

<b>ORDINARY MEETING</b>  <b>16 JUNE 2015</b>	<b>5.6</b>
--	------------

REVIEW OF CHEMICAL-FREE DRINKING WATER OPTIONS AND IMPLEMENTATION REQUIREMENTS FOR DOUGLAS SHIRE COUNCIL

**Wouter van der Merwe: Manager Water and Wastewater**

**Paul Hoye: General Manager Operations**

**RECOMMENDATION:**

**It is recommended that Council:**

- **note that the Chlorine Free Trial Review was successfully completed;**
- **resolve that a Chlorine Free Trial is not a viable option in the current regulatory environment; and**
- **implement an appropriate capital works program to rectify existing system deficiencies.**

---

**EXECUTIVE SUMMARY:**

In accordance with Council's adopted 2014/2015 Operational Plan – initiative OM5 “To review chemical free drinking water options and implementation requirements”, Douglas Shire Council engaged Bligh Tanner Pty Ltd to review previous reports related to the Mossman/Port Douglas, Whyanbeel and Daintree water supply schemes and provide advice with respect to chlorine free operation. The review did so in the context of both the regulatory and technical challenges that would be faced.

There is currently a different regulatory environment compared to what was in place at the time of the earlier reports prepared prior to de-amalgamation. The change in regulatory context places additional constraints on how Douglas Shire Council can choose to operate these schemes today.

Bligh Tanner Pty Ltd met with the Queensland Water Supply Regulator, and Queensland Department of Health, to discuss how to implement a chlorine free trial within the current regulatory constraints. The regulators made it clear that they believed that chlorination was a critical element in providing safe water. Further, the Queensland Water Supply Regulator indicated that they would be unlikely to approve any proposal to remove chlorine unless Douglas Shire Council could demonstrate that there would be no increase in public health risks.

There are a number of potential risks such as viruses and opportunistic pathogens that can be identified that are currently mitigated by chlorination alone. The removal of chlorine would mean that those risks would no longer be managed. Therefore, the removal of chlorine would increase public health risks. If the Queensland Water Supply Regulator maintains the current stance that they will not approve any proposed change unless the public health risk does not increase, regulatory approval to operate without chlorine appears to be highly unlikely, indeed in practical terms, impossible.

The previous technical reports indicated a number of deficiencies within the drinking water schemes. The reports, whilst approaching the question from different viewpoints nonetheless resulted in fairly consistent outcomes. For example, there was consistent agreement that in 2009:

- The water sources are not microbiologically safe.
- Water storages allowed recontamination.
- The ultrafiltration barrier was not being operated as per design.
- Reticulation network is not secure from contamination.
- Assimilable organic carbon is likely to allow microbial regrowth in reticulation.
- Chlorination provided an additional barrier, and was necessary

In March 2015, Bligh Tanner Pty Ltd inspected relevant data, and audited aspects of the current infrastructure and operations of the Douglas Shire Council water supply schemes. Bligh Tanner Pty Ltd agreed that the source water cannot be considered as microbiologically safe, and that the water infrastructure required significant upgrading..

At present, the treatment process and reticulation networks are not suitable for operation without a residual disinfectant providing a barrier to pathogens.

Furthermore Bligh Tanner Pty Ltd highlighted the following deficiencies in the water supply system that should be addressed immediately in the next financial year's capital budget:

- The Craiglie Reservoir roof requires replacement
- All other reservoirs should be inspected to determine whether the roofs are compromised
- Repair to vermin proof all water storages
- Install individual turbidity monitoring on each Ultra Filtration skid, and develop automatic shutdowns if turbidity is above design specifications
- Upgrade membrane components like ageing valves to improve integrity testing outcomes.
- Upgrade SCADA and control systems to improve operational practices
- Replacement of ageing asbestos cement water mains in areas where water quality is affected.

