



Project to Revise the Pricing Strategy for
Water Use Charges and Develop a Funding
Model for Water Infrastructure Development
and Use and a Model for the Establishment
of an Economic Regulator
Inception Report

WP10465

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1 Introduction

1.1 Background

This document serves as an Inception report for the project WP10465: Revision of Pricing Strategy and Development of a Funding Model and an Economic Regulator. As agreed at the inception meeting for this project and other subsequent meetings, the aim of this document is to set out some of the critical issues that must be addressed prior to beginning the project, the key approaches to the project, and the adjusted timeframes. The document will also detail implications of changes to the original scope of the project that have been highlighted as necessary at the inaugural project steering meeting and the work-stream launch meetings.

This project provides an opportunity for DWA to think outside the box in a rapidly changing institutional context and to develop some innovative infrastructure finance models, approaches to water pricing, and ideas around transformational economic regulation. A great deal of work has already been done by DWA and the WRC in the three areas of this project, and the opportunity now exists to think laterally with the existing work being taken as a point of departure.

The Pricing and Economic Regulation Reforms (PERR) project is a strategic project that will enable DWA to have good policies on the pricing of water, cost reflective tariffs for the entire water value chain in South Africa with potential for the poor and a good funding framework for infrastructure development, operations and maintenance. The project has been listed under Outcome 6 as a priority and some of its elements fall within the Minister's performance agreement.

The three main project work-streams and respective outputs are the following:

- Pricing Strategy Review – a revised pricing strategy
- Infrastructure Funding Models – a funding model for water infrastructure development and refurbishment.
- Economic Regulator – recommendation on the establishment of a model for an economic regulator for the entire water value chain.

1.2 Structure and purpose of document

This document has been structured into twelve sections beyond the introductory section, as follows:

Section 2: deals with the context within which this project will be executed, including projects that are likely to have some impact and/or input into this project, and a conceptual model of the water value chain in South Africa and of funding streams in that value chain.

Section 3: gives a conceptual model of the water value chain in South Africa and of funding streams in that value chain.

Section 4: details a number of elements relating to the scope revisions under the existing terms of reference that have emanated from the various meetings of the project management team, the project steering committee and the project work-streams. It outlines the context, scope, tasks and activities of the Infrastructure Funding Models, Pricing Strategy Review and Economic Regulator work-streams under the existing terms of reference. Also covered under this section is the high level approach to capacity building and stakeholder engagement throughout the duration of this project.

Section 5: outlines the needed changes in scope if water services and other matters raised by the member of the various work-streams and PSC that are not covered under the existing terms of reference.

Section 6: assesses the key linkages between the project work-streams and other projects e.g. waste discharge charge system (WDCS) project, the institutional realignment review (IRR) project, establishment of catchment management agencies (CMA) project etc.

Section 7: gives the revised work-plan, assuming that none of the additional task in section 3 are added to the project

Section 8: describes how the management of the project will be executed and quality assurance of project outputs handled

Section 9: is a brief description of the general risks that could impact the project's progress

Section 10: gives a table of deliverables as per activity within each task detailed in the project scope

2 Setting the context

The context of the PERR project is a dynamic (changing) and complex (interconnected) environment that requires viable and sustainable solutions, that balance a number of seemingly inherent tensions, in order to support and catalyse the fundamental social (equity and redress), economic (development and efficiency) and environmental (sustainability) outcomes of government. While this may seem like an insurmountable task, it implies that the project team must fulfil three critical factors for success (as recognised in the ToR):

- Comprehensive and integrated understanding of the South African water sector, and particularly the institutional, regulatory and financial arrangements associated with the management of water resources, the development and operation of infrastructure, and the provision of water services.
- Knowledge and experience of financial, pricing and regulatory models and practice globally, both in the water sector and in related economic infrastructure sectors such as energy and transport.
- Innovative and multi-disciplinary people with the ability to operate effectively as a team to develop pragmatic and creative solutions to challenging problems through an appropriate methodology designed for complex, dynamic and uncertain environments.

2.1 The Macro Context

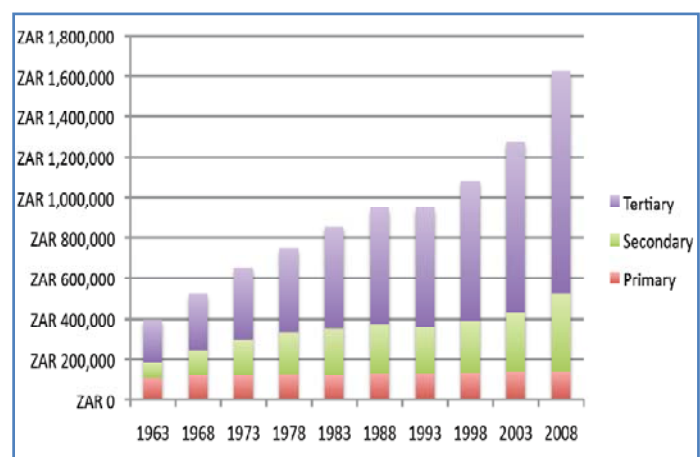
There are a number of important trends in the South African water sector, society and economy that need to be considered in the development of financial and institutional models.

2.1.1 Financial crisis and constraints

The global financial crisis impacted negatively on the South Africa economy, particularly during 2008 and 2009, and reduced the growth in tax revenue available to fund the multiplicity of demands on the fiscus. As a result, government faced a tightening of departmental budgets while the private sector faced reduced profits and job losses. While business confidence is improving, and the economic outlook is strengthening, there continue to be constraints on the financial resources available from government. Despite this, government has remained committed to a large public infrastructure spend with social and economic benefits, which has relevance for the water sector amongst others.

2.1.2 Shifting nature of the South African economy

The structure of the South African economy has changed significantly in the last 60-70 years. In particular, the economic focus has shifted from the production of goods to the provision of services. The share of the primary sector of the economy dropped from 26% in the 1950s to just over 11% in the 1990s, with most of this decline taking place in the '90s. The most remarkable change, however, has been the growth of the tertiary sector, particularly since the 1990s, as illustrated in the figure to the right.

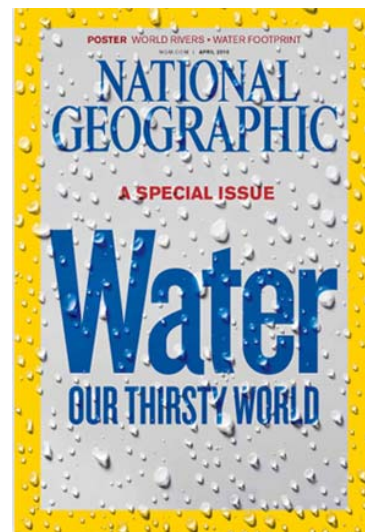


These shifts in the economy mean that while the relative contribution of primary (resource based) sectors to the economy has reduced significantly, agriculture still remains the largest user of water in the country. At the same time, increasing industrialization and the legacy of mining has seen major water quality impacts that have impacted on treatment costs, environmental sustainability and usability

of water for downstream users. Increasing urbanization and poor wastewater treatment by municipalities serving the tertiary economy have contributed to increased municipal water use and pollution of water resources.

2.1.3 Inequalities in the South African society

Despite the economic recovery since 1994, and despite its status as a lower middle income country, South Africa remains a country in which inequality is unacceptably high, as reflected in one of the highest Gini coefficients in the world. This inequality raises challenges in relation to rural development, and economic redress and redistribution, and in the context of water scarcity, issues of appropriate allocation and pricing of a scarce natural resource. While huge strides have been made in providing water for basic domestic purposes to poor South Africans, the ongoing call for access to water for productive purposes, particularly in rural and peri-urban areas has not been adequately addressed.

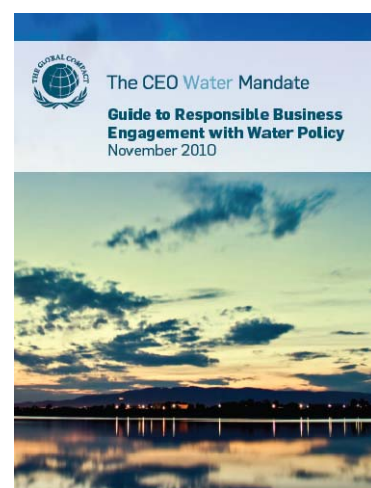


2.1.4 Food, energy, trade and water nexus

As a water-scarce country, South Africa is faced with a number of tradeoffs in the allocation of water between different sectors. Water is a critical input to the production of food and the production of electricity, and the potential trade-off between these two as a result of water scarcity raises the question of the importation of food or electricity instead, linking water security into the food and energy security nexus. This situates the South African water management challenges in the context of regional integration and regional development: looking beyond our borders may enable the more effective resolution of water challenges.

2.1.5 Public awareness of water

Over the past twenty years, public concern over water issues has been rising, both globally and in South Africa. The coverage of water issues in the media makes it clear that sustainable water management is increasingly under public scrutiny, whether driven by public health, business, or environmental concerns. As the public concern over water management rises, there is greater pressure to ensure that effective financial arrangements for the necessary infrastructure and management of the sector. There is also greater pressure to ensure engagement with the public over matters such as the development of the pricing strategy, the financing arrangements for infrastructure, and the arrangements for economic regulation and how this is to protect the interests of the public.

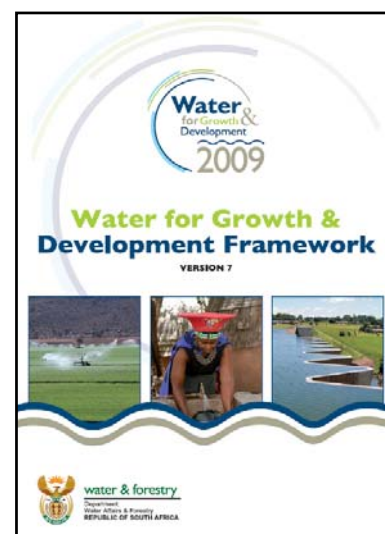


2.1.6 Corporate engagement with water

Just as the public concern over water has increased in recent years, so has concern risen in the private sector about the increases in water-related risk to business. As a result, the corporate sector, globally, has put in place a number of processes to examine water-related risk and how best to mitigate such risk, particularly in developing countries. In the South African context, a number of the large companies, such as SASOL, SABS and Anglo have been engaging actively with the issue of water risk. This interest also comes with challenges, such as the strident call for the introduction of water markets and full economic pricing of water. The increasing interest by the global investor community and financial institutions in water risk, governance and pricing also raises the stakes.

2.1.7 Institutional and legal arrangements and realignment

The on-going institutional realignment process for the water sector is critical to this project, because this either enables or constrains the possible financial models (particularly around infrastructure financing). For example, the arrangements for national water resources infrastructure financing will determine whether revenue (particularly the ROA) on existing schemes can be used only to directly finance betterments and social infrastructure or alternatively to leverage additional capital finance from commercial sources. The importance of this consideration implies the need for a two way dialogue between this project and the institutional realignment process. Equally, the water sector legislation is due to be revised, and the work under this project, particularly in relation to the pricing strategy and the economic regulator must align with and inform proposed amendments to the National Water Act and the Water Research Act.

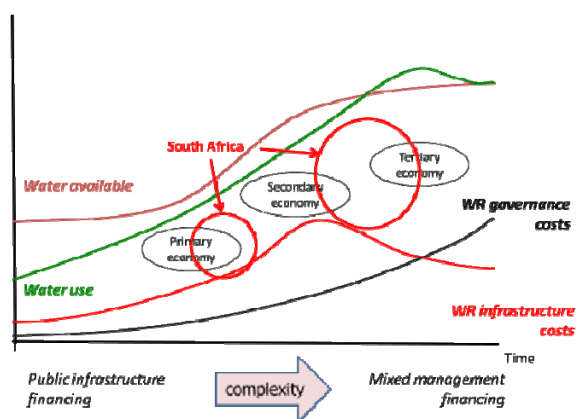


2.1.8 Shifting water resources management paradigm

As water use has shifted over the past decades, so too has the focus on water management shifted. There has been an evolution of water management focus from largely water resources infrastructure development to a balance with water resources governance. Similarly, there has been a shift from funding large infrastructure through public funds to a mixed financing approach where large infrastructure is financing through a mixture of public and off-budget financing. The understanding of this shift is critical to the revision of the pricing strategy and the development of appropriate infrastructure financing models, as well as the role and nature of an economic regulator. This shift is fundamental to the intent of the Water for Growth and Development paradigm.

2.1.9 Nature of the challenge over the next 5-10, and then 20 years

With increasing stress (scarcity and deteriorating water quality), the management of South Africa's water resources will require improved regulation (governance associated with resource protection and use), together with sound management (operation, maintenance and refurbishment) of existing infrastructure, and the development of new infrastructure (particularly for urban development, industrial requirements and rural livelihoods). Financing models need to consider these as distinct functions, with specific imperatives and constraints and potentially requiring separate funding sources, but at the same time approach these as aspects of the whole management imperative.



2.1.10 Municipal service delivery challenges

Finally, there are major challenges at the municipal level in relation to water services delivery. These include poor maintenance and refurbishment of infrastructure resulting in increasing interruptions in supply and high levels of unaccounted for water, poor management of wastewater treatment works, resulting in deteriorating raw water quality in receiving water resources, slow delivery of sanitation services, and unaffordable technology choices in some areas. These challenges are compounded by inadequate cost recovery in the water services sector. Despite significant funding of water services

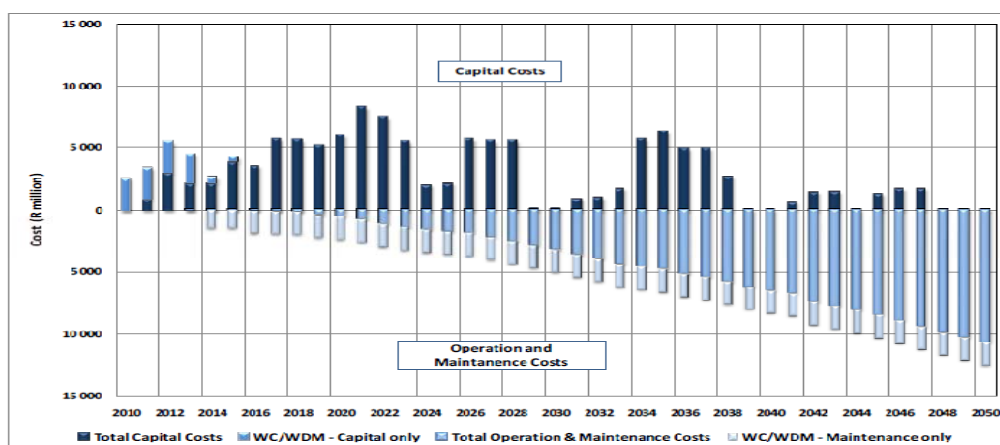
through, inter alia, the equitable share and MIG, there is considerable evidence that a very low proportion of the equitable share is actually spent on water services. In addition, billing and cost recovery are generally poor, with some areas in essence not being billed at all. This has the result that daily operations and longer terms maintenance, in particular, are significantly under-funded.

The results of poor municipal water management are demands for increased quantities of water and decreasing raw water quality, both of which have major implications for water resources management, with associated financial and regulatory implications.

2.2 Water Resources Infrastructure Financing

2.2.1 Inadequate recovery for depreciation and refurbishments

The current general under-recovery of funds for depreciation and refurbishment (in all regions other than Western Cape and Gauteng), together with inadequate ring-fencing of budgets, poses a significant challenge to infrastructure management and has contributed to the significant R10 billion refurbishment backlog. The increased operation and maintenance budget requirements of the proposed infrastructure (see following figure) further highlights this issue. The long term resilience of the South African water economy and society depends upon functioning infrastructure, which requires rectification of this challenge.



