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## GOVERNMENT NOTICE

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### DEPARTMENT OF WATER AFFAIRS

R. 813

23 October 2013

#### WATER SERVICES ACT, 1997

#### REGULATIONS RELATING TO COMPULSORY NATIONAL STANDARDS FOR PROCESS CONTROLLERS AND WATER SERVICES WORKS

I, Bomo Edna Molewa, Minister of Water and Environmental Affairs, in terms of section 71(1) of the Water Services Act, 1997 (Act No. 108 of 1997), hereby publish for public comment the draft Regulations relating to Compulsory National Standards for Process Controllers and Water Services Works to be made under section 9(1) of that Act, in the Schedule.

Interested parties are invited to submit, within 60 days from the date of publication of this notice, written comments on the proposed regulations to the Director-General, Department of Water Affairs, Private Bag X313, Pretoria 0001, Fax (012) 3366679; email: NaikerR@dwa.gov.za or MupariwaM@dwa.gov.za (for the attention of Ms NM Mupariwa).

**BOMO EDNA MOLEWA, MP**  
**MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS**

#### SCHEDULE

##### Definitions

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

**“National Qualifications Framework”** (NQF) means a flexible and integrated education and training system, which promotes a process of life-long learning through planned career paths;

**“process controller”** means any natural person who has achieved the relevant competencies to effectively operate a unit process at a water services work or who is

qualified and authorised to design and supervise the construction, installation, operation and maintenance of any water services work and who is employed by either a water services institution, water services work owner, or a company actively involved with the treatment and professional monitoring of water services works or water containing waste in some way or the other;

**“professional credits”** means the units of credit that reflect a necessary number of hours of participation by a person in accredited education programmes in order to keep his or her professional registration. One professional credit is deemed to be equivalent to one day (eight hours) of continuing education;

**“qualification”** means the formal recognition of the achievement of the required number and range of credits and such other requirements at specific levels of the National Qualifications Framework as may be determined by the relevant bodies registered for such purpose by the South African Qualifications Authority;

**“South African Qualifications Authority”** means the South African Qualifications Authority referred to in section 10 of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008);

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

**“the Department”** means the Department of Water affairs;

**“unit standard credits”** means the value or weight assigned by the South African Qualifications Authority to ten notional hours of practical and theoretical learning;

**“General Education and Training Certificate” (GETC)** means the culmination of learning of the General Education and Training band for schools and for Adult Basic Education, and a foundation for further education and training and /or career path and can ease access to Further Education and Training band;

**“Adult Basic Education and Training” (ABET)** means the general conceptual foundation towards lifelong learning and development, comprising of knowledge, skills and attitudes required for social, economic and political participation and transformation applicable to a range of contexts;

**“National Technical Certificate” (NTC)** means

**“Higher Education and Training Framework” (HEQF)** means the policy on higher education determined and published by the minister

## Standards for classification of water services works

2. (1) All water services works must be classified into an appropriate class of water services work as contemplated in Schedules 1 and 2, upon which a classification certificate shall be issued. Including existing works classified under Regulation 2834 of 27 December 1985.

(2) Every class of water services work must employ—

(a) supervisory process controllers;

(b) process controllers; and

(c) operations and maintenance support services,  
of the class or description contemplated in Schedule 4.

(3) A water services institution or owner of a water services work that is to be put into operation after the date of commencement of these regulations must apply to the Department, for a classification of the water services work, as required by subregulation (1), before it is commissioned, upon which a classification certificate shall be issued.

(4) If a component of a water services work is altered or replaced, the water services institution or owner of the water services work must apply to the Department for a reclassification of the water services work in accordance with Schedule 1 or 2, within 60 days after the date of the alteration or replacement, upon which a classification certificate shall be issued.

(5) The owner of a water services work must display in a prominent place at such work a classification certificate contemplated in subregulation (1).

Application for registration can be done on the Blue Drop and Green Drop systems.

**Disclaimer:** this registration does not replace the need to apply for a water use authorization.

## Standards for classification of process controllers

3. (1) All process controllers, whether in full-time employment or not in full-time employment, at a water services work must be registered as a learner process controller or as process controller in a class as contemplated in Schedule 3.

