National Pricing Strategy for Water Use Charges

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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List of Acronyms

CMA	Catchment Management Agency
CUC	Capital Unit Charge
DAFF	Department of Agriculture, Forestry and Fisheries
DWS	Department of Water and Sanitation
ER	Economic Regulator
FIBC	Future Infrastructure Build Charge
HDI	Historically Disadvantaged Individuals
MIG	Municipal Infrastructure Grant
M&I	Municipal and Industrial
NWA	National Water Act, 1998
NWRS	National Water Resource Strategy
O&M	Operations and Maintenance
RoA	Return on Assets
RPF	Resource Poor Farmers
SFRA	Stream-Flow Reduction Activities
Stats SA	Statistics South Africa
TCTA	Trans-Caledon Tunnel Authority
WDCS	Waste Discharge Charge System
WD Levy	Waste Discharge Levy
WHO	World Health Organization
WMA	Water Management Area
WMC	Waste Mitigation Charge
WRC	Water Research Commission
WRA	Water Research Act, 1971
WRMC	Water Resources Management Charge
WUA	Water User Association

General comments

The Department is used instead of DWS, to ensure that the document does not become outdated if the department changes its name, i.e. DWA changed to DWS – the definition should refer to DWS or its successor.

1. Introduction

This draft revised pricing strategy is published for comment in terms of the National Water Act (NWA), 1998 (Act no. 36 of 1998).

1.1. Why this pricing strategy?

This pricing strategy provides the framework for the pricing of the use of water from South Africa's water resources, i.e. the use of raw (untreated) water from the water resource and/or supplied from government waterworks and the discharge of water into a water resource or onto land. It is developed in terms of the National Water Act, which empowers the Minister of Water & Sanitation (the Minister), with the concurrency of the Minister of Finance, to establish a pricing strategy for charges for any water use within the framework of existing relevant government policy. Socio-economic, environmental and other changes warranted this third revision of the pricing strategy.

1.2. What are the objectives of the pricing strategy?

This strategy seeks to facilitate reform in the sector as well to provide transparency and predictability to water users on how water will be priced. It is intended to support the achievement of the goal, as articulated in the National Water Resources Strategy, that water is efficiently and effectively managed for equitable and sustainable growth and development. Within this context the primary objectives of this pricing strategy are to:

- Ensure that the costs of achieving and maintaining the Resource Quality Objectives are sufficiently recovered through the water use charges (or to ensure that there is adequate funding for the achievement and maintenance of the RQOs). It is also critical to ensure that the water resource management systems implemented are cost effective and do not become an unnecessary financial burden on the water users
- Ensure that there is adequate funding for the effective operation, maintenance and development of waterworks by the Department and other water management institutions
- Provide an enabling framework for the provision of financial assistance and the use of water pricing to support the redress of racial and gender imbalances in access to water and to support the redistribution of water for transformation and equity purposes.
- Facilitate financial sustainability of water management
- Promote/facilitate water use efficiency. In the context of water scarcity, it is critical to ensure an efficient allocation, which requires that the price of water reflects its scarcity

value, to ensure firstly that water is conserved and secondly that some water is redirected for optimal economic benefits while not harming social benefits.

- Establish a platform for an independent regulator for improved economic regulation across the entire water value chain.

1.3. Principles for water pricing

This pricing strategy is based on sound principles and aims to provide a greater degree of transparency on how raw water is priced in the country. It recognises the developmental context of the South African water sector and acknowledges that where, for social equity, environmental or affordability reasons, water management cannot be sustainably financed from specific water users, then that shortfall must be recovered transparently. The following principles underpin the revised pricing strategy:

- ***Hybrid tariff approach*** – The pricing strategy provides for a combination of nationally and water management specific charges to facilitate the development of affordable tariffs to all users; some elements of the water charge will be levied on the basis of a national charge for a particular sector(s), and some on the basis of a scheme based or catchment level charge.

- ***User pays and recovery of costs*** – The intent of the pricing strategy is to provide for the full recovery of costs associated with the management, use, conservation and development of water resources and the associated administrative and institutional costs. Users must pay for the costs of their water use in this regard, taking into account the need for targeted subsidies where, due to socio-economic conditions, users are not able to afford the costs resulting from full application of these principles.

- ***Polluter pays*** – Allied to the principle above, this principle sets out that polluters must pay for the costs of their water discharge or pollution.

- ***Differential charges and capping of water use charges*** – The pricing strategy allows for differential charges and the capping of water use charges to designated water use sectors to support the achievement of key national objectives, such as food security, racial and gender equity, job creation, economic development.

- ***Fiscal support*** – The Department will provide fiscal support for core national and public interest functions, undertaken by water management institutions, which cannot be recovered fully through water use charges.

- ***Ecological sustainability*** – The pricing strategy will facilitate funding to ensure the provision of water for the ecological reserve and the water sector's contribution to maintaining water ecosystems.
- ***Accountability*** – Funding will be allocated to specific water management institutions so that there is transparency and accountability for the funds that are generated through the pricing strategy
- ***Efficiency*** – The pricing strategy makes provision for an economic regulator to ensure that the water management charges are maintained at affordable levels
- ***Multi-year tariffs*** – The pricing strategy provides for multi-year tariff determination to facilitate longer term planning and greater levels of certainty for water institutions and users.

1.4. Legal mandate of pricing strategy

In terms of Section 56 of the NWA, the Minister may, with the concurrence of the Ministry of Finance, from time to time by notice in the Government Gazette, establish a pricing strategy for charges for any water use within the framework of existing relevant government policy.

The Pricing Strategy contains the objectives, methodology and implementation strategy for setting water use charges for purposes of:-

- funding water resource management by DWS and water management institutions, through water use charges, (Section 56 (2) (a));
- funding water resource development and use of waterworks by DWS and water management institutions, (Section 56 (2) (b));
- achieving the equitable and efficient allocation of water, (Section 56 (2) (c));
- providing for a differential rate for waste discharges, hereafter referred to as the WDCS, to enable the control and treatment of pollution of water resources (Section 56 (5));
- enabling the provision of financial assistance and the use of water pricing to support the redress of racial and gender imbalances in access to water and to support the redistribution of water for transformation and equity purposes.

This document sets out the revised water resources pricing strategy, based on the elements outlined above.

1.5. Definitions used in the pricing strategy

In this pricing strategy any word or expression to which a meaning has been assigned in the National Water Act shall bear that meaning and, unless the context otherwise indicates -

Abstractive uses mean taking water from a water resource for use described in the NWA, or the supply of water by a water board, CMA or another institution for use by a third party user;

Consumer Price Index (CPI) reflects the general cost of living and is a representative basket of goods and services to the consumer;

Production Price Index (PPI) reflects the cost of manufacturing goods and includes capital and intermediate goods (excluded from the CPI), excludes VAT (included in the CPI) and excludes services (which account for 45% of the CPI basket);

Scheme means a single Government waterworks or collection of inter-related Government waterworks supplying a common user base;

2. Water Use Categories

In terms of Section 56 (3) of the NWA, the pricing strategy may differentiate on an equitable basis, on the basis of geographic areas, and between different categories of water use; and different water users.

This pricing strategy provides for six water use categories, from the previous four, to better represent the water user groups and to allow for more clearly targeted charges.

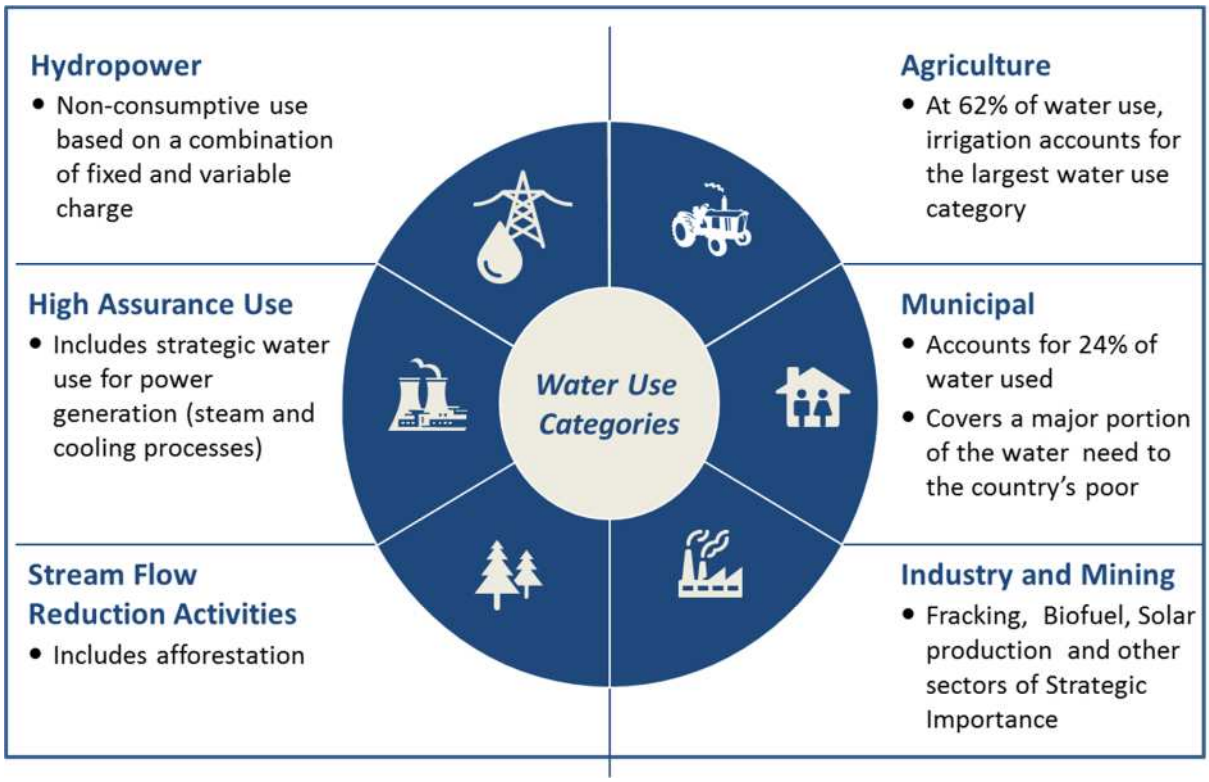

Figure 1: Proposed water use categories for charging purposes

The main changes in these categories are the following:

- The split of the formerly Domestic and Industrial category into two separate groups, Municipal and Industrial/Mining
- The addition of the High Assurance Use, representing users with an assurance of supply of 99.5%
- A category of hydropower has also been introduced to be able to charge for water use by hydropower plants that are due to be developed as part of the energy mix in the country.

3. Categories of Charges

In terms of the Section 56(1) and (2) of the National Water Act, the pricing strategy may contain a strategy for setting water use charges:

- for funding water resource management, including the related costs of:
  - gathering information;
  - monitoring water resources and their use;
  - controlling water resources;
  - water resources protection, including the discharge of waste and the protection of the Reserve; and
  - water conservation;
- for funding water resource development and use of waterworks, including:
  - the costs of investigation and planning;
  - the costs of design and construction;
  - pre-financing development;
  - the costs of operation and maintenance of waterworks;
  - a return on assets; and
  - the costs of water distribution; and
- for achieving the equitable and efficient allocation of water.

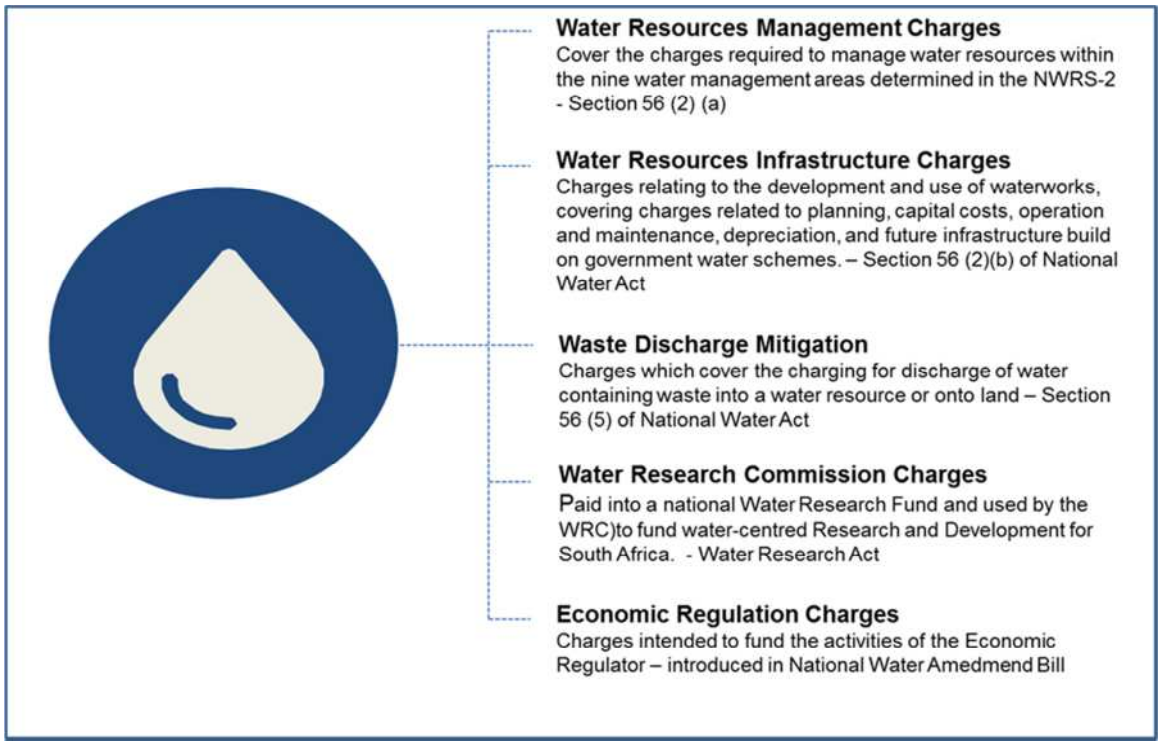

Figure 2: Categories of Charges

The water use charge, proposed in this pricing strategy, makes provision for these water resources management costs within five categories of charges. It must be noted that, in terms of the NWA, that differential water use charges will be applied and that not all water users will be liable for all categories of charges.

3.1. Water Resources Management Charge

The Water Resources Management Charge (WRMC) will fund the water resources management activities in each of the WMA. These activities relate to the protection, allocation, conservation, management and control of all of the nation's water resources. There are two components to WRMC, these being the abstraction water use charge and waste discharge related water use charge. The activities that may be partially or completely funded from the WRMC are listed in Table 1.

These activities will be progressively undertaken by CMAs when they are established and fully capacitated but will be undertaken by or in conjunction with DWS National and Regional Offices in the interim. In WMAs where both the Department and CMAs are performing WRM functions, income will be shared pro-rata to input costs and this split will be reflected in all sectoral charges. WRMCs will be levied to municipal, industrial, agricultural, SFRA and high assurance users.

It must be noted that Hydropower users will not be liable for this charge. Differential charges may be levied within a WMA, based on defined geographical areas, or pertaining to specific water use categories.

Function / Activities	Taking water (abstraction activities)	Waste discharge activities
1. Catchment management strategy and Water resources planning	• Resource studies, investigations and integrated strategy development	
	• Allocation plans	• Water quality management plan
2. Resource directed measures	• Implement programmes to monitor Resource Quality Objectives (RQOs); • Implement source-directed controls to achieve resource quality objectives • Report against the achievement of the Class and RQOs; • Report on the water balance per catchment (i.e. water available for allocation after consideration of ecological requirements)	
3. Water use authorization	• Registration of water use	
	• Abstraction & stream flow reduction activities Authorization	• Waste discharge activities Authorization
4. Control and enforcement of water use	• Control Monitoring and enforcement of Water Use	
	• Abstraction & stream flow reduction activities • Dam safety control (private dams)	• Waste discharge control
5. Disaster management	• Planning and management of disaster (Administration)	• Pollution incident planning and response (management)
6. Water resources management programmes	• Integrated water resources programmes	
	• Implementing of water management strategies (e.g. water conservation and water demand management)	• Implementing of water management strategies (e.g. cleaner technology, dense settlements, waste discharge strategies)
7. Water related institutional development (Stakeholder Management empowerment)	• Stakeholder participation, empowerment, institutional development & coordination of activities o Establishment and regulation of water management institutions o Stakeholder consultations o Capacity and Empowerment of stakeholders	
8. Water weed control	• Aquatic weeds control	
9. Maintenance and Restoration of Ecosystems to improve water resources	• Planning and implementation of ecosystem maintenance and rehabilitation programs, required for water resource protection, e.g. sediment control, nutrient trapping, riparian rehabilitation • Control of invasive alien plants with acknowledged negative impacts on water resources, e.g. riparian zones, mountain catchment areas, wetlands and in areas where there could be an impact of aquifers	
10. Geo-hydrology and hydrology	• Groundwater and Surface water Monitoring • Compiling of maps and yield information • Extending and maintaining the hydrological database & compilation of information	
11. Administration & Overheads	• Administrative, institutional & overheads for regional office or CMA	

Table 1: Activities funded by the WRMC

3.1.1. Taking water from a water resource (Section 21(a) of NWA)

This charge will be WMA specific and will be based on the total costs (the Department and CMAs) of undertaking water resources management functions within a Water Management Area. It will apply as follows:

	Agriculture will be liable for all WRM charge, prorata to its use in the WMA. WRM charge for resource poor farmers will be phased in over ten years, from the date of registration of the water use, with no charge imposed for the first five years, and the charges then increasing incrementally at 20% per annum until the full charge is imposed in year 10.
	Municipal users will attract all abstraction related water resources management costs pro rata to its share of total productive use in the water management area.
	Industry and mining will attract all abstraction related activity costs pro rata to use.
	High assurance users will attract all abstraction related activity costs pro rata to use.
	Afforestation will attract all abstraction related activity costs, pro rata to productive use, except for dam safety control. WRM charge for resource poor tree growers will be phased in over ten years, from the date of registration of the water use, with no charge imposed for the first five years, increasing incrementally at 20% per annum until the full charge is imposed in year 10.

Table 2: WRM charges for abstraction related water use

The allocation of functions, in terms of abstraction and waste discharge related users, will be in terms of Table 1. Integrated costs for abstraction and waste discharge activities will be split between the two charges, in relative proportion to the management effort. Where certain actions cannot be accurately costed at a national scale, a nominal, justifiable charge will be set by the Department.