DWA water resources infrastructure costs

2.2.2 Projected infrastructure development needs

The above figure also indicates that in excess of R60 billion will be required for water resources infrastructure development over the next 20 years. The delays in decision making around infrastructure development in many parts of South Africa (particularly for Durban, Gauteng and Western Cape) have imposed significant risk on the country over the next 5 to 10 years. Innovative financial and institutional models will be required to ensure that this situation is not repeated into the future. These models will also need to take into account the fiscal constraints that the country is facing. A further important consequence of this is that water conservation/demand management measures are necessary to close the supply gap in the short to medium term, which implies that financing of WC/DM measures needs to be considered in financing water resources reconciliation.

2.2.3 Demand management investment

As has been mentioned above, the financing of water conservation and demand management is a critical element of sustainable water resources management in the country. While some WCWDM

initiatives are relatively low cost, others, such as the refurbishment of municipal infrastructure and the lining of irrigation canals, require significant capital outlay. The current demand driven WCDM funding approach is not working well and the model for infrastructure funding should consider the financing models for treating WCWDM as infrastructure-related augmentation.

2.2.4 **Water resources infrastructure for water quality management**

In addition to infrastructure for augmentation, there are major challenges in relation to managing water quality, some of which require infrastructure based solutions. This is particularly true in relation to the management of acid mine drainage. The funding of infrastructure and the pricing strategy will need to encompass these requirements. A waste discharge pricing strategy has already been developed, but will need revision and alignment with the financing model and the revised pricing strategy. The economic regulator will also have to be able to deal with water quality related financing issues.

2.2.5 **Holistic reconciliation approach**

Going forward, an integrated approach to reconciliation of supply and demand will be required in South Africa that takes account of measures to control urban and industrial demand, consider productivity and efficiency gains in agriculture and adopt innovative supply options together with more traditional large infrastructure systems. This is the key message behind the 2030 WRG cost curves and underlies the approach to the recent DWA reconciliation strategies. A possible conclusion of this management recognition is that the financing models must also engage and be flexible enough to enable more innovative solutions.

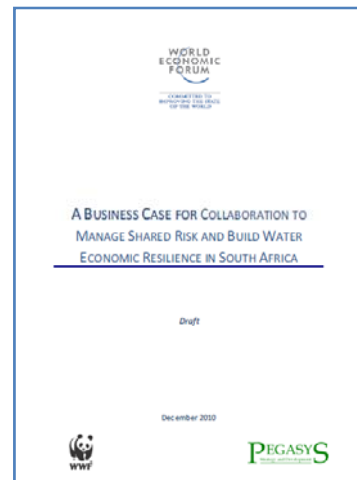
2.2.6 **Balancing equity, development and environment**

As has been mentioned, South Africa is one of the most unequal societies in the world, with extremely high levels of poverty. There is a pressing need to create decent jobs, and to eradicate poverty. This should not be done, however, in an environmentally unsustainable way. Thus the financial model and the economic regulation must be sufficiently nuanced to balance a number of different drivers, particularly the need to achieve social equity and redress, the need for economic development, and the need to protect the aquatic environment. Balancing these three factors will support the Constitutional requirement for ensuring both environmental protection and socially justifiable economic development. The pricing strategy and the economic regulator must address all three of these elements.

2.2.7 **Challenges of the water services supply**

While the norms and standards for water services tariff determination are constitutionally, legally and institutionally distinct from raw water pricing, there are considerable interfaces and opportunities to align funding and revenue sources for these two areas. Importantly, the majority of the existing water resources infrastructure revenue is billed from water services authorities (and ultimately their customers), while most of the future water resources infrastructure development will be for municipal and industrial users. Thus ensuring alignment is critical both for water services viability and for the sustainable financing of water resources infrastructure in South Africa.

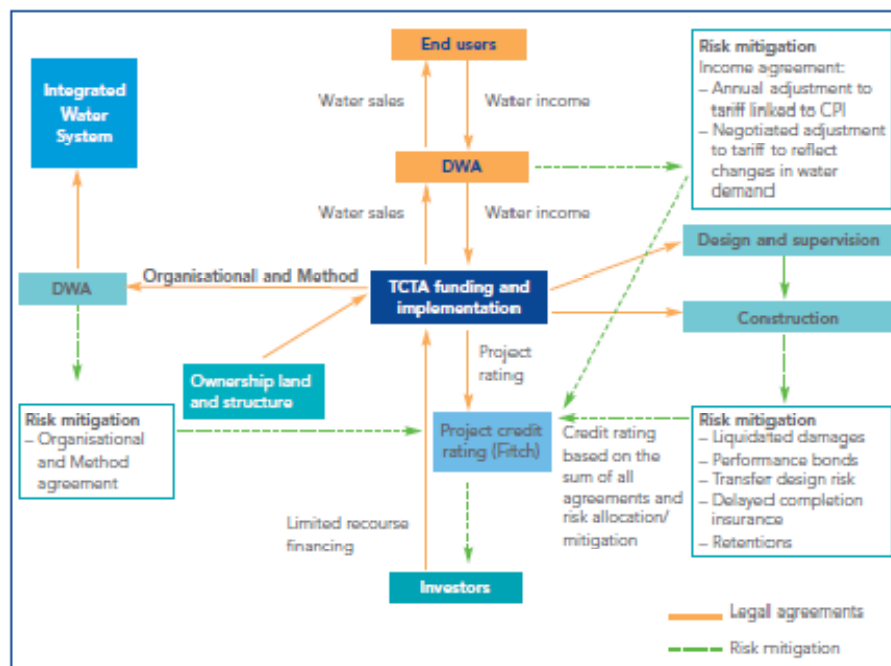
Failures in municipal water services billing and revenue generation are an increasing risk area for water boards, catchment management agencies, and DWA. In 2010 Minister Sonjica tabled in Parliament that the arrears on municipal bulk water payments to DWA was R1 029 m in August 2010. In December 2010 the arrears due from municipalities to water boards amounted to R934 million. These figures show the



critical need for effective economic regulation to support infrastructure financing, including the need for effective sanctions. They highlight the risk factors that must be taken into account in financing infrastructure and in determining raw water prices.

2.2.8 Institutional uncertainty and off-budget financing

Off-budget financial models require appropriate institutional vehicles (such as the TCTA) to access commercial sources of finance. Currently under consideration in the water sector is the appropriate institutional arrangements to manage and develop the national water resources infrastructure, as well as the role and number of water boards. This institutional uncertainty poses some challenges in developing an optimal model for the financing of water resources because models to leverage the existing infrastructure and associated cash flow to access non-project bound finance, requires the institutional ring-fencing of these assets.



The resolution of the institutional arrangements is particularly important in developing appropriate models for off-budget financing of infrastructure.

2.2.9 The nature of risk

There are a number of risk areas that must be considered in the development of infrastructure financing models. These include payment and revenue risks; institutional risks due to institutional uncertainty; and longer-term system risks arising from changing climate-hydrological and development-economic conditions. Understanding of exchange rate and financial market risks is fundamental to the critical evaluation of the exposure that different models impose on the South African government.

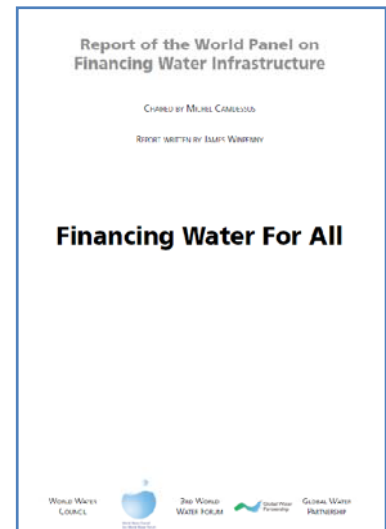
2.3 Raw Water Pricing

The National Water Act states that “The achievement of social equity is one of the considerations in setting differentiated charges. Water use charges are to be used to fund the direct and related costs of water resource management, development and use, and may also be used to achieve an equitable and efficient allocation of water. In addition, they may also be used to ensure compliance with prescribed standards and water management practices according to the user pays and polluter pays principles. Water use charges will be used as a means of encouraging reduction in waste, and provision is made for incentives for effective and efficient water use.” Some of these elements are unpacked further below.

2.3.1 Principles of pricing of infrastructure, governance and behaviour change

There are a number of sources of funding that can be used for the management of water resources and the development, operation and management of water resources infrastructure. As has been well developed in the international literature, these include the three “T”s – taxes, tariffs and transfers.

- Taxes supply revenue to the national fiscus, from which parliamentary appropriations allocate funds to national, provincial and local government in order to implement their mandate and to achieve the government priorities. Targeted levies and environmental taxes also provide incentive or disincentive to drive behaviour change around issues such as water efficiency and waste discharge.
- Tariffs, on the other hand, are specific sectoral charges imposed on water users to finance specific services from which those users benefit, including, where appropriate, the costs of off-budget financing for infrastructure. The public finance theory distinction between tariffs for services such as water supply and user charges for functions that have private and public benefit must be recognised.
- Transfers include funding from external sources such as international donor aid, but within this domain the appropriate and targeted use of subsidies need to be considered to achieve equitable and efficient outcomes where markets fail.



The development of a pricing strategy and a funding model for infrastructure development should take all of these into account so that optimal financing models can be developed as and when required and so that tariffs can be determined appropriately. The pricing strategy should also take into account the opportunities for influencing user behaviour through levies. The challenge, in this regard, is often to set charges in a way that achieve a number of different objectives, such as water use efficiency, cost recovery, social equity, institutional viability and sustainable economic development. This challenge is compounded by the fact that raw water prices are administered, rather than market driven. Because of the nature of administered prices, and in order to protect the interests of both the water user and the state it is important to have effective economic regulation of the water value chain.

2.3.2 Institutional transition, viability and self-sufficiency

As has been mentioned in the previous section, the water sector is in a period of significant institutional change. After a period of stasis, there is increasing momentum towards the establishment of CMAs, albeit a reduced number, and there would appear to be some movement towards the establishment of a national entity to manage, operate and develop national water resources infrastructure. At the same time, there are discussions around the most appropriate institutional arrangements for the management of regional bulk water services infrastructure.

The three Ts must be utilised to ensure effective funding of the establishment of and transition to the new institutional arrangements, to ensure long-term financial viability for these institutions. Such financial viability does not necessarily equate to full self-sufficiency, and in some areas institutions may need long term state support to be fully viable. Resolution of these principles is critical to the development of a relevant pricing strategy for South Africa.

2.3.3 Equity, access and redress

A critical element of the South African landscape is the need for equity, access and redress, generally, but also specifically in the water sector. While the provision of infrastructure and the allocation of water are critical in achieving these, financing, pricing and regulation are also critical elements in achieving

these. The financing arrangements for infrastructure must enable the provision of affordable and appropriate infrastructure to address rural development and equity needs, whether such infrastructure is large, medium or small in size. At the same time, the pricing strategy must respond to the equity driver in ensuring affordable charges and tariffs to resource poor water users. This must be balanced with the need for sufficient revenue generation and the use of state funds for transparent and targeted subsidies.

2.3.4 **Agricultural pricing and affordability**

A particular challenge in developing a pricing strategy is dealing with pricing for agricultural water use. A number of challenges can be identified in this regard:

- The agricultural sector is the largest water user in the country, but only contributes around 2.5% to GDP. This means that the economic value of the water per cubic metre is considerably lower than the equivalent value of water used in industry. None the less, agriculture contributes significantly to rural employment;
- There are a number of resource poor farmers in the agricultural sector that need appropriate financial support in order to develop into more commercial farmers. Some of this support may come through the pricing strategy and infrastructure financing arrangements;
- Currently charges applied to neighbouring farmers may differ by a factor of 10, depending upon the scheme from which they obtain water. This unevenness needs to be addressed in the evaluation of agricultural pricing.
- The agricultural sector is extremely vulnerable to the inter-annual variability of the South African climate, facing frequent floods and droughts. This means that the water use by farmers varies significantly from year to year, depending on rainfall and temperature, and also means that there are years in which farmers have their water allocation reduced by the state.
- As the largest water use sector in the country, it is a natural target for improving water use efficiency.

All of these issues have implications for how one determines appropriate tariffs for the agricultural sector, balancing the different drivers of affordability, cost recovery, equity and water use efficiency.

2.3.5 **Pricing and efficiency**

One of the elements of water pricing is to ensure efficient water use. In this regard, there are two different aspects to efficiency: economic water use efficiency and technical or physical water use efficiency. Economic water use efficiency aims to ensure the highest economic value derived from water use and typically relates to allocation, while technical/physical water use aims to achieve the greatest productivity per unit of water and typically relates to technology and operations. Achieving the one does not necessarily achieve the other. The pricing strategy approach should be clear on how to achieve either or both of these.

2.3.6 **Waste water discharge**

Water quality deterioration is increasingly being recognised as a major problem in South Africa, particularly associated with acid mine drainage and municipal waste water. Both of these require significant infrastructure, with associated capital and operating costs, but also provide opportunities for water supply. Again, the funding models may need to consider alignment of supply and waste water discharge pricing, as implied by the proposed WDCS mitigation charge.

2.3.7 Water markets and regulation

The National Water Act allows for the trading of water in South Africa, and temporary and permanent trading takes place both within and between water use sectors. This trading is enabled through the Department of Water Affairs, but currently there is no regulation of trading prices or possibilities for water banking, and therefore, the opportunity to use trading as a mechanism for generating funds for the reallocation of water to meet redress and environmental outcomes if not being leveraged.

Water markets provide an opportunity to address issues of both physical and economic efficiency, while also offering opportunities for reallocation of water. To achieve these without perverse outcomes, water markets also require appropriate information, regulation and control.

2.4 Economic Regulation

2.4.1 Establishment of the Economic Regulator

With the planned establishment of an economic regulator, a unified model of the entire water pricing and tariff chain is required, in order to conceptually and operationally support the regulator to consider raw water, bulk or potable water charges / tariffs along this supply chain. A similar model may be necessary to consider the waste discharge chain of collection (trade effluent/sewage), treatment (bulk) and (waste) discharge. The South African water value chain poses particular challenges that must be addressed when considering the economic regulator.

2.4.2 Public sector operators and split mandates

The first of these is that there is limited private sector involvement in the provision of water services. The bulk of water services are provided by municipalities under a constitutional mandate which must be taken into account in developing the mandate of the regulator. Equally, the issue of possible sanctions must take into account the public nature of services provision. Water resources management falls almost entirely within the ambit of the public sector, but falls under national government rather than local government, thus requiring regulation of a different suite of institutions from water services.

2.4.3 Economic regulatory objectives

The second challenge is to be clear on the scope of the regulator, and the objectives of regulation in the South African context. Economic regulation frequently includes not only the regulation of water pricing, but regulation of standards as well, particularly in relation to the provision of water services. This is necessary because the type of services provided has implications for funding and pricing requirements, and the issue of financial viability. The transformative and developmental requirements relating to the South Africa social and economic landscape must also form a key objective for the regulator. In addition, one of the questions that must be examined in relation to an economic regulator is where regulation of institutional governance e.g. of CMAs, the TCTA/National Entity and Water Boards will take place, and how this will link to economic regulation.

2.4.4 Involvement of non-water industry private sector

A third challenge that is emerging is the provision, in some areas, of water to municipalities by the non-water industry private sector. In particular, in some areas mines or major industries are providing potable water to municipalities arising from the treatment of their effluent. With increasing water scarcity and increasing pressure on water pollution, this option may well increase in future. This is an area where regulation and risk assessment currently appears to be weak, and where some investigation of the role of an economic regulator may be necessary.

