NO. R. 181 24 February 2006

NATIONAL WATER ACT, 1998

DRAFT REGULATIONS FOR THE REGISTRATION OF WATERWORKS AND PROCESS CONTROLLERS

The Minister of Water Affairs and Forestry under section 26(c), (e) and (f) of the National Water Act, 1998 (Act No. 36 of 1998), intends to make the regulations in the Schedule.

Interested parties are invited to submit written comments on the proposed regulations to the Director-General of Water Affairs and Forestry, Private Bag X 313, Pretoria 0001; Fax: (012) 323 0321; email: boydla@dwaf.gov.za (for the attention of Ms L Boyd) 60 days after the gazetted date.

SCHEDULE

Definitions

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

"National Qualifications Framework" means a flexible and integrated education and training system, which promotes a process of life-long learning through planned career paths;

"process controller" means a natural person employed at a waterwork, who has achieved relevant competencies to effectively operate a unit process at the work or a person authorised to design, construct, install, operate or maintain any waterwork;

"the Act" means the National Water Act, 1998 (Act No. 36 of 1998)

Application for registration

2(1) The owner of a waterwork in operation at the date of commencement of these regulations must apply within 30 days of such date for registration of -

(a) the waterwork; and

(b) every process controller on that waterwork.

(2) The owner of a waterwork to be put into operation after the date of commencement of these regulations must apply for registration of the waterwork as prescribed by sub-regulation (3), before it is commissioned.

(3) Application forms for registration for purposes of these regulations are obtainable from the Department and must be directed to the responsible authority with information-

(a) in respect of the waterwork concerned, the particulars referred to in Schedule I or II, as the case may be; and

(b) in respect of each process controller employed or to be employed for the operation of the waterwork, the particulars referred to in Schedule III.

Registration

3(1) Upon receipt of the particulars contemplated in regulation 2, the responsible authority must-

(a) classify every waterwork in accordance with Schedule I or II, as the case may be; and

(b) classify each process controller employed or to be employed for the operation of the waterwork in accordance with Schedule III.

(c) issue a certificate of registration in respect of such waterwork and process controller.

(2) The responsible authority must keep a register of particulars of every waterwork, including its' location, in respect of which registration has been issued and every process controller registered in terms of these regulations; and

Display a copy of the registration certificate for both the waterwork and process controller(s)

4 The owner of a waterwork must display in a prominent place on that waterwork a copy of the registration certificate(s) issued under regulation 3.

Employment of supervisory persons and process controllers

5(1) The owner of a waterwork must, from the date of commencement of its registration under regulation 3, employ for the operation and control of a waterwork-

(a) a supervisory process controller;

(b) process controllers; and

as set out in Schedule IV.

(2) An updated register of the required personnel for these functions must be kept by an owner of a waterwork and be available for inspection by the responsible authority at all times.

Repeal of regulation

6 The regulations published under Government Notice R. 2834 of 27 December 1985, are hereby repealed.

In terms of section Contravention or failure to comply with a regulation is an offence and any person found guilty of the offence is liable to a fine or to imprisonment for a period not exceeding 5 years.

SCHEDULE I

REGISTRATION OF A WATERWORK USED FOR THE TAKING, TREATMENT AND STORAGE OF WATER AND DISPOSAL OF WASTE

Rating

Class of works **Range of points**	**E** **<30**	**D** **30 - 49**	**C** **50 – 69**	**B** **70 – 90**	**A** **>90**

Points to be awarded at the discretion of the Director-General in accordance with the following criteria:

			Maximum
Population supplied		Up to 5 000……	1
		5 001 to 50 000……	2
		50 001 to 250 000……..	3
		> 250 000……..	4
Infrastructure	**Design Capacity in kilolitres per day (kℓ/d)**	0 to 500……..	2
		501 to 2 500……...	4
		2 501 to 7 500……	6
		7 501 to 25 000……	8
		>25 000……	10
		Actual volume:_____kℓ/d	
	Versus peak day	Design more than peak day use……..	0
		Design = peak day use……	1
		Design < peak day use……	3
	Final water storage capacity	>60 hours during peak……	0
		30 - 60 hours during peak……	1
		<36 hours during peak……...	2
	Installed power (kilowatts of installed power to operate)	0-5 kW…….……	1
		5 – 100 kW…….……..	3
		101 – 1000 kW…….……..	5
		>1000 kW…….……..	10
Operating Procedures	**Raw water flow rate**	No variation……	0
		Little variation (<5%)……	1
		Controlled variation with automatic adjustments……	2
		Uncontrolled variation with automatic adjustments……	3
		Controlled variation with manual adjustments…..	4
		Uncontrolled variation with manual adjustments……	5
	Raw water quality	No adjustments needed in operating procedures.	0
		Seasonal adjustments needed in procedures…...	1
		Monthly adjustments needed in procedures……..	2
		Weekly adjustments needed in procedures…..…	3
		Daily adjustments needed in procedures……..	4
		Hourly adjustments needed in procedures……...	5
	Chemical dosing	No chemicals added..……	0
		Disinfection chemical..……	2
		+1 flocculation chemical without pH control……..	4
		+2 flocculation chemicals without pH control……	6
		+1 flocculation chemical with pH control……	8
		+2 flocculation chemicals with pH control……..	10

