease	40,000	1993	10 years, completed in 2003	WSSA	Municipality
Fort Beaufort (Nkonkobe Municipality)	Lease	60,000	1995	Terminated in 2000	WSSA	Municipality
Dolphin Coast (part of Kwa Dukuza Municipality)	Concession	40,000	January 1999	30 years	SAUR with 5 local partners	Private operator
Nelspruit (Mbombela Municipality)	Concession	240,000	April 1999	30 years	Biwater with local partners	Private operator
Johannesburg	Management contract	3,200,000	April 2001	5 years	Suez	Shared
Maluti a Phofung	Management contract	400,000	November 2005	6 years	Uzinzo Water Services (80% Amanz'abantu, 20% WSSA)	n.a.

Source: Authors

Note: This table only includes projects that involve a transfer of management of the utility to a private operator, excluding other arrangements for involving private operators such as service contracts.

^a The contract initially covered 22,000 people but was expanded to 170,000 in 1995 with its extension to the townships.

^b Water and Sanitation Services South Africa, a local company with longstanding partnership with Suez.

a large rural area with very deficient services. Recognizing that it lacked the capacity to operate and expand its water and sanitation infrastructure, in 2000 the municipal government contracted two major public water boards, Rand Water and Sedibeng Water, to operate its systems under service delivery agreements. This was one of the country's largest public-public partnerships (PuP).

At contract renewal the municipality decided to put public and private operators in competition. It was the first to undergo the complex administrative process required under the MSA since its enact-

ment, and in 2005 launched a competitive tender for a six-year management contract. South Africa's three largest public water boards (including the two incumbents) submitted bids against private operators on the basis of the lowest management fee required for operating the water supply and sanitation services against contractual service targets.

The tender was won by a private operator (a consortium of local companies, including WSSA, which had been successfully operating the Queenstown lease for the last 15 years). What is remarkable is not so much that a private operator won but that the public operators submitted financial bids that were much higher than the winning bidder's (Table 2). This outcome contradicts the common perception that private operators must always be more expensive because they charge a profit, while public operators must be cheaper because they do not. It also contradicts the widespread impression that the private sector is interested only in serving large or rich urban areas: Maluti is mostly a rural municipality with a large share of its population below the poverty line.

Table 2. Financial bids for the Maluti a Phofung water management contract

Bidder	Ownership	Annual management fee (rand)	Percentage of additional revenue collected
WSSA	Private	1,270,800	1.43
Sedibeng Water	Public	2,500,000	5.00
Rand Water	Public	2,375,000	15.00
Umgeni/Munitech	Public	4,008,000	15.00
Duval	Private	6,400,000	20.00

Source: Maluti a Phofung Municipality

3 ESTABLISHING JOHANNESBURG WATER

In Johannesburg the story of the management contract for its water and sanitation services began with the reorganization of the city government and the reform program that led to the establishment of the new ring-fenced utility Johannesburg Water.

The larger Johannesburg metropolitan municipality

The first phase in the municipal reorganization took place in the mid-1990s, with Johannesburg's 11 municipalities being grouped into a single metropolitan council, the Greater Johannesburg Metropolitan Council. Four geographically based substructures called metropolitan local councils were created (East, North, South, and West), and administrative and political responsibilities were allocated between the Greater Johannesburg Metropolitan Council and these four local bodies.

This complex arrangement meant that the responsibility for provision of water and sanitation services ended up being spread among several municipal departments:

- The four metropolitan local councils had to supervise the operation of the water distribution networks in their respective zones.
- At the central level the Greater Johannesburg Metropolitan Council was in charge of customer relations and revenue management (meter reading, billing, and collection) as well as most of the support departments (finance, human resources, fleet, procurement).
- Another department of the Greater Johannesburg Metropolitan Council was in charge of the six major wastewater treatment plants and main sewer collectors.
- The state-owned company Rand Water⁴ continued to be responsible for providing bulk water to the distribution networks.

A second stage in the reorganization of the city government came in 2000, with the implementation of the Local Government Municipal Demarcation Act. This act sharply altered the map of local government in South Africa by reducing the number of municipalities and classifying them into three categories: metropolitan, district, and local. In Johannesburg this process resulted in the grouping of the Greater Johannesburg Metropolitan Council and the four metropolitan local councils into a single municipality, the City of Johannesburg, starting in January 2001. In addition, the city's outer boundary was changed to incorporate the municipalities of Midrand and Modderfontein.

The new metropolitan area of Johannesburg now encompassed 1,644 square kilometers and around 3.2 million people. Its population included huge social disparities. According to the 2001 census, 33 percent of households were in the poorest group (subsisting on less than US\$1 a day per person). But Johannesburg also had a strong economic base, with the largest economy among South African cities.

The Igoli 2002 program: Toward autonomous municipal utilities

In 1997–1998, before the creation of the new City of Johannesburg, the Greater Johannesburg Metropolitan Council went through a serious financial crisis and had to be financially rescued by the na-

⁴ Rand Water is controlled as a public board by the Department of Water Affairs and Forestry. Established in 1903, it has remained a financially viable, technically effective supplier of bulk water for more than a century. It provides bulk potable water for more than 11 million people in Gauteng Province and parts of neighboring provinces (around 3.5 million cubic meters a day). Johannesburg Water is by far the largest customer, accounting for 37 percent of the volume sold.

tional government. In exchange, the government demanded reform. An intervention team was put together in December 1998 around the transition city manager, Ketso Gordhan, who had just successfully restructured the National Roads Agency. The backbone of the restructuring program was to be the creation of municipal autonomous entities called utilities, agencies, and corporations.

The intervention team envisioned efficient, financially sustainable municipal services provided by municipal entities managed like businesses, focused on customers' service, and at arm's length from the municipality. It was expected that this would limit excessive political interference and help foster financial sustainability. These municipal entities would be set up under private law yet would be 100 percent owned by the city and governed by an independent, city-appointed board of directors. No councillors or municipal officials would sit on the boards. Each municipal entity would be regulated by an internal regulator in the city government, the Contract Management Unit. The regulator would enforce the service delivery agreement between the city and the municipal entity and monitor the entity's operational and financial performance against a list of key performance indicators.

The program, called Igoli 2002, encompassed not only utility services—water and sanitation, electricity distribution, solid waste collection—but also roads and parks agencies and municipal corporations. Announced in March 1999, the program met with resistance from the municipal unions, who saw the reform as a form of rampant privatization—or at least as paving the way to it. Opposition was so fierce that Ketso Gordhan was even physically assaulted in his office by union representatives. The city sought to temper the opposition through intensive consultation and mediation, but despite promises that there would be no retrenchments in the three-year period starting January 2001, the unions never accepted the Igoli 2002 program.

Johannesburg Water: A new, corporatized utility

The reform package included establishing Johannesburg Water as a new utility in charge of water and sanitation services throughout the whole metropolitan area. Created as a ring-fenced corporatized company, the reform was expected to introduce more business-oriented practices to promote efficiency and better service for customers.

Johannesburg Water was legally established in November 2000 and started functioning in January 2001, with the city owning 100 percent of its shares. Although created under the Companies Act as a private company, it was also subject to the Municipal Finance Management Act, which sets out special rules for independent corporations owned by municipalities. In February 2001 Johannesburg Water signed a 25-year service delivery agreement with the city (the first such agreement for the city and one of its new municipal entities). While the agreement did not include specific performance indicators, it required the utility to periodically compile a strategic business plan with performance indicators and targets.⁵

A fairly complex governance framework was put into place for Johannesburg Water. This structure assigned political responsibility to the member of the Mayoral Committee who was in charge of municipal services entities, and regulatory responsibility to the Contract Management Unit. The Shareholder Unit was charged with looking after the interests of the city as shareholder, especially the financial performance of Johannesburg Water and general relations with its board of directors (selected by the responsible member of the Mayoral Committee and the Shareholder Unit).

⁵ The first strategic business plan included nearly 50 performance indicators, with the core indicators to be included in the management contract.

4 BRINGING IN A PRIVATE OPERATOR

The introduction of a private operator was closely aligned with the corporatization process for the new water and sanitation utility. The management contract was tendered in June 2000 and started in April 2001, only four months after Johannesburg Water had been created. Two other corporatized municipal utilities were created as part of the Igoli program: City Power for electricity and Pikitup for solid waste, but only the water utility was earmarked for a PPP. Two reasons were paramount in the city's decision:

- Johannesburg Water was the biggest utility in terms of staff and customers. Its service area included Soweto, which was notorious for its recurring operational problems and low bill collection rate (around 10 percent). The power company, by contrast, did not serve Soweto but focused on the traditional urban areas.
- Finding top management locally, consistent with the new objective of promoting members of previously disadvantaged groups to management positions, was thought to be easier for Pikitup and City Power than for Johannesburg Water, justifying the contracting of a foreign management team for some years.

In addition, an experienced private operator was expected to be best equipped to tackle the many issues affecting the city's water and sanitation services. These included the need to simultaneously improve customer service, boost operational efficiency and compliance, and establish a culture of performance and accountability.

Initial situation

What was the situation of the water and sanitation services in 2001 before the entry of the private operator? For those who had household connections, the quality of service was adequate by developing country standards, with continuous service of potable water. But operational efficiency was a growing concern, customer service was seriously lacking, and the financial situation was actually worse than anyone knew at the time.

Access to services

In 2001 around 85 percent of the population of Johannesburg had access to piped water and sewerage services through a household connection. Another 8 percent had access to water through an adequate communal standpipe (located within 200 meters of their dwelling). The rest of the population lacked access to adequate services (9 percent for water and 15 percent for sanitation).

Residential customers fell into three categories, each representing around a million people:

- Middle- and high-income households living in "traditional" urban neighborhoods, with individual metered household connections.
- The mostly low-income households living in the townships (the largest being Soweto), which had individual unmetered connections and were billed at a flat rate for 20 cubic meters a month, regardless of their actual consumption.
- The poor households living in informal settlements, largely rural migrants living well below the poverty level. While a minority had individual connections (through programs financed by the city's Housing Department), most got water through communal standpipes or tankers.⁶

⁶ Unlike other developing countries, South Africa does not have private water vendors. Instead, utilities contract and pay private water tankers to bring water to the unconnected population in their service area.

Quality and efficiency of services

For the 520,000 customers with individual household connections, the services provided by the various municipal departments were of reasonable quality by developing country standards. But the fragmentation of responsibility had created a culture dominated by a "silo mentality," with little accountability for results and many problems related to coordination of service. This situation was exacerbated by the poor motivation of management and employees, disoriented from a rapid succession of reforms.

For the served population, the main problem was a lack of customer friendliness and responsiveness. Customers seldom knew where they should report or inquire about technical problems such as water leaks and sewer blockages. Only half the meters were read every month, water and sanitation bills were often incorrect, and billing complaints were handled insensitively. Frustrated customers had become used to voicing their complaints in local newspapers, where articles about service problems appeared almost daily.

The legacy of apartheid was still apparent. The water and sewerage networks covered formal townships such as Soweto. But the infrastructure and services suffered from neglect as a result of poor staff motivation—which was fueled, in part, by the tradition of the population's refusal to pay utility bills. And unlike in the rest of the city, in the townships the water supplied did not undergo routine laboratory analysis, so there was no guarantee that it was safe to drink.

The operation of the sewerage system was also becoming a major issue, with frequent incidents of noncompliance that the population perceived as a threat to the environment. Sewer overflows were continually reported by the media. Effluents from the wastewater treatment plants reached just 80 percent compliance with environmental standards, and only about half of the sludge was handled in accordance with national guidelines.

There were other problems. Civil works often experienced recurring delays and serious cost overruns. And annual investment spending was insufficient to keep up with population growth and take care of the backlog in service coverage in informal settlements.

Financial situation

There was a growing awareness that operational efficiency would have to improve significantly to avoid future tariff increases above inflation. Yet the municipal authorities were unable to properly assess the efficiency of service provision because tracking of critical operational performance indicators was lacking. Statistics, where they existed, were unreliable. The water department could not calculate the level of nonrevenue water (water put into the distribution system but not billed) with any reasonable confidence, for example, due to deficiencies in the customer database. There was no asset register. And while most maintenance work was subcontracted to private companies, it was poorly supervised and electromechanical equipment were not always in good condition.

The municipal financial statements for 1998/99 showed a moderate loss of R 54 million, or 4 percent of total revenue, for the water and sanitation services. But it would be later discovered that these financial results, computed before Johannesburg Water was established as an independent utility, did not reflect the true financial situation:

- The nonpayment rate for water bills was recorded as 7.4 percent on the basis of the global payment rate to the municipality. But a detailed assessment of the breakdown between water, electricity, and municipal rates carried out in 2003 showed that the actual nonpayment rate for water bills was in fact 23 percent, which would have added R 211 million to the loss in 1998/99.⁷

⁷ The global collection rate grossly understated the collection rate for water and sanitation services because it did not reflect the disparity in situation between Johannesburg Water (which had responsibility for Soweto, where

- There was no provision for depreciation, which would have represented an additional charge of around R 50 million.

Correcting for these two factors puts the loss incurred by the water and sanitation services in 1998/99 at R 315 million, or a staggering 23 percent of revenue (six times more than the figure that had been recorded in the books). Notably, such financial situation was not due to a low tariff level: the average tariff paid by customers stood at around R 7 (US\$1.20) per cubic meter.⁸ It was essentially due to inefficient operation of the infrastructure.

Selection of a private operator

In introducing a private operator, the city hoped to enlist outside help not only in improving customer service and transforming the utility into a financially and operationally sustainable entity but also in tackling several other challenges at the same time. These included properly launching Johannesburg Water through a complex process of integrating six different structures, building capacity within the organization, and managing an internal transformation to empower a new black management team. A five-year management contract with an international private operator was seen as the best way to meet these challenges.⁹

The introduction of private participation was carefully designed and implemented. The Greater Johannesburg Metropolitan Council set up an advisory board of independent specialists to manage the creation of the water and sanitation utility, the design of the contract, and the selection of a private operator. Leading the board was a transition manager recruited in October 1999 from the central government's Municipal Infrastructure Investment Unit (a department supporting local authorities interested in pursuing PPP projects). Because both the transition manager and the head of the Igoli 2002 program came from outside the municipality, they were expected to bring a radically new vision to the reform process.

Through extensive consultation and dialogue, the city tried to build support among the unions for the plan to introduce a private operator through a management contract. The unions nevertheless rejected the plan as a form of privatization—despite officials explaining at length that the only shareholder would be the municipal government and that control would therefore remain entirely in the public sector. Ultimately the Greater Johannesburg Metropolitan Council forged ahead unilaterally.¹⁰

The city swiftly recruited a transaction advisor, led by Halcrow Management Sciences (from the United Kingdom) and including the South African firms VKE Engineers and Palmer Development Group. Experts from the World Bank and the central government's Municipal Infrastructure Investment Unit provided technical support.

The prequalification process was launched in February 2000. Seven consortia prequalified, all of them led by international operators: Acea SpA (Italy), Suez and Northumbrian Water Group (France and United Kingdom), Vivendi (France), Azurix Services (United States), Water Corporation of Western Australia, Thames Water (United Kingdom), and Severn Trent (United Kingdom).

the average collection rate was only 10 percent) and City Power (which did not, because Eskom, the national utility, manages electricity distribution in Soweto).

⁸ The bulk water tariff paid to Rand Water was around R 1.90 per cubic meter, and around half the tariff charged to customers was for sewerage services.

