

Notice is given that a Submissions Hearing meeting will be held on:

Date: Thursday 12 November 2020
Time: 9:30 am
Meeting Room: Tasman Council Chamber
Venue: 189 Queen Street
Richmond

Submissions Hearing

AGENDA

MEMBERSHIP

| | |
|--------------------|---------------|
| Chairperson | Cr D Wensley |
| Members | Cr T Tuffnell |
| | Cr B Dowler |
| | Cr T Walker |
| | Cr C Butler |

(Quorum 2 members)

Contact Telephone:
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AGENDA

1 OPENING, WELCOME

2 APOLOGIES AND LEAVE OF ABSENCE

Recommendation

That apologies be accepted.

3 REPORTS

3.1 Deliberations Report on Water Safety Consultation 5

4 HEARING OF SUBMISSIONS

Nil

5 CONFIDENTIAL SESSION

Nil

3 REPORTS

3.1 DELIBERATIONS REPORT ON WATER SAFETY CONSULTATION

Decision Required

| | |
|-----------------------|---|
| Report To: | Submissions Hearing |
| Meeting Date: | 12 November 2020 |
| Report Author: | Helen Lane, Activity Planning Advisor (Water & Wastewater) |
| Report Number: | RSH20-11-1 |

1 Summary

- 1.1 The Council recently consulted on a proposal to apply residual disinfection using chlorine in the Council's five remaining unchlorinated water supplies (the Proposal). The Special Consultative Procedure (SCP) was used to consult the public.
- 1.2 The consultation commenced on 4 August 2020 and closed on 3 October 2020. Council received 102 written submissions. On 27 October 2020 eight submitters presented their submissions to the Water Safety Hearing Panel (the Panel).
- 1.3 The majority of submitters did not support the proposal. There was wide ranging feedback about the reasons for not supporting the proposal, including concerns about:
 - health issues;
 - unpleasant odour and taste;
 - the need to add chemicals to water;
 - extras costs; and
 - the impact on the environment.
- 1.4 Some feedback received was outside the scope of the consultation including concerns about contaminants in source groundwater and the addition of fluoride to supplies. These topics are not specifically addressed in the report.
- 1.5 Staff comments on the matters raised in submissions were provided in report RSH20-10-1 (Attachment 1). The Panel directed staff to provide further information on a range of matters raised during submissions to assist them in deliberations so they can make a considered recommendation to the Full Council. This report provides the additional information in Table 1, except for expert advice on any possible link between use of chlorine in a water supply and an increased risk of cancer. This will be provided by Nelson Marlborough Health prior to the deliberation meeting.
- 1.6 Staff have concluded that while unpopular with the majority of submitters, the use of chlorine to provide a residual disinfection is still the preferred way to continually provide safe water to customers connected to the Council Water Supplies. The proposal also aligns with Council's Drinking Water Quality Management Policy.

- 1.7 Staff recommend that the Panel recommend to Full Council that Council provide residual disinfection using chlorine for all Council Water Supplies, including Richmond, Riwaka/Kaiteriteri, Motueka, Hamama and Upper Takaka.

2 Draft Resolution

That the Water Safety Consultation Hearing Panel

- 2.1 receives the Water Safety Consultation Deliberations Report;**
- 2.2 recommends to Full Council that chlorine is used to provide permanent residual disinfection for all Council water supplies including Richmond, Riwaka/Kaiteriteri, Motueka, Hamama and Upper Takaka.**

3 Purpose of the Report

3.1 The purpose of this report is to:

- Provide additional information to assist the Panel in deliberating on submissions received during the Water Safety Consultation; and
- Seek a recommendation from the Panel to Full Council on whether to provide residual disinfection using chlorine in all the Council water supplies.

4 Background and Discussion

4.1 The Council recently consulted on a proposal to apply residual disinfection using chlorine in the Council’s remaining unchlorinated water supplies:

- Richmond;
- Riwaka/Kaiteriteri;
- Motueka;
- Hamama; and
- Upper Takaka.

4.2 The Water Safety Consultation was publically notified on 4 August 2020 and submissions closed on 3 October 2020. Council received a total of 102 written submissions by the closing date.


4.3 At the hearing held on 27 October 2020, eight submitters presented their submissions to the Hearing Panel.

4.4 After listening to submitters, the Panel requested that staff investigate several matters. These matters are summarised in the table below:

Table 1: Summary of matters to be considered in the deliberations process

| Matter to be investigated | Staff comments | Staff recommendation |
|---|--|----------------------|
| <p>Gather expert evidence on whether there is a possible link (causation or correlation) between use of chlorine in a water supply and an increased risk of cancer.</p> <p>Provide a brief summary of studies and medical evidence that supports the NMH or Ministry of Health’s position on this matter.</p> | <p>Council staff are not in a position to offer expert advice on this matter and contacted Nelson Marlborough Health (NMH) for direction and guidance. NMH indicated that this request will take some time to collate and summarise. NMH confirmed they will provide more information before the Deliberations Meeting. Staff will circulate their response as soon as possible.</p> <p>A representative from Nelson Marlborough Health has also agreed to be present during deliberations to assist with any further questions.</p> | <p>N/A</p> |

| Matter to be investigated | Staff comments | Staff recommendation |
|---|---|--|
| <p>Clarify whether there is any medical evidence to suggest that chlorine has a cumulative effect on the body and whether prolonged exposure to chlorinated water results in any health issues.</p> | | |
| <p>Clarify what more can be done to remove <i>E.coli</i> from the Richmond supply including steps, costs and including comment on more frequent testing of the water supply network.</p> | <p>Council employ a range of mitigation measures to ensure all water supplies remain as safe as possible by improving the condition of the network and mitigating likely sources of contamination. This is done through operations, maintenance, renewals and upgrade activities.</p> <p>Activities include: water source protection, backflow protection, leak detection programme, pipe renewals programme, reservoir upgrades, and regular water quality testing and monitoring.</p> <p>The frequency and schedule of testing is determined by the risk and size of community served.</p> <p>The Delivering Safe Drinking Water RCN20-04-9 Report (Attachment 2) details the steps and costs of these mitigation measures.</p> | <p>All mitigation measures to reduce the risk of contamination to the network come at a cost without the guarantee that the water supply is as safe as having residual disinfection (using chlorine).</p> <p>Relying on other mitigation measures (excluding the use of residual disinfectant) are unlikely to meet the requirements of a multi-barrier approach to ensuring a safe drinking water supply.</p> |
| <p>Investigate whether a chlorine free drinking water supply can be made available where residents can fill up drinking water bottles (similar to what Hastings and Havelock North provide).</p> | <p>Hastings District Council has installed chlorine-free water stations at five sites across their district. 3,000-4,000 litres per day are supplied at their most popular sites.</p> <p>Installation of a four tap station as shown in the photo below cost about \$55,000. Ongoing maintenance costs are in the order of \$10,000- \$15,000 per year for water quality monitoring, cleaning and filter replacement. These enable people to fill small containers.</p> | <p>Do not provide chlorine free drinking water supply stations.</p> |

| Matter to be investigated | Staff comments | Staff recommendation |
|---------------------------|--|----------------------|
| |  <p>Similar facilities could be provided in one or more settlements in Tasman.</p> <p>While the cost of installing and operating these facilities would be lower than the cost of managing an unchlorinated supply, the cost would still be substantial. If council were to provide this service in our main centres, the costs to install would be approximately \$300,000 – 400,000, and cost up to \$100,000 per annum to maintain. These costs are on the basis that the site is owned by the Council and in close proximity to existing power, water and drainage infrastructure. This is a considerable cost to incur at a time when Council has many other challenges to manage and pressure on its financial caps.</p> <p>Council could choose to only provide this service in larger centres such as Motueka and Richmond to save costs. This may be viewed as unfair by other people in other centres with chlorinated water supplies, such as Mapua, Brightwater, and Wakefield which have been supplied chlorinated water for many years without such a facility.</p> <p>Home based alternatives for removing chlorine from drinking water taps are available already (see next item). These can be taken up by households wishing to remove chlorine from their drinking water supplies, and provide a more convenient service than a single facility managed by Council.</p> <p>Those using these facilities to fill larger containers could also achieve a similar benefit by filling</p> | |

| Matter to be investigated | Staff comments | Staff recommendation |
|---|--|---|
| | containers at home and letting any remaining chlorine gas-off. | |
| <p>Provide more information about the supply, cost and effectiveness of activated carbon filters.</p> <p>Investigate whether Council can bulk order filters to provide a subsidy.</p> | <p>Activated carbon filters are excellent at removing chlorine and related taste and odour characteristics. High quality activated carbon filters can remove 95% or more of the free chlorine. These are readily available from suppliers and plumbers.</p> <p>Staff sought information from local suppliers on different activated carbon filter options for domestic purposes:</p> <ul style="list-style-type: none"> • Under bench systems • Whole of house systems <p>The capital cost of the <i>'under the bench'</i> equipment ranges from \$200-\$400 for a filter at the faucet or a separate drinking water tap. Installation costs range from \$100-\$150</p> <p>The capital cost for the <i>'whole of house'</i> system ranges from \$600 (for a filter installed on the lateral water pipe) to \$1500 (for an automated backwash cylinder). Installation costs range from \$200-\$450.</p> <p>Both options would require a filter change about every 12 months depending on volume. Filters cost about \$100-150.</p> <p>These costs depend on the equipment and configuration of pipe work at each house. There is also a cheaper option to self-install a carbon filter that sits on top of the bench for about \$180. A simpler and cheaper option is to put water in a jug in the fridge overnight to help the chlorine dissipate.</p> <p>If Council purchased filters for on-sale, it would be entering into an already well established private market with plenty of competition in an area that is not our core business.</p> <p>It is unlikely to save householders much but is likely to involve considerable administration from staff and risk if our supplies do not meet customers' needs.</p> | <p>Do not bulk purchase activated carbon filters for on-sale.</p> |
| <p>Clarification on a practical solution on the Hamama supply.</p> | <p>Staff are pursuing classification of Hamama water supply as a Rural Agricultural Drinking-Water Supply (RADWS) with the local Drinking Water Assessor.</p> <p>To achieve RADWS status, it must be proved that >75% of water supplied is used for agricultural purposes.</p> <p>An assessment is being undertaken to collect metering data to demonstrate the majority of water is used for agricultural purposes.</p> | <p>Staff recommend waiting for confirmation of RADWS classification and acceptance of end point treatment by the regulator.</p> <p>Staff will keep the Council up to date</p> |

| Matter to be investigated | Staff comments | Staff recommendation |
|---------------------------|--|--------------------------------|
| | If Hamama is confirmed as a RADWS and the regulator accepts end point water treatment for each home, there will not be a requirement for chlorine to be used on the Hamama scheme. | with any relevant information. |

- 4.5 Using chlorine to treat water has been used around the world for over a century and is proven by science as a safe and effective water disinfectant. Chlorine deactivates bacteria and some viruses that may be introduced to water as it flows through the reticulated network (from source to tap) and reduces the risk of a contamination event.
- 4.6 Staff recommend providing residual disinfection using chlorine as part of a multi-barrier treatment approach because it is the most cost effective way to achieve a safe water supply and it is the preferred method to continually provide safe water to all customers.
- 4.7 Having residual disinfection was one of the recommendations from the Government’s inquiry into the Havelock North Campylobacter outbreak caused by contaminated drinking water.

