

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

**GUIDELINES
FOR
COMPULSORY NATIONAL STANDARDS**
Regulations under section 9 of the Water Services Act (Act 108 of 1997))

AND

**NORMS AND STANDARDS FOR WATER
SERVICES TARIFFS**
Regulations under section 10 of the Water Services Act (Act 108 of 1997)

April 2002

FOREWORD

BOOKLET CONTAINING THE REGULATIONS UNDER THE WATER SERVICES ACT, 1997 (Act 108 of 1997) (SECTIONS 9 AND 10) AND GUIDELINES TO THE REGULATIONS

The Water Services Act, 1997, allows me to prescribe regulations governing the provision of water services. I have exercised this right in respect of the following three sets of regulations:

- compulsory national standards in terms of section 9(1) of the Act; and
- norms and standards for tariffs in terms of section 10(1) of the Act.

In developing these regulations, I am providing a framework within which local government can provide efficient, affordable, economical and sustainable access to water supply and sanitation. These regulations support the principles enshrined in our Constitution and the Water Services Act, 1997 and help to give substance to the right of access to a basic level of service.

Although, the regulations go a long way towards assisting municipalities provide basic services in a sustainable manner, they respect the executive authority of local government. Thus, the regulations provide a broad framework, by emphasising the principles of sound management, but the discretion on how this is implemented rests with local government.

I acknowledge that regulations alone will not achieve very much. The Department of water Affairs and Forestry and I are committed to assisting water services authorities and other water services institutions put these regulations into practice. The accompanying guidelines to the regulations are just one way in which we can support stakeholders to implement the principles we have set down in regulations.

I am also aware that water services institutions are already faced with huge financial challenges in the provision of basic services and these regulations should not be seen to be adding to that burden. My Department is committed to assist water services institutions to comply with these regulations.

It is important that consumers of the service are aware of what they are entitled to. The guidelines can help consumers understand the responsibilities of water services institutions. Empowering consumers and the general public is also important in ensuring efficient and sustainable service delivery. As such, the regulations support requirements in our legislation for water services institutions to involve communities in planning service delivery and to report to consumers on performance related matters.

Finally, we produce tools such as these guidelines to assist water services institutions and consumers. We would, therefore, be happy to receive any feedback on how we can improve these guidelines and provide further support to stakeholders.

RONNIE KASRILS MP
MINISTER OF WATER AFFAIRS AND FORESTRY

ACKNOWLEDGEMENTS

We are grateful for the many people have contributed to the development of these regulations over a long period of time. Those who submitted formal comments during the public consultation process are listed below. However, we are also grateful to many others who provided formal and informal comments at workshops, meetings, by telephone, fax and e-mail.

We are also grateful to all those involved in drafting and reviewing the regulations.

FORMAL COMMENTS RECEIVED FOR SECTION 9 REGULATIONS

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H.van Vliet	Chief Director: Scientific Services	DWAF
Bill Rowlston	Director: Strategic Planning	DWAF
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Phillip Walker		AWARD
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J.J. Eagar	City Engineer	Motsemoholo Bloemfontein
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Rudi le Roux		Kwikot Limited Inland Division
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J.E. Delpont	Engineer	The Institution of Municipal Engineer of SA
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FORMAL COMMENTS RECEIVED FOR SECTION 10 REGULATIONS

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J. Eagar	City Engineer	Bloemfontein
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A.J. Dippenaar	Chief Executive	Goudveld Water
J. Kings		Tsogang: Tzaneen

How to use this booklet

This booklet is intended to be a user-friendly guide to the regulations promulgated under the Water Services Act, 1997 (the Act). Two sets of regulations are contained in this booklet:

- regulations under section 9 of the Act, relating to compulsory national standards; and
- regulations under section 10 of the Act relating to norms and standards for tariffs.

The booklet is laid out such that each regulation appears in the left-hand column, and the corresponding guideline is set out in the right hand column. The guideline states the purpose and content of the regulation and often provides options for implementing them. Additional explanations of definitions appear in text boxes within the guidelines.

The regulations are statutory requirements of the law. The guidelines are not legal requirements, but are merely there to assist people to understand and implement the regulations.

The regulations have been developed after much consultation at local, provincial and national levels with all key stakeholders. The Department of Water Affairs and Forestry (DWAF) places great emphasis on supporting municipalities to implement the regulations. We hope that this booklet assists municipalities as water services authorities and other stakeholders to understand their rights and responsibilities under these regulations, and to put these regulations into practice.

If there are any suggestions or comments that you would like to make about these regulations or the guidelines please write to:

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Introduction to the *compulsory national standards*

In terms of Section 9(1) of the Water Services Act (Act 108 of 1997), the Minister of Water Affairs and Forestry may prescribe ***compulsory national standards***. These Regulations regulate the supply of potable water and sanitation services to consumers.

It is important to note that these regulations apply to all water services institutions.

The objectives of the regulations are to protect consumers, municipalities and water services institutions and to ensure the application of sound management principles.

Key principles incorporated in the regulations are:

- the regulations aim to be simple and easy to implement;
- the regulations encourage good management principles and general good practice;
- the regulations respect the independence of local government as the sphere of government responsible for water services i.e. the regulations focus on broader issues of good practice and is flexible to some extent to allow municipalities the discretion on how to accommodate local circumstances.

Water Services Authority means a municipality responsible for ensuring access to water services.

Water Services Provider means an organisation that provides water services to consumers or to another water services institution.

Water Services Institution means a water services authority, a water services provider, a water board or a water services committee.

Water Services means potable water supply services and sanitation (sewage and wastewater) services.

1. Definitions

In these Regulations any word or expression to which a meaning has been assigned in the Act shall bear that meaning and, unless the context otherwise indicates –

“effluent” means human excreta, domestic sludge, domestic waste-water, grey water or waste water resulting from the commercial or industrial use of water;

“grey water” means waste water resulting from the use of water for domestic purposes, but does not include human excreta;

“supply zone” means an area, determined by a water services institution, within which all the consumer connections are provided with water supply services from the same bulk supply;

“the Act” means the Water Services Act, 1997 (Act No. 108 of 1997);

“the National Water Act” means the National Water Act, 1998 (Act No. 36 of 1998);

“user connection” means any connection through which a user can gain access to water services and includes any consumer installation and any bulk or communal connection.

“user sector” means the applicable category of users, being users categorised into at least either –

- (a) domestic;*
- (b) industrial; or*
- (c) commercial,*

sectors;

“water efficient device” means any product that reduces the excessive use of water.

The definitions in the compulsory national standards are in addition to the definitions provided in Section 1 of the Water Services Act (the Act). The term “user connection” is used in these regulations rather than the term “consumer installation” defined in the Act. This is because “user connection” includes both “consumer installations” (connections to end users) as well as bulk connections to other water services institutions or groups of domestic users.

2. *Basic Sanitation*

The minimum standard for basic sanitation services is -

- (a) the provision of appropriate health and hygiene education; and*
- (b) a toilet which is safe, reliable, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum and prevents the entry and exit of flies and other disease-carrying pests.*

One of the main objects of the Water Services Act is to provide for the right of access to basic water supply and to basic sanitation. This regulation, together with **Regulation 3**, defines basic sanitation and basic water supply and, thereby, gives effect to the relevant sections of the Act and the Constitution.

It is widely recognised that sanitation has an important impact on people's health. Good toilets that are properly used and maintained serve as a barrier to the faecal – oral transmission of pathogens. This means that organisms causing diseases such as diarrhea, dysentery and cholera are safely disposed of and are prevented from spreading.