⁹ While various PPP options were initially reviewed, the concession and lease options were quickly abandoned because of hostility from the municipal unions. The two concessions in Nelspruit and Dolphin Coast, implemented in 1999, had encountered violent opposition from municipal unions.

¹⁰ In time the unions' resistance fell away, in part because a growing share of the employees took pride in belonging to a utility that was better respected by the population.

The request for proposals (RFP) was issued on June 5, 2000, and the bids submitted by September 1, 2000. The bidding process had two stages, with a technical proposal and a financial proposal. An evaluation committee reviewed the technical bids and presented its findings to a panel made up of five city councilors. To ensure full transparency, the entire evaluation process was subject to a probity audit by a reputable auditing firm.

Of the seven prequalified consortia, only five presented an offer—Acea, Azurix, Suez-Northumbrian, Thames, and Vivendi-Rand Water—and only three passed the technical evaluation. For these three the financial bids were evaluated on the basis of an “X factor” representing the share of the increase in operating margin to be retained as a bonus by the private operator (in addition to a fixed management fee and bonuses for reaching contractual targets).

The financial bids, opened in public on October 13, 2000, showed that Thames had proposed an X factor of 5 percent, Vivendi 1.25 percent, and Northumbrian-Suez 0.18 percent. Those proposed by Vivendi and Northumbrian-Suez were significantly lower than prebid estimates. The evaluation committee, considering it unlikely that either could make a profit at those rates, assumed that they wished to win the contract for reasons of reputation and as part of a long-term commercial strategy. The committee concluded that the risk of nonperformance was low, however, since both were competent companies looking for further expansion in the South African market.

The final combined scores (60 percent technical, 40 percent financial) were as follows:

- Northumbrian-Suez: 93.64 percent
- Vivendi: 82.24 percent
- Thames: 63.82 percent.

Contract negotiations were short because the RFP document had set out the model contract. Northumbrian-Suez received its notification of award in early January 2001. The private consortium established a dedicated subsidiary, Johannesburg Water Management (JOWAM), to enter into the contract, due to start April 1, 2001 (and to end June 30, 2006).

Takeover phase

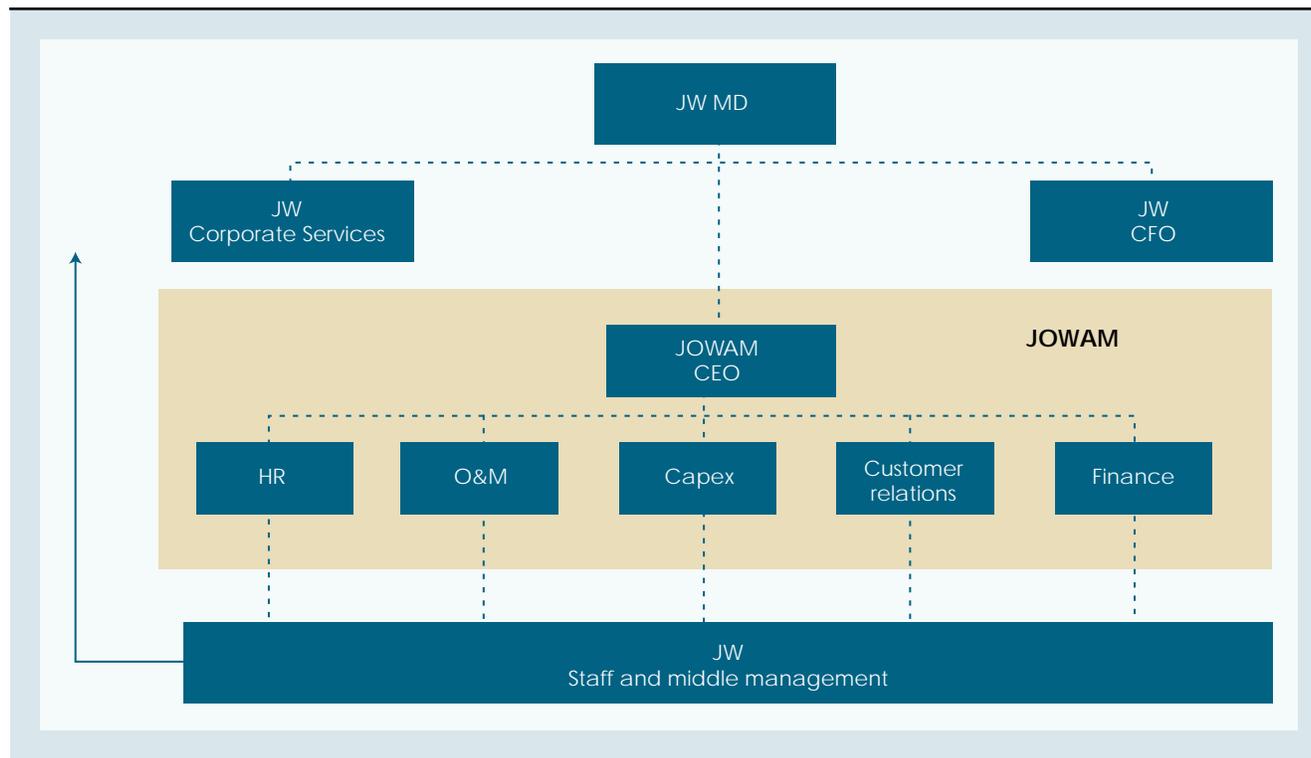
In starting up Johannesburg Water, the first task was to transfer all the personnel in charge of water and sanitation services to the new utility. This was done with no layoffs. The transfer was relatively straightforward for the field staff, but it involved more discussion for administrative staff coming from central departments, as they could elect to join any of the three newly created public utilities (City Power, Pikitup or Johannesburg Water).

The transition manager in charge of the design and tender of the management contract was appointed as the first executive director of Johannesburg Water. During the first quarter of 2001, with the private operator not yet in place, no major decisions affecting operations were made.

But in March 2001, before the contract had officially started, the private operator assisted Johannesburg Water and the city in developing a new tariff structure for the 2001/2 financial year. The changes took into account the country's new free basic water policy requiring that utilities provide the first 6 cubic meters of water a month free to all domestic customers. The new tariff structure, designed to maintain total revenue for Johannesburg Water at a level similar to that before, spread the burden of financing the 6 free cubic meters among all customers.¹¹

¹¹ In complying with the free basic water policy, in place since 2001, South African water utilities typically provide the 6 cubic meters of water as the first block of a rising block tariff structure, with the second block often set below cost and higher blocks at above cost.

Figure 1. Management structure of Johannesburg Water at the start of the management contract



Source: Authors

Notes: JW: Johannesburg Water, MD: Managing Director, CEO: Chief Executive Officer, CFO: Chief Financial Officer

The private operator took over operations during the second quarter of 2001, mobilizing a team of 13 full-time managers. A strategic choice was made by the private operator to rapidly transfer skills to Johannesburg Water’s new managers so that they could quickly replace the expatriate team. The JOWAM team was to be reduced to four managers in the third year of the contract, and then to just two in the last two years.

The new organizational chart was aimed at establishing a flat structure with a clear allocation of responsibilities, and therefore greater accountability, for the managers (Figure 1). This was a major shift in the corporate culture for most field managers. But despite anxiety associated with the change, most managers of Johannesburg Water saw an opportunity to obtain “responsibility space” that they might not have had in the past. The private operator’s approach was to delegate authority to managers in a supportive environment, including support sections where managers with strong technical but weak management skills could support line managers as best-practice specialists.

The organizational chart also reflected a special feature of this management contract: the shared management of the utility between the executive director of Johannesburg Water, a civil servant appointed by its board of directors, and the chief executive officer of JOWAM (for more details, see the following chapter). Accordingly, JOWAM’s management inserted itself above the staff of Johannesburg Water under its responsibility and below the executive director of Johannesburg Water.

This new organizational design became well accepted despite its potential pitfalls. JOWAM’s managers immersed themselves into the structure with their teams, and foreign executives presented them-

selves first as mentors rather than hierarchical managers and experts. The private operator's leadership style was to set clear objectives but also invite discussion and consultation.

Throughout the contract period JOWAM managers always took care to present themselves as Johannesburg Water managers in all meetings with the city or with external stakeholders. This was deemed necessary to ensure that all staff of the utility could feel ownership of the reform taking place under their leadership. It was important for all stakeholders to perceive that Johannesburg Water was not a private utility, but a public utility with a temporary private management team.

5 DESIGNING THE MANAGEMENT CONTRACT

Bringing in a private operator just at the same time as Johannesburg Water was created and launched as a new corporatized entity was a bold move. The aim was to leverage private sector expertise to build it into an efficient, self-sustaining municipal utility. This meant that the management contract had to be designed to pursue a dual strategy:

- To strengthen the financial and operational performance and customer service of the water and sanitation services through a performance improvement program. Particularly important was the need to improve financial viability—to move from heavy losses to financial equilibrium without significant tariff increases.
- To establish the newly formed Johannesburg Water as a functional water and sanitation utility, by means of both carrying out a complete corporate (re)organization and providing ongoing capacity building for the municipal staff. The city expected the operator to smooth the complex management transition from six operational entities to one and to put into place all systems and procedures needed to run a modern water utility.

While the first objective—improving performance—is customary in all management contracts for water utilities in the developing world, this was not the case of the second one. In Johannesburg, the private operator was also to be a key agent in the execution of a corporatization reform that had been well planned in advance.

Sharing of roles and responsibilities

The management contract rested on a tripartite relationship between the municipality, Johannesburg Water as a public utility, and the private operator. The basic allocation of responsibilities was as follows:

- Johannesburg Water was accountable for the delivery of water and sanitation services, in accordance with the 25-year service delivery agreement signed with the municipality. The utility's board of directors and its managing director were appointed by and represented the municipal government.
- The private operator was delegated the day-to-day management of the water and sanitation services, making it responsible for the utility's overall performance.
- The municipality remained responsible for financing investment (either directly or by guaranteeing borrowings by Johannesburg Water), for setting tariff levels, and for funding any potential shortfall due to excessive operating costs or insufficient revenues.

Under this arrangement most operational and management risks were assigned to the operator, and most financial risks to the utility and ultimately the municipal government. (The small X factor meant that the private operator bore little financial risk in practice.) All responsibility for financing investment rested with the city.

One departure from many management contracts that have been implemented in the developing world was that the operator had to identify, on a yearly basis, the investment necessary to improve service. It was responsible for preparing and submitting investment plans to the utility's board, and ensuring that the corresponding civil works were implemented efficiently. Typically, the execution of civil works under management contracts elsewhere (as in for instance Amman, Jordan) were left to the contracting government and the operator had little role in defining the investment plan.

The Johannesburg management contract had two other features that were a departure from the typical design of such contracts: the coexistence of two heads within the utility and the retention by the city of significant responsibilities in revenue management.

Governance structure—and the coexistence of two heads

How management responsibility was shared between the public and private partners deserves closer analysis. The management contract was designed around a dual management structure with two heads—one from the private operator and one from Johannesburg Water. While the private operator was contractually responsible for running the utility, the executive director at the top of the utility was a public servant appointed by the municipal government (see Figure 1).

While most of Johannesburg Water's middle managers and staff reported to JOWAM's management, several departments remained the direct responsibility of the utility's executive director. In particular the chief financial officer, the communications manager, the legal advisors, and the company secretary all reported to the executive director.

The finance department illustrates the complexity of the allocation of responsibilities between the two parties: the chief financial officer reported to Johannesburg Water's executive director because of the long-term implications of financial planning (beyond the five-year horizon of the management contract). Meanwhile, the financial manager, a position occupied by a JOWAM expert during the first two years of the contract, handled the day-to-day financial management.

Human resource management was also complex, with the HR manager having two lines of reporting. Because JOWAM was not the legal employer of the utility's staff, the contract assigned to Johannesburg Water the responsibility to "pay the staff salaries, hire and fire, determine the routine hours of work, determine the rates of pay and corresponding annual increases with the trade unions, and carry out any activity an employer is accountable for under the Applicable Law." Yet the contract required JOWAM to "manage the staff on a day to day basis, establish the organizational structure, evaluate the staff performance, provide the necessary recommendations in terms of hiring and firing and participate in the implementation of the corresponding decisions, be responsible for disciplinary actions, manage all human resources records and information systems, and assist the Utility in all collective bargaining negotiation processes." Consequently, whether the human resource manager reported to Johannesburg Water's executive director or to JOWAM's chief executive officer depended on the matter at hand.

Another complexity lay in the contractual terms ruling the relationship between the two heads. The original draft contract stipulated that "the Operator shall report to the Executive Staff on a day to day basis, and the Operator shall receive instruction from the Executive Staff." The pre-qualified companies had complained during the tender that this would limit their freedom of initiative in working to turn around the utility. In response to these complaints, the Greater Johannesburg Metropolitan Council issued an addendum to the request for proposals with new language: "The Operator shall report to the Executive Staff with respect to all Contract compliance matters... The Parties acknowledge and agree that the Operator will attend the meetings of the Utility Board unless otherwise notified by the Utility Board. At the request of the Utility Board, the Operator shall attend Utility Board meetings or make representations to the Utility Board." In fact, the operator was invited to attend all the board meetings as an observer. Although it had no voting rights, its advice was consistently sought.

These complex arrangements illustrate an issue lying at the core of the design of management contracts: there is an inherent tension between the private operator's need to be free to make daily operational decisions and the public partner's need to remain involved because of the short duration of the contract. The public partner must strike a delicate balance, avoiding the temptation to micro-

manage the operator while at the same time exercising its fiduciary responsibilities. The ability to do so ultimately depends largely on the people involved, on both sides of the partnership, and the choice of “two head” structure reflect the concern of the city about maintaining sufficient control.

Operational functions remaining under the city

The allocation of responsibility for revenue management (meter reading, billing, and collection) added another layer of complexity. This was an area where it was decided early on that the city should retain direct control. As a result, Johannesburg Water, and thus the private operator, effectively lacked the prerogative to manage a large share of the commercial activities linked to generating revenue.

The service delivery agreement between Johannesburg Water and the city stipulated that in January 2001, the newly established corporatized utility would take over the revenue management functions for the top customers, who generated up to 60 percent of total revenue, and that a year later it could take over the management of the rest of the accounts. But the city never fully transferred revenue management to Johannesburg Water.

Nor was the management contract clear about the allocation of the responsibility. The contract stipulated that “*the Operator shall . . . carry out all billings, collections and customer service functions . . . in the Service Area*”. But it also stated that “*the Operator acknowledges that as of the Starting Date the Utility and the [City of Johannesburg] will have shared responsibilities with respect to billing and collections. The Operator further acknowledges that it may, during the Term of the Contract, take over full responsibility for billings and collection for the Utility.*”¹²

So it is unclear what the bidders had assumed—whether that they would gain control of all revenue management after the first year of operation or that they would do so sometime during the term of the contract—even though an inability to manage the entire revenue function could have serious implications for their capacity to turn around the utility. Actual events, in what would come to be called the “revenue management saga,” led finally to a partial and gradual transfer of revenue management (see the chapter on managing revenue).

Another function that was to remain the city’s responsibility, and thus beyond the realm of action for both Johannesburg Water and the private operator, was the expansion of water and sanitation services to informal settlements. In these periurban areas, home to nearly a million people—a third of the population of Greater Johannesburg—only around half had access to piped water, and even fewer had access to sewerage. The city’s retention of responsibility in this area meant that the private operator would have to restrict its action to the existing customer base, leaving out coverage expansion to the municipal authorities (more on this key issue in the chapter on the utility’s turnaround.)