It was also the opinion of Bligh Tanner Pty Ltd and Water and Wastewater Management that, regardless of how much money is invested, it is unlikely that regulatory approval would be gained under the current regulatory environment. Bligh Tanner also approached Prof Don Bursill, an international leader and recognised expert in the field of water management and water quality to get an update on his opinion regarding this matter. Prof Bursill is in agreement that it is not appropriate to consider operating these schemes without chlorine whilst the identified system deficiencies remain.

### **BACKGROUND:**

Several studies were conducted to determine the viability of a Chlorine free water supply in Douglas Shire. Three reports were presented to Cairns Regional Council in August 2009. Two of the reports, by Water Futures and Hunter Water Australia, were commissioned by Cairns Regional Council whilst a third, independent report was also provided by Prof. Don Bursill. At this time, only the transitional arrangements of the *Water Supply (Safety and Reliability) Act 2008* were in place.

In October 2009 Queensland Health issued three Public Health Orders to Cairns Regional Council. These public health orders indicated that Queensland Health believed that there was a public health risk associated with the operation of the Mossman/Port Douglas, Whyanbeel and Daintree water supply schemes without a disinfection residual, or alternative safeguard. In response to the Public Health Orders, chlorination of these schemes commenced.

Black and Veatch were engaged in 2011 by Cairns Regional Council to develop a framework for a chlorine free trial, in consultation with the relevant regulators. At that time, a trial could have been undertaken if Council believed it to be appropriate. However, at the same time, Cairns

Regional Council was also required to develop a drinking water quality management plan (DWQMP) for these schemes, and apply to the Queensland Water Supply Regulator for approval under the *Water Supply (Safety and Reliability) Act 2008*.

The Act requires that the DWQMP describes the current operation of the schemes, the risks to the services, and the barriers that were in place to effectively manage those risks. As was required under the Act, the DWQMP included a description of disinfection using chlorine as a barrier to pathogens. Once the Queensland Water Supply Regulator approved the Cairns Regional Council DWQMP (1 March, 2012), Cairns Regional Council was from that point obliged to operate the schemes as described in their DWQMP.

Following de-amalgamation on 1 January 2014, the Cairns Regional Council DWQMP became the Douglas Shire Council DWQMP, as required under the *Local Government (De-amalgamation implementation) Regulation 2013*. As a result, Douglas Shire Council had a regulatory requirement to operate these services as described in the DWQMP, including chlorine disinfection.

The DWQMP was amended during 2014 as required by the Regulator to exclude all CRC plant information and the first Douglas Shire Council DWQMP was approved on 26 February 2015. A review and amendment of the DWQMP is planned for 2015/2016 to incorporate capital improvements.

#### **COMMENT:**

In theory and as a matter of process only, Douglas Shire Council could prepare a Drinking Water Quality Management Plan that details how Council would operate without chlorine, and then apply to the Queensland Water Supply Regulator to amend the current DWQMP.

However, a new DWQMP cannot be implemented until the Queensland Water Supply Regulator approves the amended DWQMP. Until such time as there is an approved DWQMP that excludes chlorination, Douglas Shire Council is obliged to chlorinate the drinking water services. Failure to do so exposes both Council, and Council's Executive(s) to a risk of prosecution under the *Water Supply (Safety and Reliability) Act 2008*.

There are a number of potential risks such as viruses and opportunistic pathogens that are currently mitigated by chlorination alone. The removal of chlorine would mean that those risks would no longer be managed. Therefore, the removal of chlorine would increase public health risks. If the Queensland Water Supply Regulator maintains the current stance that they will not approve any proposed change unless the public health risk does not increase, regulatory approval to operate without chlorine appears to be highly unlikely, or in practical terms, impossible.

Even if the Queensland Water Supply Regulator approved a DWQMP without chlorination, the provisions of the *Public Health Act 2005* still apply. The Queensland Department of Health could at any time re-issue Public Health Orders, for example, requiring that Council re-instated chlorination. If the Department of Health were able to demonstrate that Douglas Shire Council was providing unsafe water, they also have powers to prosecute both Council and Council's CEO. There is a potential jail sentence associated with this offence.

