

# Development of regulations for water care works and process personnel

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## Abstract

It is well known that South Africa is a water scarce country and that return of high quality effluents to the water resources is essential. In terms of the National Water Act, 1998 (Act 36 of 1998) the National Government has public trusteeship of the nation's water resources and therefore, acting through the Minister, must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and in accordance with its constitutional mandate. For this reason and the sensitive nature of South Africa's water resources, it is necessary that water care works for both potable and wastewater treatment be managed to ensure that stipulated water quality standards are adhered to.

Regulation No. 2834, in terms of the Water Act, 1956 (Act 54 of 1956) for the erection, enlargement, operation and registration of water care works, was promulgated in an attempt to ensure that operators with relevant qualifications were running the different classes of water care works. This regulation had its shortcomings however, in the fact that it focussed more on qualifications and not competence and skill of process personnel. With the promulgation of the National Water Act of 1998 (Act 36 of 1998) it was felt that changes to the regulation were necessary.

In terms of the South African Qualifications Authority Act of 1995 (SAQA) and the Skills Development Act of 1998 (SDA) persons must be trained and assessed using unit standards generated for each particular sector. In light of this unit standards have been developed to take into account recognition of prior learning as well as qualifications and competencies. This means that when a person achieves a unit standard the persons' ability to do a certain task is tested together with the persons understanding of the theory that underpins the task being done. The paper to follow sets out a draft regulation for both the classification of the Water Care Works as well as their process personnel.

## Introduction

It is well known that South Africa is a water scarce country and that return of high quality effluents to a resource is therefore essential. In terms of the National Water Act, 1998 (Act 36 of 1998) the National Government has public trusteeship of the nation's water resources and therefore, acting through the Minister, must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and in accordance with its constitutional mandate. For this reason and the sensitive nature of South Africa's water resources, it is necessary that water care works for both potable and waste water treatment be managed to ensure that stipulated water quality standards are adhered to.

## Background

Rapid urbanisation and development in SA has meant that water care works have to produce larger quantities of potable water for distribution and also treat larger volumes of wastewater for discharge back to water resources. The water qualities both for drinking water purposes as well as the returned effluents must, however, not deteriorate.

Poor planning coupled with the need for development has often meant that, in particular sewage works and pump stations are not upgraded when necessary. Budget cuts within the Local Authorities have also meant that cuts to the operation and maintenance

budgets as well as the employment of skilled personnel of sewage works are common, giving rise to major pollution incidents.

Experience has indicated that a large proportion of the operating staff at water care works are not competent to perform the tasks expected of them to ensure that plant effluents comply with water quality standards. In December 1985 regulation No. 2834, in terms of the Water Act, 1956 (Act 54 of 1956) for the erection, enlargement, operation and registration of water care works, was promulgated in an attempt to alleviate this problem. This regulation had its shortcomings however, in the fact that it focussed more on qualifications and not competence and skill of process personnel. A process of updating Regulation No. R2834 (Regulation in terms of Section 26 read in conjunction with section 12A of the Water Act, 1956 (Act 54 of 1956), for the erection, enlargement, operation and registration of Water Care Works to fit in with the National Water Act, 1998 (Act 36 of 1998), was started in 1999. At the initial meeting with the industry concerned it was ascertained whether such regulations were still necessary, before proceeding. After further consultation draft regulations were drawn up for comment but due to various hitches, never gazetted.

## The South African Qualifications Authority Act, 1995

Towards the end of 2000 it became apparent that a regulation of this nature would be severely affected by the South African Qualifications Authority (SAQA) Act, 1995 which provides for the implementation of a National Qualifications Framework (NQF). The main objective of the NQF being to create a flexible and integrated education and training system, which promotes a process of life-long learning through planned career paths. The NQF creates a unified hierarchical framework that is organised over three bands,

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through eight levels, and involving 12 learning fields. The National Standards Body (NSB) carries out the standard setting function for each of the 12 learning areas. Standard Generating Bodies (SGB) are responsible for generating, updating and reviewing of standards and qualifications, which they submit to their NSB.

Two other important acts in this respect include the Skills Development Act, 1998 which has established a number of mechanisms to promote skills development in South Africa as the Skills Development Levy Act, 1999, which was legislated to make training happen.

## The proposed regulation

### Water care works

Schedules I and II deal with the classification of Water Care Works which are defined as both potable water and wastewater treatment processes. Due to the complexity of the processes there is firstly a need to classify each works in order to determine the operator requirements; and secondly, statistically this database is useful in terms of parameters such as design capacity and return flows, essential elements in the bigger picture of water resources management.

A shortcoming of regulation No. 2834 with respect to Schedules I and II are that regardless of the complexity of the works, the smaller the size, the lower it is classed, and thus according to the regulation, the fewer skilled process personnel are needed for its' operation. This is therefore also holds true for large, less complex processes, that according to the regulation require far more qualified process personnel.