Contractual targets and incentive structure

The contract between Johannesburg Water and JOWAM was called the “Performance-Based Management Contract for Water and Wastewater Services,” clearly indicating that the private operator’s payment would be linked to its performance. The payment structure directed incentives toward carefully defined targets for performance.

Targets, payments, and incentives

The payment structure had three parts:

¹² Respectively article 2-1 of Appendix to the service agreement, and article 8.2.1 of management contract.

- A fixed management fee equal to R 25 million for the duration of the contract.
- A “Part A” variable incentive payment equal to a maximum of R 20 million and linked to contractual targets for performance improvement.
- A “Part B” variable incentive payment linked to the X factor in the financial bid (0.18 percent of the additional revenue collected during the life of the contract).

Beyond the usual insurance coverage (third-party liability, motor vehicle liability, fidelity insurance, and the like), the operator also had to post a R 7 million performance bond not only for the life of the contract but also for another 18 months after its end.¹³

The performance improvement targets under the Part A incentive payment were based on a complex framework, with around 50 parameters grouped around five main factors (each triggering a maximum annual payment of R 800,000):

- *Improved customer service factor*, including the percentage of customer calls answered within the first 30 seconds and the percentage of customer queries and complaints resolved in the first contact.
- *Quality standards compliance*, including the number of spills and overflows as a percentage of the number of sewer connections and taking into account the number of storm events.
- *Improved facilities maintenance factor*, aimed at significantly reducing the number of vehicle, plant, and equipment breakdowns from one year to the next.
- *Annual capital investment program factor*, aimed at achieving a 95 percent performance in meeting time and budget targets.
- *Human resource development factor*, including reduction in overtime and absenteeism, implementation of a human resource development plan, and training.

These performance factors fairly summarized the main goal of the management contract—to establish Johannesburg Water as an efficient water and sanitation utility. But it is noteworthy that they did not capture an important challenge: reducing Non Revenue Water (NRW).

The Part B incentive was originally supposed to capture the nonrevenue water issue, since any reduction in nonrevenue water would have a direct impact on the operating margin of Johannesburg Water. But because of the results of the tender, the Part B incentive ended up being set at only 0.18 percent of the net increase in earnings before interest, taxes, depreciation, and amortization (EBITDA) and thus had little financial impact for the operator. Moreover, the limited transfer of revenue management responsibilities from the city sharply constricted its range of action for dealing with commercial water losses.

There was no incentive for improvement in service coverage, which is logical as this issue was left outside of the scope of responsibility of Johannesburg Water, and of the realm of the management contract.

Arrangements for monitoring performance

Responsibility for overseeing the management contract lay with the executive director of Johannesburg Water, subject to board approval for key decisions. At the city level the Contract Management Unit was responsible for monitoring the performance of the utility and thus that of the private opera-

¹³ The operator vehemently opposed the requirement for a performance bond extending beyond the life of the contract, arguing that it could not be held accountable for any mismanagement once its staff left the utility. But the requirement was nevertheless imposed.

tor. In addition, an independent technical auditor was recruited to help assess the private operator's performance. The auditor was responsible most notably for calculating the annual incentive payment. This decision was final and not subject to appeal in a court of law.

The process for selecting the independent auditor, defined in the contract, gave the main responsibility to Johannesburg Water and allowed the operator to reject a proposed candidate only once. Johannesburg Water could elect to change the independent auditor every year following the same process. In fact, the matter was dealt with swiftly: the transaction advisor (the Halcrow-VKE consortium) was selected by mutual consent for the first year and continued as independent auditor for the remainder of the contract.

Because of the lack of reliable data when the private operator took over, the performance targets for the first year were waived. Most parameters were reoriented toward establishing a reliable measurement framework to provide a baseline for measuring performance improvement in subsequent years. After the first year, increasingly stringent targets were established at the beginning of each financial year. This pragmatic way of dealing with the lack of reliable data at the start of the contract—an issue that has caused major problems in the implementation of many management contracts in the developing world—was made possible by the spirit of collaboration that existed between the parties, and the presence of a reputable independent auditor.

While calculating the Part B incentive was straightforward, the ratings assigned to the Part A incentive factors had the potential for generating discussion. The contract set out the following steps for this process:

- Just after the end of the financial year the operator presented its own performance evaluation and rating to the independent auditor.
- The independent auditor examined all the records and presented its performance evaluation and rating to Johannesburg Water.
- Johannesburg Water could challenge the independent auditor's evaluation and ratings, as could the operator afterward.
- The independent auditor made the final decision.

In practice and despite the discussions that tended to arise, the operator and the utility challenged the independent auditor's ratings on only a few factors each year, and the overall process went smoothly.

Corporate planning obligations

While corporate planning for Johannesburg Water remained the responsibility of its executive director, the management contract required the private operator to prepare a series of reports, plans, and programs serving as the core of the corporate planning process for the newly established utility. The operator had to prepare as many as 27 documents covering the full range of management functions—from technical operations to human resources, revenue management, and financial and procurement issues. In each case, the utility's board had 45 days to review and approve each plan once submitted, or to provide written comments to the operator. Most of the reports had to be completed in the first 12 months of the contract.

Many of these documents related to the performance improvement plan, and the operator had to outline its strategy to improve efficiency in every aspect of the utility's operation. The operator also had to provide an analysis of staff training and capacity development. Some plans even had to deal with issues beyond the five-year term of the contract. For example, a global investment plan was to identify key extensions and improvements that would enable Johannesburg Water to meet the growing demand for its services over the next 20 years.

The number of documents that the private operator was required to prepare was unusually high for a management contract. It reflects the priority the city gave to ensuring the long-term viability of the new ring-fenced entity.

6 ACHIEVING PERFORMANCE TARGETS

How well did the private operator do in achieving the performance improvement targets? There is broad consensus among those involved in monitoring the management contract and the utility's performance—the utility's board, the Contract Management Unit, and the City of Johannesburg—that the private operator fully met its contractual objectives. This assessment is confirmed by the independent auditor's ratings of the operator's performance. A letter addressed to the chief executive officer of JOWAM, the managing director of Johannesburg Water by the Board of Directors on February 28, 2006, is worth quoting: "JOWAM performed well and met all contractual deliverables and obligations. The Company [JOWAM] successfully managed to transfer skills and design, develop, and implement systems and programs, and Johannesburg Water is now ready to manage and meet its future strategic challenges without a management contract."

Each year the independent auditor rated the operator's overall performance under the Part A incentive by consolidating its ratings on all the indicators corresponding to the five main performance factors: customer service, compliance with quality standards, asset management, supervision of civil works, and human resource management. The auditor rated the operator's performance on each factor at three levels: poor (corresponding to a score of 0 out of a maximum of 100), good (75), and excellent (100). The combined ratings on the performance improvement program are very high, ranging between 90 and 95 percent (Figure 2).

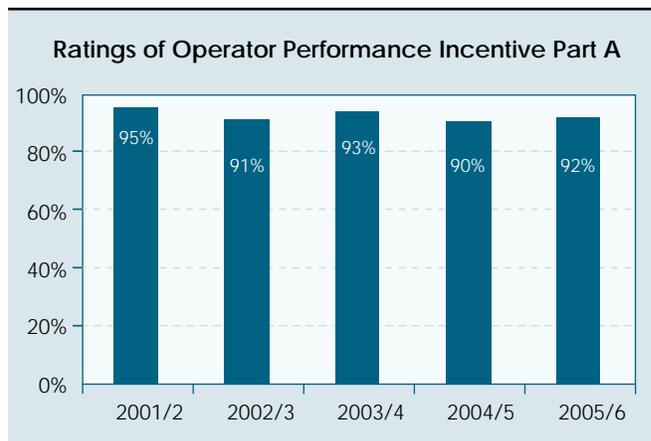
Customer service system

As the daily complaints in the local press signaled, the municipal water and sanitation departments were performing poorly in customer service. The plan to create Johannesburg Water by combining the municipal departments offered an opportunity to rethink the entire customer service system, despite the challenge represented by the complex allocation of revenue management functions between the utility and the city.

The new system, launched by the private operator just three months after it took over, was driven by the principles of having a single point of contact for customers and assigning clear accountability for following up on complaints:

- A 24-hour call center was established to receive all customer complaints. Before, all calls had been received by operational depots, and frustrated customers had seldom known which one to call.
- The call center referred complaints to the appropriate depot based on geographic location. And while depots had previously handled either water or sanitation services, they were now merged to handle both.
- Six operational regions were created (with one depot or two, depending on size), and these were aligned with the administrative regions of the city so that

Figure 2. Annual ratings of the private operator's performance on Part A incentive factors



Source: Johannesburg Water.

each city regional manager had a counterpart regional manager at Johannesburg Water. These two reforms improved communication with both the customers and the municipal administration.

The reorganization had good results. In the first month of operation the calling center answered more than 90 percent of calls in less than 30 seconds. Over the life of the contract the response time for solving the reported problems was progressively reduced by 30 percent. At the end of the five years more than 80 percent of repairs on the water network were completed within 48 hours of notification and more than 80 percent of sewer blockages were resolved within 24 hours. According to all stakeholders interviewed for this case study, all this was in stark contrast with the record before 2001.

Compliance with quality standards

Quality of drinking water

The quality of bulk water supplied by Rand Water has historically been very satisfactory, and in 2001 the piped water distributed in Johannesburg was widely believed to be potable. Nonetheless, the city had a deficient quality control system and was unable to guarantee the quality of the water supplied to end customers. Before Johannesburg Water was created, less than 150 water samples a month were collected and analyzed, only half the national standard of at least 300 a month. Even more shocking, there was no monitoring at all of water quality in the townships.

One of the first actions of the new management was to include all townships in the water sampling routines and increase the frequency of potability analysis. Starting in the first year of the contract more than 500 samples a month were analyzed, and bacteriological compliance consistently exceeded 99 percent throughout the contract period. By the end of the period Johannesburg had the best assurance quality framework of all South African cities to guarantee the potability of the water it sold to customers (See the 2005/6 results of the National Benchmarking Initiative in the chapter on the utility's turnaround.)

Environmental compliance of wastewater treatment plants

Operating wastewater treatment plants in Johannesburg poses some exceptionally big challenges for a developing country. Because of the many small streams crossing Johannesburg and its location on the continental watershed, Johannesburg Water must meet effluent quality standards that are among the most stringent in the world. Its six wastewater treatment plants, with a treatment capacity of around 1 million cubic meters a day, combine a biological process for nutrient removal with chemical treatment.

The private operator's approach in wastewater treatment provides a good illustration of the new corporate philosophy and the ongoing capacity building that took place under its leadership. Johannesburg Water had competent engineers operating the wastewater treatment plants. But the compliance rating for wastewater treatment was only around 80 percent, and there were ongoing problems with sludge handling (a significant share was dumped in ponds on site, in clear violation of national guidelines). Moreover, little attention was paid to economic efficiency.

The old organizational structure, based on an "old school" engineering culture, was identified as the root of the problem. Management was in the hands of technical experts, some of them lacking adequate people skills. Because of cumbersome line reporting, the line managers—those making daily decisions affecting the plants' operation and compliance—lacked the means to take full responsibility for their systems, and had little incentive to seek more efficient ways of doing things.

A new management structure was established to unleash the potential of the line managers. All line managers were rotated starting in July 2001 and required to report directly to a new division head,

brought in from outside the wastewater unit and selected because of his leadership skills. Assisting the new head was the unit's most talented technical expert, promoted from a line management position to the position of best-practices manager.

Under this new structure the managers of the treatment plants started to take full responsibility for both compliance and efficient operation. The private operator, taking advantage of its worldwide network of operations, brought in experts for short terms to identify ways to improve the operational efficiency of the wastewater treatment process. These experts worked closely with the line managers, coaching them so that the staff of Johannesburg Water could feel ownership of the many improvements made.

Progresses came gradually. The first step, taken in September 2001, was to stop the noncompliant practice of dumping sludge. Agreements were signed with the federation of farmers allowing treatment plants to dispose sludge on private farms situated within 90 kilometers. As the sludge handling program was gradually implemented, many parallel steps were taken to fine-tune the operation of the wastewater treatment plants.

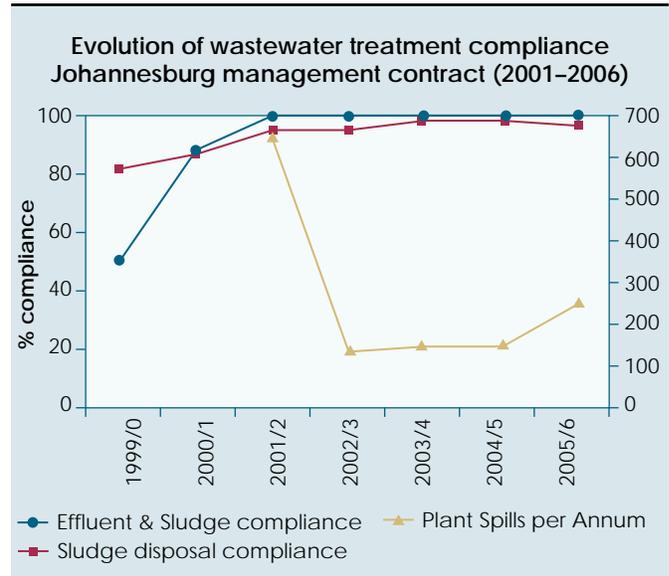
The improvement in compliance is clear: the number of accidental spills recorded at wastewater treatment plants fell from 646 in 2001/2 to only 244 in 2005/6 (Figure 3). The compliance of effluents discharges increased from around 80 percent to more than 95 percent at the end of the management contract, while the compliance in sludge disposal rose from 50 percent to 100 percent. The new management structure also led to efficiency gains in operation (see the chapter on the utility's turn-around).

Assets management practices

The provision of urban water and sanitation services is an asset-incentive business. Utilities have large investments in infrastructure, and efficient asset management is essential for their effective operation. The municipal water and sanitation departments were notably weak in this area, performing little preventive maintenance and failing to properly supervise its sub-contractors. The result was frequent breakdowns at pumping stations, leading to service interruptions and sewer overflows. In addition, civil works—whether rehabilitation or new investments—were subject to delays and cost overruns.

To address these problems, the private operator brought to Johannesburg Water a modern asset management system. The first step was to put together an asset register, an obvious prerequisite to sound asset management. The operator also created and trained a fully fledged electromechanical maintenance section and, with the support of asset management software, implemented a comprehensive program of preventive maintenance. Each year utility staff assessed all infrastructure to develop priority rehabilitation programs, applying sound economic principles to decide whether it was

Figure 3. Compliance with wastewater treatment standards in Johannesburg, 1999–2006



Source: Johannesburg Water

better to repair, rehabilitate, or replace defective equipment. In addition, the same management philosophy introduced in the wastewater treatment plants was applied to all operational field staff, empowering line managers to make decisions that could improve operational efficiency and reliability.

The new asset management policy had clear benefits. Data on breakdowns at pumping stations and reservoirs in the last four years of the management contract show a reduction of 60 percent (down from 80 breakdowns a month to just 29), gains that had a direct positive impact on the reliability of service (Figure 4). Trends in the number of leaks repaired and sewer blockages cleared also reflect the new emphasis on preventive maintenance. These interventions increased during the first three years of the contract, reflecting the operator’s commitment to ensuring adequate service. In the last year, as the preventive maintenance efforts started to pay off, the number of corrective interventions fell.