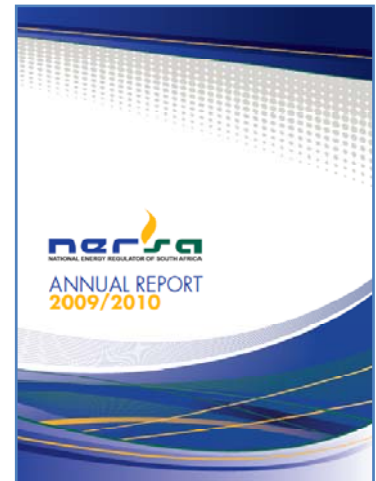
2.4.5 Establishment of the Economic Regulator

A fourth challenge is designing appropriate economic regulation arrangements in the face of the institutional change underway in the sector. In this regard it is important that the changes in the local government sector are also taken on board. The Department of Local Government and Traditional Affairs is currently reconsidering the issue of local government powers and functions with the intention that powers and functions must, in future, be aligned with capacity, including financial capacity of the municipality. To support this, the Monitoring, Support and Intervention Bill is being prepared that will stress the crucial role of provincial and national government in assisting municipalities to be more effective.

2.4.6 International and South African regulatory experience

In addressing these issues, it is important to draw on international experience, not only to determine the possible functions and mandate of a regulator, but also in determining how best to move from the current context to a future desired scenario. International experience currently indicates that an incremental transition to an independent regulator may be more effective than a once-off big-bang approach.

In considering the international experience it is particularly important to look at the experience in developing and middle income countries, countries with high levels of inequality, and countries with primarily public sector water delivery, in order to ensure that the lessons learned are appropriate to the South African context.



Lessons should also be drawn from the experience of regulatory bodies in South Africa, such as NERSA and ICASA, recognising that regulation of water is different to regulation of energy and communications, but also recognising that there are similar contexts and challenges across these sectors in South Africa. Underlying all of this is the need to recognise the specific nature of water linked to local resources, with the properties of a social and economic good, and with strong political dimensions.

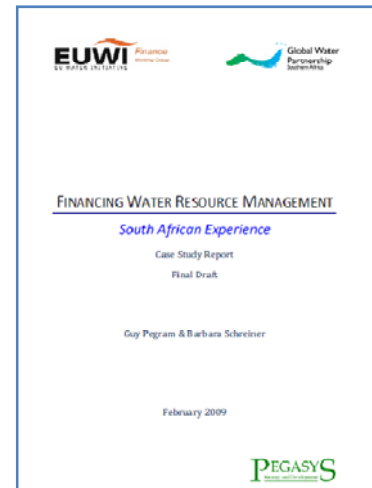
2.5 Final considerations

In summary of this context, it is worth considering the conclusions of a paper written by two of the project team for the 2010 OECD review of water resources financing. These provide a useful reference in thinking about raw water financing in South Africa.

- *Pro-poor water resources management requires investment by the state in local infrastructure to support rural development, which in reality will be largely focused on agriculture. Requiring the formal economy to pay the full financial costs of water infrastructure releases state resources to focus on those communities that cannot afford to pay for the full costs of this investment.*
- *Commercial funding of economically-driven infrastructure provides an important mechanism to optimally use state resources. However, the need for long-term project supply agreements to be signed by economic users as a condition for funding, poses challenges in basins with multiple, changing users or unidentified future users, even where a compelling case can be made for economic development.*
- *The increasing management requirements of basin complexity or new policy imperatives require greater expenditure by the fiscus and/or revenue from water users. The temptation to develop and implement the perfect instrument across all areas (assuming funding from users) should be resisted.*

Rather a gradual, prioritised and sequential approach is more appropriate, with scaling-up as human, financial and information resource requirements become available.

- *Cost-recovery from users for governance functions provides an important mechanism for financing the increasing water resources management requirements in highly developed-utilised basins. However, users tend to resist additional charges, except where the value-benefit of these charges is apparent, the collection-disbursement is transparent and/or the information-billing systems are effective, so implementation needs to address these issues in a coordinated manner.*
- *While there are a multitude of potential financial mechanisms and instruments that may be used to collect revenue and/or create incentives for behaviour change, these need to be designed as a coherent package that achieve national/basin water resources management goals, considering the challenges and opportunities provided by the country's history and current situation.*



3 Describing the Value Chain

3.1 Context

In terms of the overall context, there are a number of significant developments in the water and related sectors that are of importance in how this project is conceptualised. Some of these are highlighted briefly here, while others are raised specifically in relation to each of the three streams of the project.

- DWA is driving an ***institutional realignment*** project, which is looking at the optimal institutional arrangements in the water sector. The decisions arising from the institutional realignment project have implications for the pricing strategy, the nature of the economic regulator, and the funding model. The decisions of particular importance include the institutional arrangements in the short and medium term for the management of the national water resources infrastructure currently falling within the responsibility of DWA. While there are some outstanding issues, there is increasing clarity around the institutional arrangements in the water sector.
- The decision by the Minister to ***establish nine CMAs*** within the next two to three years will also have impacts on the pricing strategy, as the real costs of managing water resources will become more transparent and evident through this business operating model.
- There is a national debate on whether there should be ***one economic regulator*** for all infrastructure sectors, or whether each sector should have a separate economic regulator.
- The Department of Co-operative Government and Traditional Affairs is establishing a ***Municipal Infrastructure Support Agency*** which may have implications for funding models for municipal infrastructure in particular.

A further element that is important in contextualising the project is understanding the water value chain, the financial flows in the value chain, and positioning the various pieces of work within that value chain. This is addressed in the following section.

3.2 Preliminary conceptual model for the water sector

In understanding the financing of water management and development, it is important to formulate a conceptual picture of the entire “water business” at all stages of the value chain. This involves the “products” of water management, the related water flows, the infrastructure and regulatory instruments to manage this flow, the institutions that are responsible for these instruments and finally the financial flows that enable these institutions to perform their development and operational functions. While it is tempting to try and put all of these aspects in one picture, providing multiple pictures through different lenses can assist in developing the entire conceptual model. The following provides an initial perspective of this conceptual model, noting that it will be refined, modified and reshaped as the project continues.

Figure 1 is based on the idea that there are fundamentally only three products of water management, and that these link the range of water institutions with the range of clients, namely:

- *raw water*, available for agricultural, industrial, mining, power generation, and household water users;
- *potable water* for domestic, commercial, institutional and industrial consumers provided at point of use, as well as removal of waste water from the point of use; and

- *ecosystems good and services*, related to the sustainable functioning of the aquatic environment (including biodiversity), providing attenuation, assimilation and instream water use.

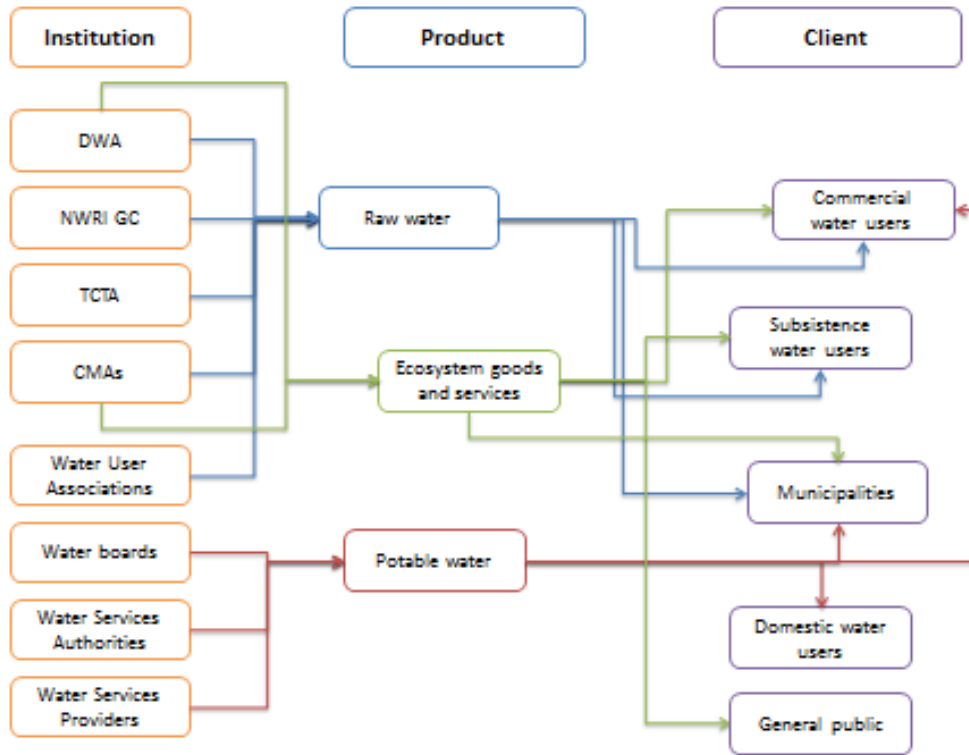


Figure 1: Institutions, products and clients for water management

Figure 2 builds on this by distinguishing four main domains within which water-related management takes place, namely:

- ✚ *catchment* (terrestrial land use and ecosystems) which govern the hydrological cycle and the flow and quality of water from precipitation into evapotranspiration, runoff or seepage and then ultimately into water resources;
- ✚ *water resources* (aquatic ecological and infrastructure systems) within which water may be used, from which water is provided for consumptive use of into which waste is disposed;
- ✚ *bulk water services* (water supply and waste water collection and treatment infrastructure) between the water resources and water services reticulation systems; and
- ✚ *water services* (supply distribution and sewage collection infrastructure) providing services to individual municipal customers.

It is important to recognize that this is a closed value chain in that a portion of water supplied returns directly to the water resource (usually with waste). It is further important to distinguish the natural ecosystem infrastructure in the aquatic (and terrestrial) environment that provides waste assimilation and flow attenuation services, from the more traditional built infrastructure. Finally, while they are not explicitly highlighted in this figure, non-conventional infrastructure may be linked to the supply and waste water infrastructure chain, such as desalination between water resources and bulk infrastructure, water demand management in the bulk and reticulation infrastructure, and waste water recycling and

AMD neutralization in the bulk waste water collection and treatment infrastructure (with possible provision to other water users or municipal systems).

Different types of water users and consumers may be identified along this value chain, from forestry intercepting rainfall in the catchment, through environmental requirements in the water resources, to agricultural and bulk industrial users from the water resource (or bulk systems) and municipal consumers provided with water services.

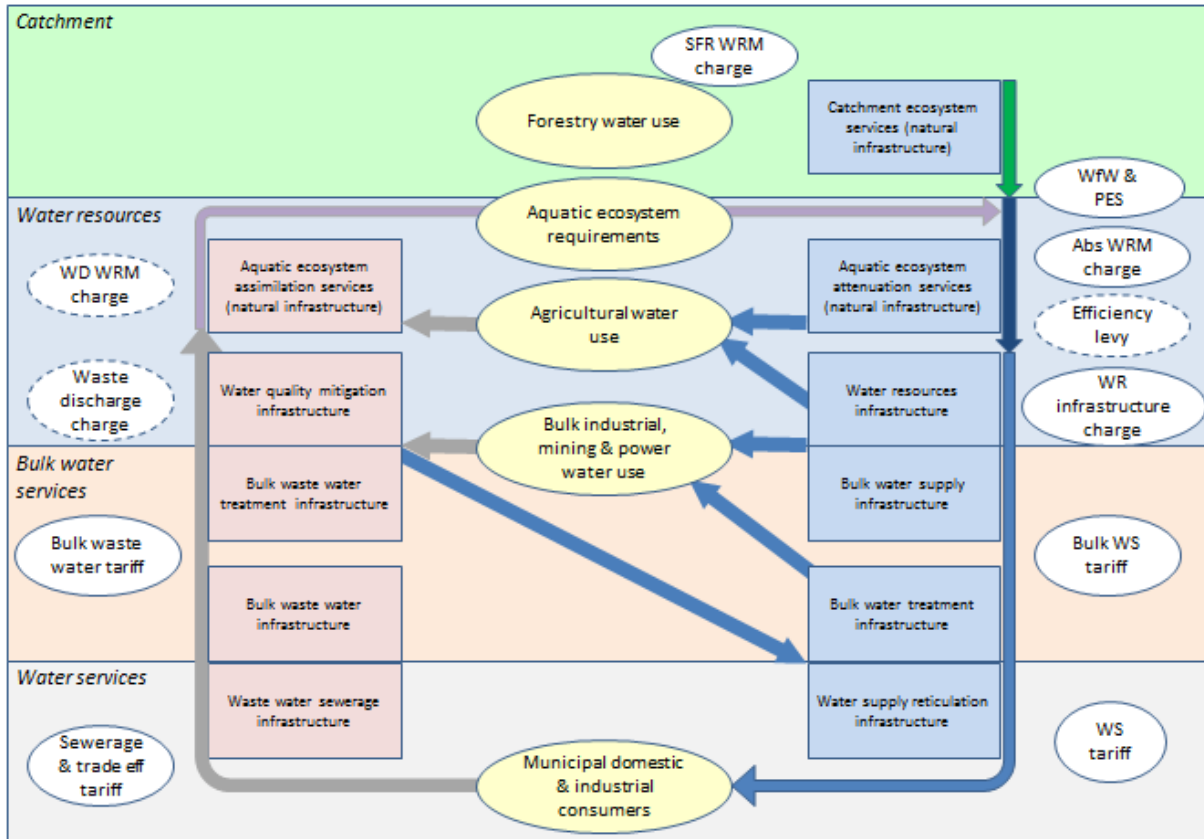


Figure 2: Water flows and infrastructure

Finally, various types of charges and tariffs can be linked to this cycle and therefore apply to the water users / consumers obtaining water from different stages in the value chain (dotted lines indicate those charges or levies that have not yet been implemented). This includes:

- *Water resources management (WRM) charges* to recover water resources management costs from:
 - streamflow reduction activities in the catchment,
 - abstraction (and storage) related users from the water resource, or
 - discharge related water users into the water resource.
- *Payment for environmental service (PES) schemes* (including Working for Water) in which downstream beneficiaries contribute to the cost of ecosystem protection (or rehabilitation) in upstream aquatic or terrestrial environments (not generally applied).
- *Water efficiency levy* to incentivise more efficient use of water resources in stressed catchments (not yet developed).
- *Water resources infrastructure charges* to cover the costs of infrastructure development and operation, for supply augmentation (and distribution for non-municipal/water services schemes).

- *Waste discharge charges* to transfer the costs of water quality impacts to dischargers, through:
 - Enabling mitigation interventions through a cost recovery charge,
 - Dis-incentivising waste discharge through imposition of a levy.
- *Bulk and water services tariffs* associated with the costs of infrastructure and service provision in the supply and treatment of potable water to consumers.
- *Sewerage, trade effluent and bulk treatment tariffs* associated with the collection and treatment of waste water from consumers.

Figure 3 then overlays the responsibilities of the key generic water institutions onto this framework, with catchment management agencies (CMA) having responsibility around the water resources, natural infrastructure, its regulation and use, DWA national water resources infrastructure (NWRI) being responsible for water resource infrastructure, bulk water services providers (BWSP) bridging the water resources and bulk infrastructure, and water service providers (WSP) bridging bulk and reticulation water services.