As previously mentioned, it is the opinion of Bligh Tanner Pty Ltd and Council's Water and Wastewater Management that, regardless of how much money is invested, it is unlikely that regulatory approval would be gained in the current regulatory environment.

The first step however is to address the infrastructure deficiencies as a matter of priority.

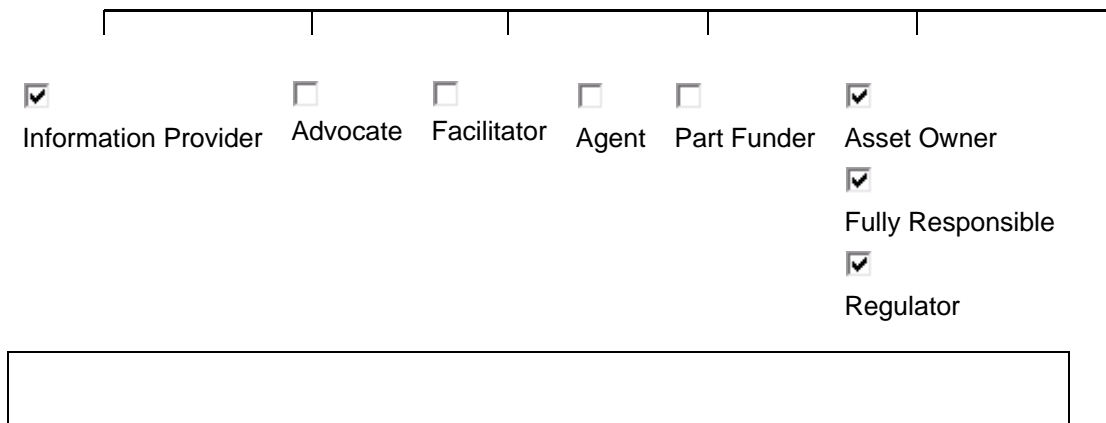
**CORPORATE/OPERATIONAL PLAN, POLICY REFERENCE:**

1. Theme 5 Governance, Goal 2 - To demonstrate leadership in local government through sound, transparent, accountable and equitable decision making.
2. Operational Plan: Operations Management (OM5) - Review chemical-free drinking water options and implementation requirements.

**COUNCIL’S ROLE:**

Council can play a number of different roles in certain circumstances and it is important to be clear about which role is appropriate for a specific purpose or circumstance. The implementation of actions will be a collective effort and Council’s involvement will vary from information only through to full responsibility for delivery.

The following areas outline where Council has a clear responsibility to act:



**FINANCIAL/RESOURCE IMPLICATIONS:**

Failure to comply with required standards/ DWQMP could result in harm to the community and substantial penalties.

**RISK MANAGEMENT IMPLICATIONS:**

Until such time as there is an approved DWQMP that excludes chlorination, Douglas Shire Council is obliged to chlorinate the drinking water services. Failure to do so has the potential to expose water users to water that does not meet the requirements to be safe and could expose consumers to waterborne pathogens and further exposes both Council, and Council’s Executive(s) to a risk of prosecution under the *Water Supply (Safety and Reliability) Act 2008*.

**SUSTAINABILITY IMPLICATIONS:**

**ECONOMIC:**

It is essential to adequately maintain water supply infrastructure and retain treatment barriers like chlorine in order to provide safe drinking water. It is critical that Council continues to invest in its water assets and maintain them in a state that reduces the risk of contamination by foreign objects and pathogens, provides a secure supply of water and operates its water assets to ensure a safe water is able to be supplied to customers.

**ENVIRONMENTAL:**

Failing to provide compliant drinking water can lead to unsafe environmental health conditions and breaching of DWQMP.

**SOCIAL:**

The Community expects a secure, high quality, compliant and safe drinking water.

**INTERNAL/EXTERNAL CONSULTATION:**

Water and Wastewater has consulted widely with leading authorities in the water industry and has appointed an accredited water auditor from Bligh Tanner Pty Ltd to conduct the review.

**ATTACHMENTS:**

Nil.