Management of capital investment

The private operator also made notable improvements in the management of the annual capital investment program. While not responsible for financing investment, JOWAM was responsible for supervising the capital investment program implemented by Johannesburg Water. During the management contract the civil works programs were fully implemented every year and within 97–98 percent of the allocated budgets—a marked difference from the frequent delays and cost overruns that had been typical before the reform.

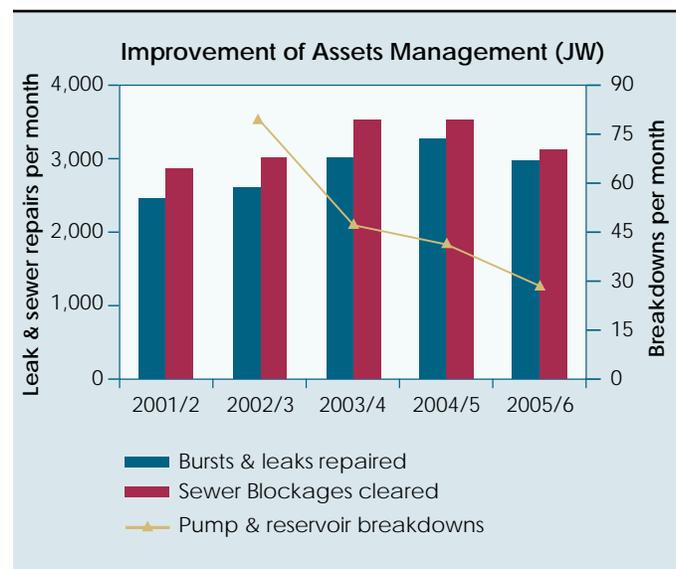
The JOWAM team also introduced a new strategy for investment planning. The Greater Johannesburg Metropolitan Council had relied heavily on external consultants. But the private operator insisted that the utility’s own staff were best qualified to evaluate its needs for infrastructure expansion and rehabilitation. In addition, the operator promoted the principle of “asset sweating”—using proper preventive maintenance to allow the utility to postpone investment in rehabilitation or expansion. That led to sizable savings in capital investment for the city.

Quantifying the overall savings that were achieved is difficult. But a good illustration is the proposed expansion of the three large wastewater treatment plants in the South of Johannesburg, with total capacity of around 550,000 cubic meters a day. Contrary to the “advice” of external parties with a vested interest in seeing construction contracts offered for this large project as soon as possible, the private operator demonstrated to the city that this investment could be delayed by a decade with the implementation of a demand management program in Soweto (see the chapter on managing revenue).

Human resource development

In human resources the private operator was responsible *inter alia* for reducing overtime and absenteeism and implementing a comprehensive training and human resource de-

Figure 4. Indicators of asset management by Johannesburg Water during the management contract



Source: Johannesburg Water.

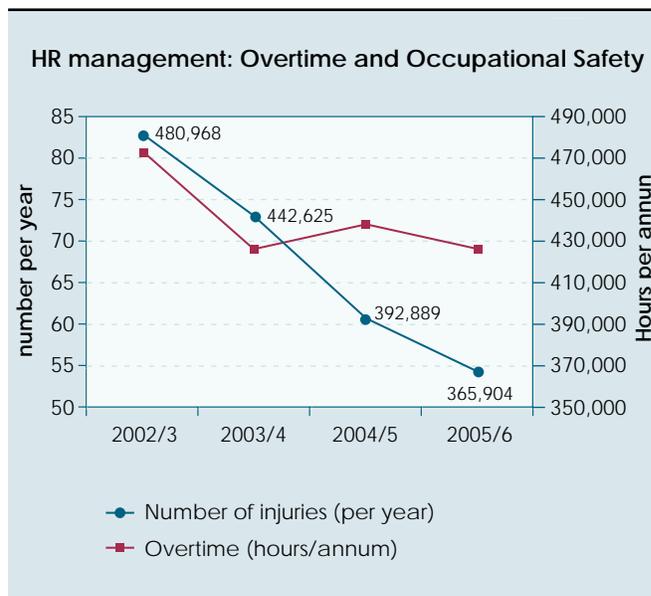
Note: Data on breakdowns at pumping stations and reservoirs were recorded only in the last four years of the management contract, after installation of the asset management software.

velopment plan. Starting in the second year of the management contract strong measures were taken to reduce overtime, which was often abused, without compromising the quality of service delivery. These focused on tightening controls to stop illicit or corrupt practices, in large part through greater empowerment of line managers and a reorganization of work during standby periods (nights and weekends). These efforts reduced annual overtime by 24 percent over the contract period (Figure 5). Measures were taken at the same time to reduce worker absenteeism. And thanks to on-the-job training, operational safety improved.

As the new management began implementing a comprehensive capacity-building program, training expenses rose from almost nothing to slightly more than 1 percent of the utility’s salary costs in the last two years of the management contract. Training was targeted to all employees, from management to field staff. Special emphasis was given to training in customer care, mandatory for all employees who came into contact with customers. Another priority was to ensure that the core values of Johannesburg Water—teamwork, accountability, customer focus, good communication, and cost-effective service delivery—filtered through the whole organization.

The new management also gave great importance to employment equity for historically disadvantaged groups, adopting an aggressive policy of training and promoting black and female professionals. When Johannesburg Water was created in 2001, white men made up more than 90 percent of the management staff transferred from the municipal departments. But thanks to an employment equity program aimed at building competence, as many as 93 percent of the 1,638 employees promoted or appointed at Johannesburg Water during the management contract belonged to previously disadvantaged groups. The greater emphasis on training and promotion helped improve labor relations.

Figure 5. Overtime and work injuries at Johannesburg Water during the management contract



Sources: Johannesburg Water; City of Johannesburg.
 Note: The database to track overtime (and other operational parameters) was established only in the second year of the contract.

7 MANAGING REVENUE AND REDUCING NON REVENUE WATER

Reducing Non Revenue Water (NRW)—the difference between the volume of water produced and put into the distribution network and the volume billed to customers, which translates into a water utility's revenues—was not an explicit contractual target in the management contract. Calculated as the percentage of the water put into the network which is not billed to customers, NRW has two basic components:

- Commercial losses—water distributed to customers but not billed because of undermetering, billing mistakes, or illegal consumption
- Physical losses—water lost through leaks in the distribution network.¹⁴

Since bulk water purchases from Rand Water accounted for around 80 percent of its operating costs for water services, Johannesburg Water had every interest in reducing both commercial and physical losses.

Because the municipality had not tracked NRW regularly before Johannesburg Water was established, the transaction advisor team had to produce its own estimate for the prequalified bidders. The team came up with a figure of 42 percent. When the private operator took over, this estimate was discovered to be incorrect and too high. While Rand Water's reliable billing system provided a precise figure for the volume of water put into the network, the customer database contained multiple errors on the billing side.¹⁵ The baseline for NRW was therefore recalculated at around 36 percent.

Another element that surfaced soon after the entry of the private operator was the big difference in NRW between metered and unmetered areas. It had always been known to stakeholders, but the actual situation (and the enormity of the problem) had never been properly assessed:

- In the metered areas—"traditional" urban areas with high- and middle-income households (around 280,000 connections)—the nonrevenue water level was at only about 20 percent, a reasonable figure compared with international benchmarks even in developed countries.
- In the unmetered areas—the townships, where customers had individual connections but were billed on the basis of estimated consumption (around 240,000 connections)—the nonrevenue water level was calculated at 67 percent. This very high level was due to excessive residential consumption, largely due to the many leaks occurring on private property (which customers billed on estimated consumption had little incentive to fix).

Overall, the townships accounted for around 60 percent of the commercial and physical losses (22 of the 36 percentage points of nonrevenue water) of Johannesburg Water, though they represented less than 20 percent of the total volume billed. The commercial losses were particularly important, and it was here that efforts would obviously need to be focused. But the private operator would have little control in this area: responsibilities for meter reading, billing, and collection were only gradually and partially transferred to Johannesburg Water during the contract, directly curtailing its capacity to reduce commercial losses. Moreover, a political decision had been made that revenue management in townships was to remain the entire responsibility of the city.

¹⁴ In South Africa the term used for NRW is unaccounted-for water, though the definition by the International Water Association is essentially the same. The calculation of NRW for Johannesburg Water accounted for (and therefore considered billed) the volume of free basic water (6 m³/month for all residential customers).

¹⁵ Arguably, these errors in the customer database were akin to commercial losses

Despite these constraints, the new management developed and pursued a strategy for reducing NRW, gradually strengthening its efforts as more revenue management responsibilities were transferred to Johannesburg Water. It also launched a demand management program in Soweto, an initiative that went beyond the operator's obligations under the contract and is due to continue after its departure.

Transfer of customer accounts: The “revenue management saga”

The city was supposed to transfer all revenue management functions for the top customers to Johannesburg Water in January 2001, to be followed by the transfer of the rest of the customer database later on during the contract. But what happened in practice was quite different.

Right after the takeover by the private operator, the city agreed to proceed immediately with the transfer of the top customers—the 25,000 with a monthly consumption of more than 100 cubic meters (mostly industrial and commercial customers, provincial and municipal administrations, and apartment buildings), expected to generate up to 60 percent of the utility's revenue. But the city also decided to retain the accounts that were the subject of legal actions. As a result, only 16,000 accounts were transferred to Johannesburg Water in the first year of the management contract, and multiple duplications discovered between water and sanitation accounts meant that the actual number of accounts transferred was only about 14,000.

These top customers represented 32 percent of Johannesburg Water's total revenue—only around half the 60 percent originally envisaged. Thus for the first year of the contract Johannesburg Water and the private operator depended on the performance of the city's revenue management unit for almost 70 percent of the utility's revenue base.

While the city was launching a full investigation of the individual collection rates for municipal services (water and sanitation, electricity, municipal rates), the new management focused its first efforts on the top customers whose accounts had been transferred. The results were impressive: cleaning the database and collecting arrears rapidly increased the collection rate from 60 percent to more than 100 percent for those customers under the direct responsibility of Johannesburg Water.

Johannesburg Water, assisted by the private operator, then started to negotiate with the city to gain control of at least meter reading for all metered customers. This function had been delegated in the meantime by the city to the power utility, but the performance was poor with many billing mistakes. The argument was that while it was understandable that the city wanted to retain control of the collection process for most domestic and small customers for social and political reasons, Johannesburg Water needed to at least control the volume being billed through effective meter reading. The negotiation took almost two years, and led to the transfer of all meter reading to Johannesburg Water between March 2003 and the end of 2004 (third year of the management contract).

In August 2003 Ernst & Young completed the investigation of the individual collection rates for municipal services, and in September Johannesburg Water learned the results. These showed that the collection rate for accounts managed on its behalf by the city's Revenue Management Unit was only 69 percent for the year ending June 2003. Thus while the rate for the top accounts managed in-house was around 95 percent, the overall collection rate for water and sanitation services was only 77 percent (compared with 93 percent for all municipal services).

At the city's request, an assumed collection rate of 93 percent had served as the basis for all financial planning for Johannesburg Water. The new information completely changed its financial profile: Johannesburg Water was effectively bankrupt.

This new situation prompted Johannesburg Water and the private operator to push for taking over the accounts still managed by the city. That would allow them to be responsible not just for meter

reading but also for billing and collection—considered essential given the poor performance of the city’s Revenue Management Unit. The city, however, wanted to preserve some of the perceived benefits (economies of scope) from having an integrated billing system for its utilities.

Four months of negotiations led to a compromise in April 2004: Johannesburg Water would take over all revenue management functions for an additional 170,000 customers. These customers, along with the 14,000 already transferred, would enable the utility to reach the 60 percent of revenue agreed with the city. Johannesburg Water also obtained agreement from the city that for the customers whose accounts would not be transferred, the utility would not only read the meters but also perform data entry during the billing process (where significant errors were occurring) while the city would continue to print and collect bills.

To the frustration of Johannesburg Water’s management and the private operator, this agreement was not fully carried out. While meter reading was fully transferred by the end of 2004 and billing data entry by February 2005, the transfer of full responsibility for revenue management for the 170,000 customers agreed upon was only partly completed with the transfer in March 2005 of 30,000 customers in Sandton, the city’s most affluent residential and business area. The rest were never transferred because of a new initiative (Project Phakama) launched by the city with the aim of recentralizing some revenue management and customer service functions in a single call center.

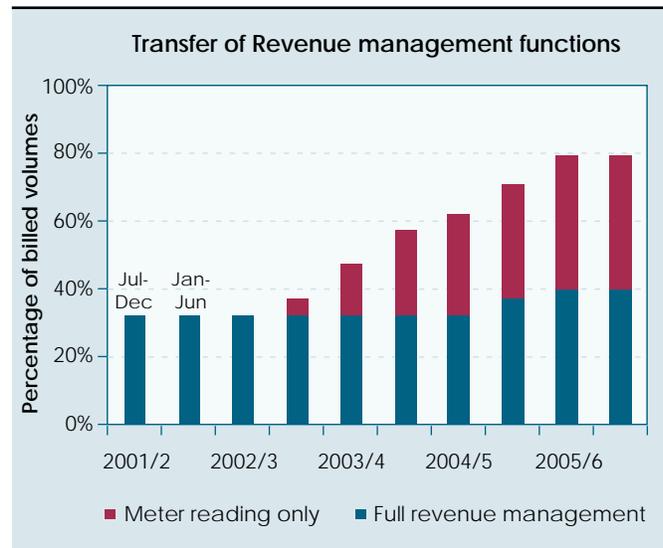
So, as a result of what local players came to call the “revenue management saga,” the private operator, through Johannesburg Water, started out in 2001 with control of revenue management for 14,000 customers and ended up in 2006 with full control for only around 45,000 (representing 40 percent of the utility’s revenue base as shown in Figure 6). In addition, it became gradually responsible for all meter reading (between the third and fourth years of the contract) and for the entry of all consumption data for the billing process (fourth year).

Evolution of NRW levels

What effect did the private operator have on the evolution of NRW levels? At first glance the data suggests that it had little if any positive contribution: the level was the same at the end of the contract period as it was at the beginning (after the baseline figure had been corrected), around 36 percent (Figure 7).

But this outcome does not mean that the private operator failed to take actions to control water losses—nor that the actions it took had no impact. The new management took effective steps to control physical losses. It also took steps to reduce commercial losses. Here, however, responsibility was shared with the city and (as explained in the previous section) evolved during the contract period, complicating the analysis of the private operator’s impact. The overall performance in NRW is a combination of various elements.

Figure 6. Revenue management functions transferred from the city to Johannesburg Water during the management contract



Source: Authors’ calculation based on Johannesburg Water data

The jump in NRW in the second year of the contract, from 36 percent to almost 41 percent, shows the difficulty of interpreting results under such a framework of shared responsibility. During that year, when City Power carried out most of the meter reading and billing, the total volume of water billed fell compared with the previous year, even though the volume of bulk water purchases rose by 6 percent. A close analysis of the bills showed that the volume billed by the city remained nearly constant for several months while the volume of bulk water purchases varied every month, as would be expected because of changing demand due to weather conditions. This problem prompted the argument between Johannesburg Water and the city described before. The jump in NRW was due to poor meter reading by City Power along with problems at the city's Revenue Management Unit, not to mismanagement at Johannesburg Water.