The unit cost will be determined by dividing the total cost by the total registered volumes for applicable water use sectors in each WMA. The principles for determining the registered volumes for each sector are included in Appendix 1.

In situations where there is an under recovery of costs, or where there is limited revenue opportunities in the WMA, to cover the costs of public interest functions, i.e. activities that are in the interest of the broader society, the Department will provide fiscal support to the affected CMAs.

In the case of inter-basin transfers, the proportional water resources management costs of exported water will be raised in the receiving WMA and transferred to the transferring WMI. Wherever possible interlinked catchments will be combined for WRM charge purposes and the funds will be allocated in proportion to the functions performed in each catchment. The activity input cost regarding an inter WMA transfer will be allocated only to those sectors that benefit directly from the transfer through water allocations in the receiver WMA. Where the quality of streamflow from an upstream WMA imposes a water quality management cost on the downstream WMA, this additional cost will be funded by WRM charges on waste dischargers in the upstream WMA.

Rebates and Subsidies on WRMCs

A portion of certain charges (e.g. Ecosystem Rehabilitation and Maintenance programme charges) may be rebated to Agricultural and SFRA users provided they can prove compliance with those provisions of natural resource management laws and regulations that protect water resources and natural infrastructure in the public good.

Sector	Sub Sector	Pricing Implications
	**Commercial forestry**	WRMC will be capped at R10 per hectare plus Producer Price Index (PPI) rate (%) at April of each year with 2002-03 financial year as the base year[1]
	Resource Poor Foresters (<10 hectares)	Resource poor foresters with land equal to or less than ten hectares under cultivation will be exempt from the WRMC charge
	Resource Poor Foresters (>10 hectares)	The WRMC will be phased in over ten years, from the date of registration of water use, with no charge for the first five years, and the charges increasing incrementally at 20% per annum until the full charge is imposed in year ten.
	**Irrigation Sector**	WRMC will be capped at 1.5 cent per m^3 plus the PPI rate (%) at April of each year with 2007-08 as base year[2]
	Resource Poor Farmers	The WRMC will be phased in over ten years, from the date of registration of water use, with no charge for the first five years, and the charges increasing incrementally at 20% per annum until the full charge is imposed in year ten.

Table 3: Rebates and Subsidies on WRMCs

[1] It has been proposed that the current capping of WRMC for forestry should be phased out over a five year period, decreasing at 20% per annum, in the next version of the pricing strategy.
[2] It has been proposed that the current capping of WRMC for agriculture should be phased out over a five year period, decreasing at 20% per annum, in the next version of the pricing strategy.

3.1.2. Water Resources Management Charges for Waste Discharge related water use

This component of the WRMC relates to waste discharge related use, as defined in Section 21 (f) – (j) of the NWA. All water use sectors, with the exception of hydropower and stream flow reduction activities will be liable for these charges.

S21 Waste Discharge related water use

- Engaging in a controlled activity (where the controlled activity relates to waste discharge activities)
- Discharging waste or water containing waste into a water resource
- Disposing of waste in a manner which may detrimentally impact on a water resource
- Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process
- Altering the bed, banks, course or characteristics of a watercourse; (where such activities have impacts on the water quality of the water course)
- Removing, discharging or disposing of water found underground if it is necessary

The calculation of charges will be based on the volume of wastewater discharged from a point source, and on the degree of management activity required for non-point source registered uses. The budgeted water resources management activity costs allocated to waste discharge related water use will be allocated to the water use categories according to the ratio of management effort applied in the WMA. Certain activities will only benefit or be related to specific water use categories and therefore will only be allocated to those categories. No differentiation will be made between sectors within a water use category. Cost allocations will be based on:-

- **Point source discharges -** Management effort for point dischargers, attracting all waste discharge related activity costs
- **Sea outfalls -** Management effort for marine outfalls, attracting waste discharge activity costs except water resources monitoring, resource directed measures and waterweed control
- **Waste disposal to facilities / land -** Management effort for waste disposal to land, attracting all waste discharge related activity costs
- **Irrigation of land with water containing waste -** Management effort for irrigated effluent, attracting all waste discharge related activity costs

The additional water quality management cost related to discharge into a downstream WMA will be allocated to the waste discharge water use categories, except marine outfalls, based on the same management effort ratios.

3.2. Water Resources Infrastructure Charge

While Section 56 2(b) of the NWA defines the costs related to the development and use of waterworks, Section 111 mandates the Minister to finance the acquisition, construction, alteration, repair, operation and control of Government waterworks from funds appropriated by Parliament or obtained from any other source.

The water resources infrastructure charge provides for this development and use of Government waterworks and may include the related costs of investigation, planning, design and construction of water schemes, which constitute the capital cost of projects.

The pricing strategy considers the costs through the full lifecycle of the infrastructure and therefore makes provisions for four components to this charge; namely:

- Operations and Maintenance
- Depreciation / Refurbishment
- Future Infrastructure Build Charge (FIBC), and
- Capital Unit Charge.

Need for water use charges

- If water use charges are too low, they will lead to underinvestment, lack of maintenance and unwarranted fiscal subsidies.
- There is a need to adjust to higher real charges over time to accommodate the cost of investing in supply capacity to meet rising demand and to maintain and refurbish existing infrastructure.
- There is also a need to invest in economic regulation of infrastructure financing and management.

These charges will be based on annually updated capital and operational expenditure plans of institutions managing water resources infrastructure and will take into account parliamentary appropriations and other contributions. It will be a differentiated tariff for the water use categories, and all charges will be scheme specific with the exception of the FIBC, which will be determined on a national basis.

In terms of development of new infrastructure, Department funding will in future be confined mostly to social water resource development or betterment projects, which conform to the purpose, set out in Section 2 of the NWA, 1998, and where the demand is not driven by specific commercial water users or sectors. Capital expenditure related to the social component of Government waterworks for the promotion of equitable access to water, as well as meeting current and future international obligations and dam safety betterments, will qualify for financing under Section 111 of the NWA.

The funding of commercially viable, new water infrastructure will be done by off-budget debt financing through the TCTA. The social component, associated with development and betterment, within commercially viable infrastructure projects will be funded by the State. Funding of water

resources management infrastructure, such as gauging stations will be fund by the Department, if it supports the national monitoring network, and by users at a WMA or scheme level, if the monitoring infrastructure is needed for non-national purposes.

The application of the four infrastructure charges will therefore vary depending on the funding arrangements of the schemes. The table below illustrates the applicability of the infrastructure charges on new and existing government water schemes, which are either commercially or government funded.

A summary of the applicability of the charges to each sector is shown in the table below, with greater detail provided in the following sections.

	Existing Schemes			New Schemes	
Charge to be Levied	Commercial portion of schemes funded by the Minister	Social portion of schemes funded by the Minister	Funded off-budget and debt has been repaid	Fully or partially funded by the Minister (social)	Off-budget funded portion of scheme
Operation and Maintenance	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Depreciation / Refurbishment	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Future Infrastructure Build Charge	*Yes*	✗	*Yes*	✗	✗
Capital Unit Charge	✗	✗	✗	✗	*Yes*

Table 4: Infrastructure related charges applicable under different scenarios

3.2.1. The Operations and Maintenance Charge

This charge will facilitate the recovery of the direct and indirect operations and maintenance costs on government water schemes to ensure that infrastructure is in an optimum condition and that there is continued security of supply. The operation and maintenance charge will be recovered on a scheme or system basis and can either be based on actual cost recovery or on a forecast of annual O&M costs and of water use. This charge is applicable to all sectors,

Standard performance and capital value can only be restored through refurbishment. Examples are the replacement of pumps, sluice gates on dams, the concrete lining of a canal or a portion of a pipeline.

except the irrigation sector for which it is capped.

The direct operation and maintenance charge includes fixed and variable costs, which can be attributed directly to administrating, operating and maintaining schemes (e.g. pumping cost, water weed control, pump maintenance, flood gate maintenance, etc.) and distribution costs. Direct costs will be allocated directly to sectors where this is possible. The cost of joint works and operations will be shared on a volumetric basis.

The indirect costs are the costs which cannot be directly attributed to a specific scheme, but which contribute towards the sustainable management of the water schemes of the entire area. This includes the allocated regional office/utility cost, allocated area office cost and the allocated economic regulation costs. Indirect operation and maintenance costs will be allocated to the different sectors in an equitable manner.

3.2.2. The Depreciation Charge

The depreciation charge provides for the loss in functional performance and real term value of existing water resource infrastructure that occurs due to wear and tear, decay, inadequacy and obsolescence, and which is not restored by regular maintenance. The depreciation charges will be used to refurbish existing assets on a prioritised basis, as and when required. As refurbishment will only restore the original capital value of assets in real terms, no increases in charges will take place as a result of refurbishment. This charge is applicable to all sectors supplied from Government waterworks, excluding hydropower. Depreciation charges for the irrigation sector will be capped.[3]

The depreciation charge will be scheme or system specific. Depreciation of the replacement value of the assets is charged based on a straight-line basis over the estimated useful life of each component of an item of property, plant and equipment. Depreciation commences when the asset is available for its intended use by management. Land, artwork and assets under construction are not depreciated. All other property, plant and equipment, including capitalised leased assets, are depreciated on a straight-line basis over their estimated useful lives or the term of the lease, whichever is shorter.

