

# **Department of Water Affairs and Forestry**

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## **Water Services Reform and Regulation Initiatives in South Africa**

Report on a visit to South Africa

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Prepared by

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## Preface

This report was prepared as part of a broader project to develop a *National strategy for the institutional reform of the water services sector* in South Africa.

This project is lead by the Department of Water Affairs, in co-operation with the Water Services Institutional Reform Task Team (also known as the National Task Team or NTT). The NTT consists of:

- Department of Water Affairs (DWAF);
- Department of Provincial and Local Government (DPLG);
- National Treasury;
- South African Association of Local Government (Salga);
- South African Association of Water Utilities (SAAWU); and
- Co-opted participants.

Professor Langford's visit was organised by Palmer Development Group (PDG), the lead advisors to DWAF for the strategy project.

Professor Langford's visit was co-funded by:

- The Department of Water Affairs (DWAF);
- The City Water Managers Forum; and
- The South African Association of Water Utilities (SAAWU).

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## 1 Introduction

The Palmer Development Group facilitated a visit to South Africa in May/June 2004 by Professor John Langford, an Australian with extensive experience of institutional reform, regulation and benchmarking of water service providers. The Department of Water Affairs and Forestry, the South African Association of Water Utilities and the City Water Managers Forum supported the visit.

The objective of the visit was for Professor Langford to contribute his knowledge and experience of water reform to South African audiences, so that they could learn from the Australian experience and apply relevant lessons to the South African situation. Institutional reform, regulation and benchmarking of water service providers were of particular interest.

During the visit to South Africa Professor Langford gained valuable insight into current reform of the South African water industry. His report sets out strategic lessons from the Australian experience in the context of South Africa.

## 2 Observations about the South African context

### 2.1 National leadership

South Africa has a distinct advantage in having a national Department of Water Affairs to lead the process of water reform. Prepared in collaboration with the South African Association of Water Utilities and the South African Local Government Association, the *Strategic Framework for Water Services* of September 2003 sets out a coherent strategy for institutional reform. A good start has been made, but continuing strong national leadership is required to implement a successful program of reform.

### 2.2 A single regulator of water service provision

The Department of Water Affairs and Forestry has another strategic advantage in that it currently incorporates all the principal regulatory functions, namely:

- allocation of water resources (although aspects of this are to be delegated to catchment management authorities);
- drinking water quality and public health;
- quality of effluent discharges and protection of the water environment; and
- an embryonic economic regulator.

There is an opportunity to create a single water service regulator now that the Department is devolving its activities in bulk and retail water service delivery to focus on policy and regulation. Having a single point of regulation offers an advantage during the learning phase of the reform process before economic regulation is devolved to an independent regulator.

### 2.3 Drinking water quality and public health

The high priority of connecting large sections of the population to at least basic water services is possibly diverting attention from drinking water quality. However, the low profile of drinking water and public health in the Strategic Framework is a surprise.

### 2.4 Integration of water and waste water services

The proposed single or integrated provider of both water supply and sewerage services is a good concept allowing water cycle management, reducing overheads that would be inherent in two organisations servicing the same customers, and creating scale to support required professional skills.

## 2.5 Water for the disadvantaged - ladder of water service standards

The concept of a 'ladder of water service standards' is excellent. Those on the lowest rung of the ladder receive free basic water services. Each rung up the ladder represents increasing service standards for which water users pay according to the standard of service. The top rung on the ladder represents standards of service expected in the developed world for which full cost recovery pricing should apply. The dividends earned from providing services to those on the top of rung of the ladder have the potential to support those lower down.

The concept of a ladder allows targeting of subsidies to those who need them most, and sets up a journey towards full cost recovery as the prosperity of South Africa grows. Even though the journey might seem challengingly long, it is important to start in the right direction.

## 2.6 Municipalities as water service authorities

The political culture, constitution and legislation in South Africa have combined to give municipal government the leading role as water service authorities. Giving municipal government the principal role in water service provision is a high risk strategy because it has the potential to create a large number of small, inefficient and costly service providers: the Japanese and American water industries are classic examples of this risk. Careful management to create cost-effective and efficient service providers is therefore required.