5 Options

- 5.1 Council has two main options, summarised in Table 2. Staff recommend option 1. A full assessment of the pros and cons of chlorinating water supplies was addressed in RCN20-04-9.
- 5.2 The Panel may also wish to recommend that Council pursue some of the initiatives discussed in Table 1, although staff do not recommend this.

Table 2: Options assessment summary

| Option 1: Provide residual disinfection using chlorine in all council water supplies, including the remaining unchlorinated water supplies. | |
|--|--|
| Advantages | <ul style="list-style-type: none"> • Ensures compliance with DWSNZ • Will be a requirement to get approved • Aligns with Council’s Drinking Water Quality Management Policy • Conforms with national and international best practice • Provides a consistent level of service in Council managed water supplies |
| Risks and Disadvantages | <ul style="list-style-type: none"> • Potentially some adverse reactions related to taste and smell. This will likely subside as pipes are flushed with chlorine and biofilms removed |
| Option 2: Do not provide residual disinfection using chlorine to the remaining unchlorinated water supplies. | |
| Advantages | <ul style="list-style-type: none"> • No adverse reactions related to taste and smell |
| Risks and Disadvantages | <ul style="list-style-type: none"> • Will not get Water Safety Plans approved with residual disinfection • Significant costs related to additional mitigations measures |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Does not aligns with Drinking Water Quality Management Policy • Risk of customers becoming ill if there is an <i>E.coli</i> contamination |
|--|--|

6 Strategy and Risks

- 6.1 As a water supplier, the Council needs to provide multiple barriers to prevent contamination and ensure water remains safe for the community. Residual disinfection using chlorine is one of several barriers.
- 6.2 Despite some opposition, the proposal to chlorinate all of our water supplies is primarily focused on protecting public health and managing the risk associated with a contamination event. It is crucial the community has confidence in the Council as a water supply authority to deliver safe drinking water, as it is an essential service.
- 6.3 The Council must balance the concerns raised during the consultation against the costs of not chlorinating water supplied, and the risks of a contamination event.
- 6.4 Recommendations in this report support the Tasman District Council Community Outcomes – water is safe to drink

7 Climate Change Impact Assessment

| Climate Change Consideration | Assessment | Explanation of Assessment |
|---|---|--|
| Is this activity associated with one of the goals in Council’s Climate Action Plan? | Climate Change considerations are not relevant to this report | Not part of the Action Plan. |
| Will this decision affect the ability of Tasman District to proactively respond to the impacts of climate change? | This decision will increase resilience to Climate Change. | <p>To the extent that climate change presents a risk to our source water or infrastructure (through increased storm intensity for example), chlorination will help provide protection against the impact of a contamination event.</p> <p>A very small amount of chemical (chlorine gas) is used to chlorinate the supply. By-products produced as part of the residual disinfection are negligible and not classed as greenhouse gases. Permanent residual disinfection would require less samples to be taken from the networks, resulting in fewer traffic movements.</p> |

8 Policy / Legal Requirements / Plan

- 8.1 The discussion on policy, legal requirements and plan were thoroughly addressed in a previous report (Delivering Safe Water RCN20-04-09). See attachment 1.
- 8.2 The SCP was used to consult on the proposal and is compliant with Council's legal obligations in the Local Government Act 2002.
- 8.3 The proposal to provide residual disinfection using chlorine in our remaining unchlorinated water supplies is consistent with the Council's:
- Level of service related to compliance with the NZ Drinking Water Standards; and
 - Drinking Water Quality Management Policy.

9 Consideration of Financial or Budgetary Implications

- 9.1 The financial implications of the options available to the Council were addressed in a previous report (Delivering Safe Water RCN20-04-09) and were also summarised in the Consultation Document. In summary, the ongoing costs of chlorination are modest. For example, the extra operational cost is approximately \$4,000 a year for Kaiteriteri and \$12,000 a year for Richmond.

10 Significance and Engagement

- 10.1 Staff consider the proposal to permanently chlorinate water supplies to be of medium-high significance due to the level of public interest and the strategic nature of public water supplies. A thorough assessment of the significance of permanently chlorinating our remaining water supplies was discussed in Section 10 of the previous report (*Delivering Safe Water RCN20-04-9* Report Attachment 2).

11 Conclusion

- 11.1 Providing safe and secure drinking water is the primary focus of the Council's water supply activity. The Council is legislatively responsible as a water supplier for providing safe drinking water and has obligations under the Health Act 1956.
- 11.2 Providing residual disinfection using chlorine is part of a multi-barrier treatment approach and is considered to be the most cost-effective way to achieve a safe water supply.
- 11.3 Written submissions on the Water Safety Consultation have been received and verbal submissions have been heard. Staff have provided advice and recommendations to the Panel on a range of issues raised in submissions to assist in the development of recommendations to the Full Council.
- 11.4 While unpopular with most of the submitters, staff still recommend that the Panel recommend to Full Council that it provide residual disinfection using chlorine in the Council's five remaining unchlorinated supplies. This is the best way to ensure we continually provide safe water to customers connected to Council water supplies.

12 Next Steps / Timeline

12.1 The next steps in the process is outlined below. The last three steps are only needed if the Panel and then Full Council resolve to proceed with chlorination.

| Date | Process |
|------------------|--|
| 12 November 2020 | Deliberations meeting to consider feedback and make recommendations. |
| 3 December 2020 | Recommendations considered by the Full Council. |
| 4 December 2020 | Public notice on Council website and advise larger consumers in affected areas. |
| 18 December 2020 | Public notice in Newline and through local media about decision |
| TBC | <p>Permanent chlorination comes into effect at different times for different schemes as some treatment plants will need to be upgraded. This is expected to be completed within the next Long Term Plan and in time to meet the NZDWS deadline.</p> <p>Kaiteriteri will start summer time chlorination on 1 December as per recent practice and will remain chlorinated from that point on if Council resolves to make this permanent at their meeting on December 3.</p> <p>Richmond's water supply will be chlorinated from early December while trunk water works are undertaken at the intersection of Champion and Salisbury Roads, and will remain chlorinated from that point on if Council resolves to make this permanent at their meeting on December 3.</p> |

13 Attachments

| | | |
|----------------------|---|----|
| 1. ↓ | Attachement 1 RSH20-20-10-1 Summary of Submissions on the Water Safety Consultation | 15 |
| 2. ↓ | Attachement 2 RCN20-04-9 Delivering Safe Water | 27 |

3.1 SUMMARY OF SUBMISSIONS ON THE WATER SAFETY CONSULTATION

Information Only - No Decision Required

| | |
|-----------------------|---|
| Report To: | Submissions Hearing |
| Meeting Date: | 27 October 2020 |
| Report Author: | Helen Lane, Activity Planning Advisor (Water & Wastewater) |
| Report Number: | RSH20-10-1 |

1 Summary

- 1.1 The Council recently consulted on a proposal to apply residual disinfection using chlorine in the Council’s remaining unchlorinated water supplies:
- Richmond;
 - Riwaka/Kaiteriteri;
 - Motueka;
 - Hamama: and
 - Upper Takaka.
- 1.2 This report provides the Hearing Committee with a summary of the submissions received and requests the Hearing Committee hears the submissions from those that have indicated they wish to speak.
- 1.3 The submission period began on 4 August and ended on 3 October 2020. In total, 102 submissions were received and are included in **Attachment 1 Water Safety Consultation Submissions**. Ten submitters have indicated they would like to speak to the Hearing Committee.
- 1.4 The majority of the submitters (91) did not support the proposal to use chlorine as a means of providing residual disinfection within the water supply network. The main reasons for not supporting the proposal include:
- Do not like idea of chemicals or additives in water supply;
 - Concern about potential health issues related to the use of chlorine;
 - Unpleasant taste and smell;
 - There has not been historical issues with water supply in the past;
 - Existing water quality does not warrant the addition of chlorine;
 - Extra costs associated with installation of household filters;
 - Extra costs associated with the addition of chlorine (or additives);
 - Negative impact to the environment, ecosystem, pets, vegetable gardens etc.;

Item 3.1

- Chlorination is not required for 10-15 houses (Upper Takaka); and
 - Most of the water in Hamama is used for stock purposes.
- 1.5 This report summarises the main feedback themes and provides staff commentary about the issues raised.

| |
|---------------------------|
| 2 Draft Resolution |
|---------------------------|

Attachment 1

That the Submissions Hearing receives the Summary of Submissions on the Water Safety Consultation report, RSH20-10-01.

3 Purpose of the Report

- 3.1 The purpose of this report is to provide the Hearing Committee with a copy of the submissions received during the Water Safety Consultation and requests that the Hearing Committee hears the submissions from those that have indicated they wish to speak.