Major repairs are depreciated over the remaining useful life of the related asset or to the date of the next major repair, whichever is shorter. The estimated useful lives over which the asset will be depreciated are in accordance with the table below.

[3] Need to describe implication of capping of depreciation charges for irrigation, i.e. process, capping limits, etc.

Component	Previous Estimated Total Useful Life (years)[4]	Proposed Estimated Total Useful Life (years)[5]
Water storage related infrastructure:		
• Dams & Weirs	45	40 - 100
• Canals	45	40 - 100
• Tunnels	45	40 - 100
• Reservoirs	Not defined	80
Pump Stations:		
• Structures	30	10 - 80
• Components	Not defined	3 - 50
Pipelines		
• Syphons & Concrete pipelines	45	40 - 100
• Pipeline structures	30	25 - 75
• Pipeline components	Not defined	20 - 75
Buildings		
• Building structures	40	50 - 80
• Building components	Not defined	10 - 20

Table 5: Depreciation of the depreciable portion

Calculation formula for annual depreciation cost (ADC):

$$\text{ADC} = \frac{\textit{Replacement value}}{\textit{Expected useful life}}$$

On schemes funded off budget, the depreciation charge will only be applicable once the loans have been repaid. If refurbishment is required during the repayment period, a refurbishment charge will be arranged by agreement between the parties.

3.2.3. The Future Infrastructure Build Charge

The FIBC will support the development of social and economic development stimulus infrastructure listed under Section 56(2)(b)(i, ii and iii) of the NWA. Social infrastructure relates to water resources infrastructure supplying basic water requirements of municipal water users in rural areas, whether

[4] Depreciable portion (%) and Estimated Total Useful Life (years) were prescribed in previous versions of the pricing strategy. The depreciable portion was based on a set of assumptions, e.g. the lining of a canal without the excavation and land, the steel of a pipeline without the land purchase, the corrodible outlet works of a dame and not the wall itself, etc. While this was overly complicated and could lead to misunderstandings, it was also not aligned with standard industry depreciation practices used by water boards and related entities. Another potential problem with depreciating only a portion of an asset is that the loan can never be paid back without showing a profit.

[5] It is proposed that the full component is depreciated over a certain period, and not only a portion as reflected in the previous pricing strategy. The Estimated Total Useful Life (years) of asset components are also aligned with standards industry depreciation practices used by water boards and related entities.

this is the entire scheme or a portion of a municipal supply system. Economic stimulus infrastructure, is water resources infrastructure that will provide for future economic water use, where there are currently no users, or where existing users cannot afford the water supply (such as Historically Disadvantaged Individuals (HDI) farmers), but where the water supply is necessary to provide for future economic development. The classification of a project (social or commercial) will be at the sole discretion of the Minister. The FIBC will provide for the costs of investigation, planning, design, construction and pre-financing of new infrastructure and the betterment of already existing infrastructure. The FIBC replaces the RoA charge provided for in the 2007 pricing strategy.

The FIBC will be paid by municipal, industrial/mining and high assurance use categories only. This pricing strategy retains the capping of infrastructure charges for the irrigation sector and these may (or will) be uncapped in future.

The FIBC will be calculated at a national level, such that all users liable for the FIBC, pay the same charge per m^3. It will be based on the annual costs for social infrastructure development/betterment and management costs (investigation, planning, design, pre-financing, overheads, etc.), as defined in the Department's 10 year infrastructure plan, applied to water use volumes of all included user categories.

Where the Minister develops waterworks, to promote future economic development, social users will be charged in terms of the policy for on-budget governmental funding, while a rate equivalent for off-budget funding will be negotiated with economic users. As economic development materializes in the designated areas, users may move from being classified as social users to being classified as economic users with the concomitant change in charges.

3.2.4. The Capital Use Charge

The current institutional framework empowers the Minister to direct the water management institutions to fund government water schemes off-budget i.e. debt financed, where such infrastructure is commercially viable. The Capital Use Charge (CUC) will be determined for each scheme and will provide for the debt service requirements on these commercially viable projects, within a reasonable period and taking cognizance of affordability, the economic life and the timing of potential future augmentation of the infrastructure. The CUC may however, be dealt with on a system or a national basis, should institutional reforms enable such change. It will be based on water used from the scheme and not necessarily on water provided into the scheme.

The CUC will be based on the financial models for the project and will be determined in consultation with relevant water users. It will be formalized through water supply agreements with either the

Department or the WMI, depending on the implementation arrangements. The CUC may be subject to an annual review where increases are passed through automatically or under specific conditions negotiated between the parties. All water users supplied from the scheme, with the exception of the social component, will be liable for the CUC. Users of the social component of the scheme will be subject to tariffs applicable to state funded schemes.

The CUC will cease once the project debt has been repaid, the project will then attract all charges that are applicable to State funded schemes. Where the users of new infrastructure fund their portion of such infrastructure planning, design and construction through a lump sum contribution they will not be liable for paying the CUC of that scheme. They will, however, be liable for the FIBC once any loan has been paid off, or after an equivalent time period if there is no loan.

3.2.5. Assurance of Supply

Strategic water users have a high assurance of water supply that is equal to 99.5%. This means that they should, on average, get their full supply of water for all but one year out of two hundred. Municipal and Industrial / Mining users have a 97% assurance of supply, which is higher than the assurance of supply of 70% for Agricultural users. These different assurances of supply are reflected in the charges that the different sectors pay since the assurance of supply is built into the calculation of the charge.

The assurance of supply results in users with a higher assurance of supply pay more for their water than those with a lower assurance of supply. It applies to the following infrastructure related charges:

- Future Infrastructure Build Charge (FIBC)
- Capital Unit Charge (CUC).

Assurance of Supply methodology

- Total volume of water available from a scheme or system is allocated to different water use categories that receive water as per assurance of supply that applies to each category
- Average volume of water that each water user category will receive from a scheme or system is adjusted by the assurance of supply that applies to the respective categories
- A new assurance of supply adjusted total volume of water is determined for each category
- Percentage cost allocation for each water user category is them determined by dividing the new assurance of supply adjusted volume for each water use category by the new assurance of supply total volume of water

3.2.6. Hydropower

Hydropower is a critical renewable energy source. Water used in hydropower generation is non consumptive, apart from possible increase in evaporation, and it is therefore necessary that appropriate pricing mechanisms are applied to support viability of these schemes. This pricing

strategy therefore proposes a charge based on a combination of a fixed charge on installed generation capacity, and a variable charge based on power generated.

Micro hydropower includes all applications with an installed capacity of less than 1 MW and is considered for self or own use only. These applications will be exempt with no charge applicable. Systems with a capacity between 1 MW and 20 MW are considered commercial applications and the charges below will apply:

	Scenario A	Scenario B
	Hydropower plant integrated within DWS's infrastructure at the dam	**Hydropower plant developed downstream of DWS's infrastructure and downstream of the dam wall**
Fixed charge	R10.00 / kW per annum	R5.00 / kW per annum
Variable charge	R0.01 / kWh	R0.01 / kWh

Table 6: Commercial Hydropower plant charges

Large hydropower that is been installed on National Infrastructure form part of long term mutually beneficial agreements between DWS and the owner / operator of these schemes as these were mostly joint developments of the dams and associated infrastructure. These collaboration agreements spell out the rules to be applied, and will remain in place as is.

New large scale hydropower (i.e. >20 MW) may be negotiated between the Department and the owner / operator of such plant on a similar basis as the existing collaboration agreements, or in the absence of these, the small scale hydropower charges should apply.

In implementing the proposed charges for small scale hydropower generation, each hydropower operator will have to provide the Department with a copy of their annual returns to NERSA. This information will provide the basic input to charge a tariff to the power generators that will establish business within the next few years. This charge may be subject to an annual escalation equivalent to an appropriate basis for escalation.

Where, a hydropower generation operator requires water to be released from a dam to generate power at times that such water would not be used by other downstream water users, then abstraction related water resources management and infrastructure charges will apply to this volume of water. In such instances the hydropower generator would need to acquire a water use license for the taking of water which qualifies as a section 21 (a) water use in terms of the NWA.

3.3. Waste Discharge Charges

This Waste Discharge Charge System (WDCS) is based on the polluter pays principle and provides an economic instrument to assist other regulatory tools in moving towards (or maintaining) the desired state of surface water resources, represented by RQOs or Resource Water Quality Objective (RWQOs). According to Section 56(5) of the NWA the pricing strategy may provide for a differential rate for waste discharges, taking into account the characteristics of the waste discharged, the amount and quality of the waste discharged, the nature and extent of the impact on a water resource caused by the waste discharged, the extent of permitted deviation from prescribed waste standards or management practices, and the required extent and nature of monitoring the water use. The application of the WDCS to groundwater resources will be considered in subsequent revisions of the pricing strategy.