## 2.7 Water boards and bulk water prices

South Africa's water resources, like Australia's, are limited and highly variable requiring construction of extensive bulk water supply systems transporting water over long distances to supply cities, industry and regional communities. Over the past 100 years or so specialised water boards have been formed to provide bulk water supplies. Bulk water providers are appropriate in circumstances where large scale water supply systems are required to service several communities. However, bulk water supply is a monopoly and tensions inevitably arise between bulk suppliers and their retail customers. Therefore bulk water prices should be subject to regulation in the first instance.

## 2.8 Catchment Management Authorities

Catchment management authorities will be established for the 19 water management areas with funding proposed from water resource management charges (and waste management charges). This is excellent in concept but lack of financial resources and skills will need to be overcome. Delegation of water allocation to these catchment management authorities involves risks that need to be managed carefully. Australia has suffered from the diversity of policies and approaches to water allocation, and cannot even have a national discussion of water policy because there is no common national language! Strategic standardisation in the instruments of water allocation, and discipline in keeping water accounts to prevent over allocation, are both required.

## 3 Lessons from the Australian experience

The global winds of economic change, combined with a drought in the early 1980s, necessitated reform of Australia's water industry. Australia has learnt some hard lessons along the way. While these lessons may not be directly applicable to South Africa, they can inform those responsible for developing reforms tailored for South Africa. The Australian experience offers perspectives on:

- central authority versus local autonomy;
- the substantial benefits of reform;
- targeted support for the disadvantaged;
- public versus private service providers;
- national consistency in water allocation policy; and
- the reality that there is no unique institutional model.

### **3.1 Central authority versus local autonomy**

The tension between central authority and local autonomy in the history of Australian water management over the past 150 years has been a dance, backwards and forwards between alternating periods of centralisation and devolution of power to local interests. Each has its weaknesses and dangers. Institutional reform has been most effective during periods of strong central leadership at either the national or State level.

The Council of Australian Governments (COAG) is a council of the Prime Minister, and State Premiers. COAG has agreed to the National Competition Policy as a method of providing national leadership in reforming the Australian economy while allowing local solutions to meet the national objectives. A water reform agenda with milestones defining progress was agreed to in 1994. The States have been rewarded by the national government with substantial financial payments according to their achievement of the reform milestones. Using national grants or subsidies to provide incentives for reform is a strategy that South Africa could consider, although I understand the current arrangements for providing grants to municipalities may constrain options.

### **3.2 Reform has substantial benefits**

Reform of water services provision to create more effective and efficient water services providers has had substantial benefits. In Australia over the 12 years between 1988 and 2000 combined water and waste water charges (per property) have been reduced by 24% in real terms. Operating costs have been reduced by 27% and net interest by 75% in real terms balancing the reduced revenue (prices) and dividends paid back to the governments which own the assets. Reductions in operating costs in real terms of over 50% have been achieved which amount to substantial savings to the community.

### **3.3 Targeted support for the disadvantaged**

Australia does not have the massive backlog in service provision and does not have such a large proportion of disadvantaged people as South Africa. Targeted support for the disadvantaged has proven effective. The wealthy should not benefit from subsidised water prices designed to help the poor!

Those with the ability to pay should do so including making a positive rate of return on the communities' investment - the dividends gained from this return can be used to support the disadvantaged. Do not subsidise the poor through keeping water prices low for everybody.

### **3.4 Public versus private service providers**

The issue of public or private ownership is a distraction in the first instance - good governance and regulatory arrangements are essential to effective and efficient water service provision whether the provider is public or privately owned. Development of effective governance and regulation is therefore a vital initial step in any reform program.

Institutional reform is more effectively implemented while service provision is in public ownership. Once assets are sold or long term concessions are entered into most of the flexibility required for effective institutional reform is lost.

Australian experience demonstrates that public water service providers can be highly efficient and effective providing some basic principles are respected.

### **3.5 National consistency in water allocation policy**

Consistency is needed in water allocation policies. (Australia's lack of a consistent language has hindered effective discussion at the national level.) Accounting for water allocations needs to be consistently disciplined to avoid over-allocation of water (often from pressures applied by local interests) leaving the national government with the costs of remedying the problems.