(2) In order to be registered as a process controller in a class as contemplated in Schedule 3, a person must obtain the necessary—

(a) qualifications and training; and

(b) years of experience,  
as contemplated in Schedule 3.

(3) All persons desiring to become process controllers must obtain a learner process controller certificate.

(4) A learner process controller can only be registered as a process controller when he or she has complied with the requirements for a Class I certificate as contemplated in Schedule 3.

### **Standards for training of process controllers**

4. (1) For a process controller registration certificate to be renewed a process controller must—

(a) meet the following minimum annual training requirements:

<b>Class of Process Controller</b>	<b>Unit Standard Credits</b>	
Learner	30	Continued Education
Class I	30	
Class II	30	
Class III	30	
Class IV	30	
Class V	10 <sup>1</sup>	Continued Education/Refresher Training
Class VI	10*	

1 Professional Credits: From Class V, process controllers must register for professional process controller registration.

; and

- (b) obtain at least six months operating or related experience over the five years between registration renewals.
- (2) Every process controller employed at a water services work must complete the required hours of training every year, over the five years between registration renewals.
- (3) process controllers registered as Class I - Class IV, the Unit Standards for training may be provided in any combination of fundamental, core and electives from a registered water learnership at the appropriate NQF level such that any one learner will be able to obtain a full water qualification at a progressive level in a five year cycle.

#### **Standards for process controllers employed prior to commencement of regulations**

- 5. (1) Process controllers who have the experience requirements contemplated in Schedule 3, but do not have the necessary educational requirements, may be registered to work at the water services work where he or she is employed for a period of five years.
- (2) A process controller contemplated in subregulation (1) must in accordance with subregulation (3) successfully demonstrate that he or she is competent to receive a registration certificate and must have the registration certificate renewed on the expiry of the five year period.
- (3) For the purposes of subregulation (2), demonstration of competency entails that a process controller be subjected to a competency assessment that must be carried out by a registered professional upon request in writing to the Department of Water Affairs.

#### **Repeal of regulations**

- 6. The Regulations for the Erection, Enlargement, Operation and Registration of Water Care Works published under Government Notice No. R. 2834 of 27 December 1985 are hereby repealed.

**Short title**

7. These regulations are called the Regulations relating to Compulsory National Standards for Process Controllers and Water Services Works.

## SCHEDULE 1

**CLASSIFICATION OF A WATER SERVICES WORKS USED FOR THE ABSTRACTION,  
TREATMENT AND STORAGE OF WATER AND DISPOSAL OF ASSOCIATED WASTE  
PRODUCTS**

## Rating

Class of works Range of points	E <30	D 30 – 49	C 50 – 69	B 70 – 90	A >90
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Points to be awarded at the discretion of the Director-General in accordance with the following criteria:

Technology	Unit Process	Control Elements	Maximum
Population supplied		Up to 5 000..... 5 001 to 50 000..... 50 001 to 250 000..... > 250 000.....	1 2 3 4
Infrastructure	Design Capacity in kilolitres per day (kl/d)	0 to 500..... 501 to 2 500..... 2 501 to 7 500..... 7 501 to 25 000..... >25 000.....  Actual volume: _____ kl/d	2 4 6 8 10
	Versus peak day	Design more than peak day use..... Design = peak day use..... Design < peak day use.....	0 1 3
	Final water storage capacity	>60 hours during peak..... 36-60 hours during peak..... <36 hours during peak.....	0 1 2
	Installed power (kilowatts of installed power to operate)	0-5 kW..... 5 – 100 kW..... 101 – 1000 kW..... >1000 kW.....	1 3 5 10
Operating Procedures	Raw water flow rate	No variation..... Little variation (<5%)..... Controlled variation with automatic adjustments..... Uncontrolled variation with automatic adjustments..... Controlled variation with manual adjustments..... Uncontrolled variation with manual adjustments.....	0 1 2 3 4 5
	Raw water quality	No adjustments needed in operating procedures..... Seasonal adjustments needed in procedures..... Monthly adjustments needed in procedures..... Weekly adjustments needed in procedures..... Daily adjustments needed in procedures..... Hourly adjustments needed in procedures.....	0 1 2 3 4 5
	Chemical dosing	No chemicals added..... Disinfection chemical..... +1 flocculation chemical without pH control..... +2 flocculation chemicals without pH control..... +1 flocculation chemical with pH control..... +2 flocculation chemicals with pH control.....	0 2 4 6 8 10