4 Background and Discussion

Background

- 4.1 On 30 April 2020, Full Council approved the **Delivering Safe Water** (RCN20-04-9) Report. The report sought approval to propose using chlorine to provide a permanent residual disinfection in Council's remaining unchlorinated water supply schemes:
- Richmond;
 - Riwaka/Kaiteriteri;
 - Motueka;
 - Hamama; and
 - Upper Takaka.
- 4.2 On 21 May 2020, Full Council approved the **Drinking Water Quality Management Policy** (RCN20-05-3) Report. The policy demonstrates the Council's commitment to managing its water supplies effectively in order to provide safe drinking water to the community. The Policy also sets out the overarching framework for the Council's Water Safety Plans and is an important component of the New Zealand Water Safety Plan Framework published by the Ministry of Health in 2018, following the Havelock North Inquiry.
- 4.3 On 30 July 2020, Full Council approved the report **Consultation of Chlorination of Water Supplies** (RCN20-07-2) Report. The report proposed to use the special consultative procedure (SCP) to consult the community on the proposal to permanently chlorinate all remaining unchlorinated water supply schemes.
- 4.4 Staff produced an information document to support the consultation that met the requirements for a Statement of Proposal under the SCP. The document explains the Council's proposal, provides background to the proposal, discusses why we are proposing permanent chlorination; and explains other options considered.
- 4.5 The consultation and supporting information was publicly notified on 3 August 2020 and consultation commenced on 4 August 2020. The consultation was originally scheduled to run over a one month period. However, due to COVID-19 Alert Level Restrictions and concerns, the consultation period was extended for another four weeks. The consultation closed on 3 October 2020.
- 4.6 During Alert Level Three (on the 13 August 2020) staff held a virtual drop in session via Zoom where one person attended. A second virtual drop in session (during Alert Level 2) was held on 16 September 2020 and three people attended but only two engaged in dialogue and asked questions.
- 4.7 Also during Level Two, staff held two public drop in sessions. The first was held in the Council Chambers on 23 September 2020 where one person attended. And the second was

held at the Motueka Memorial Hall 24 September 2020 where one person attended. Despite wide advertisement of the sessions public attendance was very low.

- 4.8 Staff arranged several video podcast interviews with a range of independent experts on the subject matter and provided the material on the Council webpage. Experts included:

| Agency | Person | Role |
|---------------------------|-------------------|---------------------------------|
| Nelson Marlborough Health | Stephen Bridgeman | Director of Public Health |
| Water New Zealand | Noel Roberts | Technical Manager |
| Independent | Jim Graham | Principal Advisor Water Quality |

- 4.9 The three videos were watched 64 times in total on You Tube and the videos reached 1277 people on Facebook.

Discussion

- 4.10 The proposal to permanently chlorinate the five remaining unchlorinated water supply schemes could potentially affect up to approximately 20,000 people and hundreds of businesses.
- 4.11 101 submissions were received in total. 90 submitters did not support the proposal. Ten submitters supported the proposal and one did not specify whether they were in support or not.
- 4.12 A copy of all submissions is contained in **Attachment 1 Water Safety Consultation Submissions** of this report.
- 4.13 Ten submitters indicated they would like to present their submission to the Hearing Panel on 27 October 2020. Staff have made arrangements with the submitters to allocate a timeslot to speak to the Hearing Panel. Table 1 lists the order of submitters to be heard. Each submitter has been allotted ten minutes to speak to their submission. This time includes any points of clarification and or questions.

Table 1: List of timeslots and submitters to be heard at Hearing Panel

| Time | Submitter | Submission # |
|---------------|----------------------------|--------------|
| 2.00 pm | Richard Hayward | 24659 |
| 2.10 pm | Mr Hellyer | 24867 |
| 2.20 pm | Mr Geoffrey Waring | 24873 |
| 2.30 pm | Catherine Hughson | 24944 |
| 2.40 pm | Dr Stephen Bridgman | 24922 |
| 2.50 pm | Mik Symmons | 24930 |
| 3.00 pm | Lewis Solomon | 24883 |
| 3.10 pm | Liz Attree | 24946 |
| 3.20 pm | John Phair | 24949 |
| 3.30 pm (TBC) | Margriet Bettine Maarsingh | 24864 |
| 3.40 pm (TBC) | Miss Lily Mclver | 24875 |

- 4.14 Table 2 below summarises the number of submitters connected to the supply schemes that are potentially affected by the proposal. The table also lists the number of submitters where we could not reconcile the provided address with a connection to a Council managed scheme.

Table 2: Summary of submitters connected to the Council water supply schemes

| Water Supply Scheme | Number of submitters | Number of submitters where staff could not match a physical address |
|--|----------------------|---|
| Richmond | 25 | 1* |
| Hamama | 23 | 4 |
| Upper Takaka | 21 | 9 |
| Motueka | 17 | 1 |
| Kaiteriteri/Riwaka | 5 | 2 |
| Not connected but interested in process or did not specify | 11 | |

*submitter was actually on the Redwood Water Supply scheme

- 4.15 Some submitters provided their reasons for not supporting the proposal. These are summarised below, along with staff comments.

Table 3: Summary of suggestions to improve water quality

| Submitter Feedback | Staff comments |
|--|--|
| Do not want chemicals or additives in the water | Chlorine provides one of the most effective ways of treating water because it disinfects the water all the way from the treatment plant, through the reticulated network of pipes and reservoir to connected homes and businesses. |
| Concern about potential health issues related to the use of chlorine | The residual disinfection of water is fully supported by the local Drinking Water Assessor, Medical Officer of Health, the Ministry of Health and the recommendations from the Havelock North inquiry. Permanent chlorination is the preferred method to provide residual disinfection in our water supplies. It is already a widely used across the Tasman District and Nelson City Council. Chlorination is widely used across the country and internationally. |
| Use of chlorine makes water taste and smell unpleasant | Many people understandably do not like the smell and taste of chlorine. Staff propose to use very low doses of chlorine (between 0.3 to 0.5 ppm) to provide residual disinfection. A higher dose of chlorine may be used initially until biofilm is cleared from the network. There is information about some easy ways to reduce the effects of chlorine on the Council website. |

| Submitter Feedback | Staff comments |
|---|--|
| <p>There has not been historical issues with water supply in the past</p> | <p>Several times a year, coliforms are detected in the unchlorinated water supplies and sometimes <i>E.coli</i> is detected.</p> <p>Total coliforms and <i>E.coli</i> have not been detected in samples taken directly after water has been treated with UV in the treatment plants, therefore, the contamination is occurring in the network.</p> <p>The Richmond supply has had the most instances of bacterial contamination. Since 2011, there have been 20 positive <i>E.coli</i> samples in the Richmond Distribution Zone. Between 2004 and 2006 three bacteria events occurred in the in the Riwaka/Kaiteriteri supply.</p> <p>The most recent <i>E.coli</i> event this year occurred in Upper Takaka.</p> <p>These issues suggest that the current monitoring and operational measures are not effective in preventing contamination in the network and mitigating the risks. Therefore, it is likely that the Water Safety Plans may not be approved unless the Council commits to either residual disinfection or other more costly preventative measures to ensure a safe drinking water supply.</p> |
| <p>Existing water quality does not warrant the addition of chlorine</p> | <p>As a drinking water supplier, Council has a responsibility to provide safe drinking water to all users.</p> <p>All water supply networks are constantly at risk of microbiological re-contamination through planned works, backflow events, illegal connections, pipe breaks, faulty fittings, illegal water takes from hydrants or ingress through reservoir roofs.</p> <p>Providing residual disinfection in the water supply network post treatment greatly reduces the risk of microbiological recontamination and would deactivate some viruses.</p> <p>Residual disinfection, as part of a multi-barrier treatment approach, is considered to be the most effective way to achieve a safe water supply.</p> <p>Having residual disinfection was one of the recommendations from the Government's inquiry into the Havelock North Campylobacter outbreak caused by contaminated drinking water.</p> |
| <p>Extra costs associated with installation of household filters</p> | <p>It is likely that some residential, commercial and industrial properties will chose to install activated carbon filters to remove chlorine from their water supply. These costs will be the responsibility of the property owner.</p> <p>The Council may decide to investigate bulk purchase of carbon filters to reduce the costs to the community.</p> |

| Submitter Feedback | Staff comments |
|--|---|
| | The Council may also consider providing a community drinking water fountain that has chlorine removed. |
| Extra costs associated with the addition of chlorine (or additives) | Using chlorine gas is a very cost effective and long lasting treatment method to provide residual disinfection in a water supply network. |
| Concerns about the negative impact to the environment, ecosystem, pets, vegetable gardens etc. | Staff acknowledge that high concentrations of chlorine is harmful when directly discharged into natural waterways but this situation is highly unlikely. The Council has measures in place that mitigate the risk of chemical spills. The proposed dosage of chlorine we intend to use will ensure a residual in the network and will dissipates within a short time frame. Furthermore residual chlorine breaks down quickly when in contact with the ground (soil and geology) and poses minimal risk to the environment. |
| Chlorination should not be required for only 10-15 houses in Upper Takaka | Staff will investigate whether 'Rural Agricultural Drinking Water Supply' status is applicable to Upper Takaka and/or Hamama and whether 'point of supply' treatment is an acceptable solution in the new DWSNZ. |
| Most of water in Hamama is for stock purposes | |

4.16 Some submitters provided reasons for why they support the proposal. These include:

- Multiple treatment barriers is the most effective way to achieve a safe water supply;
- Use of chlorine will provide a residual disinfection in the whole network;
- Manages risk of contamination events;
- Most economical way to ensure that the Council achieves the water quality standards; and
- Water needs to be as safe as possible.

4.17 The submission form asked the public if they were aware of alternative methods to achieve residual disinfection and whether they knew of other actions the Council could take to reduce the impact of chlorine. The main suggestions themes are summarised in the Table 4 below with staff comments.