Operating Processes	**Desludging**	Automatic desludging……	1
		Manual desludging……	2
		Automatic fixed schedule of desludging……	3
		Manual fixed schedule of desludging……	4
		Optimised desludging……	5
	Filter Backwash	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
	Settling Process	Uncontrolled process……	2
		Controlled process (sludge blanket)……	5
	Stabilisation	pH correction with automatic dosing……..	1
		pH correction with manual dosing……..	2
		pH correction according to Langelier/Razner index……	3
		pH correction according to Stasoft programme…	4
		Complete stabilisation with CO_2……..	5
	Disinfection	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
	Recirculation	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
	Sludge handling	Sludge lagoons……..	3
Control Processes	**Water Losses**	On works only……	2
	Water Management	Different reservoirs……	2
		Different pressure zones……..	4
	Pumping	Gravitation only……..	2
		Gravitation and pumping……..	4
		Raw or final pumping……..	4
		Raw, Final and other pumping……..	6
	Level	Indicators……..	2
		Telemetric……	4
	Maintenance	None by operators……	0
		Basic maintenance by operators……	1
		Specialised maintenance by operators……..	2
	Lab services	Reading with instrumentation by operators……..	2
		Full lab service on site but not done by operators, although still a management function..	3
		Chemical analyses done by operators……..	4
		Jar tests to maintain optimum dosing by operators (more than 2x daily)……	5
	Administration	Record readings……	1
		Calculate daily flow and stock taking……..	2
		Calculate dosing and generate reports……..	4
		Work on computer (not just check screen)……	5
Special Processes	**Demineralisation**	Mechanical – Air……..	2
		Chemical*……	1 – 5*
	Fluoridation	……	5
	Reverse Osmosis	……	5
	Activated carbon	……	5
	Softening	……	5

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

SCHEDULE II

REGISTRATION OF A WATERWORK USED FOR THE TREATMENT OF WASTE AND THE DISPOSAL OR RE-USE OF THE TREATED WASTE

Rating

Class of works	**E**	**D**	**C**	**B**	**A**
Range of points	**<30**	**30 - 39**	**40 - 59**	**60 - 70**	**>70**

Points to be awarded at the discretion of the Director – General in accordance with the following criteria:

			Maximum
Infrastructure	**Design Capacity in kilolitres per day (kℓ/d)**	0 to 500	1
		500 to 5 000	2
		5 001 to 20 000	4
		20 001 to 50 000	6
		50 001 to 250 000	8
		>250 001	10
		Actual volume: _____Kℓ/d	
	Installed power (kilowatts of installed power to operate)	0 – 5 kW	1
		5 – 100 kW	3
		101 –1000	5
		>1000 kW	10
Quality of intake water		Domestic	0
		Conservancy/Night soil	1 – 5**
		Industrial effluent	1 – 5**
		Internal recycle eg filtrate/centrate, supernatant etc.	2
		Leachate	1 – 3**
Process parameters	**Primary Treatment**	Handraked screens	1
		Automatic screens	2
		Hand/mechanical grit removal	1
		Automatic grit removal	2
		Flow balancing	2
		Primary sedimentation	2
		Sludge fermentation	4
	Secondary Treatment	Oxidation ponds	2
		Biodiscs	3
		Biofilters (Biof)	4
		Activated sludge: full nitrification	6
		Activated sludge: partial denitrification	8
		Activated sludge: Biological Excess phosphate removal	10
		Chemical Addition	4
	Tertiary Treatment	Maturation ponds	1
		Reedbeds	1
		Sand filters	2
		Disinfection (eg. Chlorination, ammonium bromide, ozone and UV 1-2)*	1 – 3*
		Chemical De-chlorination	2
		De-salination/Membrane filters	4
		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
	Sludge Treatment	Anaerobic Digestion - <30 days retention	4
		- >30 days retention	2
		Mechanical or physical/chemical sludge treatment including thickening, stabilisation and/or dewatering	7
		Aerobic digestion	2
		Sludge drying beds/lagoons	1
		Thermal sludge treatment	6
	Additional Factors	Gas engines, incineration, boilers	1-3*
		On-site steam generation	3
		Partial to full plant automation	1-5*
		Odour control	1-3*
		Standby power	1-3*
		24 hour telemetry monitoring	3