The first part of this regulation acknowledges that sanitation is not only about providing toilets. In order to maximise the health benefits of sanitation infrastructure, it is important to recognise good health and hygiene practices as an essential component of good sanitation. Thus, the provision of health and hygiene education to users is defined as part of the minimum standard for basic sanitation. The provision of appropriate education should not be limited to coincide with the initial installation of toilets and should also be offered to any new consumers who move into an existing township. Appropriate education should also be repeated to various communities at different intervals when deemed necessary.

The second part of the regulation requires the installation of appropriate toilets and ensuring the adequate provision for the disposal of effluent from the toilets. There are many different types of toilets used throughout the country. Rather than restricting water services institutions and consumers to a particular type of toilet, the second part of this regulation defines a basic sanitation facility (or toilet) in terms of its performance i.e. what it is required to do or achieve.

The actual type of toilet selected would depend on the preference of consumers, affordability, availability of materials and skills, environmental conditions and other such issues, which are specific to the local circumstances. If environmental conditions are feasible a properly used and well-maintained Ventilated Improved Pit (VIP) latrine (or equivalent) is considered to comply with the requirements of this regulation.

One of the biggest challenges regarding free basic services is to ensure the sustainability of the infrastructure in terms of adequate care and maintenance. Once

infrastructure such as toilets is provided in private properties consumers must take responsibility to ensure the adequate maintenance of the structures.

3. *Basic Water Supply*

The minimum standard for basic water supply services is –

- (a) the provision of appropriate education in respect of effective water use; and*
- (b) a minimum quantity of potable water of 25 litres per person per day or 6 kilolitres per household per month -*
 - (i) at a minimum flow rate of not less than 10 litres per minute;*
 - (ii) within 200 metres of a household; and*
 - (iii) with an effectiveness such that no consumer is without a supply for more than seven full days in any year.*

A basic minimum standard of water supply is defined as a given **quantity** of potable water delivered within 200m of a household, at a minimum flow rate of 10 litres per minute. These requirements are designed to strike a balance between reducing the time and effort people have to spend collecting water, whilst still recognising that shorter walking distances and high flow rates have cost implications. The **quality** of potable water is covered in Regulation 5.

The government's free basic water policy envisages that every poor household receives 6,000 litres per month free of charge.

The **quantity** of water forming the basic minimum standard is defined as being either 25 litres per person per day or 6,000 litres per household per month (equivalent to

25 litres per person per day for a household of eight people). The reason for the household based volume is that it is often more practical for water services institutions to count the number of households to be served rather than the actual number of individuals. 25l/p/day is a provision for communal standpipes and 6000 litres for yard connections.

Although eight people were used for 6000 litres, this remains the limit irrespective of the number of people in a household except in cases where the municipality decides to provide a higher amount.

This regulation also includes education in the effective use of water as part of the minimum standard, again acknowledging the fact that the proper operation and maintenance of infrastructure and sound health and hygiene practices would complement the provision of water supply services in improving people's health. Education should also include information on how to use water efficiently and prevent water wastage. This will enable poor consumers not to exceed the free basic water

allocation, will promote financial viability for water services institutions by reducing non-revenue demand and promote the objectives of water conservation.

This regulation recognises that reliability of a water supply also forms part of the basic minimum standard. This is addressed by the requirement that no consumer is denied access to basic water supply for more than seven full days in any year.

*A full day is a 24-hour period measured from midnight to midnight.
A year is any twelve-month period.*

4. Interruption in the Provision of Water Services

A water services institution must take steps to ensure that where the water services usually provided by or on behalf of that water services institution are interrupted for a period of more than 24 hours for reasons other than those contemplated in section 4 of the Act, a consumer has access to alternative water services comprising –

- (a) at least 10 litres of potable water per person per day; and*
- (b) sanitation services sufficient to protect health.*

There may be instances when the supply of water services provided by, or on behalf of, a water services institution, may be interrupted. This might happen due to an unplanned breakdown in the system or due to planned maintenance. In the case of both planned and unforeseen interruptions in supply for periods exceeding 24 hours, water services institutions are required to take **reasonable measures** that ensure that certain minimum levels of service are maintained.

*Note: This regulation does **not** deal with the limitation or discontinuation of water services in the event that a consumer has failed to comply with the conditions of service – in such cases the provisions of Section 4 of the Act and the local bylaws must be followed.*

In such instances, minimum levels of potable water supply, of at least 10 litres per person per day, and sanitation services sufficient to ensure that basic requirements for health and hygiene, must be provided to affected consumers, through the use of **alternative water services**.

Reasonable measures imply planned actions for the provision of alternative water services that are within the capacity of the water services institution to provide.

Examples of alternative measures include the use of water tankers to

deliver water to households or communal water points and the provision of portable toilets. Such services required on a temporary basis in the event of emergencies might be contracted from other organisations, as it may be uneconomical for a water services institution to maintain these services on a standby basis. In all cases, there

should be contingency plans in place to address such eventualities. Planning should take into account the number of people that could be affected and the duration of the interruption.

Alternative water services are the water services provided on a temporary basis to affected consumers during interruptions exceeding 24 hours.

The nature of an interruption of water services has a bearing on the type

of measures that can be put in place. Planned interruptions arise from routine maintenance work on the water distribution network. Such maintenance work and the resultant interruption should be planned well in advance. Notices must be issued telling consumers of the nature and duration of the impending interruption in supply and of the alternative means of supply that may be available. Advance notice also allows consumers to proactively prepare by storing water. Emergency interruptions occur without any prior warning, such as the sudden break in a water main or a breakdown of a pump. Since it is impossible to predict the occurrence of such breakdowns, water services institutions should look at options of alternative water services available to them and put in place emergency plans.

In all eventualities the key to dealing with interruptions effectively is good **communication** with consumers and prior **planning**.

5. *Quality of Potable Water*

- (1) *Within two years of the promulgation of these Regulations, a water services authority must include a suitable programme for sampling the quality of potable water provided by it to consumers in its water services development plan.*
- (2) *The water quality sampling programme contemplated in subregulation (1) must specify the points at which potable water provided to consumers will be sampled, the frequency of sampling and for which substances and determinants the water will be tested.*
- (3) *A water services institution must compare the results obtained from the testing of the samples with SABS 241: Specifications for Drinking Water, or the South African Water Quality Guidelines published by the Department of Water Affairs and Forestry.*
- (4) *Should the comparison of the results as contemplated in subregulation (3) indicate that the water supplied poses a health risk, the water services institution must inform the Director-General of the Department of Water Affairs and Forestry and the head of the relevant Provincial Department of Health and it must take steps to inform its consumers -*
 - (a) *that the quality of the water that it supplies poses a health risk;*
 - (b) *of the reasons for the health risk;*

(c) of any precautions to be taken by the consumers; and

(c) of the time frame, if any, within which it may be expected that water of a safe quality will be provided.

The intention of this regulation is to ensure that water services authorities provide potable water that is safe for human consumption, suitable for drinking, food preparation and personal hygiene and not harmful to water supply installations and domestic appliances. This is achieved by requiring water services authorities to implement a sampling and testing programme. Within two years of the promulgation of the regulations, all water services authorities are required to include details of their water sampling programme in the submission of their water services development plan. The sampling programme would have to be developed by the water services authority to best suit local circumstances, taking account of water quality issues experienced locally as well as available resources.

What are recognised quality standards?

Details of the procedure for the establishment of a water quality-sampling programme are too complex to be adequately dealt with in these explanatory notes. For more information the reader is referred to SABS 241 and the following publications, obtainable, upon request, from the Department of Water Affairs and Forestry, Department of Health or the Water Research Commission :

Quality of Domestic Water Supplies

Volume 1 :Assessment Guide

Volume 2 : Sampling Guide

Volume 3 : Analysis Guide

Volume 4 : Treatment Guide

Volume 5 : Management Guide

For water to be of an acceptable quality, it should comply with minimum quality standards that are recognised. In order to ensure a reliably safe quality of water, it is necessary to carry out water quality monitoring on a regular basis. This does not mean that a complex testing programme is required, but certain

basic water quality tests are required to ensure that water is safe for human consumption. Where initial tests indicate that there may be cause for concern, additional testing is required to investigate the possible contamination.