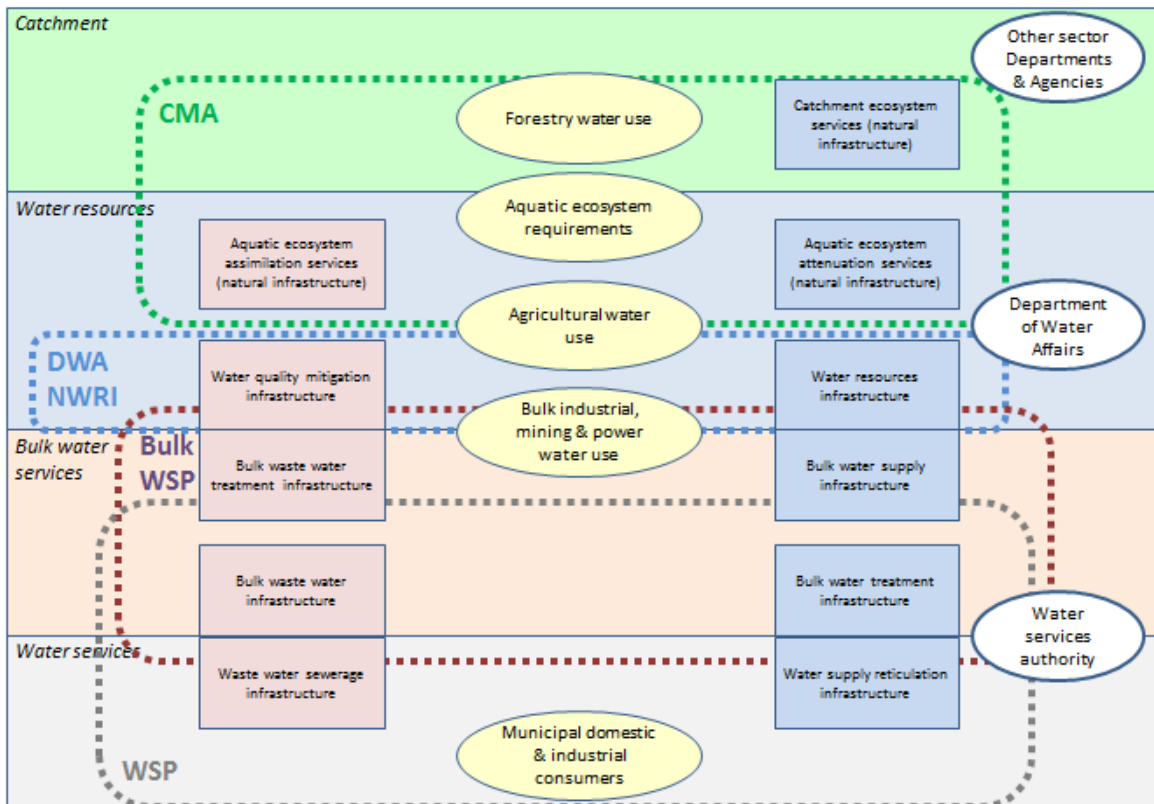


Figure 3: Institutional responsibilities related to water management and infrastructure operations

It should also be noted that local government as water services authority has mandate over water services, whereas DWA has mandate over water resources and regulatory oversight on water services. On the other hand other sector and line-function departments have primary mandate over land use and activities in the catchment.

Figure 4 outlines a generic framework for funding of infrastructure (or any other management intervention) by these institutions. Ultimately, there are only two sources of funds for water infrastructure or management:

- Taxation, generally (or possibly targeted by levies) through the fiscus (national revenue fund), or more specifically through municipal rates.
- Tariffs or charges, to recover the costs of infrastructure or services provided in supply water or treating waste water.

All other sources of funding, such as debt (or equity) provide mechanisms to (i) manage cash flow by deferring repayment, (ii) manage balance sheets by shifting liabilities, or (iii) share risk (and return). All of these must be paid back at some stage through tax revenue or charges, typically at a premium reflecting the risk and cost of capital.

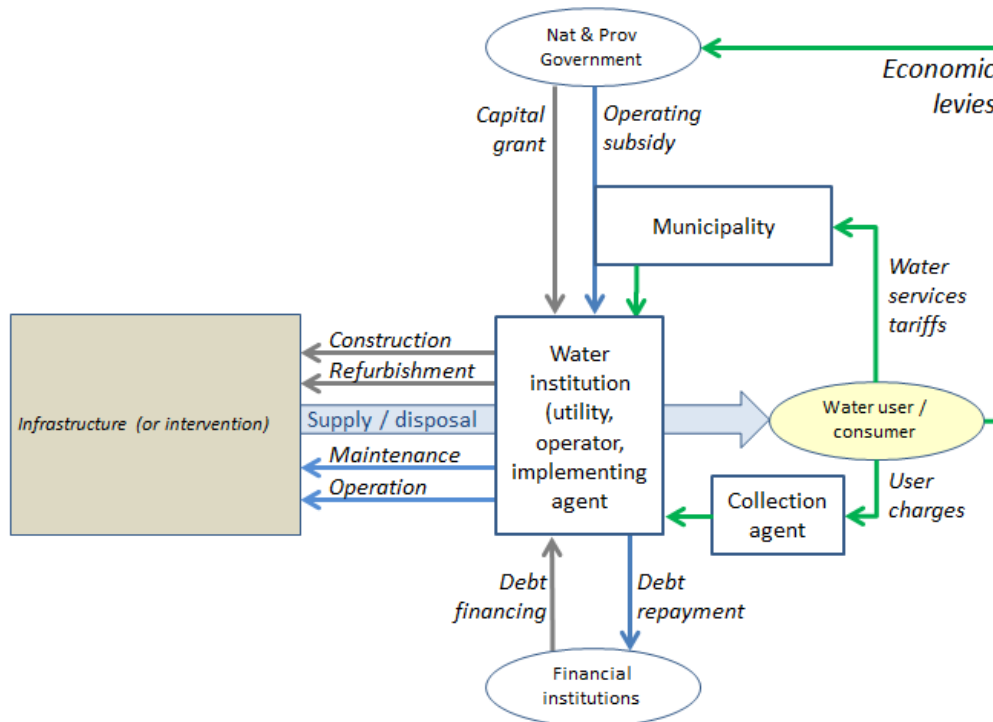


Figure 4: Financial flows for infrastructure development and operation

In Figure 4, the grey lines reflect capital financial flows required to develop, improve, refurbish or rehabilitate the infrastructure. This capital may come from national (or provincial government grants), debt (or equity) from (private or public) financial institutions, or financial reserves (or own sources) from the water institution itself. Where the water institution is also the municipality as water services provider, this may be from accumulated capital reserves (not linked to water services).

The blue lines represent ongoing financial flows required to operate and maintain the infrastructure (intervention), repay any debt (or returns) or possibly build a reserve in the water institution (for future interventions). The green lines represent the payment by water users or water services consumers in return for water supplied or waste water discharged.

It is worth noting that any economic levies that do not constitute cost recovery (such as the waste discharge incentive charge or a possible efficiency levy) are typically returned to the national revenue fund, even if they are implicitly earmarked and returned through the budget process (grant or subsidy) for local intervention.

Figure 5 presents a preliminary attempt to synthesise the preceding aspects into a coherent structure to guide the development of the conceptual financial model. It follows the four layers that are required:

- The reconciliation of *water availability, requirements and use* to achieve broader political, social, economic and environmental imperatives drives and therefore underlies the entire structure (referring back to the three key products of water management).
- The development, operation and management of *water infrastructure* (in its broadest sense) to enable this use and management of water along the entire value chain.
- The *water Institutions* that are responsible for the management, development and operation of this water value chain (as opposed to the oversight and regulation thereof), including project implementing agents (IA), special purpose vehicles (SPV) and public-private partnerships (PPP).
- The sources of capital and operating finance to resource these institutions to perform their management, development and operating costs, distinguishing recovery of tariffs and charges from access to government grants and subsidies, supported by commercial investments.

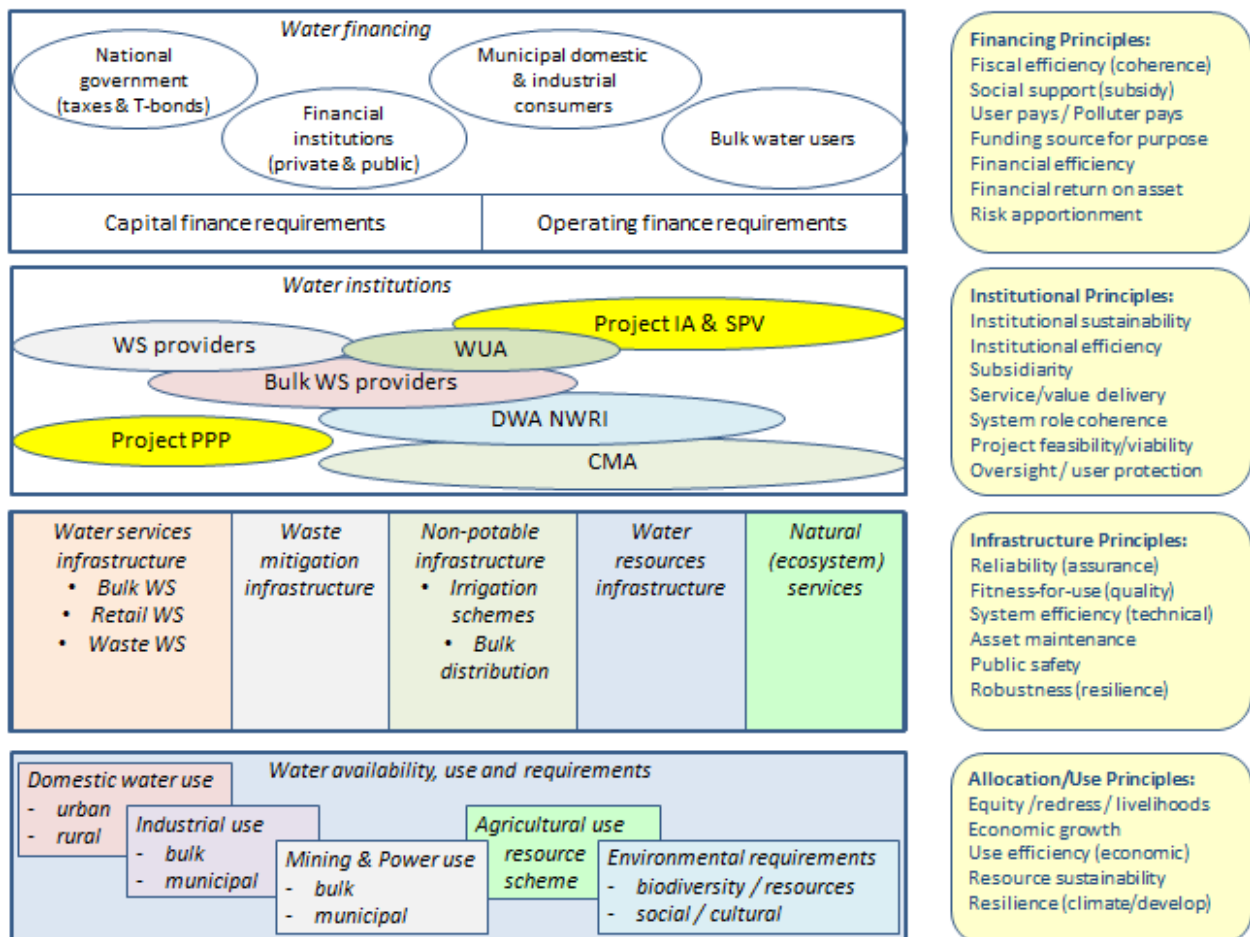


Figure 5: Elements of the conceptual financial model

This layering also enables a more nuanced development of principles and drivers for management of the water value chain through to the financing thereof. These are developed in more detail in the supporting work-stream review documents developed as part of the Inception Phase. However, at a high level, evaluation of the financing of water should reflect this layering.

Firstly, the allocation and use of water should be driven by the broad Constitutional and policy principles related to equity and redress (including promoting livelihoods), economic growth, employment and standards of living, water use efficiency (in using water effectively and for optimal social benefit), ensuring sustainable functioning of the water resource and associated ecosystems and considering resilience to climate variability and development pathways.

Secondly, infrastructure should be driven by principles relating to reliability and fitness-for-use of supply, system efficiency in design and operation with effective asset maintenance to optimise system functioning (and avoid losses), ensuring public safety and providing for robustness to changing climate and development circumstances.

Water institutions should be driven by institutional sustainability and efficiency (in design), linked to coherence in institutional role (mandate) definitions, subsidiarity (performing functions at the lowest possible level) and ensuring value added service delivery to users, consumers and beneficiaries, constructing feasible and viable projects, and effective oversight of operational institutions (including protection of customers and users in terms of charges and service quality).

Finally, water financing needs to balance the needs for fiscal efficiency (in allocation from national revenue) and social support (subsidies and grants), with the concept of user payment for services and appropriate and efficient access to commercial finance for economic infrastructure, the appropriate sharing and apportionment of risk against capital with an acceptable return on investment (or assets).

All of these principles need to be refined and unpacked into a coherent suite of overarching principles, together with specific operational principles related to the funding models, water pricing and economic regulator work-streams. Following this elaboration, the financing model/s that underlie all three work-streams will be developed.

4 Scope of project

Since the signing of the contract on the PERR project, the Project Steering Committee and the work-streams on the Pricing Strategy Review and the Funding Models have engaged with the terms of reference of the project, and indicated the desire for a significant increase in scope. In particular, under the Funding Models work-stream, the need has been identified for an assessment of funding and financing models for water services infrastructure, which was not included in the original terms of reference of the project, which was only focused on funding/financing models for water resources infrastructure.

Under the Pricing Strategy Review work-stream, a similar need was expressed to expand the scope of the review to consider pricing across the entire value chain including municipal tariffs. This too, is out of scope relative to the original terms of reference and project proposal. In this inception report, under the relevant work-streams, more detailed information is presented on these out of scope matters in terms of what work will be required and the associated costs.

It is noted that DWA will need to find the requisite financial resources, and determine the most effective procurement procedures for this additional work to be done.

The following section deals with the amended tasks and activities under the current terms of reference, while section 5 deals with the revised scope, our understanding of the activities required under the revised scope, and the budgetary implications of the revised scope.

4.1 Terms of Reference (ToR) Mandated Scope

The ToR for project number WP10526 specify the scope of the project as originally conceived in terms of what the project ought to cover in its tasks and activities. The detailed tasks and activities were developed by the project team based on the requirements stated in the ToR. The key requirements for each work-stream of the project, as per the ToR, and as understood and interpreted by the project team, were as below.

“The (funding) model will have to . . . develop a coherent funding model for water resources infrastructure to feed into the raw water pricing strategy element of the project. It would also be aligned to models for water services infrastructure funding to develop a unified ‘cost accumulation and management model’ that informs the pricing of raw, bulk and potable water and will inform the basis for the policy for economic regulation of the sector.” Under the required output/outcome of the infrastructure funding model section of the ToR of the project it clearly states that the PSP must “develop models for financing new water resources infrastructure development, including refurbishment and betterment of existing infrastructure, considering fiscal and off-budget sources of funding”. After listing this and other required outputs/outcomes of the infrastructure funding model work-stream, the ToR goes on to state that “in summary the funding model needs to determine the resources requirements (capital and operating expenses) necessary to manage, maintain, rehabilitate, replace and expand water resources infrastructure and how these resources requirements are to funded”. This content of the ToR clearly indicates that the scope of the work-stream is limited to raw water infrastructure.

The pricing strategy work-stream will translate the analysis of the infrastructure charges “into an operational methodology under the proposed revised pricing strategy”. The key output of this work-

stream is the development of a revised raw water pricing strategy. Due to the limited jurisdiction of the raw water pricing strategy, the scope of the work-stream is without question only limited to water resources. The revision of the raw water pricing strategy must adhere to the requirements of the National Water Act (NWA) in terms of stakeholder consultation, required waiting period before gazetting and the need to deal with every comment submitted to the department.

The economic regulator work-stream has three key objectives. Drawing on the lessons learnt in other countries that have established independent economic regulators while ensuring that South Africa's socio-economic circumstances are taken into account, the work-stream must develop:

1. A clear regulatory objective including the scope, powers and functions of the economic regulator – bearing in mind that the role of the economic regulator is to be restricted to the assessment on tariffs in the value chain of raw, bulk and potable water pricing and the waste chain of effluent and waste discharge
2. Guidelines on how the regulator is funded, and
3. A model on how the regulator should be established including timelines and advice on all legislative changes required

This process will also require a process of stakeholder consultation, however this will be a consultation with certain key stakeholders within and outside of government, not a broad consultation as that which is needed for the pricing strategy review.

4.2 Motivation

The focus of the ToR and proposal for the PERR project was on funding models for water resources (WR) infrastructure, not water services (WS) infrastructure, on the review of the pricing strategy for raw water and on an economic regulator for the entire value chain.