The WDCS is intended to:

- promote the sustainable development and efficient use of water resources
- promote the internalisation of environmental costs by waste dischargers
- create financial incentives for waste dischargers to reduce waste and use water resources in a more optimal manner, and
- recover costs associated with mitigating resource quality impacts of waste discharge

The WDCS will be implemented at a catchment or sub-catchment level, as may be appropriate, as part of a water resources management planning process to support the achievement or maintenance of resource classification and the objectives of the Catchment Management Strategy. The WDCS may be implemented in catchments where the RQOs are either exceeded or threatened. In the absence of a class and associated resources quality objectives (RQO), RWQO will be refined and set as part of the WDCS implementation in that catchment.

Potential Mitigation Strategies

- *Removal of load from the water resource*: enables the recovery of costs for developing and operating regional mitigation schemes, initiatives or projects for the reduction of water quality loads within the water resource.
- *Water resource system operation for water quality management*: enables the recovery of costs associated with reduced system yield associated with the management of river-reservoir systems to reduce the impact of water quality problems.
- *Treatment for downstream water users*: enables the recovery of costs incurred in developing and operating additional treatment requirements for downstream users, particularly where water quality does not meet specified resource quality objectives.
- *Treatment at source*: enables a group of dischargers to contribute directly to the costs of reducing waste load from a specific source, including regional schemes to collect and treat waste from a number of sources before it enters the water resource.

The WDCS will be levied on water quality variables that critically impact on the RQOs, which will be selected with due consideration to the type of waste discharge sources, the nature of the waste typically discharged, and the cost-effectiveness of monitoring different variables.

The WDCS may, amongst others, be levied on the following water quality variables:

- *Nutrients*: phosphate, nitrate & ammonium
- *Salinity*: Total Dissolved Solids, Electrical Conductivity, chloride, sodium & sulphate
- *Heavy Metals*: arsenic, cadmium, chromium, copper, mercury, lead, nickel & zinc
- *Organic material*: Chemical Oxygen Demand

The WDCS will be most applicable in circumstances where the water quality impact is associated with the cumulative impacts from a number of dischargers, rather than localised impacts from a single discharger, and where sources are authorised water users, as opposed to diffuse sources.

Waste Mitigation Charge

- Facilitates the recovery of costs to mitigate the impacts of waste discharge on surface water resources
- Charged to registered water users discharging waste in the impacted catchments
- Dependent on net waste load (load in discharge, less load in intake) in the return flows

The WDCS will comprise of two distinct water use charges, either or both of which may be applied in a specific catchment. These are the ***Waste Mitigation Charge (WMC)***, which will cover the quantifiable costs of mitigating waste discharge related impacts, and the ***Waste Discharge Levy (WDL)***, that will provide a disincentive for the use of the resource as a means of disposing waste. This version of the pricing strategy only provides for the WMC, as the levying of the WDL will require the Minister of Finance to promulgate a Parliamentary Money Bill.

The Waste Mitigation Charge will facilitate the recovery of the full costs to mitigate the impacts of waste discharge on surface water resources. It will be a charge to registered water users, discharging waste in the impacted catchments, and will be dependent on the net waste load (load in discharge, less load in intake) in the return flows and not on the concentration. The Department will be responsible for the costs associated with load that cannot be charged to registered water users (registered point source and registered discharge to land facilities).

- The WDCS may be applied to all discharges contributing to the load in an upstream catchment where downstream resource quality objectives are threatened or exceeded, even where incremental upstream resource quality objectives are met.

- The mitigation measures and thus the associated waste discharge charges may be phased in to enable planning by dischargers and to allow adaptive setting of charges as conditions change.
- Minimum load thresholds for charging may be specified on the basis of administrative cost considerations.

3.4. Water Research Commission Charge

The Water Research Commission Charge is used for the promotion of water research and development on behalf of the nation and is levied in terms of Section 11 of the Water Research Act (WRA), Act No. 34 of 1971. It empowers the Minister, with the concurrence of the Ministry of Finance, to set tariffs in respect of water research charges levied on quantities of water supplied, or made available for use, for agricultural purposes, urban purposes, industrial purposes or any other purposes. While the Department will collect the charges on behalf of the WRC, the water research charges remains independent of changes in water use charges governed by the pricing strategy. The WRA allows for differentiated charges, based on geographic areas, categories of water use and water users.

The water research charge is payable by the municipal, industrial & mining, agriculture and high assurance water use sectors. Resource poor farmers will be exempt from paying the water research levy. The water research levy will be based on the projected annual research requirements for the sector, contained in Water Research Business Plan, and will be levied on registered volumes for abstractive uses in the applicable water use sectors. The levying of water research charges on registered volumes will be phased in over a 3 year period, from the current use of volume of water supplied.

Section 11 of the WRA also empowers the Minister to levy rates on land which may be irrigated by means of water supplied or made available by the State, an irrigation board or a water board. This version of the pricing strategy phases out the rates on irrigated land in lieu of a registered water volume charge.

Given the current challenges in the water sector, including increasing pressure on water resources, water quality challenges and challenges with water services delivery, the national policy requires an intensification of water research. Subsequent revisions of the pricing strategy will therefore introduce water research charges for additional sectors, such as stream flow reduction activities and hydropower, and will introduce charges for waste discharge, as well.

3.5. Economic Regulator Charge

The Economic Regulator Charge is proposed as a separate category and it is intended to fund the activities of the Economic Regulator. It should be noted that the activities of the Economic Regulator are not part of the costs to produce water, but that the Economic Regulator has a critical role to play in all aspects of the water value chain. The NWA does not currently provide for levying a charge for these activities, and the Economic Regulator Charge will only be implemented once the necessary legislation provides for such charges.

The Economic Regulator Charge will be based on the annual budget of the Economic Regulator and will be recovered on the total register volume of users liable for the charge. The Economic Regulator charge will be payable by all sectors. The scope of the economic regulatory activities and the basis for calculation of the charge is included in Appendix 3.

3.6. Application of Charges to Water Use Categories

WATER USE CATEGORY	WATER RESOURCE MANAGEMENT CHARGES	INFRASTRUCTURE RELATED CHARGES	WASTE DISCHARGE CHARGES	PHASING IN OF CHARGES	WATER RESEARCH COMMISSION CHARGES
Municipal and Industrial	Full cost recovery on abstraction and waste discharge related costs	On-budget GWS: Depreciation; FIBC, O&M including ER charge Off-budget GWS: CUC, Refurbishment, and O&M; and FIBC post payment of loans	Full costs of mitigation charge	WRM charges in place Waste discharge charges to be implemented after registration of waste users as per catchment specific plans	As currently determined
High Assurance Use	Full cost recovery on abstraction and waste discharge related costs	On-budget GWS: Depreciation; FIBC, O&M including ER charge Off-budget GWS: CUC, Refurbishment, and O&M; and FIBC post payment of loans	Full costs of mitigation charge	WRM charges in place Waste discharge charges to be implemented after registration of waste users as per catchment specific plans	As currently determined
Stream Flow Reduction Activities: Commercial growers	Excludes cost of Dam Safety Control and waste discharge management				Still to be determined
Stream Flow Reduction Activities: Resource poor tree growers	Excludes cost of Dam Safety Control and waste discharge management; Waived for first 5 years after registration and phased in over the five year period that follows. Subsidy starts at 100% for five years, then reduces by 20% annually.			No charge for forest plantations ≤ 10 hectares. WRMC Phased in over ten years	

WATER USE CATEGORY	WATER RESOURCE MANAGEMENT CHARGES	INFRASTRUCTURE RELATED CHARGES	WASTE DISCHARGE CHARGES	PHASING IN OF CHARGES	WATER RESEARCH COMMISSION CHARGES
Irrigation: Commercial farmers	Full recovery of allocated costs	GWS: Capped Depreciation plus O&M including ER charge on existing schemes. No FIBC charged. Full financial cost recovery for new schemes.	Full costs of mitigation charge for commercial farmers who are discharging directly to the source.	Waste discharge charges to be implemented after registration of waste users as per catchment specific plans.	As currently determined
Irrigation: Resource poor farmers	Waived for first 5 years after registration and phased in over the five year period that follows. Subsidy starts at 100% for five years, then reduces by 20% annually.	GWS: FIBC, O&M and Depreciation charges waived for a 5 year period and phased in over the five year period that follows on existing and new schemes. Subsidy starts at 100% for five years, then reduces by 20% annually. Capital subsidies available under certain conditions. Targeted subsidies to be provided by DWS for water resources infrastructure or purchase of water allocations.		Consumptive charges Subsidised for 10 years from date of registration. Subsidy starts at 100% for five years, then reduces by 20% annually. WRMC: Phased in over 10 years	
Hydropower		Fixed charge in installed capacity and variable charge per kilowatt hour		All charges immediate on registration or authorization of water use	Still to be determined

3.7. Indexation of Charges

The pricing strategy must use the index that is linked the closest to the cost being inflated or compared.

The CPI (Consumer Price Index) is a benchmark for how consumers perceive tariff increases relative to a basket of other goods consumed. While the CPI is a good overall test, this index should be limited to the O&M components when calculating the various raw water use charges, with the exception of energy costs. For the latter, an 'energy index' based on the average price of electricity as calculated from Eskom's Annual Report should be used as it reflects the energy cost the closest.

The PPI (Production Price Index) is based on a completely different basket of items than the CPI. It reflects the cost of manufacturing goods and is the closest reflection of the cost of construction. The PPI should be applied when calculating infrastructure related charges.

