

TOWARDS COMPLIANCE WITH THE NSW PUBLIC HEALTH ACT 2010 - A DRINKING WATER MOU



Paper Presented by:

Murray Thompson

Author:

Murray Thompson, *Water Supply Engineer,*

MTWS Pty Ltd



*6th Annual WIOA NSW Water Industry Engineers & Operators
Conference*

*Tamworth Regional Entertainment & Conference Centre,
27 to 29 March, 2012*

TOWARDS COMPLIANCE WITH THE NSW PUBLIC HEALTH ACT 2010 - A DRINKING WATER MOU

Murray Thompson, *Water Supply Engineer, MTWS Pty Ltd*

ABSTRACT

Port Macquarie-Hastings Council has signed a Memorandum of Understanding (MOU) with the NSW Health's North Coast Public Health Unit reinforcing its long term strategic approach to providing clean, safe drinking water to its consumers.

The aim of this paper is to outline the purpose and benefits provided by the MOU, including the strategic ability to comply with the requirements of the NSW Public Health Act 2010 and Australian Drinking Water Guidelines 2011.

From an operational perspective the MOU will assist water supply field staff to better monitor, operate and respond to situations which may occur within the water supply network. This includes communication paths and procedures to ensure that Council and NSW Health work cooperatively together to ensure the safe quality of drinking water at all times.

KEY WORDS - Drinking water quality management and operations

1.0 INTRODUCTION

The Port Macquarie-Hastings Local Government area lies within the Mid North Coast Region of NSW. Based upon the 2006 ABS Census, the population for the local government area is currently estimated to be 76, 800 in 2012 and is forecast to grow to more than 105,000 by 2031. This makes it one of the fastest growing regions in NSW.

Council has been actively working upon its compliance with the Australian Drinking Water Guidelines 2011 - since the document was first drafted in 2001.

To Council as the Local Water Utility, the provision of clean and safe drinking water is a fundamental reason for the organisation's existence and a very high expectation of its consumers.

As such the MOU is directly aligned with Council's corporate objectives which include;

"To provide a reliable, safe, clean and cost effective water supply to Council's customers in a manner sympathetic to the environment"

The objective of this paper and presentation is to provide a simple overview of the MOU and its relevance to the ADWG 2011 and NSW Public Health Act 2010. In addition a number of recent water quality incidents will be outlined in the presentation to demonstrate the practical application of the MOU on a day to day basis in the field by water supply staff.

2.0 DISCUSSION

The NSW Government has endorsed the Australian Drinking Water Guidelines (ADWG) as a model of best practice in NSW.

The ADWG's framework for the management of drinking water quality includes twelve (12) fundamental elements as follows;

Commitment to drinking water quality management	(Element 1)
Assessment of drinking water system	(Element 2)
Preventive measures for drinking water quality management	(Element 3)
Operational procedures and process control	(Element 4)
Verification of drinking water quality	(Element 5)
Management of incidents and emergencies	(Element 6)
Employee awareness and training	(Element 7)
Community involvement and awareness	(Element 8)
Research and development	(Element 9)
Documentation and reporting	(Element 10)
Evaluation and audit	(Element 11)
Review and continual improvement	(Element 12)

The NSW Minister of Health and the Director-General NSW Health both have certain responsibilities in relation to the protection of public health, including safety measures for drinking water under the Public Health Act 2010.

The current draft NSW Public Health Regulation 2011 "Part 5 - Safety measures for drinking water", includes a requirement for a supplier of water (eg. local Councils) to have a drinking water quality assurance programme which must address the twelve (12) elements of the ADWG's. A copy of this drinking water quality assurance programme must be provided to NSW Health and it can be made public information.

As outlined above Council has been actively working upon its compliance with the ADWG since the early 2000's. This long term strategic approach to the provision of a clean and safe water supply has included numerous projects and initiatives specifically targeting the improvement of drinking water quality.

A risk based approach has been adopted to identify project priorities for capital investment including; Three villages and Wauchope membrane filtration water treatment plants in 2004 and 2007, Koree Island raw river water online quality monitoring system and Port Macquarie and Cowarra off-creek storage dams water quality monitoring programmes.

This progressive implementation of water treatment facilities and water quality monitoring programmes over the past fifteen (15) years has provided adequate treatment barriers to protect consumers supplied directly from river surface water supplies. While at the same time allowing Council to successfully operate a large non-filtered (disinfection only) water system to supply the majority of its water consumers from two off-creek storage dams.

NSW Health has allocated a minimum number of samples as part of the Drinking Water Management Program for Council to monitor drinking water quality. Water samples, that are representative of the water supplied to the consumer are collected from the distribution system and analysed for *E.coli* and Total Coliform presence by Council's Environmental Laboratory.

