

MY EXPERIENCES AS AN OPERATOR IN NEW ZEALAND AND AUSTRALIA (SO FAR)



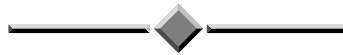
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MY EXPERIENCE IN WATER AND WASTEWATER OPERATIONS IN NZ AND AUSTRALIA (SO FAR)

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ABSTRACT

Despite the synergies in the type of services provided, the water industry in Australia and New Zealand go about their tasks under completely different Legislative, Regulatory, Training and operationally based environments.

Although not a technical paper in the true sense, this paper will outline some of the differences and similarities that I have observed over my 16 year water industry career working in both countries.

1.0 NEW ZEALAND WATER & WASTEWATER LEGISLATIVE REQUIREMENTS

The following is a list of the legislative requirements in New Zealand with relevance to the water industry.

- HEALTH ACT 1956 (Department of Health)
- HEALTH (Drinking Water) AMMENDMENT ACT 2007 (Department of Health)
- RMA 1991 – (Department of Environment and Conversation)
- Water and Soil Conservation Act 1967 (Department of Environment and Conversation)
- Local Government Act 1974
- HEALTH and SAFETY IN EMPLOYMENT ACT 1992 (Department of Labour)
- HSNO ACT 1996 (Department of Labour)

A brief summary of the requirements of each of these Acts follows.

1.1 RMA 1991 – (Department of Environment and Conversation)

Under the Resource Management Act there are five types of resource consent:

1. Land use consent
2. Subdivision consent
3. **Water permit**
4. **Discharge permit**
5. Coastal permit.

1.2 Water and Soil Conservation Act 1967 – (Dept of Environment and Conversation)

1. Improving the conservation, **allocation, use and quality of natural water**
2. Promoting soil conservation
3. Preventing damage by flooding and erosion
4. Looking after the needs of industry, **community water supplies**, water-based recreation and wildlife.

1.3 Local Government Act 1974

- This Act set the foundation for the RMA by transferring power from central government to local government.
- It allows local authorities to provide "services" such as water and waste and lays down permitted methods of charging.

1.4 HEALTH (Drinking Water) AMMENDMENT ACT 2007 (Department of Health)

This Act is the most relevant to Councils and Water Enterprises supplying services.

- **Ensures the water supplier:**
 - ≥ registers their supply to **WINZ**
 - All water quality data (leaving the plant & within the reticulation network)
 - Any incidents, non-compliances.
 - As part of water supply grading
 - Plan your sampling requirements
 - ≥ monitors their water, (catchment, plant & distribution)
 - Leaving plant
 - ✓ Two criteria – Frequency and Value
 - ✓ Turbidity, Chlorine Residual & pH = 1minute & 5minutes.
 - ✓ Microbiological (Quantity is based on population)
 - Within the Reticulation Network
 - ✓ Turbidity, Chlorine Residual & pH (frequency of monitoring is population based)
 - ✓ Microbiological (frequency of monitoring - population based)
 - ≥ implements a Public Health Risk Management Plan (PHRMP),
 - Two sections to mitigate risk – **Currents practices** and **improvement plans**
 - Catchment, source, treatment, reticulation, general, training.
 - Categories - High to Low risk
 - Implementation of improvement plans – now to 5 years
 - Drinking Water Assessor (DWA) assess your plan based on the adequacy of plan Vs your processes and improvement plans
 - Annually checks on your improvement plans
 - DWA has NO power to alter your plans but may suggest options / alternatives.
 - ≥ take all practicable steps to comply with the drinking-water standards,
 - ✓ PLC/SCADA
 - ✓ Double/triple validation on all critical monitoring instrumentation
 - ✓ High/low alarm set-points
 - ✓ QMS 9001:2008 – SOP's & O&M manuals
 - ✓ Continuous and Corrective Improvement system
 - ✓ Manual and automatic recording of data and operational trends
 - ✓ PHRMP
 - ✓ Operator competencies
 - ✓ Duty/Standby system on all critical components
 - ≥ ensure an adequate supply and take reasonable steps to protect the source.
 - ✓ Catchment Engineer
 - ✓ ICMP

- **Governs the current DWSNZ**
 - ✓ Enforce compliance with requirement with the Act.
- **Water Supply Protection Regulation 1961**
 - ✓ These regulations offered protection of public water supplies and included provisions for **backflow prevention**, requirements for **disinfection** following mains repairs and the abolition of **ball hydrants**.
- **Empowers Drinking Water Assessors to ensure compliance.**
 - ✓ assess compliance with standards in implementing **PHRMPs**, and the Act as a whole,
 - ✓ take **appropriate steps** where a supply is not complying.
- **Grading of each Supply (A1 down E)**

SAY = Tauranga City Water Supply System has an Aa rating

- A1 - Completely satisfactory, negligible level of risk, demonstrably high quality
- A - Completely satisfactory, extremely low level of risk
- B - Satisfactory, very low level of risk when the water leaves the treatment plant.
- C - Marginally satisfactory, low level of microbiological risk when the water leaves the treatment plant, but may not be satisfactory chemically
- D - Unsatisfactory level of risk
- E - Unacceptable level of risk
- U - Ungraded