3.8. Summary of Charges

A summary of the applicability of the charges to each sector is shown in the table below.

Sectors		Water Resources Management Charge	Water Resources Infrastructure Charge	Waste Discharge Mitigation Charge	WRC Charge	Economic Regulation Charge *(Future)*
	Municipal	*YES*	*YES*	*YES*	*YES*	*YES*
	Industry and Mining	*YES*	*YES*	*YES*	*YES*	*YES*
	High Assurance Use	*YES*	*YES*	*YES*	*YES*	*YES*
	Agriculture	*YES*	*YES (Capped)*	*YES*	*YES*	*YES*
	Stream Flow Reduction Activities	*YES*				*YES*
	Hydropower		*YES*			*YES*

Table 7: Summary of Water Use Charges per Water Use Category

4. Implementation of the pricing strategy

4.1. Measurement of Water Use

Water charges are currently based on registered water use, where water use is not measured or metered. Water for productive use is available or is abstracted at different assurances and this must be reflected in the annual payment for water resource management services and is taken into account in the registered volume. The intention is, however, to phase in the compulsory measurement of water abstraction so that water use charges relating to development and use of waterworks can be charged against actual abstraction rather than registered use. Water resources management charges will continue to be charged against registered use for stability of revenue and administrative ease.

4.2. Treatment of Reserve Funds for Depreciation and FIBC

The Department will manage the funds associated with depreciation and FIBC charges, within a dedicated reserve fund. When the above structures have been put in place the depreciation charge revenue may serve as a stabilization reserve for refurbishment whilst the FIBC income may serve as a provisioning reserve for betterment and development of social and economic stimulus development projects and could also be applied to dam safety betterments on existing social schemes. Use of depreciation funds will be prioritised in accordance with DWS integrated water resource risk management systems. The Department will continue to fund these projects, until such time that the reserve fund has been built up.

4.3. Application of the Pricing Strategy for Natural Disasters

Section 56(3)(e) of the National Water Act allows the Minister to provide on an equitable basis for some elements of the charges to be waived in respect of specific users for a specified period of time. In addition to the support offered hereunder, any relief offered by other government departments at the time of the natural disaster could also be applied to offset further water charges.

4.3.1. Forest fires and floods

In the event of forest fires or floods, when water resources are not in use as a result of damages caused, the Minister may apply her/his mind to grant some form of relief to affected users. The relief will in all cases be limited to the actual Water Resource Management charges, which could be fully or partially waived for a fixed period of time. The Minister will consider the extent of damage to crops and/or plantations in determining the relief to be granted. The pricing strategy does not provide for the provision of cash grants as a relief.

4.3.2. Droughts

During times of droughts when it is necessary to curtail entitlements, the following rules will apply when water restrictions are imposed by the Department on established and resource poor farmers on existing Government Water Schemes. In schemes where the actual available supply is:

- greater than or equal to 70% of the irrigation quota, full charges will apply,
- less than 70% and equal to or above 50% of the irrigation quota, charges will be limited to the WRM charges and the O&M and FIBC charges, while the Depreciation charges will be waived,
- less than 50% and equal to or above 30% of the irrigation quota, charges will be limited to the WRM charges and 30% of the O&M and FIBC charges, and the depreciation charges will be waived,
- less than 30% and equal to or above 0%, of the irrigation quota, charges will be limited to the WRM charges, implying that the depreciation, FIBC and O&M charges will not apply.

CMAs and WUAs must approach the Department with a motivation for the implementation of these drought measures when appropriate. When less than 50% of water is available, the Department will approach National Treasury for the shortfall in income to be recovered from the fiscus.

4.4. Multi-Year Charges

The Department and CMAs will introduce with the implementation of this Pricing Strategy a system of multi-year charges. In terms of this principle, sectoral charges will be developed during the budgetary process for each water management area and charges will be set for a period of three years. Final sectoral charges will then be formalised and disseminated through the accounts receivable system to the water users prior to the commencement of the financial year and in accordance with the multi-year charges process.

For the first three years, these charges will be reviewed annually on a rolling-three year basis to ensure that the mechanisms and tools work effectively. Thereafter, i.e. in year four after the implementation of this strategy, the charges will be set for three years, every three years. The implementation of the economic regulator for water will assist to ensure that these charges are appropriate.

The water use charges must be approved by the economic regulator before the 15th of September of every appropriate year, where after the charges must be provided to water services providers and bulk water services providers in order to enable them to calculate bulk water tariffs before 30th of September[6]. Before the economic regulator is established, the Minister must approve the charges.

It must be noted that if water use charges are too low they may lead to non-viable institutions, sub-optimal water resources services and overall deterioration of the water resources. There is therefore a need to adjust to higher real charges within a limited time period to accommodate the cost of effective and financially sustainable water management institutions, taking cognisance of affordability constraints within user sectors.

4.5. Approval of Water Use Charges

The Minister approves the water use charges for government waterworks and for water resource management. The Economic Regulator reviews and advises the Minister on aspects such as revenue, cost and tariff trends, substantive parameters such as the affordability of tariffs, collection ratios and efficiency, the impact of an adjustment of tariffs on sectors and/or on the revenue and sustainability

[6] Bulk water service providers must commence with their consultation with water services authorities in October of every appropriate year in order to comply with the Norms and Standards in respect of tariffs for bulk water services supplied by bulk water services providers or regional bulk water utilities to other water services institutions.

of the WTE, as well as compliance with the pricing strategy and other regulatory guidelines and requirements.[7] The Minister presents the charges to the Portfolio Committee to get their input, but the Minister remains ultimately responsible to approve the water use charges.

The annual raw water use charge budget planning and price setting process is depicted in the table in Appendix 1.

4.6. Payment and Collection of Water Use Charges

The Minister may appoint any appropriate body as a billing agent, such as a water board, CMA, WUA or other external body. The proportion of the income collected by these agencies that may be retained by the agent must be contractually agreed with the Department. Unless other arrangements are approved by the Department or CMA, all water use categories, with the exception of the irrigation and stream flow reduction sectors, will be invoiced on a monthly basis. The irrigation and stream flow reduction sectors, will be invoiced on a six monthly basis.

Minimum cut-off values for annual payment can be laid down by CMAs where the cost of collection would exceed income. Reimbursements of inter WMA transfer payments will be done on a monthly basis in equal instalments.

Arrear water charges will attract interest at rates determined by the Minister from time to time.

4.7. Implementation Date

This pricing strategy will be implemented as from 1 April 2016. The charges that will be implemented for the financial year 2016/2017 onwards will be guided by the provisions of the Pricing Strategy III.

[7]The Economic Regulator is not independent and reports to Minister; it is thus part of DWS and can currently only advice the Minister of the tariff determination process. Legislation amendments are required to provide the Economic Regulator with the necessary powers and mandate to approve water use charges.

Appendix 1: Raw Water Use Charge Budget Planning and Price Setting Process

TASK	ACTIVITY	OUTPUT	RESPONSIBILITY	TARGET DATE
Prepare Budgets O&M, Refurbishment, Betterment, Movables (including admin & buildings)	Approval of Price Setting Cycle	Price Setting Cycle	Budget Office	**May**
	Distribution of revised Budget Templates (including costing parameters)	Revised Budget templates	Budget Office	**2nd wk May**
	Support and training to clusters and proto-CMAs	Site visits	Budget Office	**On going**
	Preparation of Budgets	Populated Budget Templates	Clusters, proto-CMAs, Head Office	**1st wk June**
	Budget Planning Review	Draft Budget	Clusters, proto-CMAs, Head Office	**On going**
Prepare Volumes	Distribution of guidelines	Guidelines	Revenue Management & WARMS	
	Determine volumes	Volumes Schedules	Clusters, proto-CMAs, Head Office	**2nd wk May**
	Review volumes	Reviewed Volume Schedules	Revenue Management	**1st & 2nd wk June**
Price Setting	Obtain infrastructure asset registers from Asset Management	Asset registers	Asset Management	**2nd wk May**
	Determine ROA and Depreciation values for infrastructure assets	ROA and Depreciation values	Budget Office	**3rd wk May**
	Distribute ROA and Depreciation values	ROA and Depreciation values with explanatory notes	Budget Office	**30th May**
	Verify and accept ROA and Depreciation calculations	Verified ROA & Depreciation values	Clusters	**1st wk June**
	Completion of Charge Calculation Templates (CMA and Clusters)	Complete Charge Calculation Sheet	Clusters, proto-CMAs	**2nd & 3rd wk June**
	Review of revenue estimates and calculation sheets(charges review) on site	Revenue projections	Revenue Management, Clusters & CMA's & Budget office	**4th wk June**