Over-allocation of water in Australia has been caused by inadequate oversight by a central authority and government, and public scrutiny of administrative allocations, or undue influence of particular local interests.

### 3.6 There is no unique institutional model

Australia is a federation of 6 states and 2 territories. Provision of water services is a state responsibility, and each state has followed its own path of reform resulting in a great diversity of institutional models. Australia provides a good laboratory to study institutional reform.

The most important lesson to be learnt from the Australian experience is that markedly different institutional arrangements can create efficient and effective water service providers. Hunter Water Corporation, the combination of a bulk service provider and three retail service providers in servicing Melbourne, and a municipal service provider in Brisbane are the three most effective water service providers in Australia.

Review of the Australian and international experience of institutional reform reveals a common set of principles that are necessary for creation of efficient and effective water service providers.

This is good news for South Africa because institutional arrangements can be tailored to suit South African conditions. Flexibility to tailor the institutional arrangements to meet the diverse needs across South Africa is also available providing the fundamental principles are respected. These principles are defined in the following section.

## 4 Principles for reform of water services

The following principles have been derived from international experience in institutional and regulatory reform of the urban water industry in Australia, the United Kingdom, the Netherlands, France, Japan and the United States. Each principle should be used as a check point in any evaluation of the likely success of an institutional reform agenda.

It is not the specific institutional structure that is the key to success: it is respect for the following 8 principles that will have the greatest influence on the result.

### Principle 1: Sufficient scale

A water services provider needs to have *sufficient scale* to be efficient and effective. Small service providers lack:

- financial resources to employ skilled managers, professional staff and technicians;
- resources to invest in sophisticated financial and strategic asset management systems; and
- ability to raise sufficient capital funds for investment in essential water service infrastructure.

Typically small water service providers leave a legacy of decaying infrastructure resulting from underpricing and insufficient investment in maintenance and renewal of infrastructure. The networks of water and sewer pipes, which make up the largest component of the investment in water services provision, are particularly prone to neglect because they are buried and unseen, and the consequences of neglect do not become obvious for many years.

### Principle 2: Harmony with water systems

The most significant step in reform of water services providers in the United Kingdom was the creation of 10 large regional water service providers from a multitude of small ones. There is now a regional service provider for each major river basin allowing integration of all activities from source to the tap. South Africa, like Australia, is not well endowed with water resources. Often bulk water systems have to transport water over long distances crossing jurisdictional or even international borders. In these cases a bulk water provider delivering bulk supplies to

several retail service providers, each serving a community of interest, would be more appropriate.

Cities serviced by several water service providers are prone to costly regional sub-optimisation. Sewerage services that rely on gravity are particularly prone to this phenomenon unless the service boundaries are aligned with catchment boundaries. Where this is not possible, a bulk sewerage authority is an option that should be considered.

Institutional reform of water service providers must have regard to the water systems that provide water sources and the sinks for treated waste water.

### **Principle 3: Accountability**

Clearly defined accountabilities are vital to creating efficient and effective water service providers. Water service providers should have an operating licence or contract defining accountabilities. The licence could specify, for example, standards of service and drinking water quality, service provision to disadvantaged groups, and the requirement to implement a strategic asset management plan. Such licences can be subject to periodic audit. In the South African context the operating licence could be between the water service authority and the water service provider. Bulk water boards would most likely require a licence from the national government.

Financial accountability through keeping a comprehensive set of financial accounts for the water services businesses, including an asset register setting out the current replacement values, current cost depreciation, and written down replacement values or equivalents. Ideally a renewal annuity should be calculated from the cash flows necessary to fund renewal of assets as they become unserviceable. While the need to have a comprehensive, rigorous accounting system appears obvious, the public, in particular municipal water service providers, often lack the necessary rigour required to become efficient and effective.

### **Principle 4: Incentives**

Full cost recovery applies the discipline of having to raise sufficient revenue to fund all activities. Prices for services must be set accordingly. While full cost recovery is the ideal for an efficient and effective water service provider, South Africa has such a large group of disadvantaged people that subsidies will be required for decades to provide even basic services.