The reason for requiring a sampling and testing programme is to protect the health of consumers. The results of the tests should be compared to the standards referred to in this regulation. If there is any actual or potential risk to the health of consumers, the water services authority is required to inform the Director General of the Department of Water Affairs and Forestry, the Health Department of the Provincial Government and its consumers. Consideration should also be given to suspending the water supply until the water quality problem can be rectified.

Communications to consumers should be clear, well targeted and should keep people continuously informed of developments. Information provided should include the risks and dangers associated with the water, the cause(s) of the problem, precautions that consumers should take in order to protect their health and the time frame in which the water services authority intends to have the situation rectified.

Certain water quality issues may not be harmful to health, but could cause inconvenience to consumers or could damage household appliances. In such cases, the water services authority should inform consumers of the potential problems and advise on any mitigating measures they can take.

6. Control of Objectionable Substances

- (1) *A water services institution must take measures to prevent any substance other than uncontaminated storm water to enter -*
 - (a) *any storm water drain; or*
 - (b) *any watercourse, except in accordance with the provisions of the National Water Act.*
- (2) *A water services institution must take measures to prevent storm water from entering its sewerage system.*

Objectionable substances are substances that are unsuitable for discharge into watercourses without treatment. This may include sewage, domestic wastewater, petroleum products (e.g. engine oil), chemicals, leachates from solid waste dumps etc.

The quality of water in rivers and streams (watercourses) must be protected. Failure to do so can endanger people's health and result in damage to the natural

environment. Runoff from surfaces such as roads, car parks and other surfaces finds its way directly or indirectly (via the storm water drainage system) into watercourses with little or no treatment. In order to protect the quality of water in rivers and streams, it is important that water services institutions take measures to prevent objectionable substances from entering watercourses. This requires the proper management of storm water runoff with particular attention to the planning / design, operation and maintenance of storm water drainage systems. Water services authorities should also introduce appropriate by-laws that prohibit consumers to discharge any substances other than uncontaminated storm water into the storm water system.

The planning and design of stormwater system beyond the scope of these explanatory guidelines. For further information a useful reference work

"Guidelines for Human Settlement Planning & Design", by Dept. of Housing / CSIR, Pretoria

Whether it is a pit latrine or a piped sewerage network, all sewage systems should be designed to a certain capacity based on the population and sewage loads they have to accommodate. Although there may be some ingress of stormwater into sewage systems, if this is significant,

What is the relevance of the National Water Act to this regulation?

According to Schedule 1 (f) of the National Water Act, wastewater or runoff can be discharged into a stormwater system only with the permission of the person controlling the stormwater system (normally the water services authority or other municipality).

Section 21 of the National Water Act deals with water use licences, which may be required for discharging effluent into a watercourse.

the design capacity of the sewage system may be exceeded. This could result in “backing up” and overflow and spilling of sewage or the inability of treatment plants to cope with flows, resulting in inadequate treatment and discharge into watercourses. Thus, significant stormwater ingress into the sewage system can cause serious health problems as well as damage to the environment. This regulation, therefore, requires all water services institutions to take measures to prevent storm water entering the sewerage system. The exact measures to be taken would depend on the type of sewage system in question and the stormwater

runoff problems experienced in a particular area.

7. Disposal of Grey Water

A water services institution may impose limitations on the use of grey water if the use thereof may negatively affect health, the environment or available water resources.

What is Grey water?

Grey water is essentially wastewater that does not contain significant amounts of faecal pollution (i.e. not sewage discharges). Typically, this consists of water discharged from baths, showers and sinks. Water that is used to flush toilets is not grey water as it would contain faecal matter.

In most water supply systems, all the water supplied to the consumer is of drinking water quality. However, some of the uses of water do not require such a high quality standard. For example, water used to flush toilets does not have to be to potable standards. In such instances, untreated

or minimally treated Grey water can be used. This is called Grey water recycling. Grey water recycling and use has potential water conservation benefits and economic savings. For example, Grey water can be recycled and used to flush urinals in a sports stadium.

Despite the benefits, Grey water use could be a health hazard if people come into contact with it, as it may contain some contamination. Thus, Grey water use systems would require good design and operational controls. This regulation gives the water services institution the right to impose limitations on the use of Grey water if this is necessary to protect the health of the public or to prevent any pollution to the environment.

This could include restricting the use of Grey water for irrigation purposes or for flushing toilets only. Even then, further conditions could be prescribed particularly for large systems to ensure that Grey water use is properly monitored and controlled. Examples of conditions may include a minimum level of treatment, or prohibition of the use of grey water on lawns that are open to the public.

8. Use of Effluent

- (1) A water services institution must ensure that the use of effluent for any purpose does not pose a health risk before approving that use.
- (2) Any tap or point of access through which effluent or non-potable water can be accessed, must be clearly marked with a durable notice indicating that the effluent or non-potable water is not suitable for potable purposes.
- (3) A notice contemplated in subregulation (2) must be in more than one official language and must include the PV5 symbolic sign for non-potable water as described in SABS 1186: Symbolic Safety Signs: Part 1: Standards, Signs and General Requirements.

What is effluent?

Water containing waste in suspended or dissolved form leaving any process, factory or premises is referred to as effluent.

Water of potable quality is not necessary for all uses. For example, effluent from factories can often be used to irrigate surrounding lawns or effluent from a sewage works can be used to cool a power station. Such practices are normally safe as long as the effluent does not contain pollutants which cannot be assimilated

by such use and as long as it does not pollute natural watercourses. This could happen if lawns are over-irrigated or processes are by-passed. Humans and animals should also not come into direct contact with effluent. It is therefore necessary to put up signs warning that the effluent is not suitable for drinking or normal household use.

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9. Quantity and Quality of Industrial Effluent Discharged into a Sewerage System

A water services institution is only obliged to accept the quantity and quality of industrial effluent or any other substance into a sewerage system that the sewage treatment plant linked to that system is capable of purifying or treating to ensure that any discharge to a water resource complies with any standard prescribed under the National Water Act.

Natural water sources can only handle a limited pollution load. Every institution that discharges effluent into a water body (river, stream, lake, and reservoir) must have an authorisation to do so from the Department of Water Affairs and Forestry. The authorisation would specify the types and maximum levels of contaminants that the effluent is allowed to contain.

Before a water services institution allows an industry or business to connect to its sewerage system it must consider the effect of that discharge on the quantity and especially the quality of the effluent ultimately discharged from the sewage works. If accepting that discharge would pose a risk to the treatment process or lead to a breach of the permit, the water services institution should only agree to accept the effluent once the harmful substances have been removed or reduced. Industries can comply by:

- pre-treating their effluent such that it complies with the permit conditions;
- separating effluent discharges and treating the harmful component of the discharges separately; or
- collecting harmful streams that are then removed by appropriate waste disposal contractors.

The quantity and the concentration of the effluent must be considered together to get the total contaminant load. Industries should not be allowed to dilute effluent in order to comply with set concentration limits.

Water Services institutions should monitor the effluent discharge by large industrial consumers on a regular basis in order to ensure compliance is maintained on an ongoing basis.

10. Water Services Audit

(1) A water services authority must include a water services audit in its annual report on the implementation of its water services development plan required in terms of section 18(1) of the Act.