Control Processes	**Maintenance**	None by operators……..	0
		Basic maintenance by operators……..	1
		Specialised maintenance by operators……	4
	Lab services	Reading with instrumentation by operators……...	2
		Full lab service on site but not done by operators, although still a management function……..	3
		Chemical analyses done by operators……..	4
	Administration	Record Readings……	1
		Calculate daily flows and stock taking…….....	2
		Calculate dosing and generate reports……	4
		Work on computer (not just check screen)……	5
	Trade Effluent by-laws	Trade effluent by-laws exist and are implemented……..	0
		No trade effluent by-laws……..	5
Sensitivity of water resource into which treated water containing waste is discharged		Low – eg oxidation pond with irrigation, evaporation pond, marine discharge…….	2
		Medium – eg all discharges to any river or stream except in specially identified areas……	4
		High – eg Special standard or where a receiving water quality standard is prescribed and estuaries…..……..	6

*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 waterwork making the process more complex. This motivation must include the Chemical Oxygen Demand concentrations.

SCHEDULE III

WATERWORK 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						
Existing qualifications prior to the NQF	**CLASS Trainee**	**I**	**II**	**III**	**IV**	**V**	**VI**
▪ Std. 6	0	-	-	-	-	-	-
▪ Std. 6 plus Maintenance Workers Certificate	0	4	-	-	-	-	-
▪ Std. 7 plus Maintenance Workers Certificate	0	3	-	-	-	-	-
▪ Std. 8 (or NTC I) plus Maintenance Workers Certificate ▪ Std. 8 (or NTC I) plus Water and Wastewater Treatment practice NI	0	2	5	-	-	-	-
▪ NTC I in Water and Wastewater Treatment practice	0	1.5	4	-	-	-	-
▪ Std. 8 (or NTC I) plus Operators certificate	0	1	3	9	-	-	-
▪ Std. 9 (or NTC II) plus Operators certificate ▪ NTC II in Water and Wastewater Treatment practice	0	0.5	2	7	15	-	-
▪ Matric (or NTC III) plus Operators certificate ▪ Matric (or NTC III) plus Water Treatment practice N3 ▪ Matric (or NTC III) plus wastewater Treatment practice N3 ▪ NTC III in Water Treatment practice ▪ NTC III in wastewater Treatment practice		0	0.5	3	8	15	-
▪ National Diploma or National Technical Diploma or NTC VI or 3 year BSc (all in appropriate field)				0	2	6	-
▪ Higher National Diploma or 4 year BSc (both in appropriate field)					0	4	15
▪ Professional Engineer (Act 81 of 1968) in appropriate field; Natural Scientist (Act 55 of 1982) in appropriate field; Corporate member of IWPC (now WISA)					0	3	12
National Qualifications Framework (NQF) qualifications							
▪ Unit standard on the water cycle from Certificate in Wastewater or Water Process Operations (NQF2)	0	-	-	-	-	-	-