Table 4: Summary of suggestions

| Suggestions to improve water quality | Staff comments |
|--------------------------------------|---|
| Use ozone treatment | Ozone treatment is a method that could be used as part of a 'multiple barrier' approach but it does not provide residual disinfection throughout the reticulated network. |
| Use reverse osmosis treatment | Reverse osmosis is a method that could be used as part of a 'multiple barrier' approach but it does not provide residual |

| Suggestions to improve water quality | Staff comments |
|---|--|
| | disinfection throughout the reticulated network. Reverse osmosis plants are typically costly to build and operate. |
| Use filtration treatment | Filtration is used as a barrier early on in the water treatment process to remove particulate and organic matter in order to bring the water up to standard before disinfection is applied. It doesn't produce a residual disinfection effect. |
| Use bromine treatment | <p>Bromine can be very effective against bacteria, effective to lesser extent against viruses, and least effective against some protozoan parasites.</p> <p>Chemical forms of bromine are primarily used as an alternative disinfectant for swimming pools, spas and cooling tower water. It is not commonly used for municipal drinking-water treatment.</p> <p>There are health concerns about the formation of brominated disinfection byproducts. There are also practical handling and storage concerns.</p> <p>Bromine treatment has high operational costs.</p> |
| Additional maintenance or infrastructure upgrades | This is possible and would be very costly and even then would not guarantee a residual disinfection throughout the entire network. |
| Research and trial other methods | <p>Research and development of new water treatment methods is ongoing around the world. Staff are actively involved in several industry bodies and professional associations to keep up to date with developing technology and innovation.</p> <p>The current methods used in Tasman District are cost effective, tried and tested and in line with other water supplies in New Zealand and around the world.</p> |
| Monitor rubbish dumps | Recent water quality monitoring done on the source water bores in the Tasman area has not identified the presence of any contaminants that could be associated with rubbish dumps or landfills. |
| Removing organic material so that chlorine does not produce smell and taste | <p>We sometimes use filtration at the treatment plant as an initial treatment barrier to remove material; however organic matter (and contaminants) still can enter the network after the treatment plant.</p> <p>When initially added to the network, chlorine can initially produce undesirable odour and taste when it reacts with organics and biofilm; however this will dissipate with time and a structured flushing regime.</p> |

| Suggestions to improve water quality | Staff comments |
|---|--|
| Find source of contamination | <p>In accordance with the Health Act 1956 and the DWSNZ the source of contamination is investigated by the Tasman District Council.</p> <p><i>E.coli</i> is an indicator of faecal contamination to a water supply and there is a 24 hour incubation time to grow the <i>E.coli</i> bacteria from a water sample in the lab. This presents a 24 hour delay in knowing that a water supply has been contaminated to find the source of the contamination. By this time thousands of people could have become infected through drinking the water. Therefore, the continual residual disinfection is essential to provide an effective last barrier in the treatment process to protect against contamination within the reticulation system.</p> |
| Frequent and automated testing of water supplies | <p>Water quality samples are regularly tested throughout all our water supply networks.</p> <p>The DWSNZ provides a guideline on how many and how frequently water samples are taken. The sampling program for each supply is based on statistical modelling which takes into account the number and the frequency of sample taken for a population and the likelihood that a contamination event will be detected within the range of samples. Additionally, real time continuous monitoring of the treatment parameters is done in accordance with the DWSNZ. These results are reported to the Drinking Water Assessor who determines the risk to public health and whether a supply complies with the drinking water standards.</p> <p>The Water Safety Plan details how the risks associated with a public water supply will be monitored and managed to prevent and protect public health.</p> |
| Only chlorinate when bacterial outbreak or major works are undertaken | <p><i>E.coli</i> is an indicator of faecal contamination to a water supply and there is a 24 hour incubation time to grow the <i>E.coli</i> bacteria from a water sample in the lab. This presents a 24 hour delay in knowing that a water supply has been contaminated. By this time thousands of people could be infected through drinking the water.</p> <p>We cannot always predict when or where contamination will occur in the drinking water system. Therefore, the continual maintenance of a residual disinfection such as chlorination is essential to provide a robust last barrier to a multi-barrier treatment process. Chlorine is effective at killing pathogenic bacteria and preventing their establishment in the reticulation system.</p> |

| Suggestions to improve water quality | Staff comments |
|---|--|
| Monitor farmers to ensure their activities do not negatively impacting the environment. | The regulatory arm of Council has ongoing monitoring regimes in place. |

4.18 Some submitters suggested that the Council should provide chlorine free water for a variety of reasons such as drinking and food preparation. Some submitters also suggested that Council should subsidise carbon filters to be installed in households.

4.19 There were other matters raised during the consultation that are not directly related to the use of chlorine, themes include:

- Concentration of nitrates level in water supply;
- Current drinking water standards do not address pesticides in water supply;
- Concerns of 1080 in water supply; and
- Consider the use of fluoridation in our water supply.

4.20 Of note, two doctors (submitters 24607 and 24724) and one health policy advisor from the Nelson Marlborough Health (submitter 24922) were in support of the proposal. However, one retired medical laboratory scientist (24915) was not in support of the proposal.

4.21 The submission from the Nelson Marlborough Health notes that the Water Services Bill that has recently been presented to Parliament contained within Clause 57 the following statement – “Subject to subsection (5), the drinking water safety plan must provide for the use of residual disinfection in the supply”. Clause 57 is a clear signal that residual disinfectant such as chlorine may become mandatory for water supplies.

5 Strategy and Risks

5.1 The proposal to chlorinate all of our water supplies is primarily focused on protecting public health and managing the risk associated with a contamination event. It is crucial the community has confidence in the Council as a water supply authority to deliver safe drinking water, as it is an essential service.

5.2 A proposal to chlorinate water supplies may cause division within the community. However, using chlorine as a residual disinfectant throughout all Council managed supplies will reduce the risk associated with a contamination event.

6 Policy / Legal Requirements / Plan

6.1 The SCP used to consult on the proposal is compliant with Council’s legal obligations in the Local Government Act 2002.

6.2 The proposal to provide residual disinfection using chlorine in our remaining unchlorinated water supplies is consistent with the Council’s:

- Level of service related to compliance with the NZ Drinking Water Standards; and
- Drinking Water Quality Management Policy.

7 Consideration of Financial or Budgetary Implications

- 7.1 The financial implications of the options available to the Council were addressed in a previous report (Delivering Safe Water RCN20-04-09) and are summarised in the Consultation Document.
- 7.2 Costs for the consultation process were minimised and existing communication channels such as Council’s website, Newsline, and social media platforms were used as much as possible. Local media also covered the topic. Major costs (excluding staff time) comprised of the follow (excluding GST):
- Production of video material \$1100;
 - Printing consultation document \$600;
 - Development and editing of consultation document \$1300; and
 - Staff advertising \$800.

8 Significance and Engagement

- 8.1 Staff consider the proposal to permanently chlorinate water supplies to be of medium-high significance due to the level of public interest and the strategic nature of public water supplies. A thorough assessment of the significance of permanently chlorinating our remaining water supplies was discussed in Section 10 of the previous report (*Delivering Safe Water RCN20-04-9* Report Attachment 2).

9 Conclusion

- 9.1 This report summarises submissions on proposal to apply residual disinfection using chlorine in our remaining unchlorinated water supplies – Richmond, Riwaka/Kaiteriteri, Motueka, Hamama and Upper Takaka. This report highlights the common themes and concerns received during the consultation process.
- 9.2 Hearing, deliberating and making recommendations to the Full Council on all submissions received, is a critical part of the decision making process required to determine whether the Council will permanently chlorinate all water supplies in Tasman District.

10 Next Steps / Timeline

- 10.1 The next step in the process are outlined below. The last three steps are only needed if the Hearing Panel and then Council resolve to proceed with chlorination following the consultation and hearings.

| Date | Process |
|------------------|---|
| 27 October 2020 | Hearing date for submissions. Subcommittee will consider public feedback. |
| 12 November 2020 | Deliberations meeting to consider feedback and make recommendations. |
| 3 December 2020 | Recommendations adopted by the Full Council. |

Item 3.1

| | |
|------------------|---|
| 4 December 2020 | Public notice on Council website |
| 18 December 2020 | Public notice in Newsline |
| TBC | Permanent chlorination comes into effect. |

Attachment 1

11 Attachments

1. Attachment 1 Water Safety Consultation Submissioins
2. Attachment 2 RCN20-04-9 Delivering Safe Water

6.1 DELIVERING SAFE DRINKING WATER

Decision Required

| | |
|-----------------------|--|
| Report To: | Full Council |
| Meeting Date: | 30 April 2020 |
| Report Author: | Mike Schruer, Utilities Manager; Richard Kirby, Engineering Services Manager |
| Report Number: | RCN20-04-9 |

1 Summary

- 1.1 As a drinking water supplier, the Council has a responsibility to provide safe drinking water to all users.
- 1.2 All water supply networks are constantly at risk of microbiological re-contamination through planned works, backflow events, illegal connections, pipe breaks, faulty fittings, illegal water takes from hydrants or ingress through reservoir roofs.
- 1.3 When contamination occurs, it takes at least 24 hours, before monitoring results indicate *E.coli* is present. The consequence of this time lag is that users could already have been exposed to this risk through their drinking water.
- 1.4 Having multiple treatments, for example; water source protection, filtration, UV and providing residual disinfection is part of the 'multi-barrier approach', which is being widely adopted as the standard approach to drinking water treatment around the world.
- 1.5 Providing residual disinfection in the water supply network post treatment greatly reduces the risk of microbiological recontamination and would deactivate some viruses.
- 1.6 Four of the Tasman District Council's 15 water supplies do not have residual disinfection; Upper Takaka, Motueka, Riwaka/Kaiteriteri and Richmond.
- 1.7 The Hamama water supply scheme, which is not chlorinated is owned by the Council, but operated and maintained by the community.
- 1.8 Two of the unchlorinated water supplies, Riwaka/Kaiteriteri and Richmond, have provision for 'temporary' chlorination and can be converted to permanent chlorination, cost effectively, if required.
- 1.9 Design is underway for a new water treatment plant in Parker Street, Motueka. This treatment plant will be designed to include chlorination equipment.
- 1.10 Permanent residual disinfection, as part of a multi-barrier treatment approach, is considered to be the most effective way to achieve a safe water supply. Having residual disinfection was one of the recommendations from the Government's inquiry into the Havelock North *Campylobacter* outbreak caused by contaminated drinking water.
- 1.11 This report has identified permanent chlorination of water supplies as the preferred option as it provides continually safe water to all customers.