TASK	ACTIVITY	OUTPUT	RESPONSIBILITY	TARGET DATE
	Submission of Draft budgets and Charges to Regional and Cluster heads for consideration and approval	Preliminary approval for consultation	Revenue Management, Clusters & CMA's	**1st July**
	Submission of draft charges for assessment	***Compliance with Pricing Strategy***	***Institutional oversight unit***	**1st wk July**
Consultation and Approval	Joint (Clusters & CMA's) regional consultation meetings with water users	Regional Consultation Report (minutes/outcomes)	Clusters & CMA's	**2nd – 4th wk July**
	Review of Consultation and Consolidation of Charges(National Office Meeting)	Addressing concerns raised during Regional Consultation meetings	Clusters, proto-CMAs, DCFO; CD:FM, CFO, DDG's NWRI, P&R and Regions	**1st wk August**
	Preparation for submissions for Stakeholder Consultation: - Presentations - Supporting Documentation	Presentations, supporting documentation	Briefing of DDG: Regions; DDG: P&R and DG	**1st wk August**
	Sector Specific Consultation Meetings	Outcome of the meetings	SFRA, Irrigation and Domestic & Industrial water use sectors	**2nd & 3rd wk August**
	National Consultation	Outcome of the meeting	SFRA, Irrigation and Domestic & Industrial water use sectors	**1st wk September**
	Resolve and respond to queries of consultation	Outcome communicated to Water users	Institutional Oversight	**1st wk September**
	Prepare submission of Charges and budget to Director-General for consideration and approval	Approval of WRI, WRM charges and budgets	Budget Office	**15th September**
	Distribution of Final Charges to Stakeholders	Soft copy and Intranet	Budget office	**30th September**

Table 8: Annual raw water use charge budget planning and price setting process

Appendix 2: Pricing Strategy Public Consultation and Approval Timeline

ACTIVITY	TARGET DATE
Gazetting Pricing Strategy for Public Consultation process :	
Final refinements based on comments from DDG: RCA, NWRI and CFO: WTE	End April 2015
Top Management approval	End May 2015
Gazette and media release	End June 2015
Conduct Public Consultation and incorporation of comments on the Pricing Strategy:	
Provincial consultations	July – August 2015
Focused sector consultations	September 2015
Approval process of the final draft Pricing Strategy:	
Final revised draft ready for approval process	Mid-October 2015
Top Management consideration of the final draft and approval for submission to Minister	End October 2015
Tabled in Cabinet	Before December 2015 recess
Approval process of the final draft Pricing Strategy:	
Final Gazetting of the strategy for implementation	End January 2016
Roll-out of the Pricing Strategy	2016/17
Raw Water Tariffs to be based on the revised strategy	2016/17

Table 9: Pricing Strategy Public Consultation and approval timeline process

Appendix 3: Hybrid tariff approach

The pricing strategy provides for a combination of nationally and water management specific charges to facilitate the development of affordable tariffs to all users. In this hybrid approach some elements of the water charge will be levied on the basis of a national charge for a particular sector(s), and some on the basis of a scheme based or catchment level charge. While there is a level of inequality in the distribution of costs even on this model, the disparity is of acceptable level as compared to a national charge approach.

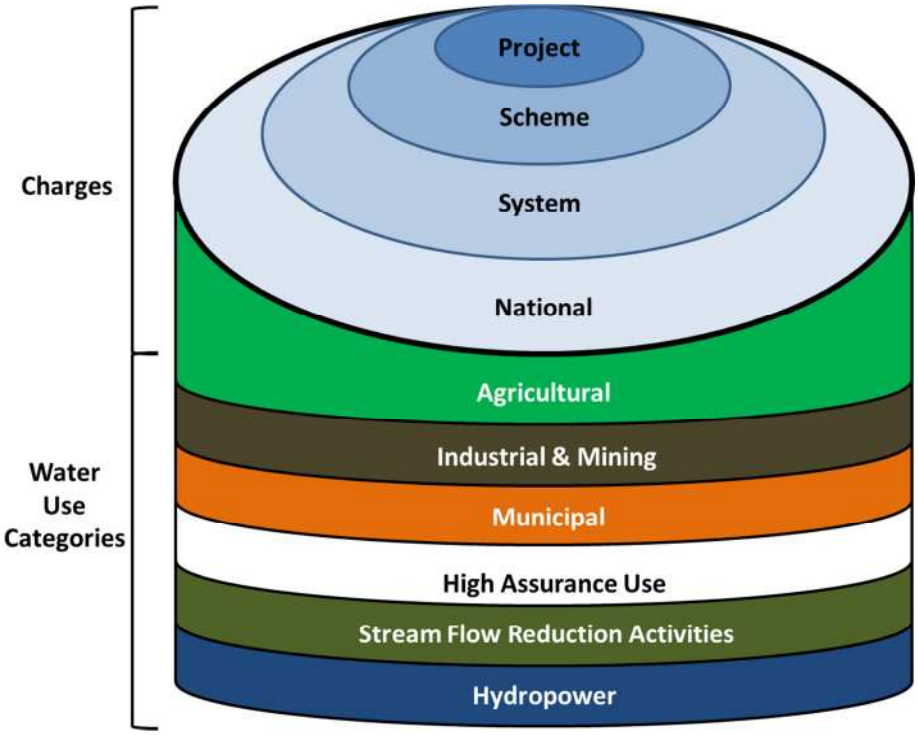

Figure 3: Hybrid tariff approach

The hybrid model pricing strategy proposes a number of changes to the current version of the pricing strategy, and these changes are expected to lead to an increase in the revenue generated by the Department.

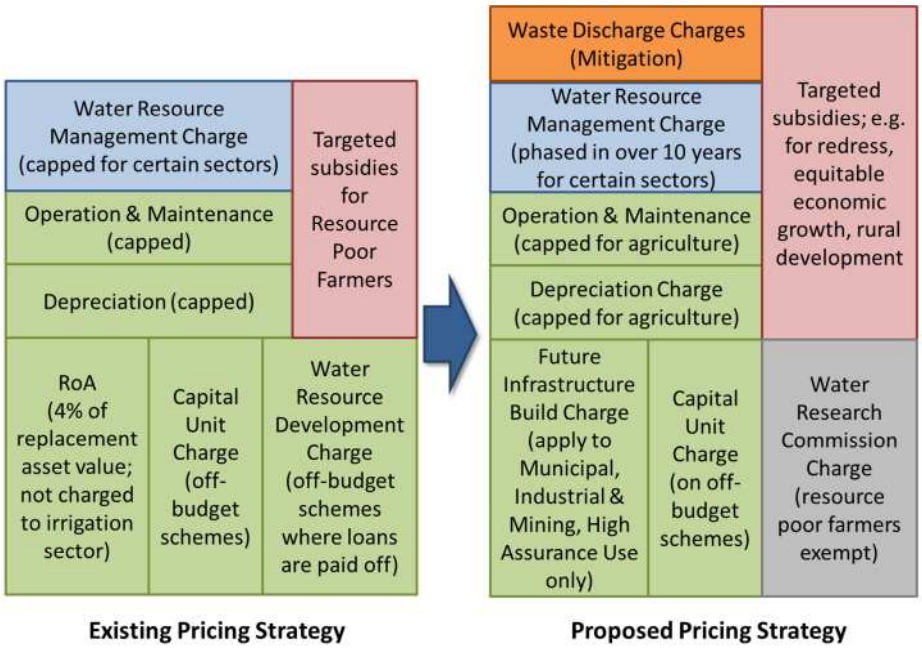

Figure 4: Changes in charges in pricing strategy

The critical component of equity must be addressed in the pricing strategy to redress the imbalance distribution of water and costs. Analysis has indicated that the national charge system is not going to cross-subsidize the poor as it was intended; instead it is going to put them in worse position than before. To achieve the equity and redress; it was found that the hybrid model charge will present better results than the national approach.

	Pros	Cons
National Charge	• Easier to administer • Leads to increased cross-subsidization • Ensures that everyone pays the same charges, avoiding some people paying for more expensive water than others	• Less cost reflective • Can lead to reduced water use efficiency • Potentially subsidises larger users
Hybrid Charge	• More cost reflective – reduced economic distortions • Negligible impact on water use efficiency • Better Water Conservation and Water Demand Management • Reduces potential of cross-subsidizing large users	• More complex to administer • Decreased potential for cross-subsidization

Table 10: National versus Hybrid Charge

Appendix 4: Determination of annual sectoral use volumes per WMA for pricing purposes

The registered water use of the various sectors must reflect volumes as determined by using the following methodologies for the water uses as defined.

Section 3.1 use:

Municipal, Industry/Mining and High Assurance Use

Water allocations as reflected on a lawful permit, general authorisation or licence or which constitute an existing lawful use in terms of section 32 of the NWA, and amended for assurance of supply.

Agriculture

The existing lawful water use related to agriculture or allocated through new licences, and amended for assurance of supply. The SAPWAT programme developed by the Water Research Commission or other methods as approved by the Department will be used to determine average annual volumetric use. Irrigation quotas, amended for assurance of supply, will be registered in former water control areas and on waterworks owned by water management institutions.

Section 3.4 use:

SFRA (Forestry)

Modified tables based on the WRC Report No TT 173/02 (April 2002): Estimation of streamflow reductions resulting from commercial afforestation in South Africa [MB Gush, DF Scott, GPW Jewitt, RE Schulze, TG Lumsden, LA Hallowes and AMM Gorgens] or other methods as approved by Department or a CMA where the function has been delegated will be used to determine average annual use of existing lawful plantations and for new licences.

The total volume of registered water use per WMA as captured by WARMS must be compared with the total yield of current resources at 98% assurance within the WMA, which can be allocated for productive purposes, in terms of the NWRS or the most recent determination. This allocable volume must exclude the quantities set aside for the Reserve, international obligations and transferred to other WMAs.