(2) A water services audit must contain details for the previous financial year and, if available, comparative figures for the preceding two financial years of –

(a) the quantity of water services provided, including at least -

(i) the quantity of water used by each user sector;

(ii) the quantity of water provided to the water services institution by

- another water services institution;*
- (iii) the quantity of effluent received at sewage treatment plants; and*
- (iv) the quantity of effluent not discharged to sewage treatment plants and approved for use by the water services institution;*

(b) the levels of services rendered, including at least -

- (i) the number of user connections in each user sector;*
- (ii) the number of households provided with water through communal water services works;*
- (iii) the number of consumers connected to a water reticulation system where pressures rise above 900 kPa at the consumer connection;*
- (iv) the number of households provided with sanitation services through consumer installations connected to the sewerage system;*
- (v) the number of households with access to basic sanitation services;*
- (vi) the number of new water supply connections made; and*
- (vii) the number of new sanitation connections made;*

(c) the numbers provided in compliance with paragraph (b) expressed as a percentage of the total number of connections or households;

(d) cost recovery, including at least -

- (i) the tariff structures for each user sector;*
- (ii) the income collected expressed as a percentage of total costs for water services provided; and*
- (iii) unrecovered charges expressed as a percentage of total costs for water services provided;*

(e) meter installation and meter testing, including at least –

- (i) the number of new meters installed at consumer installations; and*
- (ii) the number of meters tested and the number of meters replaced expressed as a percentage of the total number of meters installed at consumer connections;*

(f) the water quality sampling programme contemplated in regulation 5(1), the results of the comparison set out in regulation 5(3) and any occurrence reported in compliance with regulation 5(4);

(g) water conservation and demand management, including at least -

- (i) the results of the water balance as set out in regulation 11;*
- (ii) the total quantity of water unaccounted for;*
- (iii) the demand management activities undertaken; and*
- (iv) the progress made in the installation of water efficient devices.*

*“Every water services authority has a duty to all consumers or potential consumers within its area of jurisdiction to **ensure efficient, affordable, economical and sustainable access to water services.**”*

(Water services Act, 1997, Section 11(1)).

“The Minister and any relevant Province must monitor the performance of every water services institution to ensure compliance with all applicable national standards”

(Water services Act, 1997, Section 62(1)(a)).

The duty of a water services authority is to ensure efficient, affordable, economical and sustainable access to water services to all residents. One of the key tools to achieve this is the preparation of an annual water

services development plan, as required under the Water Services Act. Section 18(1) of the Act requires a water services authority to annually report on the implementation of the plan. Furthermore, Section 62 of the Water Services Act requires the Minister to monitor **every water services institution** in order to ensure compliance with these prescribed national standards.

This regulation requires a water services authority to complete and submit a water services audit every year. The audit is designed to monitor the compliance of the water services authority and other water services institutions with these regulations. As much of the information required for the Minister to monitor water services institutions is similar to the information required for reporting on the water services development plan, these regulations call for a water services authority to submit this audit as part of their annual report on the implementation of their plan. **This allows the audit to be used as a tool to compare actual performance of the water services authority against the targets and indicators set in their plan. The water audit can also be used to determine opportunities, the role and key performance indicators of water conservation and water demand management.**

What kind of information is required in an audit?

- *quantity of water services supplied;*
- *extension of services to the unserved;*
- *level of service provided;*
- *level of cost recovery achieved;*
- *progress with meter installations;*
- *water quality sampling and testing;*
- *progress on water conservation and demand management measures.*

This information is essential for the water services authority and provider to manage the system properly.

What is the purpose of the water services audit?

- *To monitor compliance with the Act and these regulations;*
- *To compare actual performance against targets contained in the water services development plans.*
- *To identify possibilities for improving water conservation and water demand management.*

By understanding who and how water is used this will assist water services institutions as well as DWAF in the planning of water services and water resources respectively.

In order to assist municipalities, the way the information for the annual water services audit is supplied is fully integrated with the process of reporting on the water services development plans.

In order to manage water services efficiently, it is important to be able to measure and quantify the services provided to consumers and to separate these figures in terms of user sectors. The water services authority is required to sub-divide their consumers into specific user sectors. Each sector should consist of consumers with similar consumption patterns e.g. residential, commercial, industrial etc. Through the separation and measurement of supply to these sectors, the water services authority is able to record the total **quantity** of water services used by each user sector. This information would enable water services authorities to monitor whether resources are

being allocated on an equitable basis and would assist in determining the tariff structure.

Where do we get the information?

- *departments within the municipality (the water services authority) e.g. technical services, finance, administration etc.;*
- *other municipalities within the area of jurisdiction of the water services authority e.g. a local municipality;*
- *water services providers operating in the area.*

If the water services authority receives bulk water from other water services institutions (e.g. a water board), it should record the total quantity of water received from each of these. The recording of effluent received at the sewage treatment plants provides important information on water utilisation i.e. what proportion of the water fed into the system is discharged.

The levels of services rendered provide an indication of the equitable basis on which services are being provided. Expressing key information in the form of percentages and comparing these with figures obtained in previous years provides an indication on progress being made in maintaining and extending services.

Cost recovery is a vital factor in ensuring the sustainability of water services. Figures relating to cost recovery are required by the audit to assist the water services institution monitor the financial viability of the water services.

The installation of meters enables a water services institution to monitor and control the provision of services and to improve the efficiency of its billing. Water meters also assist in the determination of water losses and unaccounted for water (UAW) and is an essential component of implementing a free basic water policy. Measurement of water services is also essential in implementing water conservation and demand management measures.

Water conservation is one of the key issues that the Water Services Act seeks to address. At the water services institution level water loss management and demand management can be used to promote conservation measures. The audit also requires a water services authority to report on what water conservation and demand management measures have been put in place.

There are a number of ways in which the water used by consumers may be regulated by the water services institution. Such measures are collectively referred to as demand management activities. Examples of demand management activities are the encouragement of the use of water saving devices e.g. pressure reducing valves, campaigning for responsible use of water, and regulating the use of water in terms of time and quantity.

By undertaking a water balance calculation, the water services institution can work out the amount of water that is being lost to the system, and where these losses are occurring. The audit requires the water services institution to use the water balance to calculate the “unaccounted for water” (UAW). This information provides an indicator of how efficiently the water supply system is being run, and provides information to the water services institution on how to improve the system.

What is unaccounted for water (UAW)?

The water balance basically compares what goes into a water reticulation network with what comes out of it. A water balance can be done for each discrete part of the network as well as for the network as a whole. UAW is the difference between the measured volume of water put into the supply and distribution system and the total volume of water measured to authorised consumers.

Losses can be due to a number of reasons:

- *background leakage: small leaks at joints and fittings;*
- *visible leakage: leaks normally reported by public including burst due to breakages of pipes and fittings or overflowing of reservoirs;*
- *underground leakage: leaks that usually run to ground or stormwater drains or sewer drains caused by breakages of pipes and fittings*
- *authorised but unmetered consumption (I.e fire fighting).*
- *unauthorised unmetered usage (i.e from fire hydrants and unmetered house connections)*
- *Inaccurate registration of metered consumption (inaccurate meters, broken meters etc)*
- *Non-physical losses: (meter reading errors, book entry errors, billing errors etc)*

UAW is a direct economic loss to the water services institution. The reason for undertaking a water balance and determining the UAW is to inform the water services institution on the extent and locations of wastage and to enable the water services institution to plan measures to reduce losses.

The water audit also requires details of the water quality sampling and testing programme put in place by the water services authority as required under Regulation 5.