<b>Operating Processes</b>	<b>Desludging</b>	Automatic desludging.....	1
		Manual desludging.....	2
		Automatic fixed schedule of desludging.....	3
		Manual fixed schedule of desludging.....	4
		Optimised desludging.....	5
	<b>Filter Backwash</b>	Automatic controlled by timer.....	1
		Automatic controlled by pressure.....	2
		Manual with fixed time schedule.....	3
		Manual with fixed pressure schedule.....	4
		Optimised filter backwash.....	5
	<b>Settling Process</b>	Uncontrolled process.....	2
		Controlled process (sludge blanket).....	5
	<b>Stabilisation</b>	pH correction with automatic dosing.....	1
		pH correction with manual dosing.....	2
		pH correction according to Langelier/Rayzner index.....	3
		pH correction according to Stasoft programme... ..	4
		Complete stabilisation with CO <sub>2</sub> .....	5
	<b>Disinfection</b>	Uncontrolled with tablets.....	1
		Dosing with liquids or powder.....	2
		Dosing with chlorine gas or ozone.....	3
		Optimum chlorine gas or ozone dosing.....	4
		Combination chlorine and ozone.....	5
	<b>Recirculation/Backwash recovery</b>	Without any adjustments in procedure.....	1
		With automatic adjustments in procedure.....	2
		With separate settling tanks.....	3
		Controlled recirculation with adjustments.....	4
		Uncontrolled recirculation with adjustments.....	5
	<b>Sludge handling</b>	Sludge lagoons.....	3
<b>Control Processes</b>	<b>Water Losses</b>	On works only.....	2
	<b>Water Management</b>	Different reservoirs.....	2
		Different pressure zones.....	4
	<b>Pumping</b>	Gravitation only.....	2
		Gravitation and pumping.....	4
		Raw or final pumping.....	4
		Raw, Final and other pumping.....	6
	<b>Level</b>	Indicators.....	2
		Telemetric.....	4
	<b>Maintenance</b>	None by process controllers.....	0
		Basic maintenance by process controllers.....	1
		Specialised maintenance by process controllers.....	2
	<b>Lab services</b>	Reading with instrumentation by process controllers.....	2
		Full lab service on site but not done by process controllers, although still a management function.....	3
		Chemical analyses done by process controllers.....	4
		Jar tests to maintain optimum dosing by process controllers (more than 2x daily) .....	5
		Record readings.....	5
	<b>Administration</b>	Calculate daily flow and stock taking.....	1
		Calculate dosing and generate reports.....	2
		Work on computer (not just check screen).....	4
		.....	5
<b>Water Reclamation and reuse</b>	<b>Power Generation</b>	Record Readings.....	2
		KW daily production.....	4
<b>Special Processes</b>	<b>Demineralisation</b>	Mechanical – Air.....	2
		Chemical*.....	1 – 5*
	<b>Fluoridation</b>	.....	5
		.....	5
		.....	5
	<b>Reverse Osmosis</b>	.....	5
	<b>Activated carbon</b>	.....	5
	<b>Softening</b>	.....	5

\* need to motivate number of points claimed eg. combination of chemicals.



**SCHEDULE 2****CLASSIFICATION OF A WATER SERVICES WORKS USED FOR THE TREATMENT OF  
WASTEWATER AND THE DISPOSAL OR RE-USE OF THE TREATED WASTE****Rating**

<b>Class of works Range of points</b>	<b>E &lt;30</b>	<b>D 30 – 39</b>	<b>C 40 - 59</b>	<b>B 60 - 70</b>	<b>A &gt;70</b>
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Points to be awarded at the discretion of the Director – General in accordance with the following criteria:

<b>Technology</b>	<b>Unit Process</b>	<b>Control Elements</b>	<b>Maximum</b>
<b>Infrastructure</b>	<b>Design Capacity in kilolitres per day (kℓ/d)</b>	0 to 500..... 500 to 5 000..... 5 001 to 20 000..... 20 001 to 50 000..... 50 001 to 250 000..... >250 001..... <div style="border: 1px solid black; padding: 2px; display: inline-block;">Actual volume: _____ Kℓ/d</div>	1 2 4 6 8 10
	<b>Installed power (kilowatts of installed power to operate)</b>	0 – 5 kW..... 5 – 100 kW..... 101 – 1000..... >1000 kW.....	1 3 5 10
<b>Quality of intake water</b>		Domestic..... Conservancy/Night soil..... Industrial effluent..... Internal recycle eg filtrate/centrate, supernatant etc..... Leachate.....	0 1 – 5** 1 – 5** 2 1 – 3**

<b>Process parameters</b>	<b>Primary Treatment</b>	Manually raked screens.....	1
		Automatic screens.....	2
		Hand/mechanical grit removal.....	1
		Automatic grit removal.....	2
		Flow balancing.....	2
		Primary sedimentation.....	4
		Sludge fermentation.....	2
	<b>Secondary Treatment</b>	Oxidation ponds.....	3
		Biodiscs.....	4
		Biofilters (Biof).....	6
		Activated sludge: full nitrification.....	8
		Activated sludge: partial denitrification.....	10
		Activated sludge: Biological Excess phosphate removal.....	4
		Chemical Addition.....	1
	<b>Tertiary Treatment</b>	Maturation ponds.....	1
		Reedbeds.....	2
		Sand filters.....	1 – 3*
		Disinfection (eg. Chlorination, ammonium bromide, ozone and UV 1-2)*.....	2
		Chemical De-chlorination.....	4
		Desalination/Membrane filters.....	2
		Treated water containing waste re-use for industrial purposes.....	2
		Treated water containing waste re-use for potable purposes (this section of the plant must then be registered in terms of Schedule I).....	Nil
		<b>Sludge Treatment</b>	4
		Anaerobic Digestion - <30 days retention.....	2
		- >30 days retention.....	7
	<b>Additional Factors</b>	Mechanical or physical/chemical sludge treatment including thickening, stabilisation and/or dewatering.....	2
		Aerobic digestion.....	1
		Sludge drying beds/lagoons.....	6
		Thermal sludge treatment.....	3
		Sludge heating.....	1-3*
		Gas engines, incineration, boilers.....	3
		On-site steam generation.....	1-5*
		Partial to full plant automation.....	1-3*
		Odour control.....	1-3*
		Standby power.....	3
		24 hour telemetry monitoring.....	3
<b>Control Processes</b>	<b>Maintenance</b>	None by process controllers.....	0
		Basic maintenance by process controller.....	1
		Specialised maintenance by process controller.....	4
	<b>Lab services</b>	Reading with instrumentation by process controller.....	2
		Full lab service on site but not done by process controller, although still a management function.....	3
		Chemical analyses done by process controller.....	4
	<b>Administration</b>	Record Readings.....	1
		Calculate daily flows and stock taking.....	2
		Calculate dosing and generate reports.....	4
		Work on computer (not just check screen).....	5
	<b>Trade Effluent by-laws</b>	Trade effluent by-laws exist and are implemented.....	0
		No trade effluent by-laws.....	5
<b>Sensitivity of water resource into which treated water containing waste is discharged</b>		Low – e.g. oxidation pond with irrigation, evaporation pond, marine discharge.....	2
		Medium – e.g. all discharges to any river or stream except in specially identified areas.....	4
		High – e.g. Special standard or where a receiving water quality standard is prescribed and estuaries.....	6
	<b>Reclamation/Reuse Type (Term)</b>	<b>Applications</b>	<b>Maximum</b>

<b>Water Reclamation and reuse</b>	<b>Agricultural Irrigation</b>	Crops irrigated.....	6
	<b>Landscape irrigation</b>	parks.....	3
		golf courses.....	3
		freeways.....	3
		office and industrial developments.....	3
		residential.....	3
	<b>Industrial Activities</b>	Cooling and process needs.....	6
		Power Generation.....	6
		Gas Production.....	6
	<b>Groudwater Recharge</b>	spreading basins.....	10
		direct injection to groundwater aquifers.....	10
	<b>Other non-potable uses Fire protection, air condition, toilet flushing, construction water and sanitary sewer</b>	fire protection.....	4
		air condition.....	4
		toilet flushing.....	4
		construction water.....	4
		sanitary sewer.....	4
			4
	<b>Potable reuse</b>	Direct sewer treatment for potable supply.....	10

\*points scored according to complexity of process – needs to be motivated and 1 additional point is then added per motivation.