- 1.12 It is recommended that the affected communities be consulted on the proposal to permanently disinfect all Council water supplies utilising chlorine. The outcomes of the consultation are to be considered and assessed before a final decision is made by the Council.

| |
|---------------------------|
| 2 Draft Resolution |
|---------------------------|

That the Full Council:

- 1. receives the Delivering Safe Drinking Water report RCN20-04-9; and**
- 2. notes that, as a supplier of drinking water, the Council has a duty to supply safe drinking water to users (Health Act 1956, Section 69V Duty to comply with the Drinking Water Standards for New Zealand); and**
- 3. approves the proposal to consult with the users of its drinking water on the option of utilising chlorine to provide permanent residual disinfection in the Richmond, Riwaka/Kaiteriteri, Motueka, Hamama and Upper Takaka water supplies; and**
- 4. notes that staff intend a special consultative procedure consultation and a further report will be presented to the Full Council to adopt the consultation document.**

3 Purpose of the Report

- 3.1 The purpose of this report is to outline the Council's responsibilities as a drinking water supplier to deliver safe drinking water to reticulated users. It also details the Council's options and associated cost estimates plus the need to consult if permanent residual disinfection is the preferred option.

4 Background and Discussion

Current Water Treatment

- 4.1 The Council has 15 water treatment plants. Of these, 11 are permanently chlorinated and therefore with water safety plans would comply with the drinking water standards.
- 4.2 There are five water supplies that are funded by their own users. These are Hamama, Motueka, Dovedale, Redwood Valley and Eighty Eight Valley. The remaining water supplies are part of a "Water Club" and are all funded by the users together. These include Richmond, Waimea/Mapua, Brightwater, Wakefield, Tapawera, Murchison, Riwaka/Kaiteriteri, Upper Takaka, Collingwood and Pohara.
- 4.3 The Riwaka/Kaiteriteri and Richmond water treatment plants have recently been upgraded with equipment installed for 'temporary' chlorination. This equipment is capable of providing sufficient residual disinfection throughout these networks.
- 4.4 Prior to 2015 half of the Richmond network, Champion Road and the Wakatu industrial area was supplied from the Waimea Water Treatment Plant, which was permanently chlorinated. These areas were transitioned to the new Richmond Water Treatment Plant when it was commissioned. Consequently, because the new treatment plant did not have permanent chlorination these areas were supplied with non-chlorinated water.
- 4.5 The Motueka water supply is currently supplied from bores near the Recreation Centre, with the bore water being pumped into the network without any form of treatment. It is proposed that this source be replaced by a new treatment plant which is about to be constructed at a site in Parker Street. This treatment plant will be designed to enable permanent chlorination.
- 4.6 The Upper Takaka water supply scheme is very small with approximately 30 customers being supplied through 14 metered connections. Current usage is only about 5 m³/day for the whole scheme. Upper Takaka has Ultra-violet (UV) treatment but does not have chlorination facilities.
- 4.7 The Hamama water supply scheme is a small, rural network serving only 25 connections. It has no treatment facilities. Although it is Council owned, it is funded and operated by its users. The Council has started the process to hand it over to the users. There is a good chance that it could qualify as a rural agricultural supply scheme and therefore be allowed to have treatment at the point of entry to the residences.

Havelock North Contamination Event

- 4.8 In August 2016, the Havelock North water supply became contaminated with campylobacter, resulting in approximately one-third of the town (>5,000 people) becoming sick, 45 people hospitalised and four deaths. In September 2016, a Government inquiry was set up to investigate the cause. The source of the campylobacter contamination was sheep faeces washing into a pond near a bore. This water contaminated the underlying aquifer where the town abstracted its water that was not treated before being reticulated.
- 4.9 As a result of the inquiry, the Health Act has changed, the Drinking Water Standards New Zealand was updated and a new drinking water regulator proposed. This regulator is planned to be set up in 2020 and a new Water Act encompassing all current regulations is expected to be passed in the same year.
- 4.10 The Council received a letter from the Director General of Health on 21 October 2019. The aim of this letter was to raise the Council’s awareness of the new water safety planning requirements that will be mandatory in 2020.
- 4.11 The letter particularly refers to water supplies which do not have residual disinfection:

“As a supplier of drinking water that does not include a disinfection residual in the network, the assessment of your drinking water supply system must include a detailed examination of all hazard and risks that can affect the quality of water in the network. Your Water Safety Plan (WSP) must demonstrate how the existing preventative measures are effective at ensuring the quality of the drinking water can be maintained throughout the system without a disinfection residual”.
- 4.12 This letter may also be a signal that the Government is contemplating an introduction of compulsory residual disinfection into the Drinking Water Standards New Zealand (DWSNZ).

New Zealand Drinking-water Safety Plan Framework (2018)

- 4.13 The New Zealand Drinking-water Safety Plan Framework (2018) identifies the six fundamental principles of drinking-water safety in New Zealand.

Principle 1: A high standard of care must be embraced

Unsafe drinking-water can cause illness, injury or death on a large scale. All those involved in supplying drinking-water must therefore embrace a high standard of care. Vigilance, diligence and competence are minimum requirements, and complacency has no place.

Principle 2: Protection of source water is of paramount importance

Protection of the source of drinking-water provides the first, and most significant, barrier against drinking-water contamination and illness. It is of paramount importance that risks to sources of drinking-water are understood, managed and addressed appropriately.

Principle 3: Maintain multiple barriers against contamination

Any drinking-water system must have, and continue to maintain, robust multiple barriers against contamination appropriate to the level of potential contamination. No single barrier is effective against all sources of contamination, and any barrier can fail at any time.

Principle 4: Change precedes contamination

Contamination is almost always preceded by some kind of change, and change must never be ignored. Change of any kind should be monitored for and responded to with due diligence.

Principle 5: Suppliers must own the safety of drinking-water

Drinking-water suppliers must maintain a personal sense of responsibility and dedication to providing consumers with safe drinking-water. Knowledgeable, experienced, committed and responsive personnel provide the best assurance of safe drinking-water.

Principle 6: Apply a preventive risk management approach

A preventive risk management approach provides the best protection against waterborne illness. Once contamination is detected, illness may already have occurred. This requires systematic assessment of risks throughout a drinking water supply from source to tap; identification of the ways these risks can be managed; and control measures implemented to ensure that management is occurring properly. Adequate monitoring of performance of each barrier is essential.

Current Management and Operational Measures

- 4.14 The Council has indicated its intention in the Long Term Plan to upgrade its water treatment plants to ensure water is treated and delivered in compliance with the drinking water standards.
- 4.15 A programme of leak detection and backflow prevention testing is implemented annually to minimise the risk of contamination.
- 4.16 The Riwaka/Kaiteriteri and Richmond water treatment plants have equipment installed for 'temporary' chlorination. These are activated as and when a positive test indicating contamination is received.
- 4.17 The Council's water supplies are regularly tested and the schedule of testing is determined by the risk and size of community served. All routine bacteria sampling consists of an *E.coli* test and a total coliform test. The *E.coli* test is an indicator of faecal contamination, which could make people sick. The total coliform count is an indication of how many coliforms are in the water, both faecal and non-faecal in origin.
- 4.18 The current testing regimes at treatment plants ensure that water leaving the plants have no coliforms present. Should testing from the network determine the presence of either total coliform counts or *E.coli* then this indicates that contamination is occurring within the network. Total coliform counts and/or *E.coli* are seldom, if ever, picked up in the permanently chlorinated water supply schemes.
- 4.19 In the non-chlorinated supplies, especially those with reservoirs, contamination is often picked up in the network as a total coliform count. It takes at least 24 hours to get a sampling result; from the time the sample is taken to the time a positive contamination report is received. By this time some, if not all, of the users on that supply could potentially have been exposed to contaminated water for at least 24 hours. The timing of the sampling means that exposure could be longer than 24 hours. If a contamination event occurs directly after sampling and the next sample is not taken until the following day, it could take up to 48 hours to receive a positive report of *E.coli*.
- 4.20 Table 1 below lists the current sampling sites for the non-chlorinated water supplies. It costs \$107,185 per year to undertake this routine sampling. The Drinking Water Assessor has requested a number of additional zone sampling sites for each scheme to achieve a better coverage of the schemes. Sampling is not a contamination barrier but an indication that contamination is present in the network.

Table 1: Current water quality sampling sites

| Scheme | Sample Location – Current | Weekly/ Monthly Sampling |
|---------------------------|--------------------------------------|--------------------------------|
| Richmond | Plant | Daily |
| Richmond | Industrial – Champion Road Reservoir | Weekly |
| | High East – REHL Reservoir | Weekly |
| | Lower Res - Queen Street Reservoir | Weekly |
| | Upper Reservoir – Valhalla Reservoir | Weekly |
| Motueka | Plant | Twice Weekly |
| | North Street | Weekly |
| | Toy Library | Weekly |
| Riwaka/Kaiteriteri | Plant | Weekly |
| | Fire Station | Every 2 weeks |
| | End of Line | Every 2 weeks |
| Upper Takaka | Plant | Monthly |
| | Zone | Monthly |

- 4.21 It is not currently feasible to test for viruses in water to determine the risk for each water supply scheme. Research shows that viruses are able to remain viable for years in the environment, compared to bacteria which may only last a few days. An absence of *E.coli* or other coliforms does not necessarily mean an absence of viruses. There are potential sources of viruses upstream of all of our water sources. It is likely that future legislation will require water treatment for viruses, as other countries are already doing, such as Canada. At the right dose and retention time, chlorination can be an effective virus barrier.
- 4.22 Reservoir rooftops are suspected as one of the main sources of contamination. Inspections of the roofs often find that there are bird faeces evident and, in the case of the Champion Road reservoir, ducks have regularly been seen. The Richmond reservoirs, which have had the most positive bacteria results, are concrete and have numerous cracks in the roof. Some of these are hairline cracks (1mm or less) but others are up to 5mm wide. Previous repairs have not stood up to the region's sunshine and now a permanent repair is being investigated. A sturdy bandage is planned to be installed along the main crack on the Champion Road reservoir in 2020 and it is estimated this will cost around \$12,000. However, this will not resolve the contamination issues due to hairline cracks in the concrete roof. The cost to install a complete membrane on the Champion Road reservoir roof is in excess of \$200,000 due to the size (32 metres diameter) and complexity of the roof structure. A similar membrane has recently been installed on the Tapawera reservoir roof, which is much smaller having a diameter of about 9 metres. An estimate received for the two other Richmond concrete reservoirs in Valhalla Drive indicates that it would cost around \$75,000 for both. With residual disinfection, a membrane cover for all three reservoirs would not necessarily be required. Major cracks would still require a bandage but this would be a smaller cost.