11. Water and effluent balance analysis and determination of water losses

- (1) *Within two years of the promulgation of these Regulations, a water services institution must every month -*
- (a) *measure the quantity of water provided to each supply zone within its supply area;*
 - (b) *determine the quantity of unaccounted for water by comparing the measured quantity of water provided to each supply zone with the total measured quantity of water provided to all user connections within that supply zone;*
 - (c) *measure the quantity of effluent received at each sewage treatment plant; and*
 - (d) *determine the quantity of water supplied but not discharged to sewage treatment plants by comparing the measured quantity of effluent received at all sewage treatment plants with the total measured quantity of water provided to all user connections.*
- (2) *A water services institution must -*
- (a) *take steps to reduce the quantity of water unaccounted for; and*
 - (b) *keep record of the quantities of water measured and of the calculations made.*

Knowledge of the extent of water losses is essential for effective management of water services. Water services institutions are therefore required to determine the amounts of water losses and unaccounted for water and to seek economical ways of reducing these losses (refer to **Regulation 10**).

The water services institution should sub-divide its entire area of supply into discrete supply areas using criteria such as topography, layout of the distribution system, pressure zones or townships fed from one or more metered bulk supply mains. Each supply area should further be sub-divided into supply zones whereby each supply zone comprises of a given number of houses that are all supplied with water from one or

References

SABS 0306: 1999 the code of practice for "The management of potable water in distribution systems" provides an approach which water services institutions may use to determine and control unaccounted for water.

more water supply mains. The water services institution should implement a program to install meters at appropriate positions on the distribution network i.e. bulk meters on supply mains to the supply area, zone meters to parts of the water distribution system that can be isolated from the rest and meters on every consumer connection. The water services institution should take regular monthly readings of all meters and replace faulty or unreadable meters.

The quantity of water provided to a supply zone represents the amount of measurable water that has been delivered into one of these well-defined areas, townships or suburbs. When this measurement is compared with the total measured quantity of water used by consumers in that supply zone, the difference provides an indication of unaccounted for water usage within the water supply network in that area. In order to highlight the impact of UAW, it is recommended that it is also reflected in terms of financial losses. Water services institutions are encouraged to determine an appropriate benchmark of UAW according to their own specific circumstances.

The quantity of effluent received at each sewage treatment plant is an essential component of the total water balance. The difference between the total quantity of water provided to consumers and the total quantity of effluent received at sewage treatment plants over the same period should give an indication of the water that has either been retained by consumers (e.g. in swimming pools or used for the watering of gardens), or lost through leakage in the water and sewerage networks. Such information is essential in the formulation of water conservation strategies and in water resource planning. The water services institution should ensure that all sewage treatment plants under its control are equipped with appropriate meters to measure the flow quantities. The ingress of stormwater in the sewerage system has the effect of inflating the quantity of effluent received at sewage treatment works resulting in misleading figures. To assess the magnitude of the ingress of stormwater in the sewerage that the sewerage flow patterns are compared to average rainfall figures. Not all water provided to consumers ends up at the sewage treatment plants. Some consumers, especially in the industrial and agricultural sectors, make use of the effluent emanating from their manufacturing processes. The use of recycled effluent is however subject to approval by the water services institution (refer to Regulations 7 and 8).

Records of the measurements taken and the calculations that are performed serve as a useful source of information both at the local and national level. These records may be used as a means of assessing progress between successive years. For this reason, this regulation encourages all water services institutions to keep records of all measurements and of the calculations.

12. Repair of Leaks

A water services institution must repair any major, visible or reported leak in its water services system within 48 hours of becoming aware thereof.

It is recognised that large amounts of water are wasted through pipe bursts and leakage without speedy action being taken. The purpose of this regulation is to ensure that all water services institutions play an active roll in reducing water wastage through pipe bursts and leakage. This is one of the most visible ways by which a water services institution can prove to its consumers that it is performing effectively.

Ideally the leak should be repaired within 24 hours but in order to accommodate for exceptional cases the time allocated in the regulation has been increased to 48 hours. Water services institutions should ensure proper and efficient procedures for reporting and repair of leaks, which could be combined with the “consumer service” required under Regulation 16. The water services institution should also ensure that it has dedicated resources (equipment, staff, and money) to ensure that leaks that are detected or reported are attended to promptly. In the case of repairs that take more than 24 hours, the water services institution should make arrangements for alternative water supply services as required in Regulation 4.

13. Measurement or control of water supplied

(1) A water services institution must -

(a) within two years after promulgation of these Regulations, fit a suitable water volume measuring device or volume controlling device to all user connections provided with water supply services that are existing at the time of commencement of these Regulations; and

(b) fit a suitable water volume measuring device or volume controlling device to every user connection made after the commencement of these Regulations.

(2) If constructed or installed after promulgation of these Regulations, a suitable water volume measuring device or volume controlling device must be fitted to separately measure or control the water supply to every –

(a) individual dwelling within a new sectional title development, group housing development or apartment building;

(b) individual building, having a maximum designed flow rate exceeding 60 litres per minute within any commercial or institutional complex; and

(c) irrigation system with a maximum designed flow rate exceeding 60 litres per minute that uses water supplied by a water services institution.

(3) Where the water supplied is measured by way of a meter, that meter must comply with the Trade Metrology Act, 1973 (Act No. 77 of 1973), if of a size regulated under that Act.

What is a volume controlling device?

A "volume controlling device is a mechanism that restricts the supply of water to a consumer to a pre-arranged quantity. Examples of volume controlling devices include manually or automatically regulated yard / roof tanks, trickle feed systems or control valves.

Before installing any form of volume control it is vital that consumers are consulted to ensure that they understand why their water supply is being restricted.

The Water Services Act promotes the operational efficiency and economic viability of water services. In order to meet these objectives, it is important that water services institutions can measure the amount of water being supplied to consumers. Measurement can be done by using meters or by controlling the volume of water supplied to consumers. Good measurement and control of water supplies enables the water services institution to

develop a more efficient and fair billing system and makes it easier to determine and minimise unaccounted for water (UAW). Measurement and volume control are also essential components of implementing Government's Free Basic Water policy. It is also a necessary tool for efficient management of a water supply system.

Due to the substantial capital requirements, this regulation provides for a period of two years within which all user connections *existing* at the time of promulgation of the Regulations are to be fitted with meters or volume controlling devices. The two year period, within which these measure have to be implemented allows the water services institution time to:

- carry out necessary surveys to identify the nature and magnitude of the work required;
- allocate financial resources; and to
- plan and implement any necessary work.

The word "user connection" has been defined in the regulations and does not only refer to individual connections.

In the case of developments that are built *after* the regulations have been promulgated, the water services authority should ensure the metering (or volume

control) of all new user connections including individual dwellings in group housing developments, sectional title developments and apartment buildings. The metering (or volume control) of all individual dwellings can be made conditional to the approval of building plans.

Benefits of meters or volume control devices

For consumers

- It assists in minimising wastage.
- It enables consumers to manage their water usage and hence expenditure on this commodity.
- It enables the detection and repair of leaks on consumer installations thereby avoiding high water bills.
- It is fair and equitable, water efficient consumers do not have to pay for excessive use of wasteful consumers
- it enables the free basic water policy to be implemented.

For water services institutions

- It allows planning and monitoring of water conservation efforts and demand management strategies
- It facilitates the effective monitoring and control of consumption by user sector.
- It enables the determination of water losses and hence provides for a more effective management.
- It is a pre-requisite for an efficient billing system;
- It is essential for the implementation of a Free Basic Water policy as it enables the institution to measure the basic quantity provided to each consumer.