\*\* Points scored according to % of night soil, industrial effluent or leachate being discharged to the water services works making the process more complex. This motivation must include the Chemical Oxygen Demand concentrations.

## SCHEDULE 3

## PROCESS CONTROLLER REGISTRATION

This Schedule must be read in conjunction with the Qualifications registered with the South African Qualifications Authority on the National Qualifications Framework. The qualifications include Water and Wastewater Process operations and control and industrial water treatment support and control operations.

EDUCATIONAL REQUIREMENTS		Years appropriate experience per Class of Process Controller							
		Grand-parented	In Training (L)	I	II	III	IV	V	VI
1. None		10							
1. St 6/ Grade 8			0	-	-	-	-	-	-
1. * Skills programme equivalent to a value of at least 30 Credits of Core and/or Elective Unit Standards taken from the appropriate NQF 2 Qualification <b>plus</b> St 1/Grade 3 <b>or</b> the ABET equivalent				2					
1. St 6/ Grade 8 <b>plus</b> <b>**Maintenance Workers Certificate; or</b>			0	4	-	-	-	-	-
2. St 6/ Grade 8 <b>plus</b> <b>**Treatment Training Certificate; or</b>									
3. NQF 1 GETC: Water Services									
1. St 7/ Grade 9 <b>plus</b> <b>**Maintenance Workers Certificate; or</b>			0	3	-	-	-	-	-
2. St 7/ Grade 9 <b>plus</b> <b>**Treatment Training Certificate; or</b>									
3. NQF 1 GETC: Water Services <b>plus</b> the Core Unit Standards from the Appropriate NQF 2 Qualification									
1. St 8/ Grade 10 (or NTC 1) <b>plus</b> <b>**Maintenance Workers Certificate; or</b>			0	2	5	-	-	-	-
2. St 8/ Grade 10 (or NTC 1) <b>plus</b> <b>**Treatment Training Certificate; or</b>									
3. St 8/ Grade 10 (or NTC 1) <b>plus</b> Water and Wastewater Treatment practice N1; <b>or</b>									

EDUCATIONAL REQUIREMENTS		Years appropriate experience per Class of Process Controller							
		Grand-parented	In Training (L)	I	II	III	IV	V	VI
4.	St 8/ Grade 10 (or NTC 1) <b>plus</b> the Core Unit Standards from Appropriate NQF 2 Qualification; <b>or</b>								
5.	Appropriate NQF 2 Qualification								
1.	NTC 1 in Water and Wastewater Treatment practice		0	1.5	4	-	-	-	-
1.	Std. 8/ Grade 10 (or NTC I) <b>plus</b> Operators certificate <b>or</b>		0	1	3	9	-	-	-
2.	St 8/ Grade 10 (or NTC 1) <b>plus</b> the Core Unit Standards from the Appropriate NQF 3 Qualification.								
1.	St 9/ Grade 11 (or NTC II) <b>plus</b> Operators certificate <b>or</b>		0	0.5	2	7	15	-	-
2.	St 9/ Grade 11 (or NTC II) <b>plus</b> the Core Unit Standards from the Appropriate NQF 3 Qualification; <b>or</b>								
3.	NTC II in Water and Wastewater Treatment practice; <b>or</b>								
4.	Appropriate NQF 3 Qualification.								
1.	Matric/ Grade 12 (or NTC III) (Mathematics + Science)		0	4	-	-	-	-	-
1.	Matric/ Grade 12 (or NTC III) <b>plus</b> <b>**Maintenance Workers Training Certificate; or</b>		0	1	-	-	-	-	-
2.	Matric/ Grade 12 (or NTC III) <b>plus</b> <b>**Treatment Training Certificate</b>								
1.	Matric/ Grade 12 (or NTC III) <b>plus</b> Operators Certificate; <b>or</b>								
2.	Matric/ Grade 12 (or NTC III) <b>plus</b> Water Treatment practice N3; <b>or</b>								
3.	Matric/ Grade 12 (or NTC III) <b>plus</b> Wastewater Treatment practice N3; <b>or</b>								
4.	Matric/ Grade 12 (or NTC III) <b>plus</b> the Core Unit Standards from the Appropriate NQF 4 Qualification; <b>or</b>								
5.	NTC III in Water Treatment practice; <b>or</b>								
6.	NTC III in Wastewater Treatment practice; <b>or</b>								
7.	Appropriate NQF 4 Qualification								