It is important to note that the mandates and mechanisms for funding of WR and WS infrastructure are quite different with WR infrastructure being the mandate of national government, whereas WS infrastructure is the mandate of local government, albeit with national financial (and possibly other) support and regulatory responsibilities. The same applies in relation to the pricing chain – water resources charges fall under the national sphere of government, while municipal tariffs are set by local government, within norms and standards determined by national government.

However, the possibilities for repaying WR infrastructure development costs are often dependent upon recovery of costs in the municipal sphere. A financial model that is solely focused on water resources may therefore not provide a complete picture, if not considered alongside the funding needs of water services and the related claim that WS infrastructure investment will be having on the end user.

An added complexity is introduced to the WR-WS cycle by quasi-water resources elements that are traditionally in the WS sector, namely waste water recycling and desalination plants (typically constructed and financed as bulk water services, but used to augment water resources supplies). Understanding of the value chain will be enhanced by the incorporation and consideration of these non-standard WS elements.

Equally, an examination of pricing in the water sector could benefit from an analysis of the methods for determining charges along the value chain.

4.3 Current tasks, activities and deliverables

The current scope of the project is set out below. This is followed in section 5 by an analysis of the proposed extended scope with attached budgetary implications.

4.4 Financing models

4.4.1 Context

Infrastructure funding models focus on the mechanisms and sources to access capital required to develop proposed infrastructure, as well as the income required to repay this capital.

The purpose of the infrastructure funding model task is to identify, evaluate and recommend coherent and innovative funding models that resolve the challenges around developing and maintaining water resources infrastructure for social and economic purposes (linked to the entire supply chain). These models need to address financing constraints and differential affordability for the key water use sectors, leading to the development of a “cost accumulation and management model” that informs the “pricing of raw, bulk and potable water”.

This has financial and institutional dimensions that enable the implementation of key water resources planning decisions. While there are a number of relevant initiatives in the water sector, the following projects and processes specifically provide a point of departure with information or need to be engaged for this task:

- Sakhile asset review process in 2010, provides a base information on the infrastructure asset and its condition.
- Review of funding requirements for water (resources and services) infrastructure development nationally, links the funding needs to planned development in different parts of the country, under the Water Investment Framework study
- National infrastructure funding requirements, with water as a key element of node development, coordinated by Dept. of Economic Planning.
- Review of the infrastructure trading entity is providing improved information on the income and expenditure associated with different schemes
- Institutional realignment, particularly the business cases for national infrastructure and the regional water utilities, supported by detailed review of infrastructure condition.
- Waste discharge charge system implementation in three pilot catchments, particularly around the mitigation charges and its use for funding water quality related infrastructure.
- SALGA studies on the review of water services tariffs and financing in local government.

4.4.2 Key assumptions

An analysis of the type required to assess funding models, must firstly be based on a sound financial model of infrastructure, as well as an understanding of the imperatives and risks for the key government, private sector and civil society role-players.

Therefore the first set of key assumptions for this task in the project relate to the accessibility and availability of financial data related to:

- the value and condition of the existing asset base,

- the revenue and recovery (income) associated with this asset and
- the projected infrastructure (capital) development requirements.

The current situation associated with the water resources infrastructure trading entity needs to be clarified, including the information developed through the Asset Register (Sakhile) study and synthesised through the Institutional Realignment project. There is now significantly more information available on the asset value, operational costs and tariff structure of the national, regional and local infrastructure at a scheme level, as well as the recovery of costs associated with this, so this information needs to be compiled into a coherent and comprehensive infrastructure finance data base as the platform for the financing models. The asset value and condition has been assessed through the Sakhile and Institutional Realignment projects and this information will be used as the basis for the current asset base. It will however be necessary to work with DWA Finance (trading entity) to assess the costs, billing and recovery of infrastructure charges at a scheme level, distinguishing between O&M, Depreciation and RoA charges. The recovery of CUC charges for debt repayment associated with off-budget TCTA projects will also be reviewed, from DWA Finance and TCTA. The asset and income information provides the base financial model for all of the subsequent analysis.

The projected financing requirements for development of water infrastructure (including betterment, refurbishment) has also been synthesised through the Institutional Realignment project. This information, together with the expected operating costs and nature of the water users that will be supplied by these schemes, will be incorporated into the base financial model, in order to reflect the capital funding requirements against which different funding options may be compared.

The second key assumption relates to the process required to obtain relevant information and understanding of risk profiles for the various role-players. This depends upon an effective engagement process being defined (which is included in the project design) and the willingness of key individuals to support and engage the task.

A final key assumption to the work-stream instruction to assess the entire value chain is that the water services elements of this task are resourced and a team procured in time to coherently align and provide appropriate information, option, analysis and modelling inputs to this task.

4.4.3 **Tasks and Activities**

In responding to the Terms of Reference, the proposal outlined the following 6 activities to conduct the Funding Models task for the project:

- Activity 2.1 Assessment of the infrastructure financing
- Activity 2.2 Review of public finance principles and models
- Activity 2.3 Develop funding models
- Activity 2.4 Explore alternative sources of funding
- Activity 2.5 Evaluation of Impacts of the Financing Model
- Activity 2.6 Financial Arrangements

However, the requests of the Project Steering Committee and the two work-streams have indicated the need to restructure these tasks, both to provide a logical flow of activities and to ensure coherence between the existing water resources funding models / raw water pricing aspects and the proposed water services funding models / tariff aspects. The following tasks are proposed and expanded upon

below (distinguishing between those elements that are in the existing scope of work and those elements that need to be added):

- *Review of principles and models*, of the principles and funding mechanism applied in South Africa and internationally to facilitate financing of infrastructure - was Activity 2.2.
- *Assessment of infrastructure and financing*, combining increases in water requirements (demands) with infrastructure development and rehabilitation requirements, as well as quantifying the historical on-going infrastructure costs and income (revenue), with the future costs associated with the infrastructure requirements - was Activity 2.1.
- *Evaluate water infrastructure funding options*, exploring institutional-financial mechanisms for funding the infrastructure requirements, including sources of revenue and transfers (subsidy/grant) - was Activity 2.4 and part of Activity 2.3.
- *Develop the financial model*, combining the preceding information into a high-level model for quantifying and evaluating the financing of infrastructure under different mechanisms - was Activity 2.3.
- *Evaluate the impacts*, assess the raw water pricing (and water service tariff) and grant (or subsidy) implications of different funding options for infrastructure development and operation, as well as their socio-economic impacts – was Activity 2.5.
- *Recommend infrastructure funding models*, combining the previous information into coherent recommendations – was Activity 2.6.

Activity 2.1 Review of principles and models

This project provides an invaluable opportunity for the development of water resources infrastructure funding models to be guided by public finance principles, relevant to infrastructure finance. In particular, the philosophy and practice of charges for funding water infrastructure at different scales and for different purposes, and considering the constraints on public infrastructure funding under short and medium term conditions, and the sharing of risk between government and water users. This task will require a synthesis of public finance management theory with international experience in principles underlying infrastructure financing regimes. It will also provide a critical review of these perspectives for the social and economic history and conditions in South Africa.

The approaches and assumptions for funding energy (Eskom) and transport (SANRAL and Transnet) infrastructure in South Africa, as well as selected countries water resources, water services and hydropower infrastructure, will be reviewed to assist this analysis.

An important aspect involves assumptions around shifting from scheme-based charges to system charges, which may be more appropriate in increasingly integrated and stressed systems. Further, the assumptions behind infrastructure for economic, social (and possibly ecological) purposes need to be reviewed, particularly where these imply differences in funding and cost recovery, and the implications for poverty eradication, redress and equity. The theory and experience with the application of subsidies (and cross-subsidisation) for different groups or sectors is an area of particular relevance, including for the different treatment of capital and operational funding.

Given the emerging government policy on commercial funding for economic infrastructure, a further fundamental aspect of this review relates to the potential involvement of the private sector in infrastructure development and financing, and in particular the allocation of risk (and return) between

government and private sector. This ranges from the provision of capital debt funding from commercial sources, through capital funding through equity arrangements, to various concession arrangements linking development and operations (for a given timeframe). All of these approaches have been used in the international water services and hydropower sectors, but have not been generally adopted for water resources management. This indicates that an unpacking of the principles, assumptions, constraints and opportunities for private sector involvement in water resources infrastructure is warranted.

The review must culminate in the evaluation of different principles and assumptions for financing of water resources infrastructure in South Africa, and provide recommendations about approaches that are relevant and those that may be ignored. This provides the basis (and possibly methods) for the development of models and the possible funding mix, in the context of the existing and planned infrastructure requirements.

Deliverable:

Review of Principles and Experience Report: Summary of case review of South African and international experience with infrastructure funding, together with relevant theoretical and practical principles for water infrastructure funding in South Africa.

Activity 2.2 Assessment of infrastructure and financing

This task begins with a synthesis of information about the sector water requirements of the various water resources systems throughout the country, together with the infrastructure development and rehabilitation requirements to meet these needs. Much of this information is available through the reconciliation studies and the review of water infrastructure requirements studies that have recently been conducted.

The current situation associated with the water resources infrastructure trading entity needs to be clarified, including the information developed through the Asset Register (Sakhile) study and synthesised through the Institutional Realignment project. Three key types of information are required, namely (i) the value and condition of the existing asset base, (ii) the revenue and recovery (income) associated with this asset and (iii) the projected infrastructure (capital) development requirements.

There is now significantly more information available on the asset value, operational costs and tariff structure of the national, regional and local infrastructure at a scheme level, as well as the recovery of costs associated with this, so this information needs to be compiled into a coherent and comprehensive infrastructure finance data base as the platform for the financing models. The asset value and condition has been assessed through the Sakhile and Institutional Realignment projects and this information will be used as the basis for the current asset base.

It will however be necessary to work with DWA Finance (trading entity) to assess the costs, billing and recovery of infrastructure charges at a scheme level, distinguishing between O&M, Depreciation and RoA charges. The recovery of CUC charges for debt repayment associated with off-budget TCTA projects will also be reviewed, from DWA Finance and TCTA. The asset and income information provides the base financial model for all of the subsequent analysis.

The projected financing requirements for development of water infrastructure (including betterment, refurbishment) has also been synthesised through the Institutional Realignment project. This information, together with the expected operating costs and nature of the water users that will be supplied by these schemes will be incorporated into the base financial model, in order to reflect the capital funding requirements against which different funding options may be compared.

Interim Deliverable:

Base infrastructure and financing statement: providing the base information on the existing assets, and the associated operating costs and income, as well as future water, infrastructure and capital requirements and operating costs.

Activity 2.3 Evaluate water infrastructure funding options

For the purposes of this work-stream, funding options represent the combination of the institutional arrangements (vehicle), the financing mechanisms and the sources of finance required to fund the capital (and debt repayment) and operating costs of infrastructure development, betterment (upgrading) or refurbishment. Therefore possible funding options have both financial and institutional model dimensions, because the institutional model enables or constrains the possibilities for financing. Clarity on the proposed arrangements for infrastructure financing will be obtained from with the institutional realignment project. These models need to be flexible enough to respond to different imperatives and conditions at a scheme or systems level, considering the water users and supply system for the water.

The funding options must distinguish between fiscal and off-budget sources of capital and operational funding and the institutional mechanisms that enable this. However, it must also be recognised that there are ultimately only two fundamental sources of finance, namely fiscal support from taxation or user payments through water tariffs or charging. The nature of the scheme must be reflected in these options, distinguishing between large national multi-purpose infrastructure and more local single purpose meso-infrastructure, considering the strategic social, economic or environmental imperatives driving their development and operation.

Possible funding-institutional options for water resources infrastructure that may be considered, include:

- Fiscal funding (general taxation or Treasury bonds), disbursed through DWA or one of its water management institutions;
- Ring-fenced project funding from commercial sources, linked to project cash flow and off-take agreements, through TCTA (or similar institution);
- Funding from commercial sources against a dedicated cash-flow (primarily associated with ROA from specified existing assets);
- Funding from commercial sources against an existing balance sheet and associated cash-flow within a ring-fenced public entity (agency or utility).
- Funding through commercial equity contributions for specific projects, with off-take agreements, through a public-private partnership special purpose vehicle; and/or
- Funding by commercial interests through concession or Built-Operate-Transfer arrangements at a scheme level.

The options around the funding mix for a particular scheme or system may be identified from the funding-institutional options. This will consider the opportunities and constraints of funding infrastructure from a mix of funding sources, distinguishing the needs for capital funding from fiscal or commercial sources, linked to the recovery of repayment, operational and maintenance costs through charges and fiscal transfer (using the financial model developed in Activity 2.4). The relative contribution of different sectors and user groups must be unpacked, based on social imperatives, economic affordability and water requirements. The challenge of funding infrastructure to support redress to emerging farmers must be considered in this context, as well as challenges around the broader agricultural sector and other economic and livelihoods elements of rural economies.

The development and evaluation of innovative approaches to water resources funding will be driven by the team in consultation with a strategic reference group of representatives of key financing institutions that have experience in the water sector, namely the credit agencies, debt finance and equity finance institutions. It is critical to understand and reflect the concept of risk in any discussion of innovative financing arrangements, particularly where mandates and responsibilities for development, operations, finance and repayment (and thus risk) are shared between institutions.

Opportunities for innovative financing of non-conventional reconciliation measures should also be included in this model, particularly small local schemes, such as desalination and effluent reuse, water conservation/demand management interventions. This also links to opportunities to include waste discharge mitigation infrastructure as part of the broader infrastructure funding model, linked to the mitigation charge of the WDCS, as well as highlighting possible funding options for the protection or rehabilitation of important natural infrastructure through payment for environmental services related mechanisms.

Through this process, the required capital and operational funding from various sources will be contrasted with the current operational funding from user charges and transfers, as well as already dedicated fiscal infrastructure budgets. Similarly the off-budget capital requirements will be compared with the broader commercial capital requirements for infrastructure development in South Africa over the next 20 years.

Interim Deliverable:

Funding options report: on the funding options, including institutional arrangements, financing mechanisms and sources of funding required to develop, refurbish and operate water resources infrastructure required to support social and economic development in South Africa, highlighting shortfalls in the current funds available and additional requirements and sources of funding to meet this shortfall.

Activity 2.4 Develop the financial model

A cost accumulation model will be developed to assess the financial implications of alternative funding options to meet the demands in different parts of the country. This will conceptually link the following five elements (although these may be reflected through different modules):

- Infrastructure required to provide water supply or waste management services.
- Capital and operating costs required for this existing, new and refurbished infrastructure.
- Institutional-funding model to enable the development and operation of that infrastructure.

- Sources of capital funding associated with the funding option for infrastructure development.
- Sources of operational financing for capital repayment and operational costs, including prices

This financial model will have to be able to reflect either a scheme based approach to infrastructure financing or a system based approach. This in turn will influence the way in which existing infrastructure is treated in the financial model, particularly around assumptions on the existing O&M, depreciation and ROA charges. The concepts of strategic asset maintenance will also need to be brought into the financial models. Possible subsidy mechanisms will need to be included in the model, while recent experiences around funding requirements and constraints in regions experience severe drought (such as the Southern Cape) must be captured. Enabling flexibility in the models will allow alternative approaches (options) to the funding mix to be evaluated.

It is expected that the development of these models is iterative, with the point of departure being the principles for infrastructure financing and the current situation captured (Activities 2.1 & 2.2). This will be refined as different funding options are evaluated (Activity 2.3) and the implications are assessed using the financial model (Activity 2.5). The final cost accumulation model will be produced once there is agreement on the principles, assumptions and approaches to water infrastructure financing. This will reflect the understanding of the financing conceptual model as it becomes stable.

Interim Deliverable:

Financial Model and User Manual: on the assumption and application of the financial model for assessment of financial possibilities for financing water resources infrastructure, while considering the entire cost chain to the final user.