With regard to commercial or industrial developments that are constructed after the regulations have come into force, all individual buildings within such complexes, whose anticipated water usage is in excess of 60 litres per minute, should be separately metered or controlled. Meters for individual meters within complexes will not belong

to the water services authority and do not have to be read by them. The water services authority should amend its building standards or by-laws to make provision for the metering (or volume control) of such buildings to be conditional to the approval of the building plans. The use of building standards or by-laws should however be supplemented by physical inspections and on site tests in order to ensure compliance. In addition, separate water meters or volume control devices are required to all connections provided for irrigation purposes where supply exceeds 60 litres per minute. Examples of these connections include golf courses, sports fields, peri-urban smallholdings and market gardens. The regulations requiring meters to individual buildings in complexes and to irrigation systems, is to promote a culture of water use audits and water use efficiency to consumers.

14. Consumer Installations other than Meters

Every consumer installation must comply with SABS 0252: Water Supply and Drainage for Buildings and SABS 0254: The Installation of Fixed Electric Storage Water Heating Systems, or any similar substituting re-enactment or amendment thereof if the consumer installation is of a type regulated by either standard.

Every consumer installation together with the distribution network forms an integrated water supply system that conveys water from its source to the consumer points where it is drawn. The water services authority is partly responsible for ensuring that water that is delivered into the consumer installations is not lost due to poor materials and installation. It is therefore necessary for water services authorities to lay down appropriate standards to which consumer installations must comply as part of strategies that are aimed at effective water conservation. This regulation sets the standards in accordance with the South African Bureau of Standards (SABS) that must be met by all consumer installations for these to be approved by a water services authority.

<p>Relevant SABS Specifications</p> <p><i>SABS 0252: Water Supply and Drainage for Buildings</i> <i>SABS 0254: The Installation of Fixed Electric Storage Water Heating Systems</i></p>

Compliance with minimum specifications ultimately provides protection to the consumer by ensuring that plumbing

installation and equipment adheres to certain performance and safety requirements. In turn, this also leads to a minimizing of maintenance and a reduction in risk of malfunction and leaks. This regulation has been included also due to the particular safety hazards related to electrically heated water storage systems. These aspects would be addressed through the compliance with SABS standards. Water services authorities are required to incorporate these requirements into their own by-laws and appoint inspectors who will be amble to verify compliance to plumbing installations.

15. Pressure in a Reticulation System

- (1) A water services institution must design and maintain every water reticulation system installed after promulgation of these Regulations to operate below a maximum pressure of 900 kPa.*
- (2) Where water pressure in a water reticulation system could rise above 900kPa, a water services institution must install a pressure control device to prevent the pressure at any domestic consumer connection from rising above 900 kPa.*

Effective management requires practical methods with which to reduce water losses. Water losses in a reticulation system are caused by various factors including pipe bursts and leaking connections. Although pressure is required to make water flow through the system, excessive pressures considerably increase leakage as well as wear and tear on pipes and fittings. It is therefore necessary to strike a balance between levels of pressure that ensure adequate flow through pipelines whilst maintaining the pressure at a level that does not result in excessive water losses and system deterioration. It is also generally true that water gushing out of a tap or standpipe in large volumes at high speed is difficult to control. Such a situation causes consumers to receive more water than they actually need resulting in wastage.

Water reticulation systems that are planned after the regulations are promulgated should be designed to operate below a pressure of 900 kPa (kilo Pascal) and if feasible below 600 kPa. The water services institution should amend the design standards for water reticulation systems, in its area of jurisdiction, in order to specify the permissible maximum pressure at any point in a reticulation system. Approval of the designs for any new reticulation system should be conditional on the maximum operating pressures being lower than 900 kPa.

In the case of water reticulation systems existing at the time the regulations were enforced, the water services institution should analyse the reticulation system in order to identify areas where the operating pressures exceed 900 kPa.

Once a proper analysis has been undertaken and areas where pressure exceeds 900kPa have been identified, pressure control devices such as pressure reducing valves or break pressure tanks should be installed to make the system comply with this regulation. Water services institutions are also advised to consider the installation of “smart pressure reducing valves”. Such valves reduce pressure during the night where demand is low and by doing so reduce the level of leakage and protect the supply system from excessive pressures.

The difference between the elevation of the storage reservoir feeding the reticulation network and the elevation at the consumer connection constitutes the maximum pressure at the consumer connection, i.e. the difference between these two elevations in metres, multiplied by a factor of approximately 10, constitutes the approximate pressure in kPa.

16. Reporting of non-compliance

A water services institution must have a consumer service to which non-compliance with these regulations can be reported.

One of the main objectives of these regulations is to ensure that consumers are aware of their rights and understand the roles and obligations of water services institutions with respect to compulsory national standards. It is also important that consumers know what to do in the event that a water services institution fails to meet its obligations. This regulation requires a water services institution to set up a consumer service. The purpose of the consumer service is primarily to receive and record all instances of non-compliance reported by consumers along with what responses and actions have been taken to address the complaint. The contact details of the consumer centre should be widely publicised and information should be provided on how a complaint can be made, and on how a consumer can follow up to ensure that it is being addressed. The efficiency, accessibility, responsiveness and accountability of the consumer centre will largely dictate the public image of the water services institution.

Introduction to the norms and standards for tariffs

These regulations were developed in terms of section 10 of the Water Services Act (Act no. 108 of 1997), which allows the Minister, with the concurrence of the Minister of Finance, to prescribe norms and standards in respect of tariffs for water services.

The norms and standards are aimed at promoting socially equitable, financially viable and environmentally sustainable tariffs. The departure point in compiling these norms and standards was to provide the responsible water services institution with a framework that reflects best practice while allowing it discretion on how it actually sets and quantifies the tariffs.

It was, however, necessary to be prescriptive on the maximum consumption rate of the first block of the rising block tariff structure for uncontrolled volume domestic connections (six kilolitres per household per month). This was necessary because of the development of a national Free Basic Water policy which hinges on the water services institution being able to account separately for the first 6 kl supplied to a household per month. Basic water supply has been defined under section 9 regulations.

Although the water services authority will either be setting tariffs, or deciding the parameters within which tariffs are set, water services providers may in some circumstances set tariffs within the prescribed parameters. It is important to note that these regulations apply to all water services institutions and that no water services institution may use a

tariff which is substantially different from any prescribed norms and standards.

***Water Services** means water supply and sanitation services.*

***Water Services Authority** means a municipality, responsible for ensuring access to water services.*

***Water Services Provider** means any organisation that provides water services to consumers or to another water services institution.*

***Water Services Institution** means a water services authority, a water services provider, a water board or a water services committee.*

Definitions

1. In these Regulations any word or expression to which a meaning has been assigned in the Act shall bear that meaning and, unless the context otherwise indicates –

"communal water services work" means a consumer connection through which water services are supplied to more than one household;

"controlled volume" means that the supply of water to a consumer is intentionally restricted or limited to a predetermined maximum volume for a measurement period;

"fixed charge" means a monthly charge levied irrespective of the actual volume of water supplied or amount of effluent discharged or disposed of, to provide for, amongst other things, the financial sustainability of water services;

"the Act" means the Water Services Act, 1997 (Act No. 108 of 1997);

"uncontrolled volume" means that the supply of a service to a consumer is not intentionally restricted or limited to any maximum volume; and

"volume based charge" means a charge levied proportionately to the amount of water supplied or effluent discharged or disposed of.

The definitions in these norms and standards are in addition to the definitions provided in Section 1 of the Water Services Act (the Act).

Determination of revenue requirements

2. *A water services institution must, when determining its revenue requirements on which tariffs for water services are based, take into account at least the need to –*

- (a) recover the cost of water purchases;*
- (b) recover overhead, operational and maintenance costs;*
- (c) recover the cost of capital not financed through any grant, subsidy or donation;*
- (d) provide for the replacement, refurbishment and extension of water services works; and*
- (e) ensure that all households have access to basic water supply and basic sanitation.*

The purpose of this regulation is to ensure that the tariffs set by a water services institution are financially sustainable. This is achieved by ensuring that all costs incurred in providing the service are recovered through the tariff.