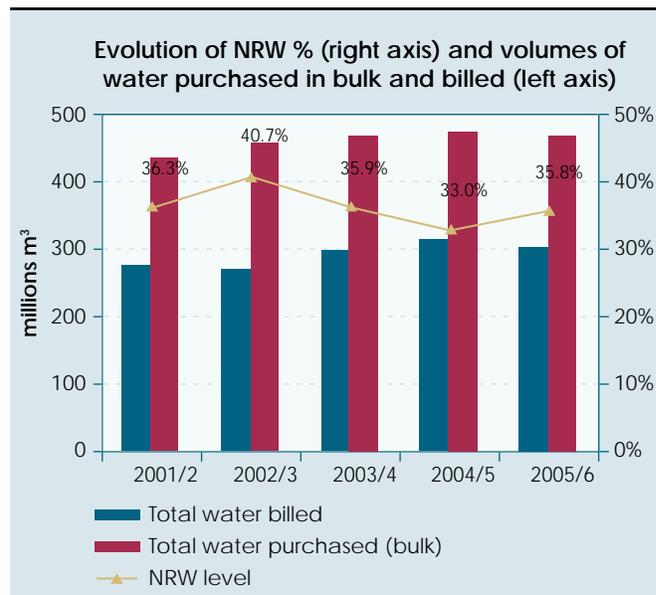
Physical losses: Monitoring and leak detection

At the beginning of the contract physical losses were estimated at around 10 percent of bulk water purchases, equivalent to an average of about 10 cubic meters a day per kilometer of distribution network (though leaks in the unmetered townships were estimated at closer to 20 cubic meters a day per kilometer). This performance was good by developing countries standards. Few gains could be made without considerable investment in rehabilitation, and it was unclear whether the financial benefits would have outweighed the costs.

The new management logically focused on maintaining this satisfactory performance by putting into place a modern system for monitoring water flows and NRW in the network. A complete telemetry system was installed, and continuous monitoring of reservoirs introduced to prevent night overflows. Nine full-time leak detection teams were created and trained to regularly monitor the network and detect new invisible leaks.

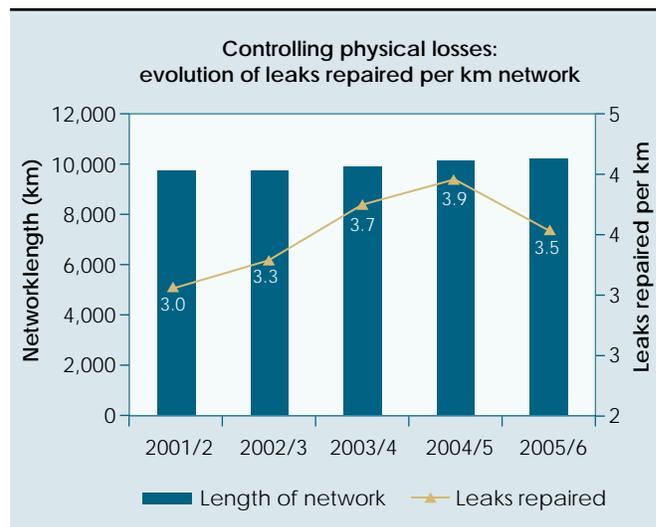
These changes had no noticeable impact on the level of physical losses, still estimated at around 10 percent at the end of the contract. But the average number of leaks repaired annually increased by 20 percent from the baseline (Figure 8). In addition, the private operator's actions left Johannesburg Water better

Figure 7. NRW level for Johannesburg Water during the management contract



Source: Johannesburg Water.

Figure 8. Leaks in water network repaired by Johannesburg Water during the management contract



Source: Johannesburg Water.

able to control physical losses. Regular monitoring of NRW is now a routine procedure. And while there was only a small leak detection team when the private operator arrived in 2001, by the end of the contract an active leak detection program had been put into place and around 70 percent of the distribution network was being controlled every year.

Commercial losses: A complex arrangement

Commercial losses at the beginning of the contract were estimated at around 10 percent in metered areas (where they accounted for around half the total losses) and 60 percent in the unmetered townships (where they represented most of the losses¹⁶). Both areas represented logical priorities for action. With 80 percent of Johannesburg Water's revenues coming from metered areas, reducing commercial losses there by even a few percentage points would have a significant impact on its financial situation. In unmetered areas, reducing the waste of water was an obvious priority.

But during the first three years of the contract, when the city controlled billing for nearly 70 percent of the utility's revenue, Johannesburg Water and the private operator had little scope for action. During that period the new management focused its efforts on the top customers directly managed by Johannesburg Water. Among the most notable actions was the recalibration of meters for the top thousand customers, which increased the volume billed to these customers by about 10 percent on average.

In the last two years of the contract, as the city transferred responsibility for meter reading and billing for a growing number of customers to Johannesburg Water, the private operator was able to step up efforts to reduce commercial losses. The status of accounts in the customer database was reviewed and adjusted where necessary, and a sample of meters was gradually checked for undermetering. By the end of the contract 83,000 meters (about 30 percent of the total) had been checked, and a significant number of defective ones repaired or replaced. The share of meters read during each billing cycle was increased from only around 50 percent under the city to 94 percent.

Dealing with the large commercial losses in unmetered areas represented a difficult issue. The city had retained direct control of billing and collection for the 240,000 connections in townships because of social and political sensitivities, and the private operator lacked a mandate to take action. But as the contract progressed, it became obvious that the excessive losses in the townships had to be tackled. While households were being billed on an estimated consumption of 20 cubic meters a month, the actual consumption per connection stood at 60 cubic meters—a gap that had much to do with careless consumption and internal leaks that households had no incentive to repair. In addition, the collection rate was only 10 percent of the volume billed.

Recognizing that the situation could no longer be ignored, the city, Johannesburg Water, and the private operator jointly decided to pursue a demand management program in Soweto. Set up by Johannesburg Water in partnership with the municipal authorities in Soweto, this initiative—called *Operation Gcin'amanzi*, a Zulu word meaning "to conserve water"—was part of the financial turnaround strategy adopted in the third year of the contract. Because of the complexity of the project, full implementation began only a year and a half before the contract ended, too late to have much of an impact on nonrevenue water levels by that time.

In conclusion, and while the overall level of commercial losses did not change significantly between the first and last year of the contract, it would be incorrect to say that the management contract had not positive impact in this area. The allocation of responsibilities was extremely complex, and at least

¹⁶ It must be noted that while most of the losses in the townships corresponded to commercial losses for the utility (since it was water delivered to customers but not billed), in practice this water was lost through physical leakages within private property. In truth, these were both commercial and physical losses.

for the accounts for which the private operator and Johannesburg Water had direct responsibility, significant progress was made (Figure 9). In addition, Operation Gcin'amanzi, whose implementation is planned to extend beyond the end of the management contract, should bring further reductions in nonrevenue water in subsequent years.

Demand management in Soweto: Operation Gcin'amanzi

Soweto was an obvious choice for launching a large-scale demand management pilot intervention: it accounted for 162,000 connections, 90 percent of the water supplied to unmetered areas, and 30 percent of the bulk water purchased from Rand Water by Johannesburg Water. But the social and political difficulties involved made the project an ambitious one. Designed in close collaboration between the private operator, Johannesburg Water, and the municipal authorities, the project centered on two fundamental principles:

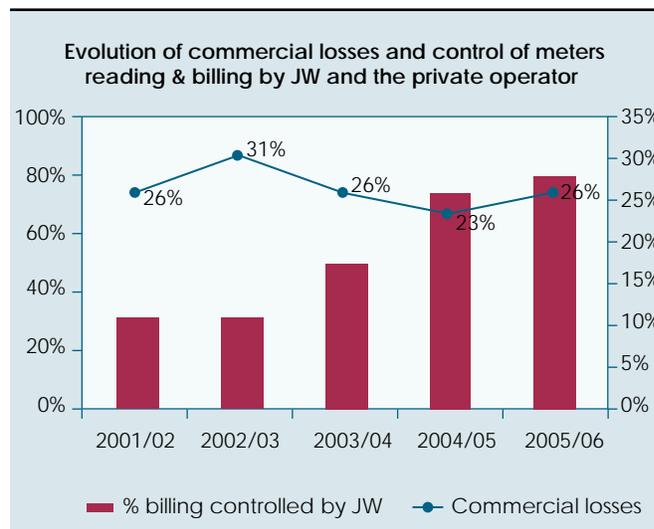
- Sustainable results could be achieved only through a holistic approach combining technical, social, revenue collection, and tariff considerations.
- Given Soweto's long history of boycotting payments for basic services, the social risks had to be managed with sensitivity. A prerequisite would be clear political support from the municipal government, led by the African National Congress.

Project design

A steering committee made up of the top management of Johannesburg Water and the private operator was set up to design the intervention. It was agreed that the project would be organized around the following principles:

- Major rehabilitation had to be carried out, covering not only the pipes in the distribution system but also the internal plumbing installations on private property. After the project, maintaining internal installations would have to be the responsibility of the households.
- Leaks on private property had to be repaired before meters were installed; otherwise, households would refuse to pay the large bills that would result from metered consumption. Internal plumbing repairs would be done free of charge and should be presented as benefiting households by increasing the value of their property.
- Installing individual meters was essential to ensure the sustainability of the intervention; otherwise, households would have no incentive to repair future leaks on their property.
- Prepayment meters rather than conventional ones should be installed. This was thought as the best way to deal with the ingrained non-payment habit, and the fact that many residents earned irregular wages in the informal economy and found it difficult to deal with monthly bills. This option allowed Johannesburg Water and the city to avoid having to resort to cutting ser-

Figure 9. Share of billing controlled and commercial losses by Johannesburg Water during the management contract



Sources: Johannesburg Water; City of Johannesburg.

vice in case of nonpayment (something that had never been attempted in Soweto anyway), while helping customers take ownership of their consumption and manage their water expenses day to day—a critical advantage given the low income level of Soweto residents. This decision was made after broad consultation with city councilors and the community.¹⁷

- In addition to the national free basic water policy (residential customers with a pre-paid meter would still get the first 6 m³ per month free of charge), a special rebate of around 20 percent would be applied to the general tariff to account for the poverty in Soweto.
- To help deal with the collection problem, residents would be allowed to write off their debt over a 36-month period in exchange for accepting a prepayment meter and not tampering with it over that period.
- For customers who rejected prepayment metering, the project would offer as an alternative the installation of a standpipe in the yard, not connected to the toilet to reduce the risk of their consuming substantially more than the 6 free cubic meters a month.
- To support behavioral change, an exhaustive program of community liaison and social intervention had to be implemented in parallel with the other interventions.

Project implementation

Johannesburg Water set up a dedicated team of about 30 people to manage the project and allocated a special budget of R 650 million (half of which was financed through a loan from Agence Française de Développement). The project started in July 2003, but experienced delays because of lack of interest among the major South African contractors who were concerned about the risks of working in Soweto.

The first 18 months were dedicated to testing the concept through a pilot in a small area with 2,300 connections. This phase took longer than expected because of the opposition encountered. Adversarial lobby groups, led by the Anti-Privatization Forum and Soweto Electricity Crisis Committee, were very vocal in their opposition. Despite attempts by Johannesburg Water to seek common ground by holding meetings with these groups, and the fact that the project had the full backing of the city government (led by the ANC), developments were marred by incidents of intimidation and property damage.

Recognizing the magnitude of the social challenges, Johannesburg Water designed and implemented a comprehensive institutional and social development program to support behavioral change by promoting environmental awareness and customer ownership of water use. A grassroots communication strategy was developed to gain cooperation from local leaders and recognized community-based structures. An education campaign was carried out—through public meetings, workshops, and door-to-door visits by local community facilitators—to highlight the efficient use of water, the water cycle, tariff rates, the purpose of meters, and the importance of customer rights but also their obligations.

The pilot, which was completed by December 2004, confirmed that the project's approach was socially, environmentally, and economically sound. Despite the organized intimidation, the project gradually gained support from local councillors and communities, resulting in 99 percent of households in the pilot area opting for a prepayment meter. The water savings exceeded expectations: water consumption per connection fell by 35–45 cubic meters a month or around 65 percent.

¹⁷ In South Africa prepayment metering had been widely used for electricity over the past two decades.

One important element in gaining social acceptance for the project was the promotion of local labor. The project's design called for directing at least 25 percent of construction spending to local companies in Soweto. As a result, by June 2006 more than 1,500 employment opportunities and about 50 permanent jobs had been created.

Results achieved by 2007

The large-scale rollout of the project started in early 2005, and by the end of the management contract in June 2006 the project had benefited around 42,000 households in Soweto (about 20 percent of previously unmetered customers). The interim results were fully in line with those of the pilot phase.

Due to be completed by the end of 2008, the project was expected to generate water savings of around 86 million cubic meters a year, equivalent to 18 percent of Johannesburg Water's total bulk water purchases. The overall level of nonrevenue water was expected to drop from 36 percent to less than 25 percent, leading to a savings in bulk water purchases of around R 240 million a year at the end of the project.

The project's expected benefits for Johannesburg Water clearly outweigh its costs. Data up to March 2007 suggest an average cost per customer of R 6,230, with around R 1,800 for the prepayment meter (purchase and installation) and the rest for network upgrading, plumbing repairs on private property, and social development initiatives. The expected bulk water saving per customer averages 40 cubic meters a month. With Rand Water's bulk water tariff at R 2.79 per cubic meter in 2005/6. This would translate into an estimated saving per customer of R 1,340 a year—a payback period less than six years.¹⁸

The project has also led to significant benefits for customers. Half the customers who received prepayment meters were consuming less than the free monthly allocation of 6 cubic meters and therefore ended up paying nothing on water and sanitation services. The other half had consumption averaging 13 cubic meters, less than the 20 cubic meters of estimated consumption for which they had previously been billed (but now they had to pay in advance for their consumption, while before most customers did not pay their bills at all).

Despite these results, the use on prepayment meters has remained a very controversial issue in South Africa, being portrayed as a discriminatory measure against the poor. A ruling issued in April 2008 by the High Court stipulated that the installation of prepayment water meters by the city and Johannesburg Water was unlawful.

¹⁸ This simple calculation does not take into account the considerable savings that should be achieved by postponing major investments in system capacity expansion. Reducing water losses in townships to levels comparable to the rest of the system was estimated to allow a delay in investment due to overall demand growth in Johannesburg by 5 to 10 years.

8 REMARKABLE TURNAROUND OF THE WATER UTILITY

The discovery in 2003 that Johannesburg Water was effectively bankrupt underscored the need for a major financial turnaround. The strategy that was developed and implemented by Johannesburg Water and the private operator achieved good results: Johannesburg Water went from a net loss of around 25 percent of revenue in the first year of the contract to financial equilibrium in the fifth. And it was rated through an independent national benchmarking exercise as the best performing large water utility in the country for the last two years of the contract. While this impressive improvement must be credited to both public and private partners, there is widespread agreement that the contribution of the private operator was essential.¹⁹

One essential area for which there was no progress over the 5 years of the management contract was expansion of services to the unconnected population living in informal settlements. But here the municipality had explicitly decided to do it on its own, and did not transfer this responsibility to Johannesburg Water.

Back to financial viability

The financial turnaround strategy, designed in 2003/4 by the private operator together with the chief financial officer of Johannesburg Water, was aimed at enabling the utility to break even by 2006/7. Besides the transfer of more revenue management responsibilities to the utility and the demand management program in Soweto known as Operation Gcin'amanzi, the strategy also included a request to the city to increase the average tariff by 3 percent over inflation annually for a three-year period.²⁰ It also included an annual subsidy of R 240 million up to be provided up to the breakeven year.