Activity 2.5 Evaluate the Impacts

There are two primary impacts of infrastructure funding on the economy and society, namely the financial price (or tariff) implications and the resulting social and economic impacts of these prices. A secondary set of implications relates to the impact on the economy of the capital requirements through the fiscus or commercial financial markets. The former is the main focus of this activity, while the latter should be qualitatively noted for completeness.

Infrastructure financing and water pricing has significant positive and negative impacts on the economy, society and environment. However, water resources infrastructure charges are only one aspect of the entire pricing framework, so their macro-economic impacts should not be assessed in isolation. This analysis will be done as part of the economic assessment associated with the Pricing Strategy review (Task 3). The financial model will enable the quantification of price and tariff impacts of water infrastructure funding in different parts of South Africa.

However, it is quite important to determine the socio-economic consequence and distributional aspects of changing infrastructure funding regimes at a micro-economic scale on local water users. This will be done by selecting 5 representative catchments throughout the country, with different hydrological, infrastructural and water user characteristics. The impacts of different funding models on the representative local users will be assessed, in terms of the cost of their water use as a portion of total input costs (where possible). The impacts on low income households, emerging farmers and agriculture will be specifically addressed, as well as the consequence for both small and large urban areas.

The likely short, medium and long term effects of the potential income shortfalls, will be qualitatively compared to the impacts of potential tariff increases on the various user sectors, as extrapolated from the case information.

Interim Deliverable:

Impacts report: on the investigation of the socio-economic impact of funding models on representative users in five systems or catchments, with qualitative assessment of the broader implications of changes in funding regime – linked to Activity 3.4.

Activity 2.6 Financial Arrangements

The interim deliverables and the financial model will be combined into a single overarching summary report on the models for financing water resources infrastructure. This will be a combination of the financial models itself, as well as the financial and economic implications.

The report will also address the financial and institutional arrangements necessary to give effect to the financial model, notably the accounting treatment and disclosure of elements of the tariffs and charges, the institutional vehicle/s required to enable the financial models, the consequences for the pricing strategy review, and the implications for economic regulation.

Key Deliverable:

Funding Model report: providing a summary of the current situation, the international principles and experience with infrastructure financing, the funding model, its implications in terms of funding sources and economic impacts, and the institutional-financial considerations for implementation of the funding model.

4.5 Pricing Strategy

This section deals with the revised tasks and activities under the existing scope of the project, as modified by comments made by the PSC and the work-stream.

4.5.1 Context

As pointed out in the ToR, much of the analysis for the infrastructure charges will have been done as part of the infrastructure funding models, but these need to be translated into strategic pricing requirements under a revised pricing strategy. An important part of this will be to be clear on what is funded through tariffs and what is funded through fiscal appropriations. Important aspects of this would address the recovery of operational hydrometric costs, as opposed to strategic support for these from the fiscus. At the same time, however, the issues of the water resources management charge, the efficiency charge, and the research levy, will need specific examination under this part of the project.

The National Water Resources Strategy-2 is being reviewed and is due for publication in July 2012 for comment and to be finalised by the end of 2012. It is important that the pricing strategy review aligns with the objectives and principles of the NWRS-2 and supports the implementation of this strategy.

4.5.2 Scope

The purpose of the pricing strategy review task as contained in the original project proposal was to identify, evaluate and recommend a coherent and relevant raw water pricing regime for South Africa

that balances the needs for cost-recovery, sustainable financing and institutional viability with the imperatives for redress, equity, growth, affordability and sustainability, and which enables effective infrastructure management and water governance, regulation and research.

In the first PSC meeting of the project, however, an extension of the scope was identified, to look at pricing across the entire value chain, including municipal tariffs. A set of activities have been developed to consider the issue of pricing across the value chain. These are dealt with in section 5. DWA will need to determine the appropriate procurement processes for resourcing these activities which fall outside the current scope and budget of the project.

4.5.3 Risks

The greatest risk to the development of the pricing strategy is the possibility that key stakeholders will not support or agree to the approaches being put forward. The best way to mitigate this is to ensure that stakeholders are consulted well in the process and feel that their views are being taken into account in shaping the pricing strategy.

4.5.4 Tasks and Activities

This section sets out the revised tasks and activities as per the comments of the PSC and the work-stream.

Activity 3.1 Review of current pricing strategy success and failures (gap analysis)

The abstraction based water resources management charge has been established for over a decade now, with more recent enabling of charges on waste discharge through the development of a waste discharge pricing strategy. The assumptions behind the former require review, particularly related to the allocation of functional costs and the capping of charges on forestry and agriculture. On the other hand, while conceptually relevant, the requirement to base cost recovery related user charges on waste discharge load has complicated its implementation, so the current pricing strategy must be reviewed to identify the key challenges, problem areas, gaps, and opportunities for improvement.

This assessment will also look at the drivers of costs of providing raw water.

Activity 3.2 Pricing Principles

A review of certain assumptions around institutional financing, depending upon the outcome of the institutional realignment related to catchment management agency establishment and the future of water boards (in relation to catchment management functions and infrastructure operation and management) will also be needed. Once again the distinction between funding of catchment based operational functions and fiscal funding of strategic functions should be unpacked, as should the functions required in the establishment of these institutions (i.e. "setup" and "commissioning" costs).

The entire suite of assumptions and procedures for estimating and allocating explicit or implicit subsidies needs to be reviewed, whether at an individual, sector or institutional scale. This will include:

- A review of economic principles regarding water resource pricing, linked to the public finance theory around user charges and tariffs
- An analysis of international water pricing policies with a specific focus on the application of subsidies

- Review of agricultural water pricing as an instrument to drive technical (conservation) efficiency as well as economic (allocation) efficiency of water use
- Review of international water pricing subsidies and an analysis of the principles that underpin them
- Review of international experience with pro-poor regulation and pricing in achieving equitable allocation of water.

The principles to be considered must include cross-subsidisation, and the costs, risks and benefits arising from this approach, and principles and approaches to protecting food security.

Interim Deliverable:

Pricing/tariff principles and assumptions report: including waste discharge charges and hydropower generation charges. The report will detail options, inputs and recommendations.

Activity 3.3 Develop Pricing Models

In addition to the infrastructure financing models dealt with in Task 2, the recovery of water resources management costs must be addressed. In addition to the overall financial viability of water resources management and infrastructure development, operation and maintenance, the viability and self-sufficiency of catchment management agencies (CMAs) will need to be assessed, particularly in the context of amalgamation into 9 CMAs. Models for funding CMAs from user charges supported by fiscal transfers will be explored.

Based on the review of the assumptions underlying the current pricing strategy and principles, the team will develop and test relevant pricing models. As stated in the ToR, the aim of the economic charge for water, either administratively determined or market-oriented, is to provide an incentive to shift water use from low value to high value uses. It is also likely to improve water use efficiency, which is a high priority for the Department.

The desirability of introducing water efficiency charges or, alternatively, mechanisms to incentivise technical water use efficiency, will therefore be explored, noting the legal and technical difficulties and possible perverse outcomes of applying these types of charges. It is likely, for example, that increasing cost recovery charges to include full financial costs (as well as implementing the waste discharge charges) will prove adequate to drive technical efficiency improvements. In examining this issue, the price elasticity of water in various use sectors will need to be examined.

The drive towards economic efficiency under water scarcity may also be facilitated by exploring innovative trading and water auctioning mechanisms that are designed to support social and ecological imperatives. This will also be reviewed as part of the pricing strategy, as this enables the setting of market prices for economic use of water.

Critically, in examining the tariffs and making proposals for an improved approach, the project team will investigate the benefits and challenges associated with using national, system or scheme related tariffs, including an analysis of how to move from the current approach to a recommended approach.

The waste discharge charge system has previously been developed to include mitigation and incentive charges, these should potentially be reviewed to ensure that they are more pragmatic and implementable (even in the absence of resource quality objectives). The simplification of the waste discharge charge model will be viewed as part of this project.

An appropriate methodology for the pricing of water used in the generation of hydropower will be developed, based on the work already performed by DWA.

Finally, the assumptions and calculations for the WRC levy will be reviewed, particularly with experience of the past few years. The results of this may require a change to the WRC Act. The project team will feed this into the legislative review currently now starting in the Department.

In reviewing these issues and developing recommendations, the project team will work closely with the relevant officials in the Department, and will consult with key stakeholders, as necessary, and in partnership with the Departmental project team members.

Deliverable:

- Pricing Models Report.

Activity 3.4 Evaluate Socio-economic Impacts

One of the challenges with administered prices is that they are not governed by external market forces. As a result, it is possible for administered prices to have significant unintended negative socio-economic impacts. To understand such possibilities, the project team will examine the potential social and economic impacts of the proposed approaches. This assessment is important both in developing effective financing models and pricing strategy, but also provides useful information to the economic regulator about the relationships between water charges and socio-economic impacts.

With the shifting focus from water management as a technical exercise to water management as an important aspect that either catalyses or constrains economic growth and social development, the preceding assessment must be translated into recommendation on how these financing opportunities can be leveraged to support this.

An important aspect of this is again the equity and distributional implications, particularly around who pays the costs and who gains the benefits from different interventions. This is an important part of the information required for an economic regulator in a developing country such as South Africa.

Therefore, the PSP will, with the client, identify the key sectors to be examined and the key issues to be addressed in a socio-economic assessment. This might include, for example, looking in the agricultural sector at the impacts on resource poor farmers, commercial farmers, employment rates, food prices, growth and development, etc.

The report on the socio-economic assessment should be available before the consultation with stakeholders so that they can be informed of the results of the work and so that the results of the studies can be factored into the revised pricing strategy.

The local socio-economic impact of the holistic pricing regime will be tested in the same locations used for the evaluation of infrastructure models in Task 2. This would include the combination of infrastructure charges, water resources management charges, the WRC levy, and possible efficiency or waste discharge charges.

Deliverable:

- A report on the socio-economic impact assessment.

Activity 3.5 Formulate Pricing Strategy

Off the back of the above reviews, the outcomes will be translated into a revised pricing strategy which will contain recommendations on:

- Revised principles for pricing of raw water
- The key elements making up the water tariffs and how they are to be calculated;
- Whether and where to use a national, systems or scheme tariff;
- What is to be funded through tariffs and what through fiscal appropriations in order to achieve full cost recovery;
- The principles for and elements of the subsidies to be provided;
- A simplified waste discharge charging model
- How to price for hydropower generation
- Tariff setting for infrastructure charges
- The economic charge
- The institutional implications of the pricing strategy.

The outcome of this will be a draft pricing strategy. This strategy will be prepared in readiness to be gazetted for comment and consultation.

The consulting team will provide support to DWA in the consultation process on the pricing strategy, in particular through developing presentations to be given at workshops, collating comments into a comments register which will include details of how the comments have been responded to, and revising the pricing strategy on the basis of the comments received.

Deliverables:

- *Draft Pricing Strategy*: for comments from stakeholder groups as required by the National Water Act.
- A report on the comments received from stakeholders and the consideration given to the same
- A finalised Raw Water Pricing Strategy
- A finalised Raw Water Pricing Strategy translated into another language

4.6 Economic Regulator

4.6.1 Context

With the planned establishment of an economic regulator, a unified model of the entire water pricing and tariff chain is required, in order to conceptually and operationally support the regulator to consider raw water, bulk or potable water charges / tariffs along this supply chain. A similar model may be necessary to consider the waste discharge chain of collection (trade effluent/sewage), treatment (bulk) and (waste) discharge. The South African water value chain poses particular challenges that must be addressed when considering the economic regulator.

According to the ToR, in South Africa, the role of the regulator will be focus on the value chain of raw water, bulk water and potable water pricing, and also the waste chain of sewage/trade effluent, bulk effluent and waste discharge. The relationships between the various agencies and service providers along this “value chain” require coherent regulation to protect customers (including the poor) from the inappropriate addition of multiple charging layers.

The infrastructure financing models and water pricing strategy, together with the socio-economic assessment and the relevant water service tariff regulations, provide the tools to inform and guide the regulator in its determinations. This must be taken with criteria and considerations for regulating water management in a developing country context (i.e. pro-poor and transformational regulation), and the experience of other sectors and countries, to identify the strategic functional areas required from the economic regulator, relative to other regulatory functions of the DWA, and its water management and services institutions.

4.6.2 Scope

The purpose of the economic regulation task is to identify, evaluate and recommend a coherent and innovative model for economic regulation across the entire water value chain, and to develop proposals for the establishment of an economic regulator.

4.6.3 Tasks and Activities

Activity 5.1 Review of international and other sector regulator models

The project team will undertake a review of international experience of the establishment and mandates of economic regulators in order to explore options for mandate, institutional design and arrangements. This review will investigate the advantages and disadvantages of various international options. In particular, this review will look for models that include the regulation of the public sector, not just the private sector, in order to align with the South African water sector context.

This review will be based on both a literature review and interviews with key informants internationally, including the proposed reference group members. The review will draw out, amongst other things, lessons pertaining to:

- the principles of economic regulation applicable to the water sector
- lessons and experience pertaining to the mandate and related institutional arrangements for economic regulation
- lessons pertaining to the process of establishment of an economic regulator
- key opportunities and challenges for the process.

The review will also look at the regulatory experience in other sectors in South Africa.

This task will also draw out key principles for the economic regulation of the water sector and the establishment and operation of an economic regulator. These principles will be revised and further developed as the project progresses.

Deliverable:

Literature review: on international case studies for water regulators and local regulatory bodies, their functions and effectiveness, drawing out lessons and principles applicable to the South African context.

Activity 5.2 Regulatory Methodology and Approaches

In this task the project team will clarify the roles and responsibilities of the economic regulator and will analyse and make recommendations on the appropriate method of regulation including an overview of the methodology to be applied to the review of setting of water charges and tariffs process.

It will analyse role of the economic regulator in reviewing tariffs and charges and the methodologies to be used in this regard. This process will draw on the lessons learned in activity 5.1.

Arising from this, the team will develop a handbook on regulating water/waste discharge tariffs for the entire water/waste value chain. This handbook will capture the best practice for the regulator, define an appropriate methodology, and ensure that the practical steps for application of the methodology are set out clearly.

A draft handbook will be prepared, and consultations will be conducted with key stakeholders inside DWA and across the water sector value chain to ensure that the approach taken is widely acceptable, and that the experiences of the various players in the value chain are taken into account in the methodology proposed. Once the consultations have been completed, a revised handbook will be submitted to the client.

Deliverable:

Handbook: on regulating water/waste discharge tariffs for the entire water/waste value chain including options and recommendations on the appropriate method of regulation, tariff consultation and tariff approval process.

Activity 5.3 Develop Appropriate Institutional Arrangements for the Economic Regulator

This activity will involve developing the appropriate institutional arrangements for the proposed economic regulator. In order to do this, the team will investigate and suggest options for institutional design and arrangements, such as whether the regulator should be based within DWA, established as a new entity or incorporated within an existing regulatory body (e.g. NERSA). An analysis of the advantages and disadvantages of each option will be done. Such options might include a branch within DWA, a government component within DWA or an external entity.

As part of this, the team will

- investigate possible sources of funding for the different institutional options for the economic regulator,
- assess any possible legislative requirements required to establish the economic regulator under the different institutional options (including but not limited to the National Water Act, the Water Services Act, the Municipal Structures Act, the PFMA and the MFMA)
- analyse the human resource requirements for the regulator to be effective;
- analyse possible and effective sanctions to be imposed by the regulator in the context of non-compliance. For the effective functioning of the regulator it will need to have 'teeth' and the project team will need to give serious consideration to the effective 'teeth' to be given to the regulator within the current constitutional provisions, and taking into account the largely public nature of the water value chain in South Africa. This will be analysed for the various institutional options.

The team will present to the client an analysis of the various institutional options against a clear set of analytical criteria, with recommendations for a preferred option.