▪ **Skills programme equivalent to a value of at least 30 credits taken from: Certificate in Wastewater Process Operations (NQF2) *Or* National certificate in Water Purification Process Operations (NQF2) *Or* National certificate in Industrial Water Treatment Support Operations (NQF 2) ▪ General Education and Training Certificate in Water Services (NQF1*) plus* all core unit standards from the Certificate in Wastewater *or* Water Process Operations (NQF2) *or* industrial water treatment support operations (NQF2) ▪ Grade 10 certificate with maths and science *plus* all core unit standards from the Certificate in Wastewater *or* Water Process Operations (NQF2) *or* industrial water treatment support operations (NQF2)		0	2	-	-	-	-
▪ All fundamental and core subjects from: Certificate in Wastewater Process Operations (NQF2) *or* National Certificate in Water Purification Process Operations (NQF 2) *or* National Certificate in Industrial Water Treatment Support Operations (NQF 2) ▪ Matric certificate with maths and science *plus* all core unit standards from Certificate in Wastewater Process Operations (NQF2) *or* National certificate in Water Purification Process Operations (NQF2) *or* National Certificate in Industrial Water Treatment Support Operations			0	5	-	-	-
▪ Certificate in Wastewater Process Operations (NQF2) ▪ National Certificate in Water Purification Process Operations (NQF2) ▪ National Certificate in Industrial Water Treatment Support Operations (NQF2*) or* all core subjects from National Certificate in Industrial Water Treatment Plant Operations (NQF3) ▪ Matric certificate with science and maths *plus* all core and elective unit standards from: Certificate in Wastewater Process Operations (NQF2) *or* National Certificate in Water Purification Process Operations (NQF 2) *or* National Certificate in Industrial Water Treatment Support Operations (NQF2) *or* all core subjects from National Certificate in Industrial Water Treatment Plant Operations (NQF3)				0	5	-	-
▪ **The full core unit standards from: Certificate in Wastewater Process Control (NQF4) *or* Certificate in Water Purification Process Control (NQF4*) or* National Certificate in Industrial Water Treatment plant Operations (NQF4) ▪ Certificate in Wastewater Process Control (NQF4) ▪ Certificate in Water Purification Process Control (NQF4) ▪ National Certificate in Industrial Water Treatment Control Operations (NQF4) ▪ Matric with science and maths *plus* all core subjects from: Certificate in Wastewater Process Control (NQF4) *or* Certificate in Water Purification Process Control (NQF4) *or* National Certificate in Industrial Water Treatment Control Operations					0	10	15

(NQF4)							
▪ ***All fundamental and core unit standards from: Certificate in Wastewater Process Control (NQF4) *or* Certificate in Water Purification Process Control (NQF4) *or* National Certificate in Industrial Water Treatment Control Operations (NQF 4) ▪ Certificate in Wastewater Process Control (NQF4) *plus* relevant management unit standards at NQF level 5 to a credit value of 50. ▪ Certificate in Water Purification Process Control (NQF4) *plus* relevant management unit standards at NQF5 to a credit value of 50. ▪ National Certificate in Industrial Water Treatment Control Operations (NQF4) *plus* relevant management unit standards at NQF5 to a credit value of 50. ▪ National Diploma or National Technical Diploma or NTC VI or 3 year BSc (all in appropriate field) *plus* all core unit standards from: Certificate in Wastewater Process Control (NQF4) *or* Certificate in Water Purification Process Control (NQF4) *or* National Certificate in Industrial Water Treatment Control Operations (NQF4) *plus* relevant management unit standards at NQF5 to a credit value of 50. ▪ NQF5 water/wastewater management qualification or industrial water treatment management ▪ Higher National Diploma or 4 year BSc (both in appropriate field) *plus*, all core unit standards from: Certificate in Wastewater Process Control (NQF4) *or* Certificate in Water Purification Process Control (NQF4) *or* National Certificate in Industrial Water Treatment Control Operations (NQF4).						0	10
▪ NQF 6 water or wastewater management qualification or industrial water treatment management qualification ▪ Class V requirements *plus* a full NQF 6 generic management qualification.							0

NOTES ON SCHEDULE III

1. **NOTE: this will apply only to those who have been working at a registered Waterworks 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 now 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.

***NOTE: this will apply only to those who have been working at a Registered Waterworks for longer than 10 years in a *supervisory capacity* with no classification under Government Notice No. R. 2834 of 27 December 1985 and who have now achieved the relevant unit standards by recognised prior learning assessment. A motivation stating reasons for being registered in this category must accompany the application

2. 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.

SCHEDULE IV

MINIMUM CLASS OF PROCESS CONTROLLER REQUIRED PER SHIFT, AND SUPERVISION, OPERATIONS AND MAINTENANCE SUPPORT SERVICES REQUIREMENTS AT A WATERWORK

WORKS CLASS	CLASS OF OPERATOR PER SHIFT	SUPERVISION*	OPERATIONS AND MAINTENANCE SUPPORT SERVICES REQUIREMENTS*
E	Class I	Class V*	THESE PERSONNEL MUST BE AVAILABLE AT ALL TIMES BUT MAY BE IN-HOUSE OR OUTSOURCED - electrician - fitter - instrumentation technician
D	Class II	Class V*	
C	Class III	Class V*	
B	Class IV	Class V	
A	Class IV	Class V	

NB. Fluoridation – for any class works, minimum operator classification should be class III

NOTES FOR SCHEDULES IV

*does not have to be at the works at all times but must be available at all times. If the owner of a waterwork has no person of this class employed on that work, a contractor/consultant with the required qualifications as prescribed in Schedule III in respect of that particular class of persons, shall be appointed to visit the work weekly.