The Environmental Laboratory has the capacity to perform physical, chemical and microbiological analysis of drinking water and has a current corporate NATA accreditation for these analyses.

The water treatment plants and water quality monitoring programmes outlined above have gone a long way to improving Council's compliance with the ADWG and the twelve (12)

elements of the Framework for Management of Drinking Water Quality.

In 2010 Council commenced work with the North Coast Public Health Unit to prepare a Memorandum of Understanding (MOU) between the two organisations in regards to the Public Drinking Water Supply. This was considered to be a first step in the development of a fully documented water quality management plan.

The purpose of the MOU is to clearly state the mutual commitment and support to be provided by both organisations in achieving a cooperative approach to supply water that is safe to drinking and ensuring the protection of public health for the local community which has access to the drinking water within the reticulation network.

The MOU has now formalised the existing excellent working relationship between the two organisations which has largely been the result of individual long-term staff members working cooperatively without any documented procedures or formal reporting arrangements.

The quality assurance approach requires that such working relationships and arrangements must be documented and reviewed on a regular basis, to ensure that the processes remain relevant and effective.

The MOU includes an agreement to work cooperatively in relation to;

- Consider long term strategic issues and emerging public health issues relating to the drinking water supply,
- Maintain and enhance water quality data collection and data sharing projects,
- Participate in programs of research and development, sharing of program results as appropriate eg. disinfection by-products, pesticide sampling/testing, Total & Dissolved Organic Carbon sampling/testing, etc.
- Define and implement effective processes for communication and reporting, and
- Annually review the implementation of this Memorandum.

The MOU objectives can be summarised as follows;

- To ensure the provision of adequate, safe drinking water to the customers,
- To strengthen communication and reporting processes between Council and NSW Health,
- To support and enhance data sharing arrangements, and
- To enhance drinking water quality through collaborating on HACCP planning schemes and other water quality improvement programs.

The roles and responsibilities of each organisation are outlined in the MOU as follows;

2.1 North Coast Area Health Service Responsibilities:

- Monitor water quality results via the NSW Health drinking water quality database,
- Respond to fax and SMS notifications from Council in a timely manner,
- Actively participate where requested in the planning and design of water quality improvement programs with Council, and
- Coordinate the annual review meeting of the Steering Committee.

2.2 Port Macquarie-Hastings Council Responsibilities:

- Notify Public Health Unit Environmental Health Officer via Fax and SMS of any:

- *E.coli* from the reticulated supply,
- Operational issues that may include:
 - treatment breakdown/malfunction effecting water quality or raising potential public health concerns,
 - water main breakages effecting >20 houses or critical customers (i.e. home dialysis patients, schools, hospitals and nursing homes)
- Immediately rectify any treatment or disinfection failure (i.e. Confirmed Total Coliforms Count > 200, failure to meet disinfectant or turbidity targets) and investigate possible causes of contamination,
- Notify Public Health Unit Environmental Health Officer in a timely manner when:
 - Aesthetic issues arise related to algal presence,
 - Potentially toxin-forming algal species are identified,
 - The Algal Alert Level Framework recommends notification, or
 - Individual properties are disconnected or restricted from the supply.
- Develop and maintain an incident response plan in consultation with the Public Health Unit,
- Timely data entry – The data collected as part of NSW Health Drinking Water Monitoring Program sample allocation be entered on NSW Health Drinking Water Quality Database within 15 working days (3 weeks),
- Discuss with the Public Health Unit when considering or planning a boil water alert,
- Develop and maintain a register of current dwellings placed on a restrictor or disconnected, and
- Advise the Public Health Unit of Council’s Environmental Laboratory NATA accreditation status on an annual basis.

A Steering Committee has been established including the following representatives:

- Environmental Health Officer of the North Coast Public Health Unit,
- Manager of Water Supply Services for Council,
- Port Macquarie Hastings Environmental Laboratory Manager, and
- Other delegates as agreed upon.

The Steering Committee meets at least twice a year to measure the ongoing performance of the MOU and evaluate its implementation through the following processes:

- Opportunistically discuss water quality improvement programs and associated training/education seminars,
- Review and discuss public health components of risk management plans for drinking water,
- Observe that Council’s drinking water operations reflect the 12 elements of the Framework for the Management of Drinking Water Quality, and
- Annually review:
 - water quality test results,
 - progression of any drinking water programs undertaken,
 - incidents/faults,
 - response procedures to incidents/faults,
 - NATA accreditation status & audits,
 - policy and procedures for water restrictors and disconnections,
 - sample sites and sample allocations, and
 - other emerging issues.