The financial turnaround strategy proved remarkably successful. Launched in 2004/5, the strategy was fully applied except for the delay in the transfer of customer accounts and related revenue management functions to the utility (see the previous chapter). But despite this exception and delays in implementing Operation Gcin'amanzi, Johannesburg Water achieved breakeven by 2005/6—the last year of the management contract and one year earlier than originally planned (Figure 10).

Size and source of gains

The financial situation of Johannesburg Water steadily improved during the management contract. Gains came in the first three years as a result of the operational improvements introduced by the new management, and then at a faster rate in the last two years with the additional measures of the financial turnaround program. By the fourth year operations were already cash positive, with earnings before interest and taxes (EBIT) at R 166.6 millions, or 6 percent of gross revenue (Table 3). By the last year Johannesburg Water posted its first positive net result, R 26.5 millions.

How much of the improvement in the utility's financial situation was due to private management—and how much to the special tariff increases? As part of the financial turnaround strategy, Johannesburg Water was allowed to increase the average tariff by 3 percent above inflation in the fourth and

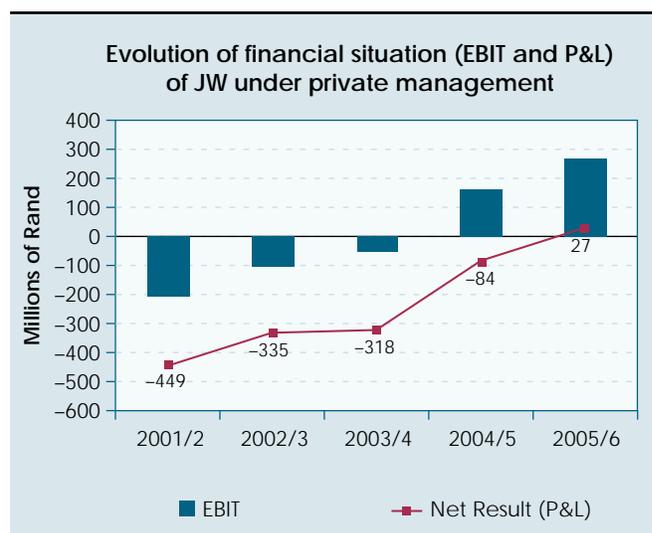
¹⁹ Interviewed for this case study, Prem Govender, senior manager in the city's Contract Management Unit during the management contract, summarized a view widely shared by stakeholders: "*Considering the parlous state of the finances of the water and sanitation undertaking in the late 1990s, the turnaround achieved by JOWAM, in a situation where they did not have full control over revenues, was remarkable.*"

²⁰ The normal tariff adjustment policy was to increase the average tariff by the previous year's inflation.

fifth years of the management contract.²¹ The above-inflation factor generated R 176 million in additional revenue in those two years, while total revenue increased by R 489 million. To properly analyze the impact of private management requires controlling for the increase in the average tariff. This can be done by comparing the average tariff in real terms over the duration of the management contract with the operating ratio (net revenue/operating costs), which captures the improvement in the operating cash flow (Figure 11).

The growing gap in Figure 11 between the average tariff and the inverse of the working ratio during the contract shows that most of the improvement in the operating margin is not due to the above-inflation tariff increases. Of the 28 percent improvement in the operating margin, only about a fifth (6 percentage points) is attributable to net tariff increases.²² The largest

Figure 10. Financial performance of Johannesburg Water during the management contract



Sources: Johannesburg Water; City of Johannesburg.
Notes: EBIT: Earnings Before Interests and Taxes, P&L: Profits and Losses

Table 3. Key financial indicators for Johannesburg Water during the management contract
(thousands of rand except where otherwise specified)

Item	2001/2	2002/3	2003/4	2004/5	2005/6
Total revenue	1,868,684	2,036,883	2,413,944	2,725,240	2,903,187
Bad debt provision	492,797	363,826	393,698	390,632	364,336
Collection rate (percent)	74	82	84	86	88
Net revenue	1,375,887	1,673,057	2,020,246	2,334,608	2,538,851
Bulk water purchases	923,345	1,069,972	1,189,526	1,261,981	1,328,424
Salaries	241,660	286,154	344,830	351,588	388,555
Other operating costs	298,978	317,586	378,565	404,234	394,841
Total opex	1,463,983	1,673,712	1,912,921	2,017,803	2,111,820
Net opex/revenue	1.06	1.00	0.95	0.86	0.83

(continued on next page)

²¹ In 2005/6 the average tariff was R 9.60 (around US\$1.50) per cubic meter. Although rather high by developing country standards, the tariff covers both water supply and sanitation (with tertiary wastewater treatment for all effluents). Moreover, the tariff structure is highly progressive.

²² The other exogenous tariff factor that could have had an impact on Johannesburg Water's financial situation is the bulk water tariff, since purchases from Rand Water account for about half the utility's total costs. But the growth in the bulk water tariff closely matched inflation over the life of the contract.

Table 3. Key financial indicators for Johannesburg Water during the management contract
(thousands of rand except where otherwise specified)

Item	2001/2	2002/3	2003/4	2004/5	2005/6
Depreciation	146,370	154,479	193,273	196,616	200,719
Other income	30,575	58,478	32,984	46,431	38,010
Earnings before interest and taxes (EBIT)	-203,891	-96,656	-52,964	166,620	264,322
Interest	244,760	238,384	265,113	250,444	237,790
Net result (profit and loss)	-448,651	-335,040	-318,077	-83,824	26,532
Subsidy from city	352,590	234,891	200,000	240,000	240,000
Net result after subsidy	-96,061	-100,149	-118,077	156,176	266,532
Tariff increase (percent)					
Regular increase based on past year's CPIX	—	8.5	10.0	6.0	4.7
Special increase	n.a.	n.a.	n.a.	3.0	3.0
Total increase	—	8.5	10.0	9.0	7.7
Increase in average bulk water tariff (percent)	—	9.6	9.3	4.5	6.2

Source: Johannesburg Water financial statements.

Note: Figures are restated to account for the corrected collection rate in early years.

n.a. Not applicable.

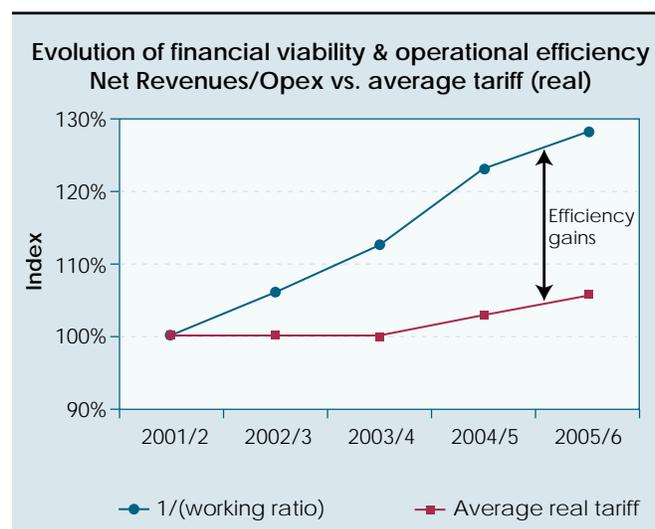
part of the gains was due to improved operational efficiency, coming from a combination of actions taken by the new management, which are analyzed in the following sections.

Commercial losses and bill collection for large customers

The main contributor to the improvement in the financial performance of Johannesburg Water was the growth in cash collected—growth due to both a reduction in commercial losses and an increase in the collection rate for large customers, which were under the direct responsibility of Johannesburg Water and the private operator.

The evidence suggests that the new management's efforts to reduce commercial losses for large customers, for whom it had direct responsibility since the beginning of the man-

Figure 11. Evolution of operating ratio and average tariff of Johannesburg Water during the management contract



Sources: Johannesburg Water and authors' calculations.

agement contract, accounted for a significant share of the increase in billed consumption. While Johannesburg Water’s total billed consumption (gross revenue) increased by 55 percent over the life of the contract, the total cost of bulk water purchased from Rand Water increased by only 44 percent. This represents an increase in the value (in Rand) of water billed of 11%. Since the level of NRW remained constant during that period, and the average tariff increased by only 6 percent in real terms, the only possible explanation for the 5 percentage point difference is that the additional volume of water sold was billed at a higher tariff than the average—that is, that more water was billed to large consumers such as commercial and industrial accounts, or residential accounts in more affluent areas. These are the accounts whose responsibility for revenue management was transferred early on to Johannesburg Water.

The new management’s efforts to improve the collection rate also paid off. As noted, the private operator was initially responsible, through Johannesburg Water, for bill collection from customers representing only 32 percent of the utility’s total revenue, a share that rose marginally to around 40 percent at the end of the fourth year. The overall collection rate for Johannesburg Water rose from 74 percent to 88 percent over the five years of the contract (Figure 12). But for the customers for which Johannesburg Water and the private operator had direct responsibility, the rate rose from 60 percent to more than 100 percent (due to payment of arrears). Because the private operator was responsible for the collection of around 40 percent of revenue, this increase was equivalent to a net improvement of 16 percentage points in the overall collection rate. Thus the increase in the overall collection rate can be traced entirely to the efforts of the private operator (indeed, the collection rate for customers for which the city had responsibility can be estimated to have fallen marginally by 3 percentage points). Moreover, the improvement represented an increase in net revenue of more than 20 percent.

Containing the overall operating costs

The new management was able to contain the overall level operating costs, even though the transformation of Johannesburg Water into a modern, customer-responsive utility generated new additional operating costs—most notably for assets’ preventive maintenance and sludge removal from wastewater treatment plants in accordance with environmental standards. Over the five years of the contract the unit operating costs per cubic meter billed rose by only 1.5 percent in real terms, from R 6.18 to R 6.27 (Figure 13).

By far the biggest cost driver for Johannesburg Water is the purchase of bulk water from Rand Water, which accounts for 80 percent of water costs and 50 percent of combined water and sanitation costs. The unit cost for bulk water purchases remained steady during the contract, however, since the level of nonrevenue water was unchanged and Rand Water’s tariff broadly followed inflation.

Figure 12. Gross revenue and collection rate of Johannesburg Water during the management contract

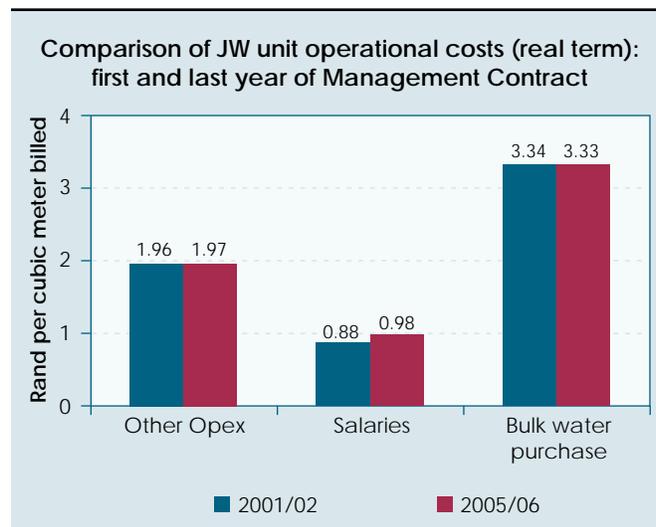


Sources: Johannesburg Water; City of Johannesburg.

Labor costs rose significantly over the contract period as a result of increases in both the average salary and the actual number of employees. The higher pay reflected higher qualifications: as utility employees received on-the-job training to handle greater responsibilities, their average salary rose by 23 percent in real terms (Figure 14). The total number of employees at Johannesburg Water rose by a net 154, from 2,509 in 2001 to 2,663 at the end of the contract in 2006. The growth in staffing was necessary to keep up with the growth in workload stemming from the partial transfer of revenue management as well as from new activities needed to improve performance (customer call center, Operation Gcin'amanzi, sludge management). Even so, the labor productivity ratio remained stable throughout the life of the contract, at around 4.9 staff per thousand connections. As new activities were undertaken, the new management was able to improve labor productivity in some areas by taking advantage of natural staff attrition to reorganize work and reduce overtime.²³

The category "other opex" consists essentially of the costs of chemicals, electricity, and maintenance. Maintenance costs increased significantly during the contract because of the implementation of widespread preventive maintenance. The implementation of the sludge disposal program, necessary to comply with environmental standards, was also a new additional cost for the utility. It represented a significant cost increase for Johannesburg Water since over time it became more difficult to find farmers close to the metropolitan area who accepted sludge to use for their fields. This fact significantly raised sludge transportation costs. However, these cost increases were offset by the notable reductions achieved in variable costs of wastewater treatment (see the following section), so that the unit cost for this category remained broadly unchanged.

Figure 13. Real unit operating costs of Johannesburg Water in the first and last years of the management contract



Sources: Johannesburg Water; City of Johannesburg; authors' calculations.

Figure 14. Employees and real average salary at Johannesburg Water during the management contract



Sources: Johannesburg Water.

²³ The relatively large number of staff per thousand connections reflects the importance of sanitation: tertiary treatment at five wastewater treatment plants and more than 9,000 kilometers of sewerage network occupied more than half the operational staff.

Cost savings in wastewater treatment

Significant reductions in unit variable costs were achieved at the wastewater treatment plants, largely due to better operational practices and newly empowered line managers. The results show what properly motivated line managers can achieve when an organization focuses on efficiency and rely on an experienced international operator that can import best practices, leveraging on its operations around the world.

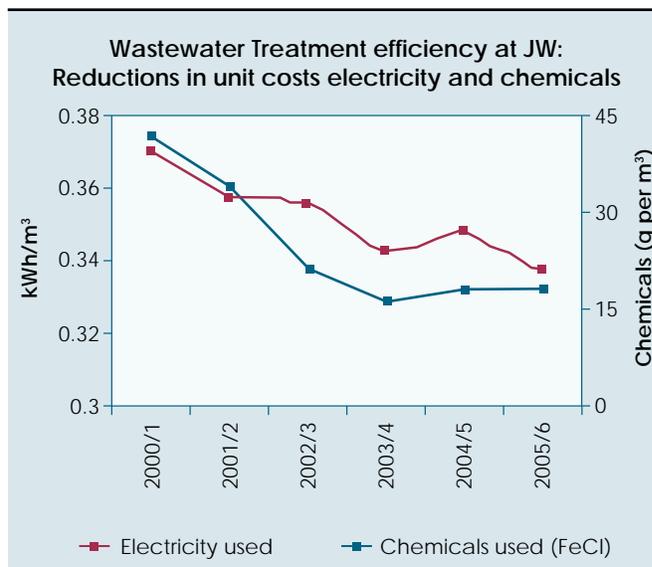
The new management put in place new operational practices to reduce the use of both electricity and chemicals (Figure 15), without compromising environmental compliance. For instance, the introduction of relatively complex patterns of aeration in the wastewater treatment process made it possible to cut electricity consumption from 0.37 kilowatt-hours per cubic meter of sewage treated to 0.34 kilowatt-hours. Extensive staff training and close monitoring of the biological process for nutrient removal also allowed the plants to reduce the chemicals used for nutrient removal (ferric chloride) by a spectacular 70 percent—from 42 grams per cubic meter of wastewater treated to 18 grams.