There are particular risks in providing capital grants to water service providers. Evaluation of investment options is distorted in favour of capital intensive, low operating cost options, which may not be the most economically efficient. Often there is insufficient revenue available to fund adequate maintenance of the assets created by subsidies and they decay leaving a substantial liability for future generations. The waste water industry in the United States is a classic example of this phenomenon!

It is essential that subsidies be clearly identified and exposed to public scrutiny, for example by publication in annual and benchmarking reports. The subsidies to water service providers could be concentrated into a single subsidy bridging the gap between revenue raised from providing services and essential costs. A long term strategy could then be implemented to reduce these annual subsidies by a combination of progressive increases in prices and improvements in efficiency necessitated by the gradual withdrawal of subsidies.

### **Principle 5: Governance**

Good governance is required to create an efficient and effective water service provider. Public water service providers are often governed by representative boards (of management). Such boards often lack the necessary skills to manage a complex business and also can fall into the trap of serving particular local interests and neglect the health of the whole organisation. Replacement of representative boards with skill-based boards is a key feature of corporatising water service providers, that is creating organisations that have the essential features of a private company except that they remain in public ownership. The Netherlands and Australia have used corporatisation to good effect in creating effective and efficient utilities.

## **Principle 6: Regulation**

Provision of water services is a natural monopoly that requires a degree of regulation. The absence of genuine competition reduces the incentive to work hard to improve efficiency. Private ownership of water services infrastructure requires heavy-handed regulation to protect the public interest, and ensure that monopoly rents are not extracted from the community through unnecessarily high prices. There is also a risk that short-term profits will be inflated by delaying maintenance and renewal of the water infrastructure, or by providing a low standard of service. On the other hand higher standards represent an opportunity for private interests to increase profits by bidding up standards of service and passing the higher costs through to the community. Regulators must be vigilant to ensure the most cost-effective outcomes between these extremes.

Providers of bulk water supplies are also a monopoly and prices charged for bulk water and waste water typically control about 50% of the total costs of service provision. Bulk prices should be subject to economic regulation by an arms length or independent economic regulator. Independent price setting helps protect the bulk provider from criticism that it is abusing its monopoly position and also helps ensure a fair distribution of costs between bulk and retail service providers.

Publicly owned water service providers also require regulation to ensure prices reflect the most efficient service delivery costs and that sufficient investment is made in renewing old infrastructure. Publicly owned water service providers are particularly prone to under-investing in renewal to keep service prices low for political reasons. Hopefully public ownership can result in light-handed regulation, although it remains to be seen whether this is possible. Effective economic regulation is a vital component of the institutional structure required to create efficient and effective water service providers.

## **Principle 7: Strategic asset management**

Water services are a capital intensive industry requiring substantial investments in the infrastructure such as in dams, pumps, pipe networks, treatment plants and reservoirs. These assets can be serviceable for very long periods providing they are properly conceived, constructed and maintained. A substantial proportion of the capital investment is driven by regulated standards specifying, for example, drinking water standards, service standards and effluent quality.

A whole-of-lifecycle approach is required in effectively managing the large and complex asset base. The lifecycle starts with policy makers and regulators setting the required standards in consultation with the community. Strategic asset management covers the planning, design, construction, operations, maintenance and renewal of infrastructure assets to develop the most cost-effective balance between capital and operating expenditure, and to optimise the investment in maintenance and renewal. Developing competence in strategic asset management is a vital element in the journey to become an efficient and effective water service provider.

## **Principle 8: Benchmarking performance**

Benchmarking the performance of water service providers and publication of high level performance information such as backlog in services, revenue per service, operating and total cost per service, allows trends in efficiency to be monitored and provides a spur to improved performance through competition by comparison. More detailed benchmarking of activities such as civil engineering maintenance or meter reading, or strategic asset management systems helps identify best practice and the knowledge to improve performance.

## 5 Provision of Water Services by Municipalities

### 5.1 Potential for a large number of small water service providers

The South African Constitution, political culture and legislation support the municipalities taking the substantial responsibility for provision of urban water services. Provision of water services by Municipalities carries a high risk of creating a large number of small municipal service providers that have no hope of becoming efficient and effective.