- 4.23 In Riwaka/Kaiteriteri, between 2004 and 2006 three bacteria events were logged for the supply. Rats were found in both reservoirs, which were then hand-chlorinated to disinfect the water supply network. These reservoirs are timber tanks with timber roofs and a plastic lining. The roofs do not last well in the local climate and need constant checking for leaks and repair. These reservoirs are due to be replaced in 2022/23.
- 4.24 The Council does issue boil water notices following notification of *E.coli* to ensure the community makes their drinking water safe until the chlorine dosing takes effect. Issuing a boil water notice for the community, while chlorination takes effect, is inconvenient for most people but especially so for businesses, schools, care homes, etc. Many people will not boil their water and may not even see the notice advising them to do so, leaving themselves and their families at risk.
- 4.25 Council staff have regularly (several times a year) detected total coliform counts in the Richmond water supply network and occasionally *E.coli* counts. This is a similar situation for the Riwaka/Kaiteriteri water supply scheme. Total coliforms and *E.coli* have not been detected in samples taken directly after water has been treated with UV in the treatment plants, therefore, the contamination is occurring in the network.
- 4.26 These issues suggest that the current monitoring and operational measures are not effective in preventing contamination and mitigating the risks. Therefore, it is likely that the Water Safety Plans may not be approved unless the Council commits to either residual disinfection or other more costly preventative measures to ensure a safe drinking water supply.

Additional Mitigation Measures

- 4.27 There are a number of options available to reduce the risk of contamination to the network by improving the condition of the network or mitigating likely sources of contamination. However, these come at a cost and without guarantee that the water supply is as safe as having residual disinfection and they are unlikely to meet the requirement of a multi-barrier approach to ensuring a safe drinking water supply.
- 4.28 The following list details possible contamination mitigation measures with estimated costs, where possible:
- **Current and Daily Sampling** - Table 2 below provides an indication of current sampling costs for the non-chlorinated supplies, which is generally a weekly sample at the nominated sites except for the smaller schemes, which are sampled less often (refer Table 1 above). The Drinking Water Assessor has requested additional zone sampling sites and we have suggested the sites below as a starter but we may be required to take additional samples at the extremity of each zone, which will increase the number of sampling sites. The cost column at the end is the annual cost of daily sampling to check for contamination. Our contractors have advised that we currently have 0.6 FTE assigned to sampling at the current level but would require four more FTEs if sampling was to be done daily on all the sites indicated below, provided we can find people with the required qualifications.

Table 2: Current water quality sampling sites and costs versus costs of a daily sampling regime with the additional recommended sampling sites.

| Scheme | Sample Location - Current | Weekly/ Monthly Sampling Cost | Sample Location – with additional sites | Daily Sampling Cost |
|----------------------------|--|-------------------------------|--|---------------------|
| Richmond | Plant | \$35,212 | Plant | \$33,628 |
| Richmond | Industrial – Champion Road Reservoir | \$7,332 | Industrial – Champion Road Reservoir | \$33,628 |
| | High East – REHL Reservoir | \$7,332 | High East – REHL Reservoir | \$33,628 |
| | Lower Reservoir - Queen Street Reservoir | \$5,016 | Lower Reservoir - Queen Street Reservoir | \$33,628 |
| | Upper Reservoir – Valhalla Reservoir | \$5,016 | Upper Reservoir – Valhalla Reservoir | \$33,628 |
| | | | Nayland Road | \$33,628 |
| | | | Cropp Place | \$33,628 |
| | | | Hill Street/ Hart Road | \$33,628 |
| | | | Arizona Reservoir | \$33,628 |
| | | | Cemetery/Wensley Road | \$33,628 |
| | | | 3 Brothers Corner | \$33,628 |
| Sub-total | | \$59,908 | | \$369,911 |
| Motueka | Plant | \$13,749 | Plant | \$45,880 |
| | North Str | \$6,875 | North Street | \$45,880 |
| | Toy Library | \$6,875 | Toy Library | \$45,880 |
| | | | Recreation Centre | \$45,880 |
| | | | King Edward Street | \$45,880 |
| | | | Harbour Road | \$45,880 |
| Sub-total | | \$27,499 | | \$275,280 |
| Riwaka /Kaiteriteri | Plant | \$8,733 | Plant | \$58,132 |
| | Fire Station | \$3,359 | Fire Station | \$58,132 |
| | End of Line | \$3,359 | End of Line | \$58,132 |
| | | | Riwaka Hall/ Bowling Club | \$58,132 |

| Scheme | Sample Location - Current | Weekly/ Monthly Sampling Cost | Sample Location – with additional sites | Daily Sampling Cost |
|------------------------|---------------------------|-------------------------------|---|---------------------|
| Sub-total | | \$15,451 | | \$232,526 |
| Upper Takaka | Plant | \$2,164 | Plant | \$63,993 |
| | Zone | \$2,164 | Zone | \$63,993 |
| Sub-total | | \$4,328 | | \$127,986 |
| Annual Total \$ | | \$107,185 | | \$1,005,703 |

- **Expand Sampling Zones** - Increase the sampling regime to cover daily sampling at the extremity of each zone across the non-chlorinated water supply schemes. This is similar to Table 2 above but it would likely double the number of zones requiring to be monitored and the cost could be around **\$1.8 million per annum**.
- **Increased Pipe Renewal Programme** – Increase the pipe renewal programme to limit the number of failures in aging pipes, which could be an increase of around **\$500,000 per annum** across the schemes. The Council typically waits until there are several breaks on a section of pipeline before replacing it, known as “sweating the assets” to maximise the life of the infrastructure. However, with the high risk of contamination of the water supply from a pipe break in the absence of residual disinfection, this is probably not acceptable.
- **Enforcement** - Increase the level of control on who can work in the vicinity of water pipes, in particular main supply lines and monitor all works. This would require additional enforcement resources and could impact on efficiencies.
- **Pressure Sensors** - Installation of pressure sensors on pipes to monitor and avoid water hammer to reduce risk of pipe failure from excessive pressure. Pressure sensors are also good for the detection of low pressure areas where water could be sucked back into the supply through breaks, cracks and leaks.
- **Upgrade Backflow Prevention** - Replace domestic double check valve backflow prevention (BFP) with testable check valves. It would be a significant cost to replace the existing double check valves and there would be an added cost of testing around 11,000 water connections (cost not estimated). Install BFP (non-testable) on all urban extension restrictors (estimated **\$10,000**).
- **Increased Maintenance** - Regular inspection and cleaning of reservoirs and roofs or installation of a membrane on all concrete reservoirs. Could conceivably cost around **\$500,000** to seal all remaining reservoir roofs.
- **Increased Patrols** - Patrols to investigate and enforce illegal takes from fire hydrants and other illegal connections (**\$100,000** per annum including prosecutions).
- **Automated Water Sales** - Installation of pre-paid, swipe card water take system, which would include a flow meter and backflow preventer, instead of the current

permitted hydrant arrangements (**\$50,000** per installation). It is costly but could save on administration and costs of damage to leased hydrant upstands.

- **Restrictor Monitoring** - Annual restrictor checks of urban extension water supplies, possibly around \$10,000 per year and then cost of remediation and prosecution could double this to **\$20,000**.
- **Increased Leak Detection** - Higher level of leak detection and consequent repair and replacement of leaking pipes (additional **\$50,000** per year for investigations and consequential cost of repairs could be around **\$200,000 per annum** for the next five to 10 years)
- **Increased Flushing** - Increased flushing of mains to reduce the build-up of organic material in the network, which create chloramines leading to taste and odour complaints (**\$50,000** per annum). Over time, chlorination removes the biofilm from the pipes reducing the likelihood of chloramines and consequent taste and odour complaints.
- **Improved Zone Monitoring** - Improved zone flow monitoring to identify possible leaks. Not only would more equipment be required but also additional staff to run the system then to monitor, report and take action on the results.
- **Pressure Zoning** - Install pressure reducing valves to reduce high pressure zones to reduce risk of pipe failures and level of leaks. This could be extremely costly, in the **hundreds of thousands of dollars**, as it would also require a reconfiguration of pipes and zones.
- **Information Integrity** - Improve accuracy of asset information (e.g. pipe depth, location, size, etc.) to assist with service locates and prevent third party damage to buried pipes (**\$50,000** per annum).
- **Education/Awareness** – undertaking education/awareness with contractors which work near water infrastructure and with property owners where public water infrastructure is located within their private properties.

Benefits of Residual Disinfection

- 4.29 Having long-lasting residual disinfection in the network significantly reduces the risk of microbiological re-contamination through planned works, backflow events, illegal connections, pipe breaks, faulty fittings, illegal water takes from hydrants or ingress through reservoir roofs.
- 4.30 Residual disinfection also provides a degree of added level of protection to residents from re-contamination in private storage tanks on restricted urban extension and rural water supplies. Note that chlorine levels do dissipate with time.
- 4.31 Having residual disinfection in the network greatly reduces the risk of finding bacteria in routine sampling and reduces the level of routine monitoring required. The direct cost of extra sampling required after a positive bacteria result can be in excess of \$5,000 per event. There are also indirect costs, such as Council staff time. Between 2015 and 2019, six bacteria contamination events have occurred in Richmond.
- 4.32 Chlorine, typically used to provide residual disinfection, also reduces the risk of virus contamination from the source water. The UV treatment in use does not deactivate viruses and current research is placing a greater emphasis on the risk of virus contamination.

- 4.33 Chlorine protects the whole community, in particular those who are most at risk; i.e. babies, the elderly and the immune-compromised. These people may not easily recover from a gastrointestinal bug.
- 4.34 Having multiple treatments, for example; source protection, filtration, UV and residual disinfection, is part of the 'multi-barrier approach' and is a widely adopted approach to provide safe drinking water around the world.