Over the life of the contract the reduction in the use of electricity and chemicals led to cumulative savings of about R 34 million, or around US\$1 million a year, at the wastewater treatment plants (Figure 16). These savings alone are equivalent to half the cost of the management contract for Johannesburg Water over the five-year period (see Table 4 on page 47).

Expansion of services to informal settlements

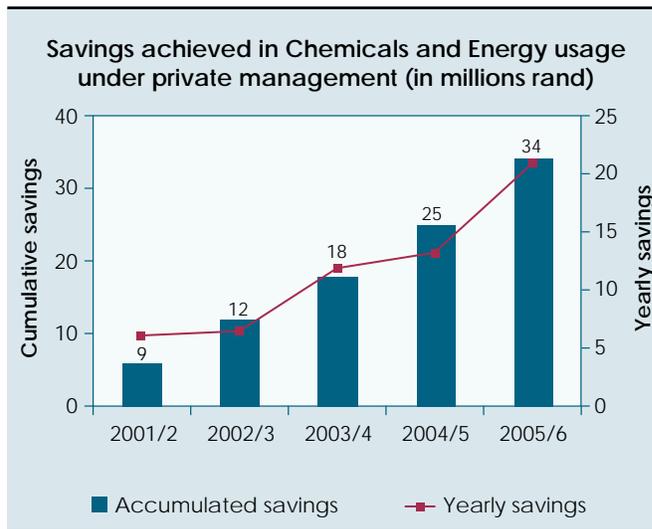
At the beginning of the management contract an exhaustive study was carried out by Johannesburg Water to assess access to water and sanitation services in informal settlements, many of which had resulted from illegal occupation of land and where most residents lived on less than US\$1 a day per person, well below the poverty level. Of the 171,000 households identified, around 14 percent had access to potable water through an individual connection, and 64 percent through a community fountain. The other 22 percent got their water from tankers. For sanitation, most used chemi-

Figure 15. Cost efficiency of wastewater treatment by Johannesburg Water during the management contract



Sources: Johannesburg Water; authors' calculations.

Figure 16. Savings from reducing electricity and chemicals in wastewater treatment by Johannesburg Water during the management contract



Sources: Johannesburg Water; authors' calculations.

cal toilets or unimproved pit latrines. Based on these findings, Johannesburg Water and the private operator had developed a proposal to increase coverage for the poor.

Proposal for expanding coverage

The new management recognized that the only way to offer affordable, sustainable, and cost-effective water and sanitation services to low-income communities was to introduce flexibility in the standards of service offered. Consistent with national policy and the experience of other utilities (such as that of eThekweni-Durban), they proposed offering three levels of service with gradually rising cost and convenience, allowing consumers to easily “climb the ladder” as their ability to pay increased. The first and second levels of service were to be provided free of charge.

- The first level, corresponding to the definition of basic access, would consist of a standpipe or water tank within 200 meters of the dwelling and a ventilated improved pit latrine.
- The second level would consist of an individual connection ending with a tap in the yard and a toilet connected to a waterborne sewage system (with the toilet being pour flushed rather than connected to the tap).
- The third level would be a standard individual house connection for water and sanitation, equipped with a conventional or prepayment meter for billing.

In early 2002 the new management submitted its proposal for clearing the backlog of water and sanitation connections in Johannesburg. The proposed program was designed to increase the population share with access to piped water and sewerage to more than 98 percent. But the municipal authorities decided otherwise, and indicated to Johannesburg Water that the city's Housing Department would directly address the backlog in permanent settlements (involving more than 95 percent of the target population) as part of a broader urban improvement program. Johannesburg Water would have to address the backlog only in the few settlements that had been earmarked for later relocation. In these temporary settlements the plans called for temporary improvements—installing communal standpipes and ventilated improved pit latrines.

Results of the coverage expansion program

Unfortunately, most residents of informal settlements saw little improvement in access during the period of the management contract. According to the Johannesburg Water's records, the civil works undertaken by the Housing Department of the municipality provided access to a mere 7,800 households in permanent settlements to the water or sewerage network, less than 5 percent of the number initially planned.

Johannesburg Water and the private operator did meet their commitment in the few temporary settlements for which they were in charge. Over the five years of the management contract, Johannesburg Water constructed more than 14,000 ventilated improved pit latrines and laid 10 kilometers of distribution pipeline to provide individual water connections to 6,000 poor households. Its program to install ventilated improved pit latrines was built largely around community participation. Residents dug the pit themselves as an in-kind contribution, and small contractors employing local workers completed the construction under the supervision of Johannesburg Water staff.

As a result of the problems encountered by the city, and because of continued rural migration, the coverage of water and sanitation services in Johannesburg may have actually fallen in 2001–06. Johannesburg is not the only South African city confronting this problem of continual migration and a growing backlog of service coverage; this is a national issue. This disappointing outcome is not linked to the management contract: if anything, the improved financial situation achieved for Johannesburg Water enables it to finance more easily the needed expansion in those unserved areas.

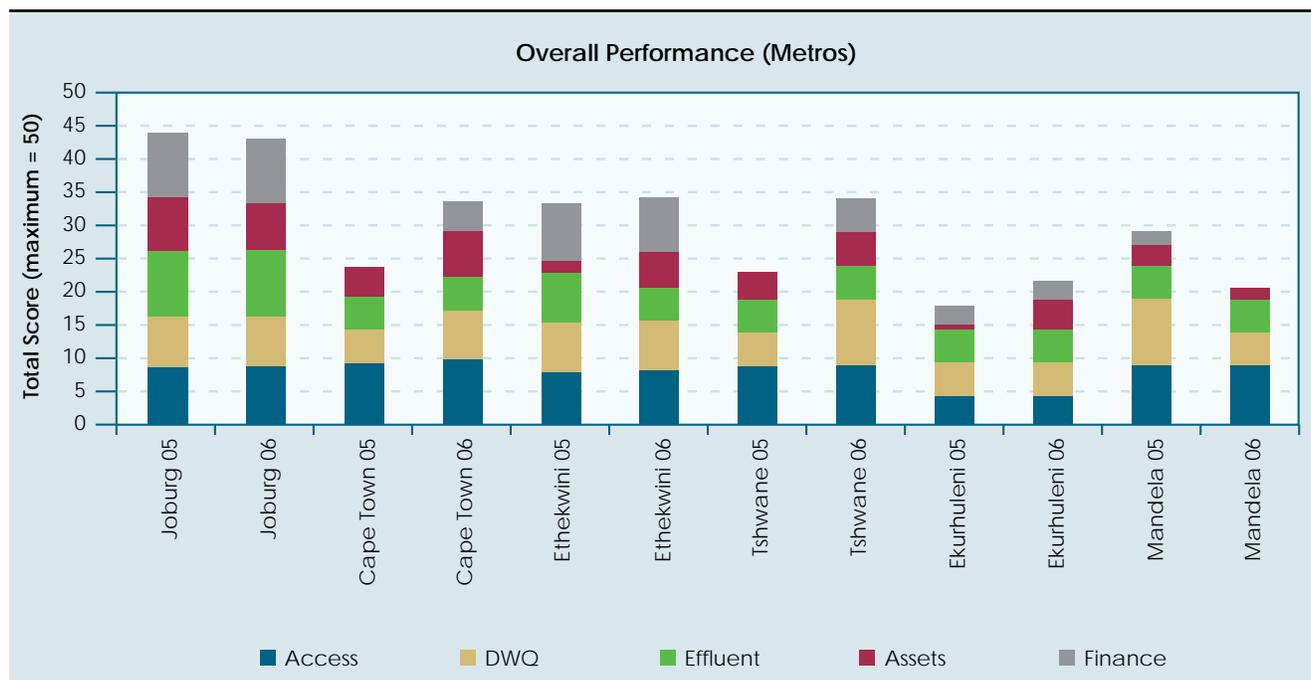
Benchmarking results: The best water utility in South Africa

Evaluating the specific improvements achieved over the life of the management contract offers one way to assess the impact of the private operator. Another approach is to compare the performance of Johannesburg Water with that of other large, urban public utilities in South Africa. Independent data from the National Benchmarking Initiative provides such comparison for the last two years of the contract, and confirm the case study's findings on the positive impact of the management contract.

The National Benchmarking Initiative was started in 2005 to promote better performance by all water service providers in South Africa. It is a joint effort by the South African Local Government Association (SALGA), the Department of Water Affairs and Forestry, and the Water Research Commission. The initiative undertakes annual, independent benchmarking of key performance indicators for the country's water utilities through an elaborate process involving site visits and quality control of data to ensure consistency and reliability. Outcomes are presented at an annual conference to highlight achievements and best practices and allow participants to direct learning efforts to areas where improvements are possible.

The first two initiatives took place in 2005 and 2006, the last two years of the contract. In the first round 40 municipal utilities were identified and 22 responded. In the second, 70 utilities were identified and 48 responded. Johannesburg was one of the six metropolitan municipalities that participated in the benchmarking. Cape Town and Ethekwini-Durban (with publicly run utilities of a size comparable to Johannesburg Water) also took part. Performance was assessed in five areas (each given a weighting of 10, with subindicators in each area): access to basic services, drinking water quality, effluent quality, asset management and operational efficiency, and finances.

Figure 17. Benchmarking results for metropolitan water utilities in South Africa, 2005 and 2006



Source: SALGA, Department of Water Affairs and Forestry, and Water Research Commission 2007.

The results of this independent assessment confirm the success of the management contract in transforming Johannesburg Water into a well-performing water utility. When the reform was initiated, Johannesburg Water was a bankrupt utility with dissatisfied customers, a poorly motivated workforce, and growing problems of environmental non compliance. But by the end of the management contract, it was receiving the highest performance rating among the public utilities in metropolitan areas in South Africa (Figure 17). Its rating was around 20 percent higher than the rating of the second-ranked utility, Ethekewini-Durban, which is widely regarded internationally as a model of well-managed public water utility. Johannesburg Water was also the only water utility to post good performance in all five performance areas.

9 ASSESSING THE MAIN LESSONS

As public-private partnerships in water have developed over the past 15 years in developing countries, management contracts have often been criticized for not always delivering their expected benefits. Debating this issue is beyond the scope of this paper.²⁴ But the findings of the case study suggest that, when properly designed and implemented, a management contract can bring significant and measurable benefits to the contracting government.

What key factors contributed to the success of the reform?

The objective data presented in the case study leave no question that JOWAM's performance in Johannesburg was satisfactory. The private operator achieved more than 90 percent compliance with contractual targets every year, with clear improvements in customer service, environmental compliance, and cost efficiency. The new management was also instrumental in carrying out a complete financial turnaround, in partnership with the city's authorities, which had restored the utility to financial equilibrium by 2006. And in the best illustration of its positive impact, the National Benchmarking Initiative ranked Johannesburg Water as the best metropolitan water and sanitation utility in the country in both 2005 and 2006.

Moreover, and even though public-private partnerships in water tend to be controversial in South Africa, there appears to be widespread agreement among stakeholders that Johannesburg Water greatly benefited from the five-year management contract. This perception was confirmed by all those interviewed as part of this study (see the list of interviewees at the beginning of the paper). Another series of interviews, conducted in 2004 by the UNESCO-IHE Institute for Water Education, found similar positive feedback.²⁵ Beyond improving performance, the new management was also praised for facilitating the training and promotion of a large group of black managers and professionals, who were well equipped to run the utility by the end of the contract.

Not all management contracts for water utilities implemented in developing countries in the past decade have been that successful. So it is fair to ask what this success can be attributed to. While answering this question is clearly difficult, several aspects stand out in the design and implementation of this PPP:

- *There was a high level of political commitment to the public-private partnership from the start.* The municipal government was strongly committed to turning around the water and sanitation services, and to making innovative use of the private sector to help with this turnaround. There was a strong ownership of the choice made to implement a PPP—a decision made entirely on its own by the elected municipal government, without donors' conditionality for accessing external funding.
- *The management contract was not designed as a catchall with multiple unrealistic targets.* Management contracts often try to achieve too much in too little time. By contrast, the contract in Johannesburg had a single clear objective—to establish a viable, corporatized public water utility. This vision guided the design of the contract: performance targets were selected

²⁴ There are many reasons why management contracts have sometimes fallen short of expectations, including unrealistic contractual targets, poor clarity in the allocation of responsibilities between the private operator and the government, and the inherently limited potential impact of short-term contracts.

²⁵ These interviews were carried out as part of a different World Bank research work, looking at case studies of well run public water utilities (see Baietti et al, 2006)

to focus on priority areas, and the contract included explicit requirements for training and corporate planning.

- *The municipality was able to adopt a flexible approach to measuring the year-by-year impact of the private operator.* Where a reliable baseline is lacking, assessment of an operator's performance becomes difficult, and this often leads to distrust and conflict. This issue was approached with notable pragmatism in Johannesburg. The first year of the contract was dedicated to establishing a reliable baseline and performance monitoring system so that progress could be reliably measured, against increasingly stringent targets, in later years. This pragmatic solution required both sufficient trust between the partners and the presence of a reputable independent auditor.
- *Both partners were committed to making the partnership work.* The success or failure of a public-private partnership ultimately depends on whether the two partners can work together. The private operator proved ready to devote substantial resources to making the contract work (probably as a basis for developing future contracts). Meanwhile, the city authorities "played the game" by consistently refraining from interfering in the utility's day-to-day management. They also appointed as JOWAM's counterparts competent executives who were supportive of the corporatization reform. The parties were able to build over time a relationship of trust, essential for dealing with new developments during the contract (such as the financial turnaround strategy and Soweto project).
- *There was a strong focus on developing human resources.* The private operator sent a large number of expatriates during the first year of the contract to ensure a rapid transfer of know-how, and a competent management team made up of black professionals were gradually trained and installed in positions of responsibility. The private operator also built ownership of the reform among the utility's employees so that they would actively support its efforts to improve performance. That the utility's employees were treated as assets and partners in the ongoing reform certainly accounts for many of the progresses made.

Another important aspect was the relatively favorable environment, compared to many other developing countries. While the municipal water and sanitation departments were not functioning well at the start of the management contract, neither were they dysfunctional. In addition, the infrastructure was generally in satisfactory condition. Considerable investments had been made in the previous two decades, and the various municipal departments had technically competent professionals in place when Johannesburg Water was established. This allowed the private operator to focus on improving the management of staff and assets, and develop a new corporate vision of efficiency and customer orientation.

Some important opportunities missed

While the management contract fully met its objectives and achieved a remarkable organizational and financial turnaround of Johannesburg Water, in retrospect several aspects of this public-private partnership could have been improved.

Reducing NRW

The results achieved in reducing NRW were obviously disappointing. As noted, the overall level remained broadly the same between the first and last years of the management contract, at around 36 percent. But as the detailed analysis of NRW shows, that does not mean that the management contract had no positive contribution. Moreover, water losses plague all water utilities in South Africa, and the level for Johannesburg Water is in line with the average.

Still, there is little doubt that the results would have been better had full responsibility for meter reading and billing been transferred to Johannesburg Water and the private operator early on. Commercial losses are relatively easy to deal with for a competent operator, and experience with management contracts around the world shows that this is in fact the area where the positive contribution of private operators is the most consistent (Marin, 2009). The concern about transferring revenue management appears to be rather unique to South Africa, where it had already arisen with the lease contracts awarded in the early 1990s. There may be social, legal, or administrative issues that justify keeping bill collection in the government's hands in some situations. But it is hard to find a valid reason for preventing a private operator from reading meters and issuing bills. The municipal authorities finally came to the same conclusion and transferred more revenue management to the private operator over time.