Institutional models that allow a number of municipalities to have a share in a larger, common water service provider are a critical issue for South Africa. Review of institutional reform in the Netherlands provides a good starting point. The Netherlands reforms are based on not-for-profit companies set up under corporations law applying to private sector companies. The municipalities own shares in the company and appoint a skills-based board of directors. The Municipalities collectively can thereby achieve the necessary scale and skills while keeping the service provider under municipal ownership. The municipalities receive financial benefit through taxing the service provider, although personally I would prefer the payment of a dividend which is more transparent than taxes.

The scale necessary to create viable water services provider is difficult to determine exactly: it is more an art than a science. Some examples could illuminate the question, however. Reforms in the Netherlands over past 30 years progressively amalgamated small municipal service providers into larger units until a minimum of 100,000 services was reached.

Reforms in the Australian State of Victoria progressively reduced the number of water service providers in regional Victoria from 400 to 15 over 20 years, lifting the average number of services per provider from approximately 1000 to 27,000. A minimum annual revenue for combined water and waste water services of some A\$20 million was used as a guideline to define long term viability (A\$1 currently about 5 Rand) which would equate to a minimum of approximately 25,000 services. The smaller service providers still do not measure up.

A minimum of 50,000 services is required to join the Water Services Association of Australia, the industry association representing the major regional and metropolitan service providers.

The minimum scale for a viable South African water service provider should reflect South African conditions. The backlog in service provision, and the number receiving only basic services will be a key feature relevant to South Africa. What is required to create a viable water service business? Key factors to be taken into consideration include:

- revenue;
- potential growth in revenue;
- number of services;
- the backlog in services;
- expenditure on operations administration and maintenance;
- current replacement asset values;
- liabilities attributable to renewal of infrastructure; and the
- potential capital expenditure required to meet demands for services.

An institutional model that facilitated progressive amalgamation of service providers, supported by benchmarking of performance, allows experience to determine when sufficient scale has been reached.

## 5.2 Financial accountability

Financial accountability is crucial for municipal water service providers who often find it difficult, or are unwilling to separate the accounts of the water services businesses from the accounts of the municipality as a whole. Rigorous financial accounts are a precondition to becoming an efficient and effective water service provider.

Municipal water services providers often find it difficult to properly separate the accounts of their water services business from the accounts of the municipality as a whole. The lack of transparency allows the municipality to divert resources required to maintain water infrastructure into other municipal services. Lack of transparency also allows a municipality to keep prices artificially low for a period before the reality of decaying infrastructure becomes obvious. Ring fencing the accounts of municipal water service provision, to create separate financial entities is a minimum precondition to achieve efficiency and effectiveness. Ideally services should be provided by a separate legal entity under municipal ownership.

## 5.3 Incentives

Given the large backlog in service provision, and the lack of local financial resources, subsidies will be a feature of water service provision in South Africa for a long time to come. Setting up the framework for providing subsidies, and examination of the incentives that these subsidies give the service provider, are vital issues. Subsidies targeted at provision of basic water services that give the service provider flexibility in using the subsidies for the optimum combination of capital and operating costs are favoured. This could be provided as a single subsidy that bridges the gap between the service providers' revenues and essential costs.

The *Strategic Framework for Water Services - (2003)* provides a way forward via the 'ladder of opportunity'. Basic water services, the lowest rung on the ladder, are provided free to the disadvantaged. Higher rungs on the ladder represent increased levels of service with the highest rung representing services expected in the developed world. As peoples' circumstances improve they can afford to contribute to the costs of providing higher levels of service and step up the rungs on the ladder. Those on the highest rung should pay the full cost of providing the services including a rate of return on the investment so that a dividend can be paid back to the community. A single annual subsidy (which could be used for both investment in infrastructure and/or operations) could be made available to water service providers so that they can provide services to those on the lower rungs of the ladder. The dividend paid by those on the top rung of the ladder could also be used to fund services for those lower down the ladder. As the economy of South Africa grows, the circumstances of the people should improve and they can move up the ladder reducing the subsidies to water service providers. Even though the journey is long and will take many decades to reach the goal it is essential to start the journey in the right direction.

# 6 Implementation of Water Services Reforms

The following points are made to assist development of strategies for institutional reform in South Africa.