Dis-benefits of Residual Disinfection

- 4.35 The most common feedback from customers when using chlorine for residual disinfection is the taste and odour. It is possible for customers to mitigate the taste and odour of chlorine by treating the water with activated carbon filters at the point of entry to the house or by installing an under-sink activated carbon filter to treat drinking water only. The level of chlorine can also be reduced by storing a bottle of chlorinated water in a fridge for 24 hours.
- 4.36 Some people are sensitive to chlorine on their skin and may have an allergic reaction. In these cases a point of entry activated carbon filter would be the recommended option.
- 4.37 If the water and the reticulation is free of organics then taste and odour is largely not noticeable. However, any organic material in the raw water or in the reticulation reacts with the chlorine to form chloramines. Generally, this is how the taste and odour is created. Minimising the levels of organic material in the reticulation can be done initially by filtering the raw water and then by flushing the reticulation.
- 4.38 Chlorine odours are very noticeable in public swimming pools or spas. The presence of organics in the pool water reacts with the chlorine to form the chloramines. The organics come from body fluids, whether it be sweat or other fluids. Consequently greater levels of chlorine dosing has to be done to counteract this reaction and keep residual chlorine in the water to maintain disinfection.
- 4.39 In the water supplies, once the presence of organics is reduced than it is possible to reduce the chlorine dosing whilst still maintaining permanent disinfection. Consequently taste and odour occurrences are reduced. Should permanent chlorination be implemented it may take 6 to 12 months for the chlorine to deactivate the organic material in the reticulation. This should reduce the incidences of taste and odour. The good quality groundwater and the absence of organics in the Richmond, Riwaka/Kaiteriteri and Motueka schemes means that it is possible to dose chlorine at very low levels. This is different for water supplies with surface water takes or river takes. Organic material is much more prevalent with these takes.

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| 5 Options |
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5.1 The options considered are detailed in the table below:

| Option | Pros | Cons |
|---|--|---|
| <p>Option 1: No change to existing operations and only chlorinate when there is a bacterial contamination event, major works are</p> | <p>No public opposition to chlorine taste and odour, other than following a contamination event.</p> <p>Less public opposition to the addition</p> | <p>Contamination risk remains and of more risk to specific members of the community, in particular babies, elderly or immune-compromised.</p> |

| Option | Pros | Cons |
|---|---|---|
| <p>undertaken or failures occur on the network.</p> | <p>of chlorine to the water supply as an added 'chemical'.</p> | <p>Chlorine dosing after a positive bacteria result could be too late to prevent people being adversely affected.</p> <p>Reputational risk from having regular boil water notices.</p> <p>Very unlikely that Water Safety Plans would be approved without residual disinfection, such as has recently happened in Christchurch. Lack of residual disinfection would not comply with DWSNZ.</p> <p>Time-consuming job every time chlorine is turned on to email affected customers, put information on social media and keep it updated.</p> <p>Risk of disease outbreaks at holiday destinations, particularly caravan parks, could be much harder to control.</p> <p>Increased operational costs during each positive bacteria event due to laboratory and contractor costs and staff time.</p> <p>Severe inconvenience for businesses and at risk customers who find it hard to boil water, in particular care homes.</p> <p>Fewer staff and contractors are available over holiday periods and laboratories are only open for restricted hours.</p> <p>Concrete reservoir roofs, which have cracks, have been identified as high risk and need to be sealed with a membrane, which is a costly exercise.</p> |
| <p>Option 2: Implement greater management measures, excluding chlorination, to mitigate the risk of contamination.</p> | <p>Has a higher level of protection of the water supply network than the current measures.</p> <p>No public opposition to chlorine taste and odour in the water supply.</p> | <p>Does not guarantee a continually safe drinking supply water to all customers, all of the time, as even with daily sampling it could be 48 hours or more, depending on sampling times, before contamination is identified.</p> <p>Chlorine dosing after a positive bacteria result could be too late to prevent consumers from being adversely affected.</p> <p>Contamination risk remains and of more risk to specific members of the community, in</p> |

| Option | Pros | Cons |
|---|--|---|
| | | <p>particular babies, elderly or immune-compromised.</p> <p>Unlikely to comply with the requirements of Water Safety Plans which means it will also not comply with the DWSNZ.</p> <p>Significantly increases the cost of managing the water supply network (refer Section 4.28 of this report).</p> <p>Commercial customers who require residual disinfection will require their own point-of-use treatment.</p> <p>Concrete reservoir roofs, which have cracks, have been identified as a high risk and must be sealed with a membrane, which is a very costly exercise.</p> <p>Reputational risk from having boil water notices.</p> <p>Time-consuming job every time chlorine is turned on to email affected customers, put information on social media and keep the sites up to date.</p> <p>Risk of disease outbreaks at holiday destinations, particularly caravan parks, could be much harder to control.</p> <p>Increased operational costs during each positive bacteria event due to laboratory and contractor costs and staff time.</p> <p>Severe inconvenience for businesses and at risk customers who find it hard to boil water, particularly for rest homes.</p> |
| <p>Option 3: Permanent chlorination of all Council water supplies. Prior to final consideration of this option by Council, the affected communities will be consulted.</p> | <p>Provides continually safe drinking water to all customers, all of the time.</p> <p>Reduces resources and costs incurred during bacterial contamination events or following major construction</p> | <p>Extra operational cost for residual disinfection. This would be much less than the cost of the mitigation measures required to protect the network in the absence of residual disinfection, which would still not guarantee a continually safe water supply.</p> <p>Some residential customers may object to the taste and smell of the chlorine, if this is the most effective means of achieving residual disinfection, and may require a handheld or under-sink activated carbon filter to make it palatable.</p> |

| Option | Pros | Cons |
|--------|---|---|
| | <p>works, pipe breaks or network failures.</p> <p>Significantly lower overall cost of monitoring the networks for likely contamination.</p> <p>Commercial customers who require residual disinfection will no longer require their own treatment.</p> <p>Expensive reservoir roof repairs can be scaled down.</p> <p>By undertaking consultation with the affected communities, concerns or feedback will be taken into account before a decision is made by the Council.</p> <p>The community will be well informed of the public health need to have residual disinfection in water networks.</p> | <p>Customers with existing skin conditions aggravated by chlorine may wish to install an activated carbon filter at the point of entry of the water supply into their house.</p> <p>Some commercial customers may need to install chlorine removal equipment.</p> |

- 5.2 **Option 1** is not the preferred option as it does not deliver permanently disinfected water supplies and therefore will not comply with the DWSNZ. It also does not mitigate the risks surrounding the delay in identifying contamination in the waters supplies.
- 5.3 **Option 2** provides for a higher level of protection of the public water supply network than currently provided. However, it is unlikely that Water Safety Plans would be approved without residual disinfection and these schemes would therefore not comply with DWSNZ. It is also an expensive option whilst still not providing a permanently disinfected water supplies.
- 5.4 Staff recommend **Option 3 - Permanent chlorination of all Council water supplies.** However, this option is subject to a special consultative procedure. It is proposed that this occur in June 2020, with hearings and deliberations in July 2020 with a decision being considered by the Strategy and Policy Committee on 20 August 2020.
- 5.5 The Council has a level of service, and a statutory obligation, to provide a safe drinking water and, as explained above, the only effective means to do this is to have residual

disinfection in the water supply networks. It is very difficult for Council to prove that contamination of the water supply network is being avoided without residual disinfection.

- 5.6 Residual disinfection utilising chlorine is likely to have a high level of interest. Therefore, it is necessary that community consultation is undertaken with accurate information so that there is a greater understanding surrounding this decision. Council needs to understand community sentiment and concerns prior to making a final decision on the permanent chlorination of its water supplies.
- 5.7 If chlorine is dosed at appropriate levels, then the occurrence of taste and odour should be minimised. Initially, permanent chlorination of a previously non-chlorinated water supply is likely to result in odour and taste issues given that there are likely to be pockets of organic residue (“biofilm”) on the inside of the pipes. This should dissipate over time. Should this occur then lower dosing rates could be applied that would still maintain compliance with the DWSNZ.
- 5.8 For those with less tolerance to chlorine, there is the option of installing an activated carbon filter to remove the taste of chlorine. Or they could put potable water in a receptacle to allow it stand to allow the chlorine to evaporate. For other customers that are very sensitive to chlorine on their skin, an activated carbon filter installed at the point of entry to their house would suffice.
- 5.9 Some industries, such as breweries or food processing plants, may prefer unchlorinated water, which can be achieved with an activated carbon filter. The DWSNZ has the objective of constantly providing permanently disinfected water, utilising chlorination may not meet specific industrial purposes.
- 5.10 There will be a number of customers that will not want to accept the addition of ‘chemicals’ into their water supply and there may be a demand for a location to supply ‘unchlorinated drinking water’ for customers. The provision of a ‘de-chlorinated’ fill point for customers to refill drinking water bottles may be of benefit to the community, for example, a site in Sundial Square and other town centres could be considered. . A number of councils in New Zealand, such as Hamilton City, provide chlorine free taps,
- 5.11 It may also be possible to provide an unchlorinated water supply at a hydrant at some of the treatment plants. This could be operated along the lines of the existing user pays permitted hydrant upstand system. Alternatively, a swipe card system of payment with a permanent backflow prevention device and hose connection could be arranged. To set up and operate such a service would incur additional costs and require further administration,

6 Strategy and Risks

- 6.1 The Havelock North contamination event and subsequent enquiry re-focused the water industry’s attention on the risks associated with supplying drinking water that is appropriately treated. The DWSNZ was reviewed and revised in 2018. Subsequently the Health Act was updated with the Health Drinking Water amendment Bill in July 2019. Drinking water suppliers no longer have the option to take all practicable steps; they must now comply with the standards. If the Havelock North water supply had been chlorinated then the Campylobacter outbreak would not have occurred.
- 6.2 The risk of waterborne disease outbreaks in water supplies are significantly reduced by chlorination. This retains a disinfection residual throughout the reticulation network. The

positive total coliform results recorded in the Riwaka/Kaiteriteri and Richmond zone samples suggest that contamination is occurring somewhere in the networks. The risk of contamination has been confirmed and so doing nothing to permanently mitigate this risk in the networks is not an option if compliance is required.