EDUCATIONAL REQUIREMENTS	Years appropriate experience per Class of Process Controller								
	Grand-parented	In Training (L)	I	II	III	IV	V	VI	
1. National Diploma <b>or</b> National Technical Diploma <b>or</b> NTC VI <b>or</b> 3 year BSc (all in appropriate field); <b>or</b>					0	2	6	-	
2. Appropriate NQF 5 Qualification									
1. B Tech (Higher National Diploma) <b>or</b> 4 year BSc (both in appropriate field); <b>or</b>						0	4	15	
2. Appropriate NQF 6 Qualification									
1. Professional Engineer or Professional Engineering Technologist (Act 81 of 1968) in appropriate field; or a Natural Scientist (Act 55 of 1982) in appropriate field.						0	3	12	

\* This will apply only to those who have been working at a registered water services works for longer than 10 years with no classification or a Class 0 classification under Government Notice No. R. 2834 of 27 December 1985 and who have not achieved the relevant unit standards by recognised prior learning assessment. The non-prescriptive criteria allow for the older process controller who could not be classified under the old regulation to select Unit Standards relevant to their experience/training on which they can be assessed. A motivation for being registered in this category must accompany the application.

\*\* Maintenance Workers / Treatment Training Certificate: Training must be accredited and/or hold CPD credits and have duration of not less than 5 days.

### **NOTES ON SCHEDULE III**

#### **1. APPROPRIATE NQF QUALIFICATIONS**

NQF qualifications are revised every three years and updated if necessary. Certificates issued for the following qualifications and any previous or updated versions thereof will be recognized, as indicated in Schedule III above.

#### **1.1 NQF LEVEL 1**

GETC: Water Services

- 1.2 NQF LEVEL 2
- 1.2.1 National Certificate: Water and Wastewater Process Operations
- 1.2.2 National Certificate: Industrial Water Treatment Support Operations
- 1.3 NQF LEVEL 3
- 1.3.1 National Certificate: Water and Waste Water Process Control
- 1.3.2 National Certificate: Industrial Water Treatment Plant Operation
- 1.4 NQF LEVEL 4
- 1.4.1 Further Education and Training Certificate: Water and Waste Wastewater Process Supervision
- 1.4.2 National Certificate in Industrial Water Treatment Control Operations
- 1.5 NQF LEVEL 5
- 1.5.1 A generic qualification in management that includes as electives a selection of registered water related unit standards at the NQF 5 level
- 1.6 NQF LEVEL 6
- No unit standard based qualifications have yet been developed at this level for the water industry but are foreseen in the future. Equivalent whole qualifications are provided by tertiary education institutions.
- Re-evaluation of present operator classification in terms of Government Notice No. R. 2834 of 27 December 1985 may be requested. Process Controller registration in terms of Schedule III is only an indication of the persons' level of competency and in no way obliges the employer to amend a salary or create a new position for such persons.

Adjustment/new level assignment of the B Tech, BSc (3 and 4 year) and the NQF Level 5 qualification may take place in future to align them to the Higher Education Qualification Framework (HEQF) (NQF Levels 1 to 10). However, this will not impact on the number of years of appropriate experience and Class of Process Controller currently attached to this level. Any Future NQF Level 6 qualification will be developed in accordance with the criteria and requirements set for the HEQF.

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