In developing the institutional options, the project team will consult with key stakeholders inside the Department and across the value chain to gather their input and to obtain broad agreement on the objectives, function and optimal institutional arrangements for the proposed regulator. In this regard, it is recommended that the consultations be driven by the Department in association with the project team, to ensure that the Department uses this opportunity to build its leadership role in the sector and to increase its visibility as the leader of consensus building around the regulator.

While individual consultations will be held with key players in the sector, at least one workshop will be held bringing stakeholders together to discuss the proposals and to give input and share ideas across the sector. For this workshop, the project team will develop the agenda and a presentation.

Once the report has been presented to the client, the client will determine the appropriate institutional option for the next phase of the project and convey their decision to the PSP team.

Deliverable: A report setting out the possible and preferred institutional options for the economic regulator.

One workshop and consultation with key stakeholders

Activity 5.4: Development of a Business Case or Institutional Establishment Process

Once the client has determined the preferred institutional model for the economic regulator, the team will develop either a business case (in the case of a government component or external agency) or an institutional design and establishment process in the case of an internal structure in DWA. This document will propose how to go about the sustainable implementation of the regulator and will draw on international experience and on the experience of other regulatory bodies in South Africa.

In the case of a government component or external agency, a business case will be developed that will be required to take the proposed entity through the required administrative process with National Treasury and the DPSA, as well as the legal establishment process through Cabinet and parliament.

From experience, the business case required to establish a public entity in terms of the PFMA should include the following:

- Motivation for the entity/component
- Role, functions and powers of the entity/component
- Proposed corporate form of the entity/component and legal implications
- Institutional and governance arrangements
- Organisational considerations
- Financial considerations
- Implementation plan

In the case of an internal structure in DWA, the team will develop an institutional establishment plan that will include a high level organogram, clear functions and responsibilities, and an implementation plan for the establishment of the unit.

Costs of establishment and a proposed budget for the regulator will also be investigated and recommendations made in this regard.

The report will contain an implementation plan setting out the steps required to establish the economic regulator, with timeframes for each step.

Deliverables:

- *Report on process to establish an economic regulator:* including legislative amendments, options and recommendations on the objectives, scope, powers, function and source of funding, and an implementation plan.
- A final report and implementation plan for the regulator.

4.7 Capacity Building, Communication and Consultation

4.7.1 Context

Successful completion of this raw water pricing strategy project is dependent on the involvement of key stakeholders during planning and implementation of various tasks. These are internal and external stakeholders that may have various needs and different roles to play. Internal stakeholders include key project team members who are employees of the DWA, while external stakeholders are users or parties interested /affected by the process. It is equally important that the project is utilised as an opportunity to develop capacity within the department in the three project streams: **the funding models, pricing strategy and economic regulation**, through both targeted (focusing on specific DWA personnel) and generic (expanded to include interested parties within and outside the Department) interventions. Selected DWA personnel are a priority though, and the capacity building plan will mostly focus on them.

Clearly, the processes of capacity building and stakeholder engagement are interconnected. However, it makes sense to plan for each one of them separately, particularly in cases where target audiences vary depending on their role and needs. To this end the capacity building process interventions will be premised on existing staff work-plans that identify objectives aligned to specific measurable outcomes.

While stakeholder engagement interventions are informed by water user priorities and information sharing requirements. In addition to assumptions, this project inception note outlines high level approaches to implementing the two processes.

4.7.2 Key assumptions

While the project team will drive the planning and implementation of activities in all phases of the project, their role will be fulfilled in the context of the following assumptions:

- **DWA leadership /ownership of the project:** Effective communication/ consultation and capacity building will require dedicated leadership from within DWA. This is critical for trust building and is likely to influence quicker responses from relevant stakeholders to meet project requirements. At the same time leadership will not be effective if the targeted (internal and external) stakeholders are not willing to take responsibility to avail themselves as partners in the process. For these reasons, while the project team will actively drive implementation of project tasks, the assumption is that accountability and leadership direction for the process will be given by DWA. Ideally, this should take place at senior managerial levels and within the project management office.
- **Availability of management systems and tools:** The expectation from the project team is that organisational policies, procedures, frameworks and resources are in place that are critical for effective and efficient implementation of the two processes. For such a complex project to succeed, it is advisable to work within existing and established frameworks, in particular the DWA skills development framework and staff work-plans (performance management plans), where capacity building is concerned. Similarly, project communication and stakeholder involvement activities will be informed by the existing DWA communication and stakeholder engagement strategy/ plan.
- **Role of DWA personnel:** While the project will support processes to develop and finalise communication and stakeholder engagement plans, DWA personnel will manage the implementation, including reporting on the process. With regard to capacity building, targeted personnel have an operational role to play, including active involvement in drafting, revising and presentation of specific project deliverables as indicated in the capacity building plan. Further, it is also expected that where appropriate, DWA personnel from communications and human capital management will be involved to inform, guide and coordinate specific activities. This way alignment with the existing DWA communication and capacity building frameworks will be achieved.

Finally, the leadership role of DWA officials involved in the project requires them to take responsibility to ensure that participants identified internally avail themselves as and when necessary.

4.7.3 Key questions

Consultation: It is important that DWA is seen as leading the process of consultation and communication, and not the PSP. In this regard, it is important to be clear on who in DWA will be responsible for setting up consultation sessions and leading the consultation processes. It is also important to be clear on the rules of engagement with external stakeholders. In particular, it is important to be clear when and how the consultation with external stakeholders is to take place so as not to place unnecessary limitations on the project team.

Capacity Building: Capacity building of DWA officials can be done in a variety of ways. It is important to get clarity up front on expectations and needs in this regard. While a hybrid model has been proposed by DWA in other projects, implementation has proved to be difficult. It is important to get clarity up front on whether the hybrid model is to be used, or whether an approach of more structured training workshops and attendance of appropriate courses is to be implemented.

Question: Are there specific capacity building areas that must be addressed – in terms of the current DWA Skills Development Plan?

4.7.4 Capacity building

DWA is implementing a hybridisation process to capacitate staff in other projects undertaken by the department. This process is intended to be characterised by the pairing of selected DWA personnel employed in the divisions of the department with PSP project personnel responsible for managing key activities of the project. The selected DWA personnel are normally employed in operational units of the department that will be responsible for implementing project deliverables.

However, the experience with such a process is that often employees identified to take part in the process are not always available to attend planned project sessions or to do work on the project. This is due in part to inherent capacity challenges in DWA and often lack of effective coordination of the capacity building process, resulting in poor alignment with staff work-plans. In some cases project activities may not necessarily provide implementation guidelines to ensure that a clear project legacy is left behind for future reference. Closely linked to this challenge is lack of clear capacity building objectives and targets. This makes it difficult for DWA and PSPs to monitor and evaluate performance of the hybrid process.

Given the challenges mentioned here, the objective of the capacity building is:

- To ensure a coordinated knowledge generation process, development of knowledge tools, transfer of skills and project implementation experiences and tactics. A basic principle underpinning this capacity building objective is information sharing where all parties involved play an active role to generate and disseminate knowledge.

Please note that capacity building objectives specific to project activities are captured in the draft capacity building action plan attached to this note.

Scope, tasks and activities

Our approach to capacity building for the project is based on specific capacity requirements necessary to achieve effective planning and delivery of project activities. These project activities (see summary below) are aligned to project goals identified by DWA. The approach to capacity building is characterised by the following.

Task 1: DWA capacity needs assessment

The assessment referred to here is project specific and will focus on assessing capacity requirements associated with planning and implementation of project deliverables. Specific individuals have been identified by the Project Management Office that are targeted for capacity building. The plan is to ensure capacity building through two hour working sessions every two weeks in which specific project

deliverables and activities are discussed. In these meetings, roles and responsibilities from the people targeted for capacity building and those who will be working with them will be defined and clarified. A primary tool of assessment is the performance management plans (PMP) / work-plans developed for each individual, setting specific learning objectives and related outcomes. This element of the capacity building process will confirm and align capacity building objectives to the objectives identified in the PMPs. A key part of this process is consultation with the identified personnel to ensure common understanding and ownership of the process.

Task 2: Assess existing DWA capacity building strategy/ plan

The capacity building process must be implemented in accordance with the existing skills development and capacity building strategy of the DWA. Consultation with key personnel in the human capital development section of the DWA is critical and will benefit this process. Such a process is critical to enable DWA overall reporting on capacity and skills development issues, but also to make sure that the process received necessary support from the relevant authority in the Department.

Task 3: Produce and implement a capacity building plan

Once the objectives and expected outcomes are confirmed with the human capital division of DWA, a detailed capacity building plan will be produced. For purposes of monitoring, evaluation and reporting, the PM Office should confirm approval of the plan prior to implementation taking place. A draft plan is attached to this inception note that will be expanded as soon as the scope of work is approved. The deliverable for the capacity building process is indicated below.

Empowered staff: with an understanding of the assumptions and process behind the recommendations and the ability to apply tools developed to support funding models, pricing strategy and economic regulator.

4.7.5 Stakeholder engagement

Communication will enable a two-way exchange of project-specific information with emphasis on creating understanding of strategic project drivers, the main objectives and expected outcomes and getting input from key stakeholders to ensure a more informed and nuanced product. This requires that roles of various DWA stakeholders are recognised, and that their project related information requirements are clearly articulated and understood by the project team. In addition to enabling consultation with stakeholders, this process will also reinforce outcomes of the capacity building process referred to above. Stakeholder engagement will have the following communication objectives:

- To inform and involve internal and external stakeholders of the Department. Key to engaging parties is the need to provide opportunities for primary stakeholders to assist in identifying priorities and determine alternatives in the process to deliver project tasks.

Reaching the communication objectives indicated above requires that the PERR project office drive the engagement process internally supported by the PSP team.

4.7.6 Scope, tasks and activities

The stakeholder engagement process will follow a series of three tasks:

Task 1: Mapping and scoping stakeholders:

Water sector stakeholders are not homogenous community. They vary considerably with regard to their water needs and impact they have on the water resource. This means that understanding these variable needs is a key ingredient to developing and implementing successful stakeholder engagement plan. Therefore, this stage of the approach has an objective of clearly mapping and prioritising stakeholders according in terms of whether they are directly affected or interested. Understanding this information will enable effective implementation of the stakeholder engagement plan.

Task 2: Determine extent of participation required:

The level of interest in the project and the potential impact on the project outcomes will determine the level and extent of participation by each stakeholder grouping. With respect to raw water pricing for example, bulk water users such as Eskom may need to be closely involved in the process due to perceived financial /cost implications that may result from the process. Completing this step of the process is critical to developing a stakeholder participation implementation plan. The plan will indicate the extent and type of involvement stakeholders require, including the form the consultation process will take.

Task 3: Setting participation parameters:

Participation parameters are meant to differentiate between various information needs of stakeholders concerned, and how the process will unfold with respect to each stakeholder grouping. Among others this process will enable the project team decide whether to inform, consult, involve, collaborate or empower stakeholders. The deliverable coming out of this process is indicated below.

Stakeholder consultation: through various consultative sessions, together with a consultation report on the pricing strategy, funding model and economic regulation sessions, and written comments register on the pricing strategy.

As indicated in the previous section, the tight scope, timelines, and limited budget to deliver the project mean that a tight schedule is necessary that caters for priority areas of the project only.

5 Proposed scope change

5.1 Framing the Scope Change

While these activities reflected the needs of the Terms of Reference, the requests of the Project Steering Committee and the two work-streams have indicated the need to restructure these tasks, both to provide a logical flow of activities and to ensure coherence between the existing water resources funding models and pricing aspects and the proposed water services funding models and tariff aspects. The following tasks are proposed and expanded upon (indicating the nature of the expanded scope, particularly in relation to the water services aspects) in the table below:

- *Funding models*
 - *Review of principles and models*, of the principles and funding mechanism applied in South Africa and internationally to facilitate financing of infrastructure
 - *Infrastructure assessment*, combining increases in water requirements (demands) with infrastructure development and rehabilitation requirements.
 - *Financing assessment*, quantifying the historical ongoing infrastructure costs and income (revenue), as well as the future costs associated with the infrastructure requirements.
 - *Options assessment*, exploring institutional-financial mechanisms for funding the infrastructure requirements, including sources of revenue and transfers (subsidy/grant)
 - *Financial modelling*, combining the preceding information into a high-level model for quantifying and evaluating the financing of infrastructure under different mechanisms.
 - *Charge / tariff & impact assessment*, assess the implications of institutional-financial models for infrastructure development and operation, as well as socio-economic impacts
 - *Recommended approach*, combining the previous information into coherent recommendations.
- *Pricing strategy review:*
 - *Review of current pricing strategy success and failures (gap analysis)* – analysis of the current pricing strategy to identify success, failures and key issues to be addressed;
 - *Pricing principles:* a review of the principles underpinning the current pricing strategy and a proposal of new or amended principles if appropriate
 - *Develop pricing models:* the development and testing of pricing models including mechanisms to incentivise water use efficiency, the WDCS, pricing for hydropower, etc
 - *Formulate Pricing Strategy:* formulation of a revised pricing strategy in readiness to be gazetted for comment and consultation.
 - *Evaluate socio-economic impacts:* examine the potential social and economic impacts of the proposed approaches in the revised pricing strategy

Scope Change to include Water Services Funding Models and Tariffs

Table 1: Current scope and proposed additional scope in relation to water services

| | Element for Study | Water Resources (ToR scope) | Water Services (additional scope) | Comment on Scope Change |
|--|--|---|---|--|
| Funding Models | | | | |
| <i>Principles</i> | <i>Principles for funding models</i> | Infrastructure financing principles applied to water resources | Infrastructure funding principles applied to water supply and sanitation | Expanded review Budget impact: - |
| <i>Infrastructure assessment</i> | <i>Capital requirements</i> • New development • Refurbishment | Synthesised from PDG studies and DWA projections | Based on PDG studies and DWA projections, with review and refinement | Work is largely done and can be incorporated, but needs to highlight the key issues, risks and opportunities for infrastructure development along the value chain in SA Budget impact: R50k |
| | <i>Demand Analysis</i> • Economic development • Water use & availability | Based on NWRS and recon studies, including distinction between urban, industrial and agricultural | Based on PDG work on economic activities and implications for municipal demands | |
| <i>Financing assessment</i> | <i>Operating costs</i> • Operations • Maintenance • Overheads | Based on PDG work and DWA projections, refined with scheme information where available | Based on PDG work and DWA projections, but at a generic level for types of municipalities possibly in different systems; tags to specific municipalities | Further synthesis of tariffs and costs by five municipal types (metro, city, town, rural village, deep rural settlements) Budget impact: R150k |
| | <i>Revenue</i> (historical) • Policy assumptions • Charges/tariffs • Revenue collection | Based on DWA and TCTA scheme information | Synthesis of existing studies on WS revenue, referenced to types of municipalities in South Africa | Further synthesis required of actual revenue generated by type of municipality, but of existing studies (no new research) Budget impact: R250k |
| <i>Options assessment</i> | <i>Institutional arrangements</i> • Vehicles • Grants/subsidies • Commercial involvement • Target of funding | Identification and assessment of a range of institutional vehicles and mechanisms (noting opportunities, constraints and risks) to serve WR infrastructure (ecosystem?) needs | Identification and assessment of a range of vehicles and mechanisms (linking to the WR options) including ES & grants for: • Bulk infrastructure by institution (WB & LG) • Reticulation by municipality type | While the WS bulk infrastructure options dovetails with the WR infrastructure options, funding options for reticulation by municipalities requires a distinct analysis and must reflect the status (risks) of different types of municipalities and the framework for WS tariffs (subsidies and grants), linked to broader LG viability Budget impact: R500k |
| | <i>Sources of finance</i> • Public funds • Private debt/equity • Customer charges/tariffs | Identification and assessment of a range of sources and requirements, including their linkage to the PS charging | Identification and assessment of sources of finance for these funding options (noting institutional credit risk), and linking with WS tariff models | |
| <i>Financial modelling</i> | <i>Financial model</i> • Capital/debt • Income/expenditure | Development of a financing model with capital requirements and operating costs, linked to income by system & scheme | Linked (or possibly combined) model of water service capital requirements and operating costs for different systems (and schemes?), distinguishing types of municipalities | Requires the development of another entire module that can reflect the range of options for municipal WS funding and income Budget impact: R300k |
| <i>Charge/tariff & impact assessment</i> | <i>Charge/tariff analysis</i> | Using the financial model, assess capital and user charge impacts of the funding options and sources | Using the financing model, assess the percentage change in recoverable costs that must be translated into customer tariffs, | Additional requirement for modelling and cost attribution to different elements of WS system tariffs for different systems and |