- **Grading Criteria**
 - **First Letter** – Catchment and Treatment
 - **Second Letter** – Distribution Network

Catchment & Treatment	Distribution Network
<ul style="list-style-type: none"> • QMS- ISO 9001:2008 • Type of Treatment Processes • How you monitor and record operational data • Qualification of Operators • Qualification of plant supervisor/Manager • PLC & SCADA system • Maintenance System • PHRM • Water Quality testing • Types of Instruments used for Monitoring • Laboratory used for Microbiological analyses • OSH 	<ul style="list-style-type: none"> • Same applies as per treatment • Hygiene cop of Practice • Notification of shutdown to customers • How you approach low/Med/high risk breaks • Disinfection and de-chlorination protocols • Approved Contractors • How you deal with Customers complaints

1.5 NZ TRAINING AND COMPETENCIES

Previous Qualification

- Nationally Approved Qualification
- All Training Providers were approved and Administered by NZQA
- C, B & A grade Qualification

Criteria: - C Grade Qualification (Trade Certificate)

- Trainee
- Complete 2 years working at plant
- Basic fundamentals of water or wastewater distribution/catchment, treatment and monitoring etc...
- 8 weeks block course with theoretical and laboratory (exam)
- Home assignment – about your plant

Criteria: - B Grade Qualification (NZCS/E (Intermediate Certificate)

- Complete 2 more year after C grade (but not always)
- Understanding how each process works, calculation of processes, troubleshooting, make decision etc..
- Supervisor Level

Criteria: - A Grade Qualification (NZCS/E - Full Certificate)

This qualification is: Design of Water or Wastewater Systems

- **Manager or Engineer Level**

You are given (For Water Qualification)

- 20L water sample
- Topographical map showing the contours of land/area for township and catchment.
- NZDWS Water quality Requirement
- Population (current & 2.5% increase per year)
- Annual Rainfall data
- Industrial/Commercial/Residential area for the town, etc...

Current Qualification

- National Certificate in Water Treatment – Site Operator = **(C Grade Level)**
- National Diploma in Drinking Water (Treatment) Site Technician = **(B Grade level)**
- National Diploma in Drinking Water – Drinking Water Assessment = **(B Grade Level)**
- **OLD A Grade Certificate** is Level 6/7 – University Level (No Government Assistance)

Training Providers?

- NZWETA
- Polytechs (equivalent to Australian TAFEs)
- Individuals

Managed by the National Water ITO and Regulated by NZQA.

Competent or Not Yet Competent

2.0 AUSTRALIAN WATER & WASTEWATER LEGISLATIVE REQUIREMENTS

The Australian water industry is also governed by a range of Legislation, some Federal and others State government managed.

Examples of Federal legislation are:

- Australian Guidelines for Sewage Effluent 1997
- Australian Drinking Water Guidelines 2004 (revised 2011)
- Water Efficiency Labelling and Standards Act 2005
- Water Act 2007

Examples of State based legislation are:

- QUEENSLAND - Water Supply (Safety and Reliability) Act 2008
- QUEENSLAND - Environmental Protection and Other Legislation Amendment Act 2011
- SOUTH AUSTRALIA - Food Act 2001
- AUST CAPITAL TERRITORY - Public Health Act 1997
- VICTORIA - Safe Drinking Water Act 2003
- VICTORIA - Environmental Protection (Amendment) Act 2006

Obviously, now living in Queensland, we must have knowledge of and adhere to a range of Qld State based requirements including:

- Environmental policies and acts.
- Consent/Licence requirements
- Wastewater effluent discharge requirements (Environmental Protection Act 2004)
- Water Supply (Safety and Reliability) Act 2008
- Sunwater requirements
- Local council requirements

2.1 Water and Wastewater Treatment Operations

From what I have experienced so far comparing Australia with NZ.....

- Same types of Treatment Plants – Water & Wastewater as in NZ
- Legislation – States have their own requirements
- Monitoring & Recording - SCADA Systems

2.2 Short and Long Term Evaluation, Notification & Corrective Measures.

Most are based on CCP, which relates to:

- Health Related Guideline Values
- Aesthetic Guideline Values
 - Microbial
 - Chemical (Inorganic and Organic)
 - Physical
 - Radiological

2.3 Monitoring & Recording

Water Quality - **LEAVING THE PLANT:**

- Short Term – results monitored, evaluation and rectify

Water Quality - **DISTRIBUTION NETWORK:**

- Good design, management and integrity of distribution systems are essential for maintaining water quality.

2.4 Training & Competencies

National Water Training Package

- Water Operators – Cert I, II, III , IV and Diploma
- Training Matrix
- RPL
- Residential Block Course at registered RTO
- On-line
- Completed Workbook
- Issue Qualification

3.0 CONCLUSION & MOVING FORWARD – CENTRAL HIGHLANDS

- Operators & Maintenance Staff (& myself) more understanding of the legislative requirements.
- Operators to have reasonable knowledge for his/her own plants.
- Operator competency (practical – at his/her own plant)
- Have a reliable PLC and SCADA systems at plants
- All critical control points - install with monitoring and recording instrumentations.
- In time, will have double validations of instruments monitoring final water leaving all plants. (Turbidity, Chlorine Res and pH)