The proposed regulations will make provision for this so that a small works with complex processes may now require more skilled process personnel than a large works with less complex processes. The parameters included for classification include:

- Schedule I for potable water - Population supplied (for statistical use only), Design Parameters, Operating Procedures, Operating Processes, Control Processes and Special Processes such as demineralisation and fluoridation.
- Schedule II for wastewater – Infrastructure, Quality of intake water, Process parameters, Control Processes, Sensitivity of receiving water.

### Process personnel

Regulation 2834 was based strictly on qualifications and to a lesser extent "relevant" experience. This "relevant" experience was never defined and in many instances was taken as the number of years on a water care works. No provision was made for measuring skills and competency of the person. So long as the person had one of the relevant qualifications as described in Schedule III, that person could be classified. This system therefore discriminated against many individuals who for various reasons were unable to attain the qualification.

### **How has the new schedule for personnel been drawn up?**

To understand Schedule III for process personnel for the proposed regulation, it is necessary to consider how the unit standard based qualifications are drawn up in terms of the National Qualifications Framework (NQF).

The NQF defines "Qualifications" as the most socially and economically useful units of learning. The "framework" refers to

the fact that all education and training in the whole country fits within its' organised system. It measures and credits learning based on a nationally agreed set of outcomes for each unit standard. The NQF gives recognition for what learners have already learnt through life and work experiences. The system uses level descriptors which include: foundational competence, practical competence and reflexive competence all at different NQF levels. For example, at level 1 there is a heavy reliance on recall and learning through multiple repetition with no new ideas, whereas at level 3 some thinking and interpretation is required, and at level 5 there is a shift from well defined to abstract thought processes.

Considering the business benefits from the NQF, training is made more relevant and effective for business, by focusing on what employees can practically do (outcomes) and not what they have been trained to do (inputs).

In-house training can now be more easily measured by how much value it adds to the business because learning achievements can be measured on the NQF grid and company training strategies can be defined using the national learning outcomes of the NQF. This is thus a process of life-long learning, continually adding to skills and increasing value to the society.

The learner benefits because the system aids in career-pathing because of the modular approach. At any point a learner can draw upon unit standards to create a learning combination that add towards a new qualification. The NQF measures the learner's ability to actually perform a specified set of tasks or skills against the national standard. Failing an assessment now becomes an opportunity to clearly and accurately discover where gaps are, not a statement of incapacity, that leaves the learner guessing as to what should be improved.

### **What is a unit standard?**

A unit standard is the description of the expected end points (outcomes) of learning for which a learner will get credit. They are components that together describe the skills that make up a qualification. A unit standard includes both the essential, "embedded" knowledge needed to do something, and the outcomes in which a learner must prove their competence to gain credit on the NQF. Unit standards can stand alone, be grouped in clusters to form skills programmes or be combined observing SAQA's rules of combination into qualifications that are registered on the NQF.

### **Different types of unit standards**

There are different types of unit standards that must be included in a qualification. These include fundamental unit standards which are the basic knowledge that a learner must know to do their work better. Core unit standards which contain the knowledge needed in order to perform the job and be seen as competent, and elective unit standards which give the learner choice in the qualification. These will also be informed by the learner's workplace and the business needs.

An outcome is the demonstrable and measurable end products of a learning process and include: actions that are performed, roles that are acted out, knowledge that is evidenced, understanding that is shown, skills that are demonstrated, values and attitudes that a learner has to perform and the criteria against which the learners achievements will be assessed. Critical cross field outcomes are broad and the same across all fields of learning while specific outcomes are specific to certain occupations and fields of learning and measure the ability the ability to use knowledge, skills and values specific to a particular learning field or occupation.

In this respect in order to achieve a unit standard the person will be assessed against certain outcomes and must be deemed compe-

tent. If deemed not yet competent by the assessor, credits will not be awarded and the person will need to go back and practice and be reassessed at a later stage. A further advantage of this system is that the person can be assessed at his/her place of work.

***How will this benefit those persons who do not have a qualification but have been on the works for many years, and are as such unclassified?***

The concept of recognition of prior learning can be used in these instances where persons can be assessed in terms of the knowledge, skills and competencies that they may have gained over the years. In such cases portfolios of evidence will need to be included and if the person is deemed competent for a particular unit standard, then credits will be awarded and the person can in this way achieve sufficient credits to be classified.

## **Schedules IV and V**

The last two schedules of the regulation set out the process personnel requirements for the various classes of works. Regulation 2834 is very specific about the number and class of process personnel that are required. The proposed regulation however, has certain changes which include the minimum class of process person per shift as well as the support personnel requirements, such as fitters and instrumentation technicians.

## **References**

REGULATION NO. 2834 of 1985 in terms of Section 26 read in conjunction with section 12A of the Water Act, 1956 (Act 54 of 1956), for the erection, enlargement, operation and registration of Water Care Works. DRAFT REGULATION for the registration and classification of water care works and process personnel.