Scope Change to include Water Services Funding Models

| | Element for Study | Water Resources (ToR scope) | Water Services (additional scope) | Comment on Scope Change |
|--|---|---|--|--|
| | | | distinguishing between WR, bulk and reticulated WS | municipal types under different options Budget impact: R300k |
| | <i>Socio-economic analysis</i> | Selection of catchments / schemes and evaluation of the impacts | Under the pricing strategy review task | See below Budget impact: - |
| <i>Recommended approach</i> | <i>Financial arrangements</i> | Synthesis recommendations | Synthesis recommendations and coordination of inputs | Additional reporting requirements Budget impact: R100k |
| Pricing Strategy Review | | | | |
| <i>Situation review</i> | <i>Gap analysis of current situation</i> | Review of pricing strategy implementation and challenges | Review of strengths and weaknesses with the current section 10 regulations for WS tariffs and their implementation | Requires additional international review to focus on water services tariff principles Budget impact R200k |
| <i>Pricing principles</i> | <i>Principles for pricing of water</i> | Principles drawn from international review and literature | Principles drawn from international review and literature | Requires additional international review to focus on water services tariff principles Budget impact R- |
| <i>Develop pricing models</i> | <i>Models and mechanisms for using pricing to achieve particular ends</i> | Development and testing of pricing models including mechanisms to incentivise water use efficiency, the WDCS, pricing for hydropower, etc | Analysis of current section 10 regulations and their application in selected municipalities | Requires some investigation of current methodologies and an understanding of successes and failures; requires an analysis of what can be used as a generic approach across a range of municipal types and what might be specific to particular municipal categories Budget impact: R200k |
| <i>Evaluate socio-economic impacts</i> | <i>Socio economic analysis</i> | Examine the potential social and economic impacts of the proposed approaches | Examine the potential social and economic impacts of the proposed approaches | Social and economic assessment of different approaches to setting tariffs Budget impact: R250k |
| <i>Formulate Pricing Strategy</i> | <i>Drafting of pricing strategy</i> | Formulation of a revised pricing strategy in readiness to be gazetted for comment and consultation | Draft amendments to section 10 regulations under the WSA | Requires revision of the WSA section 10 regulations Budget impact: R100k |

5.2 Additional work required to incorporate Water Services into the above scope

Infrastructure Funding Models

5.2.1 Assessment of water demand, infrastructure, cost and revenue

Relatively reliable data exists on the cost side for WR and WS – considering capital, refurbishment and operations and maintenance requirements. Expanding this assessment to WS should therefore be relatively straightforward, although the reliability of the data at municipal level will not be as good as that obtained at the WR level, due to the increased size and complexity of the asset base.

On the revenue side there are significant question marks surrounding the true revenue collected at both a WR level as well as at a WS level. Expanding the scope to include WS could be done for types of municipalities, and could rely on data from National Treasury's Local Government Review and their quarterly reports. However the reliability of the data is not always good, as it is not reconciled back to audited statements.

Budget implications: R450 000

5.2.2 Evaluating the WS funding options

Extending the scope of this activity to WS increase the research load, given the number of additional institutions that play a role in the provision of WS infrastructure and the need for alternative innovative sources of funds (particularly for non-credit worthy municipalities), as well as the capital grant and operating subsidy mechanisms and their efficacy.

There are also some complexities introduced by multiple water resource sources in the value chain – e.g. a municipality may have access to bulk water supplies, its own water supplied from a local dam or boreholes, or its own water produced through desalination or waste water recycling. The nature of the source will impact on the cost structure and therefore also possibly impact the financing options.

The identification of alternative sources of funds in the WS sphere will be covered in the work completed under Activity 2.2 above, and the budget has also been included in the budget indicated for that activity.

Budget implications: R500 000

5.2.3 Integrate WS into the financial model

In order to extend the scope of this task to WS, we will need to develop a clear link from the systems and schemes contained within WR, through to bulk water systems, through to the end users in Water Services. This is necessary to develop a model which links through the tariff implications of costs incurred at any point in the value chain.

It is not anticipated that the funding models will contain a detailed analysis of all municipalities. Instead they will be grouped into certain types, with case studies conducted on selected municipalities in order to test the appropriateness of outcomes generated by the model.

Budget implications: R300 000

5.2.4 **Evaluating tariff and socio-economic impact**

The impact of different infrastructure requirements and alternative funding models on tariffs for different types of municipality in different water supply systems may be evaluated using the financial model. This would include the assessment of alternative sources of funding, the use of grants and subsidies, the linked needs of rehabilitation of existing infrastructure to ensure sustainable development of new infrastructure, and also the linkage between water supply and waste water infrastructure. The evaluation of the socio-economic implications of these tariffs would be part of the pricing strategy review activities outlined below.

Budget implications: R300 000

5.2.5 **Activity 2.6 – Financial arrangements**

This task is an amalgamation of the above tasks, with some consideration of the institutional implications of the proposed financial model outcomes. Extending the scope to WS will encompass the additional work described above, but will be limited to institutional implications at a national level, and will not extend to a detailed institutional and financial analysis of the changes required at a local government level.

Budget implications: R100 000

Pricing Strategy

5.2.6 **Activity 3.1 Review of current pricing strategy success and failures (gap analysis)**

There would be a need to conduct a review of the current regulations under section 10 of the Water Services Act and their strengths and weaknesses with reference to application in selected municipalities representing different categories of municipalities. Also to include an assessment of the key cost drivers in bulk and municipal water services tariffs.

Budget implication R200 000

5.2.7 **Activity 3.2 Pricing principles**

This section would consider the principles for water services tariffs drawn from an international review and literature, with a particular focus on principles and approaches applicable in the context of high levels of poverty and inequality.

Budget implications: -

5.2.8 **Activity 3.3 Develop pricing models**

This would require the development of methodologies for determining water services tariffs to inform the section 10 regulations under the WSA. This would be building on existing work done in this regard.

Budget implications: R200 000

5.2.9 **Activity 3.4 Evaluate socio-economic impacts**

It is important when developing a water services tariff model in the context of extreme inequality, high levels of poverty and scarcity of water to consider the possible social and economic impacts of

the proposed approaches and to ensure that the proposed approaches meet the constitutional and developmental imperatives.

Budget implications: R250 000

5.2.10 **Activity 3.5 Formulate Pricing Strategy**

Based on the work in the previous activities, it will be necessary to draft amendments to the section 10 regulations under the WSA.

Budget implications R100 000

5.3 Summary

To summarize, it is expected that the biggest impact of extending the scope will be in the following areas:

- Assessing the revenue generated by WS, and how this links into the full value chain
- Extending the financial model itself – especially with respect to the impact on the multiple WS tariffs that exist.
- Exploring alternative sources of finance at a WS level
- Giving consideration to appropriate models for tariffs for water services and the implications for this for national norms and standards

The total budget impact of the above work is expected to be R1 650 000 for the funding models task and R750 000 for the pricing strategy task, indicating a total additional budget of R2 400 000 (excluding VAT).

While the intent of the workstream committees is clear, this must be enabled by expanding the budget of the existing project or procuring services under another aligned process. To avoid any confusion, the remainder of this inception report has therefore been written for the existing scope, while highlighting areas of additional scope requirements.

6 Key linkages

Although the project has been divided into three separate work-streams, it is important to note that there are extensive linkages and feedback loops between the three streams. In managing this, it may be necessary during the project for two or more work-streams to meet together to address issues arising from one work-stream that influence another work-stream. The PSC will also have a critical role in addressing these issues.

Equally, there are linkages to other projects currently under way that must be addressed so that the results from the various projects are in alignment. While the PSP is aware of some such projects, DWA must identify any further projects with which there are linkages and bring these to the attention of the PSP.

Key projects with which there are linkages are listed below:

- Waste Discharge Charges Phase IV – this project includes a review of the WDCS, consideration of charges for non-point sources, and implementation of the WDCS in three catchments. The results of this project will be critical in informing the Pricing Strategy Review;
- Institutional Support Project – this project is providing support for the establishment of CMAs and includes an assessment of the financial requirements of CMAs. This information will inform both the Pricing Strategy Review and the Funding Models work;
-

Some of the key linkages and feedback loops within the project are identified below:

- The principles underpinning the pricing strategy will influence the function and role of the economic regulator and the nature of the financing models;
- The financing models and the pricing strategy will need to talk to each other to ensure synergy

7 Revised Work-plan

| Task and Activities | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Task 1: Inception and Review | | | | | | | | | | | | | | | | | | | | | | | | |
| Inception Report | █ | █ | | | | | | | | | | | | | | | | | | | | | | |
| Status quo & international review | | █ | | | | | | | | | | | | | | | | | | | | | | |
| Task 2: Infrastructure Funding Models | | | | | | | | | | | | | | | | | | | | | | | | |
| Assessment of the infrastructure financing | | | █ | █ | █ | | | | | | | | | | | | | | | | | | | |
| Review of public finance principles and models | | | | █ | █ | | | | | | | | | | | | | | | | | | | |
| Financial Model and User Manual | | | | | | █ | █ | █ | | | | | | | | | | | | | | | | |
| Sources of funding report | | | | | | | █ | █ | █ | | | | | | | | | | | | | | | |
| Evaluation of Impacts of the Financing Model | | | | | | | | █ | █ | █ | | | | | | | | | | | | | | |
| Financial Arrangements | | | | | | | | | █ | █ | █ | | | | | | | | | | | | | |
| Task 3: Pricing Strategy | | | | | | | | | | | | | | | | | | | | | | | | |
| Pricing strategy gap analysis | | | | █ | █ | █ | | | | | | | | | | | | | | | | | | |
| Pricing/tariff principles and assumptions report | | | | | █ | █ | █ | | | | | | | | | | | | | | | | | |
| Develop Pricing Models | █ | █ | | | | | | █ | █ | █ | | | | | | | | | | | | | | |
| Formulate Pricing Strategy | | | | | | | | | | █ | █ | █ | █ | | | | █ | █ | | | | | | |
| Evaluate Socio-economic Impacts | | | | | | | | | █ | █ | █ | █ | | | | | | | | | | | | |
| Task 4: Economic Regulator | | | | | | | | | | | | | | | | | | | | | | | | |
| Review international regulator models | | | | | | █ | █ | | | | | | | | | | | | | | | | | |
| Develop Institutional & Financial models | | | | | | | | | █ | █ | █ | | | | | | | | | | | | | |
| Tariff setting and review process handbook | | | | | | | | | | | | █ | █ | █ | | | | | | | | | | |
| Task 5: Stakeholder Engagement | | | | | | | | | | | | | | | | | | | | | | | | |
| Funding model consultation | | | | | █ | █ | | | | | | | | | | | | | | | | | | |
| Pricing strategy consultation | | | | | | | █ | █ | | | █ | █ | █ | █ | █ | | | | | | | | | |
| Economic regulator consultation | | | | | | | | | | | █ | | | | | | | | | | | | | |
| Capacity building | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Task 6: Project management | | | | | | | | | | | | | | | | | | | | | | | | |
| Management and coordination | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Quality Assurance and Backup | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |

8 Project Management

A project of this complexity requires a dedicated project management capacity to ensure coordination of the work streams and on-going communication with the client. It is assumed that operational issues will be managed with a DWA project management unit on a monthly basis around progress reports, while strategic guidance will be provided by a project steering committee on a quarterly basis around key deliverables.

It is however important to recognise that project management flexibility is necessary to enable the project to adapt to emerging understanding and information that arises during the process and in parallel processes such as the Institutional Realignment.

8.1 Quality Assurance and Backup

The Project Team will be backed up and supported by the consortium companies, all of which have well established backstopping and quality assurance procedures, with a proven track-record in large projects. The association companies have offices in the Pretoria and Cape Town from which the project will be managed and therefore can provide facilities and flexible input to the project team.

The project team will complete the project to the satisfaction and expectations of the DWA project management team in a manner which conforms to good professional practice, business integrity and contractual requirements. The achievement of good quality depends upon all aspects of the consultants' operations, particularly the calibre of the proposed staff and the establishment of sound project administration procedures.

An important element of this quality assurance is the focus on the normal implementation activities, with on-going guidance and involvement of the relevant project directors (QA managers) during the process, so that the results meet client expectations. This focuses particularly in project planning, reporting and review of deliverables, including review of project progress and assumptions.

Progress reports will be prepared by the consultant and submitted quarterly to the DWA project manager for approval. The reports will provide an overview of the on-going activities and any problems encountered in the implementation of the project (with proposed mitigation measures).

9 Risks

There are a number of risks associated with this project that are highlighted here. It will be important, during the implementation of the project, to remain aware of the risks and to develop appropriate mitigation strategies.

Decision making and leadership: There are a number of points during the project at which DW top management, as represented through the Steering Committee, will need to make decisions in order for the project to progress. These decision making points have been highlighted on the workplan, with PSC meetings arranged to coincide with such points in order to facilitate the decision making process. Should the required decisions not be made in a timely manner, the conclusion of the project within the required timeframes may be put at risk. It is in order to mitigate this that the PSC meetings have been scheduled at relevant decision making points, and it will be important to ensure that such meetings take place as scheduled.

Access to quality information: The ability of the PSP to complete the project effectively is premised on there being access to information of an appropriate quality. Until the project is under way it will be difficult to determine the quality of the information that will be available to the PSP. The quality of the available information will determine the results of the project. This is particularly relevant to the development of the funding models in relation to information on infrastructure values currently and in the future.

Task execution: In several instances during the duration of the project, various members of the project team on the side of the PSP and the client will be required to execute tasks either separately or jointly that will have an impact on the progression of the project. It is important that at each of these points these tasks are executed to the required level of quality and with the pre-determined timeframes.

Intergovernmental Co-ordination: In order for the project to generate effective results, there will be a need for engagement and co-ordination with several other government departments, in particular National Treasury, the Presidency, DPSA and sector based departments such as the Departments of Agriculture, Mining, Energy and Forestry. This engagement and co-ordination must be driven by DWA. Failure to get these departments fully on board with the project will put the project deliverables and timeframes at risk.

10 Table of Deliverables

| Table of Deliverables | |
|--|--|
| Task and Activities | Deliverable |
| Task 1: Inception and Review | Task 1: Inception and Review |
| Inception Report | Inception Report |
| Status quo & international review | International Review |
| Task 2: Infrastructure Funding Model | Task 2: Infrastructure Financing |
| Review of principles and experience | Infrastructure Financing Review Report |
| Assessment of the infrastructure financing | Base infrastructure financial statement |
| Evaluate funding options | Funding Options Report |
| Develop Financial Model | Financial Model and User Manual |
| Evaluate financial and socio-economic aspects | Impacts report |
| Financial Arrangements | Funding Model report |
| Task 3:Pricing Strategy | Task 3:Pricing Strategy |
| Pricing strategy gap analysis | |
| Pricing/tariff principles and assumptions report | Pricing/tariff principles and assumptions report |
| Develop Pricing Models | |
| Draft Pricing Strategy | Draft Pricing Strategy |
| Evaluate socio-economic impacts | Socio-economic impact assessment |
| Task 4: Economic Regulator | Task 4: Economic Regulator |
| Review international regulator models | Literature review |
| Develop Institutional & Financial models | Handbook |
| Tariff setting and review process handbook | Preferred Institutional Options Report |
| Process of economic regulator | Economic Regulator Establishment Report |