The MOU includes 24/7 contact details for appropriate staff members from each organisation, together with a number of procedural flowcharts and template investigation

and reporting sheets as follows;

Flowcharts:

- Process for Water Supply Contamination and/or Treatment Failure,
- Water Supply Physical or Chemical Samples Exceed a Guideline Value,
- Boil Water Notice Protocol, and
- Recovery of Outstanding Water Charges Through Restriction or Disconnection.

Reporting Templates:

- Investigations & Actions Taken When Detection of E.coli in Reticulated Water Supply Occurs – Stage One,
- Investigations & Actions Taken When Detection of E.coli in Reticulated Water Supply Occurs – Stage Two Resampling, and
- Investigations & Actions Taken When Detection of E.coli in Reticulated Water Supply Occurs – Sanitary Survey Investigation,

While not directly related to water quality one of the biggest issues for NSW Health in the development of this MOU was Council's approach to the recovery of outstanding water charges through restriction and/or disconnection of water supply services.

In accordance with the Local Government (General) Regulation 2005, Council may cut off or restrict the supply of water to premises, if any rates or charges in respect of the water supplied to the premises are unpaid. Council has continued to effectively use this approach to recover unpaid water charges from residents, but has very rarely disconnected a residential property.

NSW Health remained concerned regarding the possible public health issues associated with homes being unable to have safe drinking water for consumption, sanitary purposes and domestic washing.

The development of the MOU resulted in a review of existing debt recovery arrangements, including community consultation, with a new Council policy and procedure being adopted, together with greater communication with local social welfare and charity organisations.

Since the implementation of the MOU in January 2011, there have been two (2) major incidents, which have required notification to NSW Health in accordance with the MOU protocols.

2.3 Transit Hill High Level Tanks *E.coli* Incident

On Tuesday 10th May 2011, positive test results were obtained for Total Coliforms >201 MPN/100ml and *E.coli* 2 MPN/100ml from the Transit Hill High Level Tanks.

The Transit High Level Tanks with a combined capacity of 40kL supply a small high level residential zone of 40 houses in the Port Macquarie area, these tanks are filled from an adjacent 8ML reservoir.

The MOU protocols were activated with immediate communications with NSW Health and development of an action plan to address this situation. This included immediate isolation of the tanks and internal cleaning.

Until a detailed review of drinking water sampling locations in 2010, as part of the MOU development process, these tanks had not been individually tested on a regular basis. It

had been assumed that the water sampling/testing in the adjacent 8ML reservoir would be representative of the water stored in these high level tanks

2.4 Lake Road Booster Pumping Station Chlorine Dosing Incident

On Thursday 29th September 2011 a chlorine solution “dosing incident” occurred at the Lake Road Booster Pumping Station in Port Macquarie, with 400 litres of sodium hypochlorite (hypo) solution injected into the rising main. This followed a power supply surge in the late afternoon and the subsequent failure of a flowmeter instrument which then falsely indicated full flowrate in the rising main.

Both hypo dosing pumps operated continuously for 14 hours until this problem was identified on the SCADA system at 5:30am on Friday 30th September 2011.

Again the MOU protocols were activated with immediate communications with NSW Health and development of an action plan to address this situation. This included containment, decanting, dilution, notification of affected consumers and continuous water monitoring to ensure that chlorine content in the reticulation system did not exceed 5mg/L in accordance with ADWG.

This action plan was successful and the subsequent incident report has resulted in several control system and procedural improvements to avoid similar problems in the future.

3.0 CONCLUSIONS

While the MOU is not a detailed water quality management plan, it does represent an important first step towards the development of a quality assurance plan which would meet the twelve (12) elements of the ADWG’s framework for the management of drinking water quality.

This MOU does provide an important focus and reference point for Council’s water supply staff on a day-to-day basis and a regular review of activities with NSW Health staff. It will also assist in the continuing development and implementation of Council’s drinking water quality management plan, which will represent a significant future capital investment in water supply treatment facilities and monitoring programs into the future.

This will include the construction of major water treatment facilities at both the Port Macquarie and Cowarra off-creek storage dams.

4.0 ACKNOWLEDGEMENTS

Thank you to Port Macquarie-Hastings Council for the opportunity to present this paper, together with the other staff of Water Supply Services Section who have assisted with this project, and

To Greg McAvoy, Environmental Health Officer, North Coast Public Health Unit, for his support and assistance with the development of the MOU and management of the water quality incidents mentioned in this paper.

5.0 REFERENCES

National Health & Medical Research Council (2011), *Australian Drinking Water Guidelines*.