The objective of the water resource management charge is to recover the full cost of managing the water resources. This means that the total revenue collected must equal the total cost of the operations. In order for total revenue (TR) to equal total costs (TC), the unit charge (UC) will be calculated by dividing the total cost by the registered volumes (Reg. Vol.) – which is equal to the billable volumes (Bil. Vol.) – in every WMA regardless of whether the WMA is over- or under-allocated. The justification for the use of registered volumes to calculate the unit charge is as seen in the proof below:

$$TR = UC * Bil.Vol.$$

with $$Bil.Vol. = Reg.Vol.$$

and $$UC = \frac{TC}{Reg.Vol.}$$

therefore, $$TR = \frac{TC}{Reg.Vol.} * Reg.Vol.$$

$$TR = TC$$

Appendix 5: The Economic Regulator Charge

The purpose of the Economic Regulator Charge (ERC) is to fund the activities of the Economic Regulator.

The charges/tariffs and service standards together with responsible institutions that need to fall within the ambit and scope of the Economic Regulator are as follows:

- Water resource management charges as imposed currently by the Department but by CMAs in future.
- Water resource development charges relating to infrastructure related costs for the Department and the TCTA. The Capital Unit Charge is calculated by the TCTA for schemes that they are financing, and is factored into the raw water charge by the Department. The Department calculates the infrastructure charges for infrastructure that it manages. The raw water charge includes capital, O&M, depreciation and RoA elements. Charges for some international agreements are also factored into the raw water charges via the Department and/or TCTA.
- The water research commission charge is submitted to the Department for approval and inclusion in the water charges billed by the Department.
- Bulk water tariffs (bulk potable and raw water) and services relating to bulk water service providers (water boards/some municipalities/other entities).
- Retail water tariffs/services relating to Water Services Authorities as per the delegated powers and functions for water services.
- Sanitation charges/services relating to Water Services Authorities as per the delegated powers and functions for water services.
- Bulk waste water treatment charges/services relating to Water Services Authorities and some water boards (municipal and industrial waste).
- Waste discharge charges which relate to water users discharging waste into a water resource
- International agreements and associated charges.
- The financial viability aspects of business cases of new institutions such as CMAs, Water Boards, etc.

Water Use Sectors

The Economic Regulator will be funded through an economic regulation charge that will be added to the indirect Operation and Maintenance costs under the NWRI charge. Thus, those water users liable to pay O&M costs will also pay the ERC. It is important to note that with the current capping of agricultural charges, these water users in the sector will not pay the ERC unless the addition of the charge falls within the allowable annual increase. The shortfall arising from this capping will need to be funded from the fiscus.

Budgeting of Activity Costs

The expected financial flows in and out of the economic regulator are graphically illustrated as per the figure below.

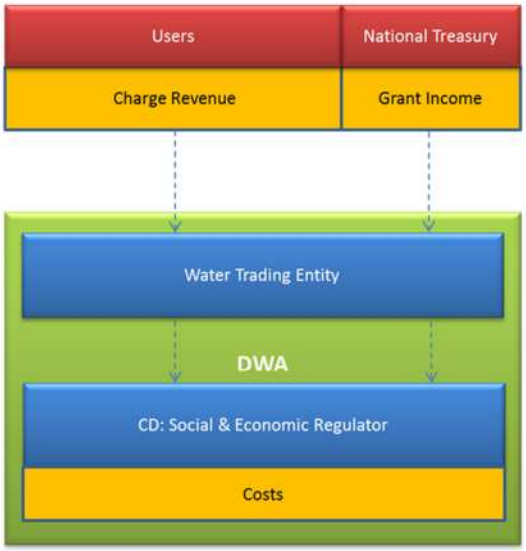

Figure 5: Financial cash flows for the economic regulator

Figure 5 illustrates that that National Treasury (and the Department) are expected to fund the establishment costs, with users paying the running costs in the form of an economic regulation charge. From this figure, it can be seen that the only source of income that the economic regulator expects to receive is income from the Economic Regulation charge. The main outflows relate to establishment costs, which are once-off, staff costs, and overhead costs, which are recurring expenses.

Appendix 6: Depreciation

depreciation is a real part of the cost of water infrastructure, in that it represents the loss in value of existing facilities, not restored by current maintenance, that occurs due to wear and tear, decay, inadequacy, and obsolescence. The depreciable portion of the development costs of assets constitutes the replacement cost required when the scheme reaches the end of its useful life.

Depreciation

Depreciation is defined as the systematic allocation of the depreciable amount of an asset over its useful life and will be applied as follows:

- Depreciation will be applied on a straight line basis, which means that the depreciable amount will be allocated in equal amounts over the useful life of the assets.
- The depreciable amount will be the annual depreciable portion of the depreciated replacement value, which will be determined in accordance with a revaluation policy whereby water resource assets will be periodically re-valued. Initially, calculations will be based on the figures produced during the investigation into the inventory of assets and financial information relating to Government water schemes which was initiated in 1998.
- Full technical revaluations will be carried out in intervals not exceeding 10 years. The remaining useful lives of assets and the depreciable portion will also be reassessed during the revaluations. In the intervening years, desk-top re-valuations will be carried out annually and will apply the average October to September producer price index (PPI) to the asset values and thus to the annual depreciation amount.
- The depreciable portion and useful lives over which the asset will be depreciated must be determined by qualified engineers and for purposes of initial price-setting, are in accordance with the table below. The technical revaluations will also be determined by qualified engineers.

The depreciable portion and useful lives listed in the table relate to new water resource asset components and could change with each re-estimate. The annual depreciation cost of existing assets could therefore also adjust with each re-estimate and will be based on the re-estimated remaining useful life.

Component	Depreciable Portion (%)	Estimated Total Useful Life (years)
Dams & weirs	10	45
Reservoirs	100	45
Canals	40	45
Tunnels	10	45
Pump Stations	40	30
Syphons & concrete pipelines	30	45
Steel pipelines	75	30
Water Treatment Works	30	45
Buildings	100	40

The previous version(s) of the Pricing Strategy provides for the depreciation of the depreciable portion of replacement value of the assets. The depreciable portion and useful life over which the asset would have been depreciated are in accordance with the table below, which was subject to revision when the next engineering revaluation of assets is due. In intervening years, the PPI of April of each year was to be applied to escalate the base value of the infrastructure assets, and thus the annual depreciation amounts, to nominal values.

Component	Depreciable Portion (%)	Estimated Total Useful Life (years)
Dams & Weirs	10	45
Canals	40	45
Tunnels	10	45
Pump Stations	40	30
Syphons & Concrete pipelines	30	45
Steel pipelines	75	30
Buildings	100	40

Table 11: Depreciation of the depreciable portion

The calculation formula for annual depreciation cost (ADC) was thus as follows:

$$\mathbf{ADC} = \frac{\boldsymbol{Replacement\ value\ x\ Depreciable\ portion}\ \%}{\boldsymbol{Expected\ useful\ life}}$$

On schemes funded off budget, the depreciation charge was only applicable once the loans have been repaid. If refurbishment was required during the repayment period, a refurbishment charge was to be arranged by agreement between the parties.

The depreciable portion was based on a set of assumptions, e.g. the lining of a canal without the excavation and land, the steel of a pipeline without the land purchase, the corrodible outlet works of a dame and not the wall itself, etc. While this was overly complicated and could lead to misunderstandings, it was also not aligned with standard industry depreciation practices used by water boards and related entities. Another potential problem with depreciating only a portion of an asset is that the loan can never be paid back without showing a profit.

It is proposed that the full component is depreciated over a certain period, and not only a portion as reflected in the previous pricing strategy. The Estimated Total Useful Life (years) of asset components are also aligned with standards industry depreciation practices used by water boards and related entities.

It is proposed that in future the depreciation of the replacement value of the assets is charged based on a straight-line basis over the estimated useful life of each component of an item of property, plant and equipment. Depreciation commences when the asset is available for its intended use by management. Land, artwork and assets under construction are not depreciated. All other property, plant and equipment, including capitalised leased assets, are depreciated on a straight-line basis over their estimated useful lives or the term of the lease, whichever is shorter.

Major repairs are depreciated over the remaining useful life of the related asset or to the date of the next major repair, whichever is shorter. The estimated useful lives over which the asset will be depreciated are in accordance with the table below.

Component	Previous Estimated Total Useful Life (years)	Proposed Estimated Total Useful Life (years)
Water storage related infrastructure:		
• Dams & Weirs	45	40 - 100
• Canals	45	40 - 100
• Tunnels	45	40 - 100
• Reservoirs	Not defined	80
Pump Stations:		
• Structures	30	10 - 80
• Components	Not defined	3 - 50
Pipelines		
• Syphons & Concrete pipelines	45	40 - 100
• Pipeline structures	30	25 - 75
• Pipeline components	Not defined	20 - 75
Buildings		
• Building structures	40	50 - 80
• Building components	Not defined	10 - 20

Table 12: Depreciation of the depreciable portion

The revised calculation formula for annual depreciation cost (ADC):

$$\mathbf{ADC} = \frac{\boldsymbol{Replacement\ value}}{\boldsymbol{Expected\ useful\ life}}$$

On schemes funded off budget, the depreciation charge will only be applicable once the loans have been repaid. If refurbishment is required during the repayment period, a refurbishment charge will be arranged by agreement between the parties.