The cost of water purchases is the amount that the water services institution is charged for bulk raw water or bulk potable water. The raw water charge is typically levied by the Department of Water Affairs and Forestry or a Catchment Management Agency for untreated water supplied from a river, a dam or from a borehole. The bulk potable water charge is levied by the bulk water services provider for potable water (drinking quality water) supplied in bulk to a municipality or water services provider for further distribution. The cost of bulk potable water would normally include the bulk raw water charge paid by the bulk water services provider to the Department of Water Affairs and Forestry or to the catchment management agency.

Minimum tariff to cover:

- cost of raw water or bulk potable water, plus*
- cost of overhead and operational costs, plus*
- cost of capital, plus*
- cost of replacement and refurbishment and extension, **minus***
- subsidies (refer to Regulation 3).*

The overhead, operations and maintenance costs include the cost of the administrative and operations staff, their vehicles and offices, the cost of electricity and chemicals, and the cost of maintaining the equipment.

The cost of capital includes the cost of constructing new works or the cost of repaying the loans and interest charges associated with the construction costs. Grants from national government for capital works such as the funding from Reconstruction and Development Programme do not have a cost of capital.

Replacement, refurbishment and extension of water services works are also capital costs. A provision should be set aside specifically for replacing or refurbishing worn out equipment. Provision should also be made for extending works that are no longer able to meet the demand because of capacity constraints.

One of the main objects of the Act is to provide for the right of access to basic water supply and basic sanitation. Section 3 of the Act requires that every water services institution to take reasonable measures to realise these rights. The water services institution should thus provide for ensuring that all households have access to basic water supply and basic sanitation.

Subsidization of tariffs

3.(1) A water services institution may use any source of funds, including any funds received from municipal rates and taxes or from transfers from national or provincial government or from any other source, to subsidize a water services tariff.

(2) A water services institution must consider the right of access to basic water supply and the right of access to basic sanitation when determining which water services tariffs are to be subsidized.

The purpose of this regulation is to encourage the use of available subsidies or grants to support the provision of basic water supply and basic sanitation. As mentioned under Regulation 2, in order to be financially sustainable the water services institution needs to consider the full financial cost of supplying water. The water services institution also has to consider what proportion of this cost needs to be recovered from water users and what proportion, if any, can be funded from other municipal sources, such as the equitable share. ***Where funds are available to subsidise water supply and sanitation services these funds should be targeted first and foremost at ensuring that all consumers have at least a basic level of service.***

Categories and levels of water services

4.(1) A water services institution must, when setting tariffs for water services provided to consumers and other users within its area of jurisdiction, differentiate, where applicable, between at least the following categories –

(a) water supply services to households;

(b) industrial use of water supplied through a water services work;

- (c) water supply services other than those specified in paragraphs (a) and (b);*
 - (d) sanitation services to households;*
 - (e) discharge of industrial effluent to a sewage treatment plant; and*
 - (f) sanitation services other than those specified in paragraphs (d) and (e).*
- (2) A water services institution must, when setting tariffs for providing water services to households, differentiate, where applicable, between at least the following levels of service -*
- (a) the supply of water to a household through a communal water services work;*
 - (b) the supply of water to a household through a water services work or consumer installation designed to provide a controlled volume of water;*
 - (c) the supply of water to a household through a water services work or consumer installation designed to provide an uncontrolled volume of water;*
 - (d) the provision of sanitation services to a household not connected to a sewer; and*
 - (e) the provision of sanitation services to a household connected to a sewer.*

The purpose of this regulation is to allow for differentiation of tariffs between different categories of users and between different levels of service.

“Services supplied to households” refers to a service supplied to a home for domestic use.

“Industrial use of water” refers to water supplied, for example, to a factory.

Typical uses that are neither for domestic nor for industrial purposes include commercial (e.g. offices) or institutional uses (e.g. schools and hospitals). A typical “communal water services work” is a communal stand pipe.

A “consumer installation designed to provide a controlled volume of water” refers to a water supply that is limited to a maximum volume per period (usually daily). A typical example is the Durban tank system where each household is supplied from a separate tank of a standard volume that is filled once daily.

A “consumer installation designed to provide an uncontrolled volume of water” refers to private yard taps or house connections where the household has discretion as to how much water to use.

The tariff structure may use additional categories to those stipulated above. The same tariff may also be set for two or more categories. For example, a tariff for industrial use of water may be the same as the tariff for “other use”.

It is important to take note of clause 3 of section 9 regulations in terms of minimum flow rate of not less than 10 litres per minute.

Supply of water to a household through a communal water services work or through a consumer installation designed to provide a controlled volume of water

5. A tariff set by a water services institution for the supply of water to a household through a communal water services work or through a consumer installation designed to provide a controlled volume of water must be set at the lowest amount, including a zero amount, required to ensure the viability and sustainability of the water supply services.

The Water Services Act emphasises that the primary consideration in water services policy is the provision of a “basic water supply” to all households. The purpose of this regulation is to ensure that the tariff for a basic level of service is affordable even to the very poor. This regulation applies amongst others to communal stand pipes and to installations such as the Durban tank system which provide a limited quantity of water per day.

What is a basic water supply?

A basic minimum standard for water supply is defined in regulations promulgated under section 9(1) of the Act as six kilolitres per household per month or 25 litres per person per day within 200 metres of the household, at a flow rate of not less than 10l/minute.

According to the Department of Water Affairs and Forestry’s policy on a free basic water supply, a water services institution should make every effort to supply the basic water supply quantity of six kilolitres per household per month free of charge. It would be the norm for users supplied out of standpipes and by means of controlled volume supplies (depending on the size of tank) to use no more than a basic supply and it would also be expected that these users will generally be representative of lower income groups. It should thus be the norm for such users to be supplied free of charge, or at the lowest cost that the water services institution can afford.

Supply of water to a household through a water services work or consumer installation designed to provide an uncontrolled volume of water

6.(1) A tariff set by a water services institution for the supply of water through a water services work or consumer installation designed to provide an uncontrolled volume of water to a household must include a volume based charge that –

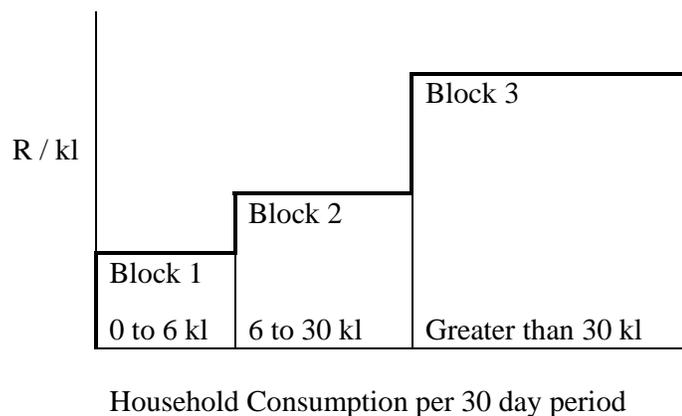
- (a) supports the viability and sustainability of water supply services to the poor;*
- (b) discourages wasteful or inefficient water use; and*
- (c) takes into account the incremental cost that would be incurred to increase the capacity of the water supply infrastructure to meet an incremental growth in demand.*

- (2) *The requirements of subregulation (1) are deemed to have been met where the tariff is set as a volume based charge that provides for a rising block tariff structure which includes –*
- (a) *three or more tariff blocks with the tariff increasing for higher consumption blocks;*
 - (b) *a consumption level for each block defined as a volume consumed by a household during any 30 day period;*
 - (c) *a first tariff block or lowest tariff block with a maximum consumption volume of six kilolitres and which is set at the lowest amount, including a zero amount, required to ensure the viability and sustainability of water supply services; and*
 - (d) *a tariff for the last block or highest consumption block set at an amount that would discourage high water use and that reflects the incremental cost that would be incurred to increase the capacity of the water supply infrastructure to meet an incremental growth in demand.*

For more information on the use of this clause to implement a Free Basic Water policy, refer to the “guidelines and implementation strategy for free basic water policy” developed by DWAF: Water Services. This can be obtained from the DWAF website: www-dwaf.pwv.gov.za.