## 6.1 Progressively build knowledge

Investment will have to be made in building knowledge of water service provision in South Africa. Knowledge informs strategy which in turn can lead to more cost-effective achievement of the communities' goals for water services. Knowledge relating to the financial and economic performance of service providers is particularly important.

Requirements for a comprehensive knowledge strategy include:

- balance sheets of assets and liabilities;
- statements of profit and loss;
- asset registers;

- current replacement costs;
- current cost depreciation;
- written down replacement;
- calculation of real rates of return on assets; and
- calculation of renewal annuities that allows calculation of financially sustainable pricing to inform the calculation of subsidies.

Water service provision requires substantial investment in infrastructure that is long lived. Much of this investment is in networks of water or sewer pipes that are buried and hidden from view. While these pipe networks can be relatively robust they require consistent maintenance and renewal, or services will eventually deteriorate requiring massive injections of capital to overcome the backlog. Calculation of a renewal annuity is an effective way in illuminating the trade offs between maintenance, service levels, risks, costs and ultimately the prices of service provision. Renewal annuities are also an effective tool for negotiating with customers and regulators about the level of expenditure required. The use of renewal annuities for regulation of private service providers in the UK is a good example of the value of renewal annuities.

## 6.2 Establish priorities for institutional reform

Institutional reform is a massive challenge and will not succeed unless priorities for reform are decided on. I would suggest starting at both ends of the challenge by:

***Starting to build knowledge of the finances and economic performance of the service providers in the biggest cities***, including the water boards, and implement the first phase of reforms in the cities. The large cities are a vital component of the national economy and have more resources and skills than the smaller municipalities;

***Building capable water service providers in areas where the backlog in services is the greatest and the capacity weakest*** This will almost certainly require application of resources from the national government in a two tier approach involving regional cities and rural areas. Provision of rural water services requires different skills, and approaches from those required in large cities. Costs are higher, and financial resources more limited in rural areas requiring innovation if large backlogs in services provision are to be overcome. Working from both ends simultaneously will address the large economic risks in the cities, and the large backlog of services in rural areas.

***Building capacity in economic regulation in the DWAF*** so that the economic and financial skills can inform the reforms as they progress, and in the first instance regulate bulk water prices.

## 6.3 Gain consensus on institutional options for municipalities

A consensus should be sought on an institutional model or models that allow municipalities to share ownership with neighbouring municipalities of a larger more viable water service provider. Review of the Netherlands model would be a good place to start. Given the important role of municipalities in providing water services, this is a vital task that should be tackled early in the reform process.

## 6.4 National leadership

Institutional reform of water service provision on a scale envisaged in South Africa requires national leadership on strategic issues. Allowing individual municipalities to decide on the best means of service provision would be a recipe for chaos. Achieving a balance between central authority and local autonomy is important to a successful reform program. The 8 principles defined above could be used to define the essential role of the central authority. Local interests can have input to developing options for institutional reform, providing that the fundamental principles are respected.

Development of a 'master plan' setting out a ultimate institutional framework is fraught with difficulty. Such a master plan would be subject to attack from all the vested interests and would generate 'more heat than light'! Institutional reform is an evolutionary process over several decades as the reforms in the Netherlands and Australia have demonstrated.

## 7 Conclusion

The *Strategic Framework for Water Services* is an important first step in the journey of institutional reform.

Maintain the philosophy of targeted subsidies to help the most disadvantaged groups. Customers could be segmented according to their position on the ladder of service. Those on the top rung should be charged full costs including a rate of return on the investment so that a dividend can be paid to provide support for those lower down the ladder.

There is an opportunity to create a single water regulator in DWAF which would streamline the reforms. The regulation of drinking water and public health should be given more emphasis. The skills of the economic regulator could be developed by regulating bulk water prices of major water boards, and supporting the large cities develop water service provision as separate financial entities within the municipalities.

Diversity in institutional arrangements is possible to meet the specific regional requirements providing the fundamental principles of institutional reform outlined above are respected.

The high risks of using municipalities as water service providers should be recognized and the risks managed.

Consensus should be sought on institutional models that allow a number of municipalities to have shares in a common water service provider. To that end I recommend that the International Water Association be invited to facilitate a workshop of knowledgeable people from countries such as the Netherlands, Brisbane (Australia) and Auckland (New Zealand).

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