It is clear that the priority for reducing NRW levels in Johannesburg was to address the issue of excessive water wastage in the townships. The many social and political issues surrounding this problem made it a perilous endeavor. The Gcin'Amanzi program that was designed jointly by the private operator, Johannesburg Water and the city government was ambitious. The continued resistance it generated, culminating with the High Court ruling in 2008 that prepayment water meters were illegal, underscore the difficulties that Johannesburg will most likely continue to face in the future for attempting to reduce water wastage in townships.

A broader solution needed for informal settlements

The second area where little or no gain was made during the five-year contract is expansion of coverage for the poor. The lack of any real progress in connecting the poor population in informal settlements is a serious failure; this population is the most vulnerable, and improving its access to services should have been a priority.

Paradoxically, neither Johannesburg Water nor the private operator can be blamed for this sorry state of affairs. Indeed, they took the initiative in the first year of the contract to develop a plan to expand coverage in informal settlements. Unfortunately, the city's Housing Department decided it would do it itself, but failed to meet the goals set. (Part of the difficulties in the Housing Department came from delays in accessing special funds for slum upgrading from the central government.)

Here, however, it would be overly simplistic to conclude that the solution should have been to transfer more responsibility to Johannesburg Water and the private operator. The new management may have executed the civil works required in a timely and cost efficient manner, but providing access to water and sanitation in slums is not just about installing pipes. It requires resolving difficult issues such as illegal occupation and uncertain property rights, and there is a case for grouping all upgrading projects under a specialized urban development agency. This is a challenge whose solution lies beyond the scope of the water utility, whether its management is public or private.

The two heads—a problem or not?

Another issue—and one which was flagged as potentially contentious right from the start of the bidding process—was the presence of two heads at Johannesburg Water, the “in-house” executive director appointed by the city government and the private operator's chief executive officer. Events during implementation of the contract suggest that the early concern was exaggerated.

This arrangement did complicate day-to-day operational management, especially at the start of the contract. But by requiring the public and private partners to work together, it may also have helped develop trust between them. Any misunderstanding surfaced immediately because of the proximity, and had to be cleared early on. This might have helped in preventing the many problems which inevitably surge in the implementation of such a complex contractual arrangement from escalating into

more serious disputes. Another important benefit was that the handover at the end of the contract was relatively straightforward because the executive director was already in place.

The views on whether this arrangement was desirable remain mixed, but it seems to have worked in practice. What is clear is that much depended on the qualities of the people involved, and this should be kept in mind when considering its replication elsewhere.

How the private operator helped in creating a new corporate culture

It is easy to conclude from the review of the technical performance that the main contribution of the management contract was the transfer of technical expertise. Yet among Johannesburg Water managers who were in daily or weekly contact with the JOWAM team, the vast majority actually believes that the main contribution was the introduction of a radically new corporate culture among employees.

Public water utilities around the world have traditionally been dominated by an “old school” engineering culture. Staffs put more emphasis on designing, constructing, and maintaining infrastructure than on serving customers. The new management was able to gradually instill a new mentality, one focused on efficiency and customer service.

The first step was to establish a trust-based relationship with the management and staff of Johannesburg Water. The private operator sent a large team of experts in the first and second years of the contract, underlining its commitment to the utility’s reform, and emphasized coaching the staff in experimenting with better practices. As the JOWAM team spread across the organization, the temptation to think along the lines of “us versus them” rapidly disappeared among most of the utility’s employees.

In addition, as an experienced international private operator, Suez brought a management culture based on accountability, performance, and customer orientation. Substantial responsibility was delegated to line managers, with simple line reporting and measurable goals that were regularly monitored. And line managers were allowed to take initiative, especially when it helped better serve customers. All this was in sharp contrast to the previous culture, with cumbersome line reporting, frequent political interference, public servants afraid to take responsibility, and little attention paid to performance and customers. Johannesburg Water employees rapidly came to appreciate working in an environment where they were empowered to make decisions, and a dynamic was created in which the private operator and Johannesburg Water staff truly worked together to turn the utility around.

Estimating the costs-benefits of the management contract

Did the benefits of the public-private partnership for the City of Johannesburg exceed its cost? The total cost of the management contract for the city was R 67 million (around US\$ 10 million), comprising R 64 million paid to the operator over the five years, plus R 3 million paid to the independent auditor.²⁶ The annual cost represented only around 0.5 percent of Johannesburg Water’s billed revenue (Table 4).

One way to calculate the benefits that accrued to Johannesburg Water from the management contract is by estimating the improvement in financial performance under private management. Johannesburg Water recorded a loss of R 450 million in 2001/2, saw its financial situation improve every year, and posted a small profit in 2005/6. All the stakeholders agree that this would not have been possible without the presence of an experienced private operator. And the financial analysis shows that of the 28 percent increase in operating margin achieved during the tenure of the private operator, 22 percent is attributable to improved management and only 6 percent to the above-inflation tariff increases.

²⁶ This does not include the cost of preparing and tendering the contract, for which no data was available.

Table 4. Payments by Johannesburg Water to the private operator by year

Financial year	Thousands of rand	As a percentage of revenue
2001/2	12,133	0.60
2002/3	10,364	0.50
2003/4	10,930	0.45
2004/5	14,752	0.55
2005/6	15,334	0.51

Sources: Johannesburg Water; City of Johannesburg.

Note: Payments exclude value added tax.

Using the net loss of R 450 million in the first year as a baseline to measure financial improvement, and correcting for the exogenous impact of real tariff increases, the financial contribution of the private operator can be estimated at more than R 900 million (around US\$130 million). This is thirteen times the total cost of the management contract. Indeed, the savings achieved through more efficient operation of wastewater treatment plants alone are enough to cover half the cost of the management contract over the five years. Even though these are gross estimates, there is no question that introducing a private operator through a management contract proved a very profitable move for the City of Johannesburg.

Even so, it might be argued that the cost-benefit assessment is biased by the fact that Suez won the contract by submitting a bid below its expected actual cost. As noted, the X factor proposed by Suez, with an incentive bonus of only 0.18 percent of the increase in operating margin, was well below the cost estimates by the transaction advisors. Many observers believed at the time that Suez had probably submitted an offer too low to fully cover its costs and risks, because it wanted the contract as a way to develop future opportunities. The Johannesburg contract was tendered at a time when private operators were optimistic about prospects for public-private partnerships in developing country water sectors. The favorable financial conditions obtained by the City of Johannesburg probably do not reflect current market conditions. Indeed, with many international water operators no longer seeking rapid expansion in developing countries, a similar management contract offered on today's market would probably be assessed solely on its merits, and potential private operators would request a larger payment.

But even when correcting for this factor, the cost-benefit equation would still be largely favorable for Johannesburg Water and the City of Johannesburg. The R 64 million payment to the private operator largely reflected the Part A incentive factor. If the Part B incentive factor had been set at 5 percent rather than 0.18 percent (as originally projected by the transaction advisor), the payment to the private operator would have increased by around R 45 million—for a total of R 109 million, still less than 15 percent of the accrued financial benefits, and less than one percent of the utility's annual turnover. So, even under less favorable market conditions, with a private operator charging for its full costs and risks, the benefits of the management contracts over the five years of the contract would have been more than 6 times its costs.²⁷

²⁷ Arguably, this calculation under-estimates the actual accrued benefits as the operational improvement brought about shall continue even after the private operator left.

10 LOOKING FORWARD: A NEW PARADIGM FOR INVOLVING A PRIVATE OPERATOR?

Using a private operator to help corporatize a public utility

During the past decade it has been common to view public and private management of water utilities as two antagonistic approaches: a government had to choose between keeping its water utility under public management and bringing in a private operator to take over. As an obvious consequence, any proposal to leverage private sector expertise through a PPP would generate fierce opposition from those favoring public management of water utilities. And conversely, those governments who had made the decision to keep their water utility in public hand discarded PPP as a matter of principle.

But the experience in Johannesburg suggests that this perceived dichotomy may be at least partly unfounded. The municipal authorities brought in a private operator not to replace public management for the long term, but to provide assistance for the short term. This approach went against the perceived wisdom that the only reason for involving a private operator is to have it permanently take over the management of inefficient public utilities.

Of course, short-term management contracts are nothing new. But they have usually been used as a stepping-stone to greater delegation of management responsibility through a lease or concession. In Johannesburg, however, the government intended from the start to keep the management of its water utility in public hands—but it deemed the challenges of establishing Johannesburg Water as a viable, corporatized utility to be too difficult to tackle alone in the early years of the corporatization reform.

Indeed, experience with reforming public water utilities in the developing world has shown that establishing a ring-fenced corporatized entity is fraught with challenges. It requires putting into place a new corporate culture emphasizing efficiency and customer service, often in sharp contrast with the ingrained attitudes of career public servants. It also requires allowing the newly corporatized entity to operate autonomously, something that goes against politicians' usual impulse to interfere in day-to-day management.

Some developing country governments have been able to handle these challenges on their own. But as Johannesburg Water shows, leveraging the expertise of a competent private operator through a short term management contract can also be a smart and cost efficient way to do it.

Looking at what happened to the other new corporatized entities established in Johannesburg—those for which the help of a private operator was deemed unnecessary—is also enlightening. When the Igoli 2002 program was designed, the water utility had been chosen as a candidate for PPP because it represented the larger challenge. After five years, Johannesburg Water had become the best metropolitan water utility in the country, while the other corporatized public utilities were struggling. Pikitup, the solid waste management utility, still depended on yearly budget transfers from the city to pay its employees and suppliers. And City Power, the power distribution utility, was still having difficulty in attracting talented managers.

After the five years of the management contract the private operator left Johannesburg Water as a ring-fenced utility in good shape—with healthy finances, efficient services, satisfied customers, trained and motivated staff, and modern management systems. The big question is whether the public utility can maintain this performance. Whatever happens to Johannesburg Water after the end of the

management contract obviously rest on the city's authorities and Johannesburg Water's public management. This case study is focused on the performance of the management contract, and does not cover the period after the private operator left. We shall leave this assessment for another case study.

Possibilities for replication elsewhere

The good performance of this management contract suggest that this experience is worth considering by any government that wants to retain public management of its water utility but feels the need for experienced outside help in carrying out the process of corporatization.

Given the complex changes involved in a corporatization reform, bringing in outsiders who have a fresh vision and can effectively coach public staff into better operational practices is of paramount importance. A government could theoretically turn to a consulting firm for this. But partnering with another operator has obvious advantages, because it means that advice can be grounded in practical experience, and that this advice can be followed by actual actions on the ground. Whether the outside operator is publicly or privately owned probably does not matter much as long as it has demonstrated operational efficiency, and the partnership is based on clear contractual targets, accountability for results, and incentives to perform.

In that respect, the management contract that was awarded in 2006 in South Africa for the water utility of Maluti a Phophung will be important to follow during implementation. It is largely a replication of the Johannesburg contract. The municipal government inherited disparate systems managed by different municipal entities, and decided to incorporate them into a single ring-fenced utility. The contract aims to leverage the expertise of an experienced operator, with performance targets that are focused on capacity building and knowledge transfer, so that after six years the management of the utility can return to public hands.

Would short-term management contracts like this one—aimed mainly at the transfer of know-how and with no real prospects for expansion—attract interest from international private operators in other developing countries? Some might feel that having to leave after the contract period means that they would be handing over their expertise in exchange for little reward. But in a market where the very idea of long-term delegation of water services to private operators encounters resistance in many countries, this approach might be a valid alternative business model. Another successful example of a corporatization program that was carried out with the help of a private operator is the national water utility of Burkina Faso, where a performance-based service contract was used (Fall et al, 2009).

Moreover, this new approach might interest not only international private operators but also publicly owned water utilities in developed countries, which often have solid expertise in running efficient operations. These public operators generally had little interest in the first wave of public-private partnerships in developing country water sectors, because their strategy was not to take over the management of foreign utilities for long durations through a lease or concession contract. But they might be interested in management contracts that are focused on knowledge transfer and capacity building. Ghana recently awarded a management contract for its national water utility to a consortium led by Vitens, the largest public water utility in the Netherlands. The needs for operational support to help public water utilities improve their performance are huge, and developing countries need all the help they can get to face the challenges of their urban water and sanitation sector.

BIBLIOGRAPHY

- Baietti, Aldo, William Kingdom, and Meike van Ginneken. 2006. *Characteristics of Well-Performing Public Water Utilities*. Water Supply and Sanitation Working Notes, no. 9. Washington, DC: World Bank, Infrastructure Network.
- Blanc, Aymeric, and Cedric Guesquières. 2006. "Decentralisation and the Free Basic Water Policy in South Africa: What Role for the Private Sector?" AFD Working Paper 25. AFD, Paris
- El Nasser. 2007. "The Amman Management Contract", Mimeo World Bank.
- Estache, Antonio, and Eugene Kouassi. 2002. "Sector Organization, Governance, and the Inefficiency of African Water Utilities." Policy Research Working Paper 2890. World Bank, Washington, DC.
- Fall, Matar, Philippe Marin, Alain Locussol and Richar Verspyck, 2009, "Reforming Urban Water Utilities in Western and Central Africa: Experiences with Public Private Partnership." Water Sector Board Discussion Series, World Bank, Washington DC
- Marin, Philippe, and Ada Karina Izaguirre. 2006. "Private Participation in Water: Toward a New Generation of Projects?" Gridlines series, no. 14. Public-Private Infrastructure Advisory Facility, Washington, DC.
- Marin, Philippe, 2009, "Public-Private Partnerships for Urban Water Utilities: a Review of Experiences in Developing Countries", Trends and Policy Options series #8, PPIAF – World Bank, Washington DC
- Mariño, Manuel, Jack Stein, and Francisco Wulff. 1998. "Management Contracts and Water Utilities: The Case of Monagas State in Venezuela." Public Policy for the Private Sector series, Note 166. World Bank, Finance, Private Sector, and Infrastructure Network, Washington, DC.
- Palmer Development Group. 2002. "So You Think You Want to Corporatize? A Guide for Municipalities Considering Corporatized Water Entities." Report prepared for the Water Research Commission, Pretoria, South Africa.
- . 2003. "Water PPP's in South Africa and Their Impact on the Poor." Report prepared for the Department of Water Affairs and Forestry, Pretoria, South Africa.
- . 2006. "First Annual Strategic Assessment of the Water Services Sector in South Africa." Report prepared for the Department of Water Affairs and Forestry, Pretoria, South Africa.
- Plummer, Janelle. 2000. *Favourable Policy and Forgotten Contracts: Private Sector Participation in Water and Sanitation Services in Stutterheim, South Africa*. Building Municipal Capacity for Private Sector Participation, GHK Working Paper Series, no. 442 01. London: GHK International.
- Ringskog, Klas, Mary Ellen Hammond, and Alain Locussol. 2006. "The Impact from Management and Lease-Affermage Contracts." Public-Private Infrastructure Advisory Facility and World Bank, Washington, DC. Draft, June.
- SALGA (South African Local Government Association), Department of Water Affairs and Forestry, and Water Research Commission. 2007. "National Water Services Benchmarking Initiative—Promoting Best Practice: Benchmarking Outcomes for 2005/2006." Pretoria, South Africa. Draft 3, May.
- World Bank. 2006. *Approaches to Private Participation in Water Services: A Toolkit*. Washington, DC.

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