This regulation applies to households that are served through a yard connection or a house connection, where the volume they use is unrestricted. The purpose of this regulation is to ensure that, in such cases, the tariff is related to the amount of water used i.e. “the more you use, the more you pay”. A further purpose is to achieve the benefits of charging higher unit rates for higher levels of usage. One way of achieving this is by using a rising block tariff system. Under rising block tariffs, the price per kilolitre increases stepwise with consumption as shown below.

EXAMPLE OF RISING BLOCK TARIFFS



The rising block system should include at least three tariff blocks but may include more. The tariff for the first block, i.e. consumption between 0 and 6kl per household per month should

be set as low as affordable by the water services institution and ***should be provided for free if a “free basic water” policy is being implemented.*** The second block in a three-block tariff structure is for “normal consumption” meaning that the upper consumption limit of this block should be set such that a household that uses water sparingly should be able to be accommodated within this block. The tariff charged for consumption in this block should ideally reflect the actual or average cost of water.

The third or top block is for “luxury consumption”. A household that uses water for luxury purposes, such as for filling a swimming pool or a household that does not use water sparingly should be required to pay a higher than average price for water that reflects the economic cost of this scarce resource. It could also be argued that the careless use of water is a major cause of having to construct new infrastructure earlier than what would have been required if water was conserved. For this reason it is recommended that the tariff for the highest tariff block should be set at a level that reflects the cost of developing new capacity and should be sufficiently higher than the tariff for the second or middle block to discourage the wasteful use of water.

Why charge a higher unit rate (R/kl) for higher levels of usage?

Equity – those that use water for “luxury purposes” can afford to pay to cross-subsidise basic services to the poor.

Conservation – higher charges gives an incentive for people not to waste water.

Economy – infrastructure has to be constructed to accommodate higher use. Capital expenditure for new infrastructure can be postponed if people conserve water or, alternatively, revenue from higher charges can be set aside to cover the cost of future capital expenditure.

The mathematics for calculating the charge for different levels of consumption using a rising block tariff structure is demonstrated in the example below:

TARIFF BLOCK	CONSUMPTION LIMITS	TARIFF PER KILOLITRE
1	0 to 6 kl	free
2	greater than 6 up to 30 kl	R2-50
3	greater than 30 kl	R5-50

A household using 5 kl would in this example pay no charge.

A household using 20 kl in a month would in this example get 6 kl for free and 14 kl at R2-50 per kl. The total charge would thus be R35-00 (R2-50 times 14).

A household using 40 kl in a month would in this example get 6 kl for free; 24 kl at R2-50 per kl; and 10 kl at R5-50 per kl. The total charge would thus be R115-00 (R2-50 times 24 plus R5-50 times 10).

A further example can be given using the same tariffs as above, but where a consumer using more than 6kl a month pays for his/her entire usage i.e. the first 6kl are free only to those who use less than 6kl. In such a case, using the same tariffs as the above example:

A household using 5kl would pay no charge.

A household using 20kl would pay R50-00 (20kl times R2,50 per kl);

A household using 40kl would pay R130-00 (30kl times R2,50 per kl plus 10kl times R5,50 per kl).

Provision of sanitation services to a household

7. *A tariff set by a water services institution for the provision of sanitation services to a household must –*
- (a) support the viability and sustainability of sanitation services to the poor;*
 - (b) recognise the significant public benefit of efficient and sustainable sanitation services; and*
 - (c) discourage usage practices that may degrade the natural environment.*

The purpose of this regulation is to give guidance on the objectives to be achieved with a domestic sanitation tariff while accommodating different approaches by not being overly prescriptive.

Poor sanitation practices impact negatively on the health and well being of the whole community and also on the environment. A water services institution should support the viability and sustainability of sanitation services to the poor by providing basic sanitation services (for example the removal of sludge from pit latrines) at as low a cost as it can afford to and preferably for free. The provision of low cost or free basic sanitation services would concurrently promote the use of sanitation practices that safeguard the public from diseases and would also discourage the uncontrolled disposal of raw sludge into the natural environment, such as the emptying of slop buckets into streams.

It is expensive and unnecessary to measure water borne sewerage at individual households. Rather, the sanitation tariff for water borne sanitation systems should be based on the volume of water supplied. A volume based sanitation charge levied on the higher water supply tariff blocks with no sanitation charge levied on at least the first 6kl would contribute towards the objectives set out in this norm.

Practices that base sanitation charges on factors that are not directly related to usage, such as the number of toilets, the property value or plot size are discouraged.

Fixed charge

8. *Any tariff set by a water services institution for the supply of water services to a consumer may include a fixed charge.*

Regardless of the amount of water that is consumed or effluent that is disposed of, there are fixed costs that are incurred by a water services institution that must be recovered. This includes for example, the costs of employing staff, maintaining equipment and infrastructure, metering, billing and running offices. When determining a tariff structure it is important to recognise that both fixed charges and volume based charges are sources of revenue that together are used to recover costs. The purpose of this regulation is to allow for a fixed charge component in the tariff structure. A fixed charge is a suitable mechanism for recovering costs from owners of

holiday homes, where the annual water use may be too low to recover costs by only using a volume based charge.

However, in complying with Regulation 5 and in order to implement the “free basic water” policy, it is important that the fixed charge is not levied for those households using less than six kilolitres per month.

CONNECTION FEE

9 *A water services institution may charge a fee for connecting a consumer to a water services work.*

The costs of connecting new water users to reticulation systems is in many cases significant. This cost can either be recovered through the tariffs over time, or this regulation allows the water services institution to charge a fee for connecting a consumer to the system. The levying of a connection fee does, however, have a further advantage in that it requires that a transaction take place between the water services institution and the consumer, thus ensuring that the new consumer is registered by the water services institution.

A water services institution may decide to charge less than the full cost of a connection up front and to recover the remainder of the cost through the user tariffs over time. A water services institution may also decide to charge the same average cost fee for all new domestic connections that fall within a set distance of the reticulation network with a surcharge based on the length of the connecting pipe only applied for connections of longer than the set distance. Normally a higher charge would be applicable for larger diameter connections.

Fee for upgrading an unauthorized connection

10. *A water services institution may charge any consumer connected to a water services work without the authorization of the relevant water services institution, a connection fee for upgrading the unauthorized connection, irrespective of any other action the water services institution may take against such consumer.*

Unauthorised connections impact negatively on the ability of water services institutions to provide services. When unauthorised connections are made they place additional demands on reticulation systems for which they are often not designed. In addition, the type of connection made is often sub-standard without meters and valves and requires upgrading. In both instances, this imposes costs on the service provider and on other consumers. The purpose of this regulation is to provide for recovering costs incurred in regularising unauthorised connections. The levying of a connection fee for unauthorised connections should not prevent the water services institution from taking other legal action. Bylaws for the municipality must make provisions for this.

Commencement

11. These regulations take effect on 1 July 2003.

The period to July 2003 allows all water services institutions time to comply with the regulations.

QUERIES

Queries and comments concerning the implementation of these norms and standards should be directed to:

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This guideline is obtainable in electronic format for the Department of Water Affairs and Forestry's web site:
www-dwaf.pwv.gov.za