7 Climate Change Impact Assessment

7.1 This report outlines the statutory requirement for permanent disinfection in water supply networks to ensure safe public drinking water supplies. Residual disinfection of the water supply networks is unlikely to have a climate change impact.

| Climate Change Consideration | Assessment | Explanation of Assessment |
|---|--|--|
| Is this activity associated with one of the goals in Council's Climate Action Plan? | No | There are no known climate change impacts from the use of chlorine for water treatment and the chlorine treatment of water supplies is unlikely to be affected by climate change. |
| Will this decision affect the ability of Tasman District to proactively respond to the impacts of climate change? | This decision will have no impact on the ability of the Council or District to proactively respond to the impacts of climate change. | This decision only impacts on the treatment of water supply schemes with chlorine, which eventually dissipates and is unlikely to have a discernable impact on climate change. A very small amount of chemical (chlorine gas) is used to chlorinate the supply. By-products produced as part of the residual disinfection are negligible and not classed as greenhouse gases. Permanent residual disinfection would require less samples to be taken from the networks, resulting in fewer traffic movements. |

8 Policy / Legal Requirements / Plan

- 8.1 Territorial authorities have numerous responsibilities relating to the supply of water. A key responsibility is the duty under the Health Act 1956 to improve, promote, and protect public health within the District.
- 8.2 The Tasman District Council Public Water Supply Bylaw does not mention the provision of chlorinated water.
- 8.3 In the 2018 Water Supply Activity Management Plan, Section 1.2, states that "Clean and Safe drinking water is fundamental to public health".
- 8.4 The Council's levels of service for water supplies are focused on providing water that has an absence of microbiological contamination and water that complies with parts 4 and 5 of the

DWSNZ. Council is constantly struggling to comply with these levels of service, as reported through the Council's most recent Annual Report.

- 8.5 The Council states it will provide ready access to high quality water in the urban areas to enhance the health of Tasman's Communities, with a level of service in the Long Term Plan 2018-2028, Volume 2, being "Our water is safe to drink".
- 8.6 The permanent residual disinfection of water is fully supported by the local Drinking Water Assessor, Medical Officer of Health, the Ministry of Health and the recommendations from the Havelock North inquiry. Permanent chlorination is the preferred method to permanent disinfect water supplies. It is already a widely used across the Tasman District and Nelson City Council. Chlorination is widely used across the country and internationally.
- 8.7 It is very likely that some form of residual disinfection will be mandated for water supply networks in New Zealand.
- 8.8 The following advice has been received from the local Drinking Water Assessor:

*I am of the opinion that Health Act 1956 No 65 (as at 01 August 2019) **69V – duty to comply with the drinking water standards** - would apply where a supplier failed to take action to prevent *E. coli*/microbiological contamination within a network.*

69ZZR states

(1) Every person commits an offence who contravenes, or permits a contravention of, any of the following:

(b) section 69V (duty to take all practicable steps to comply with the drinking water standards) [Note: the inclusion of all practicable steps in this offence appears to be an error, given that this wording has been removed from 69V itself]

69ZZS states:

(2) It is a defence to prosecution for an offence under section 69ZZR if the defendant proves (a) that the defendant did not intend to commit the offence; and (b) that the defendant took all practicable steps to prevent the commission of the offence.

*So, there is indeed a risk of being prosecuted if the standards are not met, e.g. by continuing *E. coli* detections greater than the allowable number. There is a risk of being convicted for that offence if a court decides that all practicable steps were not taken to prevent breaching of the standards – for example, by not introducing permanent residual disinfection when the supplier knew that *E. coli* in the network was an ongoing possibility.*

Also in the mix is the tightening WSP (Water Safety Plan) framework where suppliers are being specifically requested to consider how they are managing risk in their networks in the absence of a residual disinfectant. The DG (Director General) of Health wrote on this matter to Council CE's recently. This introduces the possibility that WSP's won't be approved where no residual disinfectant is present. It is also an offence to not have an approved and implemented WSP (currently for supplies >500 population).

- 8.9 This means that unless Council implements measures to prove it has a permanently disinfected water supply then they are unlikely to comply with the Water Safety Plan requirements and therefore will not comply with the DWSNZ.
- 8.10 It is also a requirement for Water Safety Plans to demonstrate commitment at the highest levels of the Council to provide safe drinking water and a Drinking Water Management Policy adopted by Council is an effective way of achieving this. Council has yet to adopt a Drinking Water Management Policy. Staff intend presenting such a policy to the Policy and Strategy Committee for adoption later this year.
- 8.11 The provision of water that is safe to drink is an essential public health service. Knowingly providing water that is susceptible to contamination and therefore compromise safety for customers could result in Council being prosecuted for offences against the drinking water provisions of the Health Act.

9 Consideration of Financial or Budgetary Implications

- 9.1 Using chlorine gas is a very cost effective and long lasting treatment method to provide permanent residual disinfection in a water supply network.
- 9.2 A 70kg bottle of chlorine gas costs about \$1,000. In Richmond, initial tests show that at a low dose one chlorine bottle will last over a month and in Kaiteriteri a bottle would last about 3 months. Therefore there is no urgency to upgrade these treatment plants to implement permanent chlorination as the current chlorination equipment could be utilised in the short-term. Additional bottles could be stored on site as required. Larger chlorine vessels would be more cost-effective. The more permanent upgrades could be included in the next Long Term Plan 2012/31, as necessary.
- 9.3 The extra operational cost of supplying chlorine gas is approximately \$4,000 a year for Kaiteriteri and \$12,000 a year for Richmond.
- 9.4 The design plans for the upgrade of the Motueka water treatment plant already includes an allowance for permanent chlorine dosing equipment.
- 9.5 The cost of an upgraded chlorine storage area at the Richmond water treatment plant to accommodate future growth has not yet been estimated but will be included in the next Long Term Plan 2021/31, as required.

10 Significance and Engagement

- 10.1 Staff have considered this decision in terms of the Council's Significance and Engagement Policy and consider it to be of high significance due to the high level of public interest and the strategic nature of public water supplies. The table below summarises the factors considered in this assessment.
- 10.2 Under the LGA, there is no specific ability for the Council to avoid the obligation to consider views and preferences of affected persons and clearly one way of ascertaining such views and preferences is through consultation. This applies even where the Council may have little choice about what options are realistically available (for example, in this situation the Council may have little option but to chlorinate if that is the only reasonably practicable option to comply with the recent changes to the Health Act 1956 and the Drinking Water Standards – as per the advice from the Drinking Water Assessor in section 7.8 of this report).

- 10.3 The Council has some idea of the views and preferences of affected persons because of feedback and/or complaints that have been received about chlorination in the past. It is unlikely that the views and preferences of the affected communities could be properly considered based only on feedback received through complaints. It is important to show that the views and preferences of affected persons have been considered before a final decision is made.
- 10.4 Consultation would remove the potential argument about whether section 78 of the LGA has been complied with. Consultation would also mean the Council has a better idea of the views and preferences of the community and can properly consider those in making its ultimate decision.
- 10.5 It is therefore appropriate that the affected communities are consulted on the proposal to provide permanent chlorination in all Tasman District Council water supply networks, before a final decision is made.

| Issue | Level of Significance | Explanation of Assessment |
|--|-----------------------|---|
| Is there a high level of public interest, or is decision likely to be controversial? | High | <p>This has raised considerable comments from some on the community and it has been the subject of comment around the country. In particular in Christchurch and Napier, and many people do not like the idea of adding chemicals to water supplies.</p> <p>It should be noted that provision of safe drinking water is the primary concern for all water suppliers. Currently 11 of the 15 Council water supply schemes are already permanently chlorinated.</p> |
| Is there a significant impact arising from the duration of the effects from the decision? | Medium | It is likely that some residential, commercial and industrial properties will chose to install activated carbon filters to remove chlorine. |
| Does the decision relate to a strategic asset? (refer Significance and Engagement Policy for list of strategic assets) | Yes | Water supplies are considered to be strategic assets. |
| Does the decision create a substantial change in the level of service provided by Council? | Yes | <p>The Council's current level of service is to provide a safe drinking water supply.</p> <p>By introducing permanent chlorination to the remaining 4 of its 15 water supplies could be considered a substantial change as those 4 schemes involve a much greater customer base. However, temporary chlorination has been implemented in these</p> |

| Issue | Level of Significance | Explanation of Assessment |
|--|-----------------------|---|
| | | schemes from time to time so it could be said that it is not that substantial. |
| Does the proposal, activity or decision substantially affect debt, rates or Council finances in any one-year or more of the LTP? | No | <p>Providing residual disinfection, by means of chlorine dosing, will incur some increased operational cost per year but it could also reduce compliance monitoring costs.</p> <p>Not having permanent disinfection, will require a significant increase in costs. There will need to be increased management of contamination sources, increased monitoring and other mitigation measures. Even with this increased cost it is unlikely that that we would comply the DWSNZ.</p> |

11 Conclusion

- 11.1 Providing safe drinking water is the primary focus of our water supply activity and it is a legal obligation.
- 11.2 The positive total coliform results recorded in zone samples over recent years confirm that contamination is occurring in parts of the water supply networks. The risk of contamination has been confirmed and so doing nothing to eliminate this risk in the networks is not an option.
- 11.3 Permanent residual disinfection, as part of a multi-barrier treatment approach, is considered to be the most cost-effective way to achieve a safe water supply.
- 11.4 Option 3 - Permanent chlorination of all Council water supplies, is the preferred option as it provides continually safe water to all customers.
- 11.5 It is recommended that the communities of Richmond, Riwaka/Kaiteriteri, Motueka, Hamama and Upper Takaka who are currently water supply customers; be consulted on the proposal to provide permanent chlorination.
- 11.6 It is recommended that staff report back to the Full Council with the proposal for the special consultative procedure.

12 Next Steps / Timeline

- 12.1 Following the Full Council's approval to undertake a special consultative procedure, staff will consult with customers connected to Council's water supplies in the communities of Richmond, Motueka, Riwaka/Kaiteriteri, Upper Takaka and Hamama. Provide these customers with an opportunity to give feedback on the proposed chlorination of their water supplies.

- 12.2 Contact larger consumers, in the affected areas, directly to discuss the chlorination of the water supplies.
- 12.3 Advertise in Newline and through the local media about the need for permanent residual disinfection in Council's water supplies.

Item 3.1

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| 13 Attachments |
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Nil

Attachment 2